AJSMU

Progress Through Knowledge

ANNALS of
JINNAH SINDH MEDICAL UNIVERSITY

ALSO INCLUDES THE ABSTRACTS OF
14TH ISOSS INTERNATIONAL CONFERENCE ON STATISTICAL SCIENCES
PRESENTATIONS HELD AT JSMU ON 14 - 16 MARCH 2016

A J S M U

Volume 2, Issue 1　　　**January - June, 2016**

PDF Creator - PDF4Free v3.0　　　　http://www.pdf4free.com

A J S M U

Volume 2, Issue 1   **January - June, 2016**

A J S M U

Volume 2, Issue 1   **January - June, 2016**

ABSTRACTS OF ISOSS 2016 CONFERENCE

ABSTRACTS OF ISOSS 2016 CONFERENCE

ABSTRACTS OF ISOSS 2016 CONFERENCE

A J S M U

ABSTRACTS OF ISOSS 2016 CONFERENCE

A J S M U

Volume 2, Issue 1   January - June, 2016

ABSTRACTS OF ISOSS 2016 CONFERENCE

ABSTRACTS OF ISOSS 2016 CONFERENCE

A J S M U

Volume 2, Issue 1   **January - June, 2016**

ABSTRACTS OF ISOSS 2016 CONFERENCE

ABSTRACTS OF ISOSS 2016 CONFERENCE

A J S M U

Volume 2, Issue 1   **January - June, 2016**

ABSTRACTS OF ISOSS 2016 CONFERENCE

A J S M U

ABSTRACTS OF ISOSS 2016 CONFERENCE

Atopic Diseases and Pakistan:
Do We Need a National Strategy?

Muhammad Yahya Noori[1] and Muhammad Asif Qureshi[1]

A number of atopic conditions such as allergic rhinitis, bronchial asthma, allergic keratoconjunctivitis, urticaria and eczema are common in Pakistan[1,2]. These allergies are due to development of hypersensitivity against external antigens that include plant pollen, animal dander, insect debris, dust mites and fungal spores[3,4]. Symptoms of these diseases are variable but they are merely different manifestations of the same pathologic phenomena, however different molecular mechanisms are involved in acute and chronic conditions[3]. Fungal spores, plant pollen and animal dander contain a number of proteins and glycoproteins that are considered foreign by the human immune system, which gets sensitized and produces symptoms of atopy upon re-exposure[5].

Though some epidemiologic data are available from different parts of the country[1,2,6], but they do not reflect a complete picture. Surveys performed in 2007 report the prevalence of allergic rhinitis as high as 28.5% in urban Sindh[6], while diagnosed bronchial asthma was reported to be 15.8%[2]. Almost similar frequency of these diseases were reported from Punjab and elsewhere in the country[5]. The appearance of symptoms of allergic rhinitis in population of urban areas in Sindh has been reported to be periodic and especially high during March-October[5], while episodes of asthma were reported to be more common in the months of January-March and July[5]. Since most of these allergens follow a particular trend, the appearance of symptoms is largely predictable on the basis of previous records. This allows generation of timely alerts to the susceptible population and helps in decreasing the morbidity related to the allergic diseases.

1   Department of Pathology, Dow International Medical College, Dow University of Health Sciences, Karachi, Pakistan.

Correspondence: Dr. Muhammad Yahya Noori, Department of Pathology, Dow International Medical College, Dow University of Health Sciences, Karachi, Pakistan.

Email: y.noori@duhs.edu.pk

Not only Pakistan lacks a comprehensive epidemiologic database about the prevalence of allergic diseases but information about the environmental allergens is also limited. Some of the studies report the presence of a number of natural allergenic plants and their pollen belonging to families *Amaranthaceae, Arecaceae, Cyperaceae, Convolvulaceae* and *Graminae* in the environment of urban Sindh[7-9], while *Cladosporium, Alternaria, Myxomycetes, Periconia, Bipolaris* and *Agaricus* spores were reported to be highly prevalent fungal spores in this environment[10]. Reports from the North of the country shows paper mulberry to be the main culprit but also include thresher and cotton dust as important allergens[5]. Some cultivated plants belonging to families *Aceraceae, Leguminaceae* and *Euphorbiaceae* were also reported to be prevalent in urban areas[11]. Pollen and spore data is available for some geographic areas but it does not reflect the actual condition on the ground as it was recorded for a limited period of time on a particular geographic location. The data reported from 2001-2004 shows peak in pollen count during the months of March-May and August-September[7], while fungal spore data from 2010 shows an uneven trend in rise and fall in spore count throughout the year[10]. Skin tests in urban Sindh performed on a few patients showed that they were sensitive to *Amaranthus viridus, Salsola barysoma, Atriplex stocksii, Cynodon dactylon, Sorghum helepense, Secale cereal* and *Prosopis juliflora*[7]. Unfortunately the availability of allergen extracts in Pakistan is very limited and use of imported extracts from abroad can give many false-negative results because of differences in antigens being tested.

In most of the developed and in some developing countries, environmental allergens are monitored on regular basis and alerts are generated for the population at risk[12-15]. Since there is an increase in the prevalence of these diseases due to increased urbanization and pollution, it is becoming increasingly important to start monitoring process for the environmental allergens[14,15]. As a part of it, the authors performed a survey of the

prevalent allergenic pollen producing plants of Karachi and found that various allergenic plants can be used as potential allergy vaccines[16].

At this point of time, most of the burden of clinical research in the field of allergy, with practical provision of allergy vaccines and allergy testing is being borne by the Allergy Center at National Institute of Health, Islamabad. Though aerobiological data have been published by other institutions as well, it is important that a national policy should be developed to co-ordinate and link all these efforts and activities for a systematic increase in the scientific knowledge and provision of relief to the suffering population.

References

1. Ahmad F, Yousaf F, Asif S. Prevalence of Allergic Disease and Related Allergens in Pakistan in 2007. J Post Grad Med Inst 2011;25(1):29-30.
2. Hasnain SM, Khan M, Saleem A, Waqar MA. Prevalence of asthma and allergic rhinitis among school children of Karachi, Pakistan, 2007. J Asthma 2009; 46(1):86-90.
3. Waqar MA, Noori MY, Saleem A, Waqar MA. Current Understanding of the Molecular Mechanisms of Allergy. J. Chem. Soc. Pak. 2008;30(6):954-62
4. Kim J-H, Oh J-W, Lee H-B, Kim S-W, Chung H-L, Kook M-H, et al. Evaluation of the association of vegetation of allergenic plants and pollinosis with meteorological changes. Allergy Asthma Respir Dis. 2014;2(1):48-58.
5. Rao TA, Siddiqui BA, Shaikh MA, Ahmed M, Shaikh AH, Ahmed F. Dynamics of some common epidemics in Karachi, Pakistan. J Pak Med Assoc 61(11):1072-9.
6. Yusuf MO. Prevalence of allergic disease and related allergens in Pakistan in 2007. J Post Grad Med Inst. 2012;25(1):14-23
7. Anjum Perveen MQ, Sad-ul-Islam M. Airborne pollen survey of Karachi and adjacent areas in relation to allergy. World Appl Sci J. 2007;2(4):289-98.
8. Parveen A, Khan M, Zeb S. Identification and quantification of airborne pollen from hyderabad: Tando-Jam, Sindh. Pak J Bot. 2012;44(5):1755-62.
9. Perveen A, Zeb S, Khan M, Qaiser M. Seasonal fluctuations of airborne pollen grains count and its correlation with climatic factors from Khairpur Sindh, Paksitan. Pak J Bot. 2014;46(1):299-306.
10. Hasnain SM, Akhter T, Waqar MA. Airborne and allergenic fungal spores of the Karachi environment and their correlation with meteorological factors. J Environ Monit. 2012;14(3):1006-13.
11. Waqar MA, Khan M, Hasnain SM. Possible effects of cultivated plants in the development of allergy in population of Sindh, Pakistan. J Chem Soci of Pakistan. 2010;32(1):95-100.
12. Sakashita M, Hirota T, Harada M, Nakamichi R, Tsunoda T, Osawa Y, et al. Prevalence of allergic rhinitis and sensitization to common aeroallergens in a Japanese population. Int Arch Allergy Immunol. 2010;151(3):255-61.
13. Blomme K, Tomassen P, Lapeere H, Huvenne W, Bonny M, Acke F, et al. Prevalence of allergic sensitization versus allergic rhinitis symptoms in an unselected population. Int Arch Allergy Immunol. 2013;160(2):200-7.
14. de Marco R, Cappa V, Accordini S, Rava M, Antonicelli L, Bortolami O, et al. Trends in the prevalence of asthma and allergic rhinitis in Italy between 1991 and 2010.Eur Respir J 2012;39(4):883-92.
15. Singh AB, Malik P, Parkash D, Gupta CK. Biological standardization of pollen allergens from India. Asian Pac J Allergy Immunol. 2011;10(2):103.
16. Perveen A, Noori MY, Khan M, Qureshi MA. Spectrum of allergenic pollen in Karachi and their characterization using conventional and electron microscopy: Potential candidates for allergy vaccines. Rawal Mel J. 2015;40(1):7-13.

— — — — — —

What is Plagiarism?

Plagiarism includes, but is not limited to:

1. Using published work without referencing (the most common)
2. Copying coursework essays
3. Collaborating with any other person when the work is supposed to be individual
4. Taking another person's computer file/program
5. Submitting another person's work as one's own
6. The use of unacknowledged material published on the web
7. Purchase of model assignments from whatever source
8. Copying another student's results
9. Falsifying results

ORIGINAL ARTICLE

Effect of Gender and Age-group on Ramadan Fasting among Hypertensive Patients

Nazeer Khan[1], Amna Qureshi[2], Raazia Aftab[2], Waqas Farooqi[2] and Muhammad Masood Khalid[3]

ABSTRACT

Objective: The objective of the study is to determine the effect of Ramadan fasting on the blood pressure with covariate of gender and age group among hypertensive patients.

Methods: One hundred seventeen hypertensive patients were selected conveniently from the staff and faculty members of Dow University of Health Sciences and other locations of Karachi. The field investigators visited three times (last ten days of Shaban, Ramadan and Shawwal) for collection of data. A structured questionnaire was completed before clinical examination. Blood pressures were measured 3 times in sitting position. Three patients were lost in the follow up.

Results: The mean age of the 114 hypertensive patients was 54.34±11.3 years. Mean systolic blood pressure (SBP) of male and female patients decreased significantly from Shaban to Ramadan, but rose with statistically significant to Shawwal. Mean SBP decreased significantly in each age group from Shaban to Ramadan then upswing in Shawwal. But reversal of the SBP was not significant in any of the age group, except the elder group. Diastolic blood pressure (DBP) also decreased significantly from Shaban to Ramadan among both the gender, but bounced back significantly in Shawwal. Mean DBP decreased significantly from Shaban to Ramadan for the age group 51-60 years only and increased significantly from Ramadan to Shawwal for the age group of < 40 years and > 60 years. Overall mean SBP and DBP of the entire sample was reduced significantly from Shaban to Ramadan, but reversed back significantly to Shawwal. There was no significant effect of gender, age group and its interaction in the changes of SBP and DBP in three readings.

Conclusions: The study revealed that Ramadan fasting has some positive effect in controlling the blood pressure even though the timing and doses of the anti-hypertensive medicines are altered. Large scale clinical studies could be conducted to observe the physiological changes due to Ramadan fasting affecting hypertensive patients.

Key Words: Systolic and diastolic blood pressure, hypertensive patients, Ramadan fasting**.**

عنوان: فشارخون کی زیادتی کے مریضوں میں جنس اور عمر کے لحاظ سے روزوں کے اثرات

مقصد: اس تحقیق کا مقصد فشارخون کے مریضوں میں رمضان کے روزوں کے زیادتی کے مریضوں کے اثرات معلوم کرنا ہے۔ طریقہ: ایک سوترہ (117) فشارخون کے زیادتی کے مریضوں کو آسان طریقہ معائنہ (Convenient Sampling) کے ذریعہ ڈاؤ یونیورسٹی آف ہیلتھ سائنسز میں کام کرنے والے افراد اور شہر کراچی کے دوسرے حصوں سے رہائشیوں سے منتخب کیا گیا۔ محققین کے افراد نے ان افراد سے تین دفعہ معلومات حاصل کیں (شعبان، رمضان اور شوال کے آخری عشرے میں) ان افراد سے ایک تیار شدہ سوال نامہ پر کروایا یا اور طبی معائنہ کیا گیا۔ تینوں دفعہ نشست میں فشارخون کا معائنہ کیا گیا۔ صرف تین مریضوں نے تینوں معائنہ مکمل نہیں کئے۔ نتیجے: 114 مریضوں کے اوسط عمر 11.3±54.34 سال تھی۔ مردوں اور عورتوں کے اوسط سسٹولک (Systolic) فشارخون شماریاتی فرق کے ساتھ شعبان سے رمضان میں کم ہوا۔ لیکن دوبارہ شوال میں شماریاتی فرق کے ساتھ بڑھ گیا۔ اوسط سسٹولک فشارخون (SBP) عمر کے ہر گروپ میں شعبان سے رمضان میں شماریاتی فرق کے ساتھ کم ہوا۔ لیکن شوال میں صرف بڑی عمر کے لوگوں میں شماریاتی فرق کے ساتھ کم ہوا۔ اوسط انبساطی فشارخون (DBP) (Diastolic Blood Presure) دونوں جنسوں میں شماریاتی فرق کے ساتھ شعبان سے رمضان میں کم ہوا۔ لیکن شوال میں شماریاتی فرق کے ساتھ دوبارہ بڑھ گیا۔ اوسط DBP صرف 60-51 سال کے لحاظ سے عمر کے مریضوں میں شعبان سے رمضان میں کم ہوا اور شوال میں دوبارہ بڑھ گیا۔ عمر اور جنس کا ان تبدیلیوں پر کوئی خاص اثر نہیں ہوا۔ حاصل مطالعہ: تحقیق نے ثابت کیا کہ رمضان کے روزے فشارخون کے مریضوں پر مثبت اثر ڈالتے ہیں جبکہ روزوں کی وجہ سے دواؤں کے اوقات اور مقدار میں تبدیلی لائی جاتی ہے۔ بڑی تحقیقی مطالعوں کی ضرورت ہے تاکہ روزوں کی وجہ سے فشارخون کے مریضوں میں جو عضویاتی (Physiological) تبدیلی ہوتی ہے وہ معلوم کی جا سکے۔

1   Department of Research, QEC, International Relation & Liaison, Jinnah Sindh Medical University, Karachi, Pakistan.

2   House officer, Civil Hospital, Karachi, Pakistan.

3   Resident Physician, Emergency Medicine at Hamad Medical Corporation, Doha, Qatar

- -

Correspondence: Prof. Nazeer Khan, Department of Research, QEC, International Relation & Liaison, Jinnah Sindh Medical University, Rafiqui H.J. Shaheed Road, Karachi 75510, Pakistan.

Email: nazeerkhan54@gmail.com

INTRODUCTION

The ninth month of Islamic calendar is known as Ramadan, in which fasting is obligatory for every adult male and female. However, they may postpone fasting due to certain health conditions. Since lunar calendar, which is followed by Islamic jurisprudents, is about 11 days shorter than solar calendar, Ramadan rotates in all the seasons and hence fasting duration fluctuates from 11 to 18 hours in tropical countries[1]. More than one billion adult Muslims of age 15 years and above[2]

abstain from food, drink, smoking and sexual activities from dawn to sunset and can use all these things from sunset to dawn. Special prayer, known as *Traweeh*, is performed at night and people may eat their first meal of the day before the dawn. These changes of meal frequency, timing, special prayer and sleeping pattern of the fasting person may affect the physiology of the body. Many studies have been conducted for diseased and healthy subjects on the effect of Ramadan fasting. Most of them are related to diabetic patients[3-7] and healthy subjects[8-15]. Few studies have also discussed the effect of Ramadan fasting on hypertensive patients[16-24].

Recently a systematic review has been published on these studies[25]. However, as far as authors' knowledge is concerned none of the study has been conducted for the effect of Ramadan fasting on Pakistani hypertensive patients. Since the eating habits and daily activities of Pakistani population are somehow different from other nationalities, there was a need to observe the effect of Ramadan fasting among Pakistani hypertensive patients. Hence, the objective of the study is to determine the effect of Ramadan fasting on the blood pressure with covariate of gender and age group among hypertensive patients of Karachi.

METHODOLOGY

This prospective study was conducted in 1434 H (corresponding 2013G) on the diagnosed hypertensive patients, selected conveniently from the staff and faculty members of Dow University of Health Sciences and other locations of Karachi. One hundred seventeen patients were enrolled in the study. The purpose of the study was explained to the participants and informed verbal consent was taken. The study was enrolled in the Research Department of Dow University of Health Sciences and Institutional Review Board's approval was obtained before starting the study. The field investigators and the instruments were calibrated before the study for measuring the anthropometric information and blood pressure. The field investigators visited three times (last ten days of Shaban, Ramadan and Shawwal; corresponding to 30/6/2013 to 9/7/2013; 29/7/2013 to 6/8/2013 and 28/8/2013 to 6/9/2013) to the study participants to collect the data. A structured questionnaire was completed before clinical examination. The questionnaire included patient's name, dates according to Islamic and Gregorian calendar, demographic variables like age and gender. The patients were also asked about the drugs, duration of disease, number and strength of the drugs for controlling the hypertension. Information about family history of hypertension and co-morbidities; frequency, intensity and duration of exercise; smoking and dietary

habits and sleeping pattern was also collected. In the Shawwal's visit information regarding number of fasting days and number of night special prayers (Traweeh) were also recorded. Blood pressures were measured 3 times in sitting position. Weight was measured in kilogram without shoes and height was taken in centimeter. Three patients did not appear for Shawwal's visit and hence only 114 patients' data were analyzed. The average temperature of Karachi in July is quite comfortable, ranging the temperature from 27°C to 34°C with breezing speed of 2m/s to 8 m/s. The fasting duration was about 15 hours in Karachi in 1434 H. The data were entered into computer using SPSS version 21. Repeated measure design ANOVA was employed to determine significant difference among the three readings of systolic and diastolic blood pressures with gender and age-group as between subjects.

RESULTS

The mean age of the 114 hypertensive patients was 54.34 ± 11.3 (R: 28-84) years. Fifty four (44%) participants were males and more than one-third 36.8% belonged to age group of 51-60 years (Figure 1). Table 1 describes the mean Systolic Blood Pressure (SBP) of three visits categories by gender and age-group. Mean SBP of male patients decreased significantly from 141.0 ± 15.1 mmHg in Shaban to 131.7 ± 15.3 mmHg in Ramadan (p<0.0001), but rose with statistically significant difference to 137.3 ± 16.2 mmHg in Shawwal (p=0.003), but did not attain the same level as of Shaban. Female patients also showed significant decrease from Shaban to Ramadan (p =0.002) and rose again significantly in Shawwal (p=0.018). Mean SBP decreased significantly in each age group from Shaban to Ramadan then upswing in Shawwal. But reversal of the SBP was not significant in any of the age group, except the last two groups. The largest drop was about 10 mmHg for age group of < 40 years from Shaban to Ramadan.

The changes in Diastolic Blood Pressure (DBP) are discussed in Table 2. The mean DBP was reduced by 1.2 mmHg from 86.6 mmHg from Shaban to Ramadan among male patients and increased by 1.8 mmHg in Shawwal. The changes were statistically insignificant (p>0.05). However, the reduction in DBP among female patients was statistically significant from 88.1 mmHg to 83.6 mmHg in Shaban to Ramadan (P=0.002). The reversal from 83.6 mmHg to 87.6 mmHg was also statistically significant (p=0.004). Mean DBP decreased significantly from Shaban to Ramadan for the age group 51-60 years only (p=0.006) and increased significantly from Ramadan to Shawwal for the age group of <40 years (p=0.003) and >60 years (p=0.023).

Table 1: Mean Systolic Blood Pressure of three visits categorized by gender and age-group

		Shaban	Ramadan	Shawwal	Total
Gender	Male	$141.0^a \pm 15.1$	$131.7^b \pm 15.3$	$137.3^c \pm 16.2$	136.3 ± 16.5
	Female	$143.2^a \pm 20.5$	$136.5^b \pm 19.0$	$141.5^a \pm 19.0$	139.1 ± 19.3
Age Group	< 40	$136.5^a \pm 12.3$	$126.9^b \pm 10.9$	$134.6^{ab} \pm 12.2$	133.4 ± 15.4
	41-50	$141.8^a \pm 20.2$	$134.6^b \pm 22.1$	$140.1^{ab} \pm 21.2$	141.0 ± 15.5
	51-60	$140.5^a \pm 20.1$	$132.4^b \pm 17.6$	$138.0^a \pm 19.9$	135.0 ± 16.0
	> 60	$146.3^a \pm 14.4$	$137.0^b \pm 15.1$	$143.7^a \pm 12.0$	141.4 ± 15.6

Table 2: Mean Diastolic Blood Pressure of three visits categorized by gender and age-group

		Shaban	Ramadan	Shawwal	Total
Gender	Male	$86.6^a \pm 11.4$	$85.4^a \pm 11.8$	$87.2^a \pm 13.5$	10.4 ± 1.5
	Female	$88.1^a \pm 11.0$	$83.6^b \pm 10.7$	$87.6^a \pm 10.4$	11.9 ± 1.6
Age Group	< 40	$89.6^{ab} \pm 7.5$	$84.2^a \pm 13.2$	$95.0^b \pm 16.8$	9.7 ± 2.9
	41-50	$87.6^a \pm 10.3$	$87.0^a \pm 12.5$	$86.2^a \pm 10.1$	9.5 ± 1.9
	51-60	$88.9^a \pm 10.7$	$83.9^b \pm 9.0$	$86.4^{ab} \pm 11.4$	10.3 ± 1.5
	> 60	$84.5^{ab} \pm 13.0$	$83.0^a \pm 11.7$	$86.7^b \pm 10.7$	9.4 ± 1.7

Table 3: Comparison of three readings of Systolic and Diastolic Blood Pressures with the effects of gender and age-group

	Shaban	Ramadan	Shawwal	Gender	Age group	Age Group* gender
	Mean ± SD	Mean ± SD	Mean ± SD	P-Values	P-Values	P-Values
Systolic Blood Pressure	$142.0^a \pm 17.9$	$133.6^b \pm 17.7$	$139.8^a \pm 17.7$	0.108	0.178	0.195
Diastolic Blood Pressure	$87.4^a \pm 11.1$	$84.4^b \pm 11.2$	$87.4^a \pm 11.8$	0.684	0.513	0.716

* The different alphabets denote the statistical significance.

An overall change of SBP and DBP in the three visits with the effect of gender and age-group is shown in Table 3. Mean SBP of all the sample was reduced significantly from 142.0 mmHg to 133.6 mmHg in Shaban to Ramadan (p=0.008), but reversed back significantly to 139.8 mmHg in Shawwal (p=0.001). There was no significant effect of gender, age group and its interaction in the changes of SBP. DBP also reduced significantly from 87.7 mmHg to 84.4 mmHg in Shaban to Ramadan (p=0.008) and rose back to 88.5 mmHg in Shawwal. This increase was also statistically significant (p=0.001). There was no significant effect of gender, age group and its interaction in the changes of DBP in three readings.

DISCUSSION

As like other Muslim countries, there is always a special religious environment that develops during the month of Ramadan in Pakistan. This environment creates a spiritual strength and motivation among the people to fast; even the sick people are encouraged to fast during this period if the health allows. Most of the hypertensive patients fast during this month with their faith and spiritual strength. Very few studies discussed the effect of Ramadan fasting among hypertensive patients and most of them are published within last 10 to 15 years. This study showed that systolic and diastolic blood pressures of the participants decreased significantly from Shaban to Ramadan and bounced back significantly from Ramadan to Shawwal. This trend is agreed by most of the studies[16,19,21,22]. However, some were not statistically significant. There was no significant effect of either gender or age group or its interaction. The study was conducted during the month of July which has longer period of fasting duration due to summer time, but has moderate breezy weather. Therefore, the effect of summer on the change of blood pressure was minimal. Studies on healthy subjects also showed the reduction in systolic and diastolic blood pressures in Ramadan as compared to pre-Ramadan[19,26,27]. However, Salahuddin & Javed[19]

showed a significant drop in hypertensive patients and in-significant drop in normotensive patients. During Ramadan, patients change the timing and doses of their medicine. They take the medicine at Iftar (breakfast) time and/or at Sahor (pre-dawn meal) time. Drop of blood pressures indicate that the changing of time and doses do not give any negative effect in the control of hypertension. Alterations in pharmacokinetic and pharmacodynamics should be studied among hypertensive patients. The drop of blood pressures could also be attributed to changing of sleeping pattern and reduction of body weight. In Ramadan, most of fasting people take a nap in the afternoon because they observe lesser sleep in night due to extra prayers and awakening before dawn for sahor (pre-dawn meal) and therefore compensate their missed sleeping hours during day time. Bursztyn et al[28] showed that the people who sleep in day time along with the night time have lower blood pressure as compared to the people who sleep only in night time. Therefore the reduction in blood pressure in Ramadan could also be related with adjustment in sleeping pattern. Studies also indicated that weight reduction has some correlation with blood pressure reduction. Since in Ramadan, people lose some weight due to alteration in frequency and timing of meals. Therefore this factor could also attribute in reduction of blood pressure[29]. However, the study of Salahuddin & Javed[19] indicated that fasting does effect after controlling these factors.

This study revealed conflicting results regarding the effect of Ramadan fasting on systolic and diastolic blood pressures among males and females. On one hand it showed that males' systolic blood pressure dropped in larger points than females and on the other hand it showed that males' diastolic blood pressure dropped only few points as compared to females. Missed fasting days of females due to menstrual period could be playing the role, but why the diastolic blood pressure dropped significantly in Ramadan among females needs further research. The strength of this study is that it is the first study on Pakistani hypertensive patients and has relatively bigger sample as compared to the other studies conducted on this topic. However, this study did not use any ambulatory blood pressure monitoring device to record 24-hours blood pressure. Randomized control trial and large scale clinical studies could be conducted to observe the physiological changes due to Ramadan fasting among hypertensive patients.

CONCLUSION

The study revealed that Ramadan fasting has some positive effect in controlling the blood pressure even though the timing and doses of the anti-hypertensive medicines are altered. The drop in blood pressures is within the safe limits and hence the hypertensive patients can fast without any damaging effect. However, they should discuss the adjustment of doses of the medicine and guidelines of their daily routines with their physicians before Ramadan.

References

1. Al Hourani HM, Atoum MF, Akel S, Hijjawi N, Awawdeh S. Effects of Ramadan Fasting on Some Haematological and Biochemical Parameters. Jordan J Biological Sci 2009;2(3):103-108.
2. ;accessed on November 24, 2015
3. Khan N, Khan MH, Shaikh MZ, Khanani MR. Effects of Ramadan Fasting on Glucose Levels and Serum Lipid Profile among Type 2 Diabetic Patients. Saudi Med J 2010; 31(11):1269-70.
4. Khan N, Khan MH, Shaikh MZ, Khanani MR, Rasheed A. Effects of Ramadan Fasting and Physical Activity on Glucose Levels and Serum Lipid Profile among Type 2 Diabetic Patients. Pak J Med Sci 2012;28(1):91-6.
5. Schweizer A, Halimi S, Dejager S. Experience with DPP-4 inhibitors in the management of patients with type 2 diabetes fasting during Ramadan. Vasc Health Risk Manag. 2014;10:15-24.
6. Siaw MYL, Chew DEK, Dalan R, Abdulshakoor SAKK, Othman N, Choo CH, Shamsuri NH, Abdulkarim SN, Chan SY, Lee JY. Int J Endocrinol 2014; 2014: 308546.
7. Paul AK, Khan MA, Fariduddin M. Effect of Ramadan fasting on anthropometric measures and metabolic profiles among Type 2 diabetic subjects. J Enam Med Coll 2015;5(2):93-98.
8. Akbari A, Golshan A, Moojdekanloo M, Hashemian M. Does fasting in Ramadan ameliorate lipid profile? A prospective observational study. Pak J Med Sci 2014;30(4):708-711.
9. Ajabnoor GM, Bahijri S, Borai A, Abdulkhaliq AA, Al-Aama JY, Chrousos GP. Health Impact of Fasting in Saudi Arabia during Ramadan: Association with Disturbed Circadian Rhythm and Metabolic and Sleeping Patterns. PLOS one 2014;9(5):e96500.
10. Chtourou H, Hammouda O, Chaouachi A, Chamari K, Souissi N. The E?ect of Time-of-Day and Ramadan Fasting on Anaerobic Performances. Int J Sports Med. 2012; 33(02):142-7.
11. Caðlayan EK, Göçmen AY, Delibas N. Effects of long-term fasting on female hormone levels: Ramadan model. 2014;41(1):17-9.
12. Lamri-Senhadji MY, El Kebir B, Belleville KJ, Bouchenak M. Assessment of dietary consumption and time-course of changes in serum lipids and lipoproteins before, during and after Ramadan in young Algerian adults. Singapore Med J 2009;50(3):288.

13. Ganoou JV, Caszo BA, Khalil KM, Adullah SL, Knight VF, Bidin MZ. Effects of Ramadan fasting on glucose homeostasis and adiponectin levels in health adults. J Diabetes and Metabolic Disorders 2015;14:55.

14. Kiyani MM, Memon AR, Amjad MI, Ameer MR, Sadiq M, Mahmood T.Study of human Biochemical parameters during and after Ramadan. 2015;7:1-8.

15. Celik A,Saricicek E,Saricicek V,SahinE,Ozdemir G, BozkurtS et al. Effect of Ramadan fasting on serum concentration of apelin-13 and new obesity indices in healthy adult men. Med SciMonit, 2014; 20: 337-342.

16. Aktürk IF, Býyýk I, Kosas C, Yalçýn AA, Ertürk M, Uzun F. Effects of Ramadan fasting on blood pressure control, lipid profile, brain natriuretic peptide, renal functions and electrolyte levels in hypertensive patients taking combination therapy. Nobel Med 2013;9(2):43-46.

17. Namaghi MA, Dalooe MH, Khoshnasab AH, Nematy M, Khoshnasab A, Farrokhi F, Norouzy A. Effects of Ramadan fasting on ambulatory blood pressure in hypertensive patients. J Fasting Health 2014;2(1):1-6.

18. Salahuddin M, Ashfak SAH, Syed SR, Badaam KM. Effect of Ramadan Fasting on Body Weight, (BP) and Biochemical Parameters in Middle Aged Hypertensive Subjects: An Observational Trial. J Clin Diagnostic Res. 2014:8(3):16-18,

19. Salahuddin M, Javed MH. Effects of Ramadan Fasting on Some Physiological and Biochemical Parameters in Healthy and Hypertensive Subjects in Aurangabad District of Maharashtra, India. J Fasting Health 2014; 2(1):7-13,

20. Ural E, Kozdag G, Kilic T, Ural D, Sahin T, Celebi O, Komsuoglu B. The effect of Ramadan fasting on ambulatory blood pressure in hypertensive patients using combination drug therapy. J Human Hypertension 2008;22:208–210,

21. Abelhad M, Nassiri I, Nouamou I, Habbal R. The effect of the fast of Ramadan on ambulatory blood pressure in treated hypertensives. Arc Cardiovasc Diseases Supplements; 2015; (2),183.

22. Bensahi I, Houari C, Elfhal A, Habbal R. Does fasting in Ramadan affect right ventricular diastolic function in hypertensive patients? A Moroccan prospective observational study. Arc Cardiovascular Diseases Supplements; 2015; (2),185.

23. Perk G, Ghanem J, Aamar S, Ben-Ishay D, Bursztyn M. The effect of the fast of Ramadan on ambulatory blood pressure in treated hypertensive. J Hum Hypertens. 2001;15(10):723-5.

24. Mahmudian SA, Namazyan Z, Tavakoli N, Ghairiz P. Investigating the condition of medical counselling and some of the clinical aspects of fasting in holy month of Ramadan from the perspective of diabetic and hypertensive patients. J Fasting Health 2015;3(2):58-64.

25. Salehi M, Nemaghi MA, Norouzy A. Effects of Ramadan fasting on blood pressure in hypertensive patients: a systematic review. J Fasting Health 2016; 4(1):17-21

26. Samad F, Qazi F, Pervaiz MB, Kella DK, Mansoor M, Osmani B, Mir F, Kadir MM. Effects of Ramadan fasting on blood pressure in normotensive males. J Ayub Med Coll Abbottabad 2015;27(2): 338-42.

27. Dewanti L, Watanabe C, Ohtsuka R. Unexpected changes in blood pressure and hematological parameters among fasting and nonfasting workers during Ramadan in Indonesia. Eur J Clin Nutr. 2006; 1;60(7):877-81

28. Bursztyn M, Mekler J, Wachtel N, Ben-Ishay D. Siesta and ambulatory blood pressure monitoring comparability of the afternoon nap and night sleep. 1994;7(3):217-21.

29. Sharabi Y, Grotto I, Huerta M, Grossman Y. Sharabi Y, Grotto I, Huerta M, Grossman E. Susceptibility of the influence of weight on blood pressure in men versus women: lessons from a large-scale study of young adults. Am. J. Hypertens.2004; 31;17(5):404-8.

— — — — —

ORIGINAL ARTICLE

Neurochemical Profile of 1-(3-Chlorophenyl) Piperazine (m-CPP) in Sucrose Rich Diet Treated Rats

Qurrat-ul-Aen Inam[1], Surraiya Shaikh[1] and Darakhshan Jabeen Haleem[2]

ABSTRACT

Objectives: 1-(3-Chlorophenyl)Piperazine (m-CPP), markedly reduces food intakes in rats and has high affinity for serotonin (5-hydroxytryptamine; 5-HT)-2C receptors. In the present study m-CPP is used to assess possible role of serotonin-2C receptors in sucrose rich diet induced hyperphagia.

Methodology: The study was conducted on 24 male albino Wistar rats. Sucrose rich diet was prepared by mixing standard rodent diet and sucrose in the ratio of 3:1 (w/w) and rats were fed freely on this diet for five weeks. After five weeks of treatment normal and sucrose rich diet treated animals were injected with m-CPP at a dose of 3mg/ml/kg to monitor the hypophagic effects of drug on 4h food intake and serotonin metabolism in the hypothalamus.

Results: Hypophagic effects of m-CPP were comparable in both groups. m-CPP induced increases of serotonin levels were smaller in sucrose rich diet than normal diet treated rats.

Conclusion: Role of serotonin and serotonin-2C receptors in sucrose rich diet induced hyperphagia is discussed.

Key words: Sucrose rich diet, Hyperphagia, serotonin-2C

عنوان:	مٹھاس کے زیادتی شدہ کھانے والے چوہوں میں 1-(3-Chlorophenyl)Piperazine (m-CCP) کا دماغی کیمیائی خاکہ۔

مقصد: 1(3-Chlorophenyl)Piperazine کا استعمال چوہوں کے کھانے میں نمایاں کمی کی کردیتی ہے Serotonin(5-hydroxytryptamine:5HT)-2C سے بہت زیادہ نسبت رکھتی ہے۔اس تحقیق کا مقصد ان غذاؤں میں جن میں مٹھاس کی زیادتی ہوتی ہے اور بھوک کو بڑھاتی ہے m-CPP کا Serotonin-2C سے ممکن نسبت معلوم کرنا ہے۔

طریقہ کار: یہ تحقیق 24 نر چوہوں Wistar پر کی گئی۔ زیادہ مٹھاس والے کھانے اور روڈنٹ(rodant) کھانے کو 3:1 کی نسبت سے ملایا گیا اور اس نسبت کو چوہوں کو پانچ ہفتے تک کثرت سے کھلایا گیا۔ پانچ ہفتے کے بعد CPP- کو 3mg/ml/kg کے حساب سے نیچے کے ذریعے چوہوں(عام کھانا اور Serotonin کھاتا) میں داخل کیا گیا اور بھوک اثرات اور Serotonin کی کیمیائی تبدیلی دیکھی گئی۔ نتیجہ: بھوک بڑھنے کے اثرات دونوں گروہوں میں یکساں تھے۔m-CPP شدہ غذا Serotonin میں اضافہ مٹھاس شدہ غذا میں نسبت عام غذا کے کم تھا۔ خلاصہ:اس تحقیق میں Serotonin اور Serotonin- 2C کے مٹھاس شدہ غذا میں استعمال کا جائزہ لیا گیا۔

INTRODUCTION

Highly palatable sucrose rich foods are the major environmental contributor of the worldwide rise in obesity[1,2]. Reduced fat and nonfat food items of food industry derive their energy from high energy sweetener (such as sucrose)[3]. Large body of research shows a strong correlation between consumption of food items containing high amount of sucrose with weight gain and obesity[4,5].

Serotonin (5-hydroxytryptamine; 5-HT) is the neurotransmitter system which is responsible for appetite suppression[6]. Dysfunctional serotonergic system is involved in eating disorders[7,8]. Hypothalamus plays an important role in the regulation of food intake[9]. Hypothalamic serotonin has been involved within meal and post meal satiety[10]. Research shows that carbohydrate rich diet increased brain serotonin metabolism[11]. Increased brain serotonin metabolism produces a neurochemical signal for the termination of meal[12]. On the other hand prolonged consumption of sucrose rich diet produced hyperphagia and decreased brain serotonin metabolism[13].

Pharmacological studies in general provide evidence that increasing serotonin functions at postsynaptic serotonin-2C receptors, decreases food intake in experimental animals[14]. 1- (3-Chlorophenyl)Piperazine (m-CPP) markedly reduces food intakes in rats and has high affinity for serotonin-2C receptors[15].

Conversely drugs with selectivity towards serotonin-1A receptors elicited hyperphagia in experimental animals[16]. Serotonin-1A selective agonist 8-hydroxy-2-(di-n-propylamino) tetralin (8-OH-DPAT) increases

1   Department of Biochemistry, Jinnah Sindh Medical University, Karachi, Pakistan.

2   Neuroscience Research Laboratory, Dr. Panjwani Center for Molecular Medicine and Drug Research, University of Karachi, Karachi, Pakistan.

Correspondence: Dr. Qurrat-ul-Aen Inam, Department of Biochemistry, Jinnah Sindh Medical University Karachi, Pakistan.

Email: qurratbiochemist@gmail.com

food consumption in freely feeding rats[17]. Serotonin-1A receptors located on the soma and dendrites of serotonergic neurons control the synthesis and release of serotonin by feedback mechanism. Stimulation of these receptors decreases the availability of serotonin at postsynaptic serotonergic hypophagic receptors[13,18].

The present study is designed to investigate the effects of prolonged consumption of sucrose rich diet on hypothalamic serotonin level and on m-CPP induced hypophagia to assess the sensitivity of serotonin-2C receptors and their role, if any, in the elicitation of hyperphagia associated with the prolonged consumption of sucrose rich diet.

METHODOLOGY

Materials and Methods were same as described before[13].

Animals and Treatment:

Twenty-four locally bred male albino Wistar rats weighing 200-230 gm purchased from Agha Khan University, Pakistan, were housed individually under 12h light dark cycle (lights on at 6:00 h) with free access to cubes of standard rodent diet and tap water 3 days before experimentation.

Preparation of Sucrose rich diet:

Cubes of standard rodent diet were crushed. Ratio of 3:1 (rat diet: sucrose; w/w) was used to prepare cubes of sucrose rich diet by mixing sucrose with crush of standard rodent diet. For normal diet cubes of standard rodent diet were used without mixing sucrose in it.

Drug:

m-CPP purchased from Research Biochemical (RBI, USA) dissolved in saline was injected intraperitoneally (i.p) at a dose of 3mg/ml/kg bodyweight. Control animals were injected with saline in volume of 1ml/kg bodyweight.

Experimental Protocol:

Animals were randomly divided into two groups (n=6) normal and sucrose rich diet treated groups and accordingly weighed amount of respective diet were given. After 5 weeks of treatment animals of both the groups divided into saline and m-CPP injected subgroups were injected with saline (0.9% NaCl) or m-CPP (3mg/ml/kg) between 10:00-11:00 h using a balanced design. A weighed amount of food was given immediately after the drug administration and intake during 4h was monitored. Rats were decapitated 4h after the drug administration between 2:00-3:00 h to collect plasma and hypothalami as described before[13]. Samples were stored at -70°C until analysis of tryptophan (precursor of serotonin), serotonin and its metabolite 5-hydroxy-indoleacetic acid (5-HIAA) by using high performance liquid chromatography with electrochemical detector (HPLC-EC).

HPLC-EC determination of tryptophan, serotonin and 5-hydroxy-indoleacetic acid:

A 5μ Shim-Pack ODS separation column of 4.0 mm internal diameter and 150 mm length was used. Separation was achieved by a mobile phase containing methanol (14 %), Octyl sodium sulfate (0.023 %) and ethylenediaminetetraacetic acid (0.0035 %) in 0.1 M phosphate buffer of pH 2.9 at an operating pressure of 2000–3000 psi on Schimadzu HPLC pump at the flow rate of 1 ml/min at 35 °C. Electrochemical detection was achieved on Schimadzu LEC 6A detector at an operating potential of 0.8 V and tryptophan at 1.0 V.

Statistical Analysis:

The data were analyzed by two-way ANOVA. Post hoc comparisons were done by Newman-Keuls test. All p values less than 0.05 were taken as significant.

RESULTS

Effects of m-CPP on 4h food intakes in sucrose-rich diet and normal diet treated rats.Figure 1. Effects of m-CPP on 4h food intakes of normal diet and sucrose rich diet treated rats were analyzed by two-way ANOVA (df=1,20) and it was revealed significant effect of drug (F=91.1, p<0.01). Effects of sucrose rich diet (F=0.35, p>0.05) and interaction between the two factors (F=0.12, p>0.05) were not significant. Posthoc analysis by Newman Keuls test showed that administration of m-CPP decreased (p<0.01) 4h food intake in rats fed the normal diet or sucrose rich diet. Cumulative 4h food intake was greater in saline injected sucrose rich diet treated animals than in saline injected normal diet treated rats. m-CPP injected sucrose rich diet and normal diet treated animals exhibited comparable values.

Effects of m-CPP on tryptophan, serotonin and 5-hydroxy-indoleacetic acid in the hypothalamus of sucrose rich diet and normal diet treated rats Figure 2. Effects of m-CPP on the levels of (a) tryptophan (b) serotonin (c) 5-hydroxy-indoleacetic acid in normal and sucrose rich diet treated rats were analyzed by two way ANOVA (df=1,20) and it was revealed that effects of m-CPP were significant for tryptophan (F=6.8, p<0.05), and serotonin (F=26.1, p<0.01), but not significant for 5-hydroxy-indoleacetic acid (F=1.6, p>0.05). Effects of sucrose rich diet were significant for tryptophan (F=5.6, p<0.05) and serotonin (F=21.3, p<0.01), but not significant for 5-hydroxy-indoleacetic acid (F=0.06, p>0.05). Interaction between

□ Saline ■ m-CPP
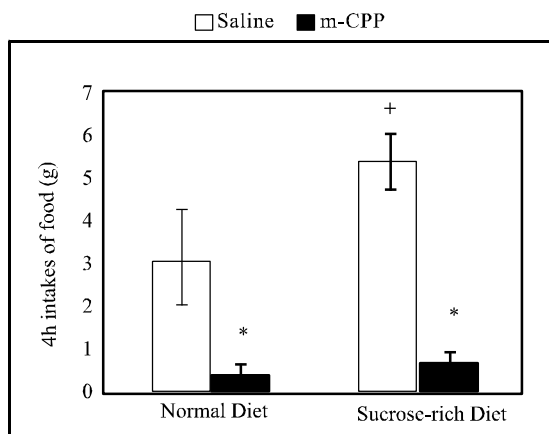
Figure 1. Effects of m-CPP on 4h food intake (g) in normal and sucrose diet treated rats. Values are means ± S.D (n=6). Significant difference by Newman Keuls test *p<0.01 from respective saline injected rats, +p<0.01 from respective control diet treated rats following two-way ANOVA.

m-CPP and sucrose diet were not significant (p>0.05) for tryptophan (F=0.2) and serotonin (F=0.84), but significant for 5-hydroxy-indoleacetic acid (F=9.6, p<0.01).

The posthoc test showed that administration of m-CPP produced no effect on tryptophan, but the levels of serotonin were greater in normal diet than sucrose rich diet treated rats. Administration of m-CPP decreased 5-hydroxy-indoleacetic acid levels in normal diet but not in sucrose rich diet treated rats. The concentrations of tryptophan and 5-hydroxy-indoleacetic acid were comparable in saline injected sucrose rich diet and normal diet treated rats, but the concentrations of serotonin were smaller in saline injected sucrose rich diet than normal diet treated rats. m-CPP injected sucrose rich diet and normal diet treated rats exhibited comparable values of tryptophan and 5-hydroxy-indoleacetic acid . The levels of serotonin were smaller in m-CPP injected sucrose rich diet than normal diet treated rats.

DISCUSSION

It is reported that three weeks consumption of sucrose rich diet increased food intake in rats[13]. In the present study we found that 4h food intake increased significantly in sucrose rich diet treated rats (Fig. 1).

The present finding is consistent with the previous result that long term consumption of sucrose rich diet induces hyperphagia.

Administration of m-CPP induced a marked and dose related increase in extracellular levels of serotonin by inhibiting its reuptake[19]. In the present study m-CPP induced increases of serotonin levels were smaller in sucrose rich diet treated rats. Which further support the notion that prolonged consumption of sucrose rich diet decrease the synthesis and release of serotonin from the terminal regions.

□ Saline ■ m-CPP
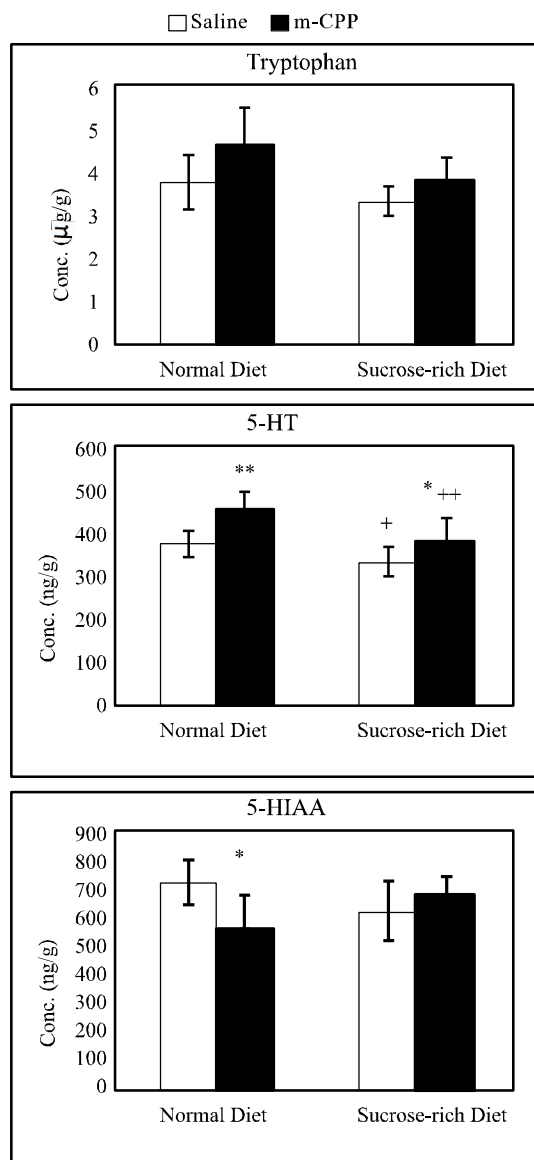
Figure 2. Effects of m-CPP on the levels of tryptophan, serotonin (5-HT) and 5-hydroxy-indoleacetic acid (5-HIAA) in the hypothalamus of normal and sucrose diet treated rats. Values are means ± S.D (n=6). Significant difference by Newman Keuls test *p<0.05, **p<0.01 from respective saline injected rats, +p<0.05, ++p<0.01 from respective control diet treated rats following two-way ANOVA.

Previous research shows that an increase in the responsiveness of somatodendritic serotonin-1A receptors which has negative feedback effects on the synthesis and release of serotonin in terminal regions[20] was not involved in the elicitation of hyperphagia[13].

In the present study it was hypothesized that prolonged administration of sucrose rich diet decrease the responsiveness of postsynaptic hypophagic receptors elicits hyperphagia. It was expected that administration of m-CPP will produce smaller hypophagic effects in sucrose rich diet treated rats. Conversely we found that m-CPP induced hypophagia was comparable in sucrose rich diet and normal diet treated rats. It may be concluded that decrease of serotonin metabolism

following prolonged consumption of sucrose rich diet did not alter the sensitivity of postsynaptic serotonergic hypophagic receptors.

Serotonin synthesis depends on the availability of its precursor tryptophan[21]. Tryptophan is obtained only from dietary source because it is an essential amino acid. Tryptophan hydroxylase catalyzes the rate-limiting step in serotonin synthesis and is thus studied as the locus for controlling the overall rate of serotonin formation[22]. Tryptophan hydroxylase is normally not saturated in vivo with its substrate. Hence variations in the local tryptophan concentration should and do directly affect the degree of enzyme saturation, and thus the rate of tryptophan hydroxylation[21]. It is reported that acute tryptophan depletion reduced the serotonin turnover while tryptophan supplementation enhanced it[23]. In the present finding serotonin and its metabolite 5-hydroxy-indoleacetic acid were decreased significantly in sucrose rich diet treated rats while no significant effect was observed on tryptophan levels in the hypothalamus, thus it is suggested that decrease in serotonin metabolism was not due to decrease in precursor levels.

On the other hand it is reported that the activity of tryptophan hydroxylase is sometimes changed in vivo without any change in the tryptophan levels. Restricted feeding decreased the activity of tryptophan hydroxylase and serotonin levels without any change in the tryptophan concentration in the hypothalamus[24]. The present findings therefore suggest that prolonged consumption of sucrose rich diet decreases the activity of tryptophan hydroxylase without decrease in the responsiveness of postsynaptic serotonergic hypophagic receptors.

CONCLUSION

The findings of this research shows that induction of hyperphagia following long term consumption of sucrose rich diet is not due to a decrease in the responsiveness of postsynaptic hypophagic serotonin-2C receptors or reduced levels of tryptophan. It may be possible that long term consumption of sucrose rich diet decrease the activity of tryptophan hydroxylase in the hypothalamus leads to decrease in serotonin metabolism elicits hyperphagia.

References

1. Gulland A. Sugar should make up less than 5% of total energy consumption, says WHO. Bmj. 2015;350:h1261.
2. Kit BK, Fakhouri TH, Park S, Nielsen SJ, Ogden CL. Trends in sugar-sweetened beverage consumption among youth and adults in the United States: 1999-2010. Am J Clin Nutr 2013;98(1):180-8.
3. Surwit RS, Feinglos MN, McCaskill CC, Clay SL, Babyak MA, Brownlow BS, et al. Metabolic and behavioral effects of a high-sucrose diet during weight loss. The American journal of clinical nutrition. 1997;65(4):908-15.
4. Duca FA, Swartz TD, Covasa M. Effect of diet on preference and intake of sucrose in obese prone and resistant rats. PloS one. 2014;9(10):e111232.
5. Hu FB, Malik VS. Sugar-sweetened beverages and risk of obesity and type 2 diabetes: epidemiologic evidence. Physiology & behavior. 2010;100(1):47-54.
6. Doslikova B, Garfield AS, Shaw J, Evans ML, Burdakov D, Billups B, Heisler LK. 5-HT2C receptor agonist anorectic efficacy potentiated by 5-HT1B receptor agonist coapplication: an effect mediated via increased proportion of pro-opiomelanocortin neurons activated. J Neurosci. 2013;33(23):9800-4.
7. Hernandez-Munoz S, Camarena-Medellin B. [Role of Serotonin Transporter Gene in Eating Disorders]. Revista colombiana de psiquiatria. 2014;43(4):218-24.
8. Kaye WH, Bailer UF, Frank GK, Wagner A, Henry SE. Brain imaging of serotonin after recovery from anorexia and bulimia nervosa. Physiology & behavior. 2005;86(1-2):15-7.
9. Bouret SG, Simerly RB. Developmental programming of hypothalamic feeding circuits. Clinical genetics. 2006;70(4):295-301.
10. Voigt JP, Fink H. Serotonin controlling feeding and satiety. Behavioural brain research. 2015;277:14-31.
11. Christensen L. The effect of carbohydrates on affect. Nutrition. 1997;13(6):503-14.
12. Reis LC, Almeida AC, Cedraz-Mercez PL, Olivares EL, Marinho Jr A, Thomaz CM. Evidence indicating participation of the serotonergic system in controlling feeding behavior in Coturnix japonica (Galliformes: Aves). Brazilian journal of biology = Revista brasileira de biologia. 2005;65(2):353-61.
13. Inam QU, Jabeen B, Haleem MA, Haleem DJ. Long-term consumption of sugar-rich diet decreases the effectiveness of somatodendritic serotonin-1A receptors. Nutritional neuroscience. 2008;11(6):277-82.
14. Dalton GL, Lee MD, Kennett GA, Dourish CT, Clifton PG. Serotonin 1B and 2C receptor interactions in the modulation of feeding behaviour in the mouse. Psychopharmacology. 2006;185(1):45-57.
15. Hayashi A, Suzuki M, Sasamata M, Miyata K. Agonist diversity in 5-HT(2C) receptor-mediated weight control in rats. Psychopharmacology. 2005;178(2-3):241-9.
16. Miryala CS, Maswood N, Uphouse L. Fluoxetine prevents 8-OH-DPAT-induced hyperphagia in Fischer inbred rats. Pharmacology, biochemistry, and behavior. 2011;98(2):311-5.
17. Jabeen B, Haleem DJ. Desensitization of pre and post synaptic 5-HT-1A receptor responses following long term consumption of sugar rich diet: implications for sugar-induced obesity. Pakistan journal of pharmaceutical sciences. 2008;21(4):327-32.
18. Inam QU, Haleem MA, Haleem DJ. Attenuation of somatodendritic responses to 8-hydroxy-2-di-npropylamino tetralin following long-term dietary sugar consumption in rats. Journal of the College of Physicians and Surgeons--Pakistan: JCPSP. 2009;19(7):401-5.

19. Eriksson E, Engberg G, Bing O, Nissbrandt H. Effects of mCPP on the extracellular concentrations of serotonin and dopamine in rat brain. Neuropsychopharmacology: official publication of the American College of Neuropsychopharmacology. 1999;20(3):287-96.

20. Samad N, Batool F, Haleem DJ. Neurochemical and behavioral effects of 8-OH-DPAT following exposure to restraint stress in rats. Pharmacological reports : PR. 2007;59(2):173-80.

21. Strasser B, Gostner JM, Fuchs D. Mood, food, and cognition: role of tryptophan and serotonin. Current opinion in clinical nutrition and metabolic care. 2016;19(1):55-61.

22. Rajathei DM, Preethi J, Singh HK, Rajan KE. Molecular docking of bacosides withEtryptophan hydroxylase: a model to understand the bacosides mechanism. Nat Prod Bioprospect. 2014;4(4):251-5.

23. Zhang WQ, Smolik CM, Barba-Escobedo PA, Gamez M, Sanchez JJ, Javors MA, et al. Acute dietary tryptophan manipulation differentially alters social behavior, brain serotonin and plasma corticosterone in three inbred mouse strains. Neuropharmacology. 2015;90:1-8.

24. Haleem DJ, Haider S. Food restriction decreases serotonin and its synthesis rate in the hypothalamus. Neuroreport 1996; 7: 1153–1156.

PENALTIES FOR PLAGIARISM

MAJOR PENALTY:

In cases where most of the paper (or key results) have been exactly copied from any published work of other people without giving the reference to the original work, then (a) a major penalty of dismissal from service needs to be prescribed, along with (b) the offender may be "Black Listed" and may NOT be eligible for employment in any academic / research organization, and (c) the notification of "Black Listing" of the author(s) may be published in the print media or may be publicized on different websites at the discretion of the Vice-Chancellor / Rector / Head of the organization.

MODERATE PENALTY:

In case where some paragraphs including some key results have been copied without citation, then a moderate penalty involving any one or both of the following needs to be imposed (a) demotion to the next lower grade, (b) the notification of "Black Listing" of the author(s) which may be published in the print media or may be publicized on different websites at the discretion of the Vice-Chancellor / Rector / Head of the organization.

MINOR PENALTY:

In case a few paragraphs have been copied from an external source without giving reference of that work, then minor penalties need to be prescribed for a specified period involving any one or more of the following: (a) warning, (b) freezing of all research grants,(c) the promotions/annual increments of the offender may be stopped, for a specified period and (d) HEC or the University / Organization may debar the offender from sponsorship of research funding, travel grant, supervision of Ph.D. students, scholarship, fellowship or any other funded program for a period as deemed appropriate by the "Plagiarism Standing Committee".

ORIGINAL ARTICLE

Frequency of Myopia and Correlated Environmental Factors among Medical Students of Karachi

Ghazala Usman[1], Amber Tahir Siddiqui[2], Javeria Khan[2], Kainat Sheikh[2], Syed Awais[2] and Mehwish Hussain[3]

ABSTRACT

Objective: The aim of the study was to find out the frequency of myopia and correlated factors among the medical students of Karachi.

Methods: Data were collected from 545 medical students from 3 medical colleges of Karachi, Pakistan. Self-administered questionnaire was distributed among participants. Questionnaire comprised of three sections such as demographic characteristics, myopia frequency and risk factors of the disease. Data were analyzed using chi-square test and predisposing factors were assessed by logistic regression model.

Results: Myopia was reported by 81.5% of the students. Among them 71.4% developed myopia after commencing their medical school. About 6% were recommended by ophthalmologists to drop the MBBS program. Altogether, 74.2% students endured bothersome eye symptoms. Eye strain followed by squinting was the most common symptoms. For 31.2% students these symptoms were significantly aggravated during semesters (P < 0.0001). Myopic students were significantly older than non-myopic (P = 0.005).Increased age resulted in 1.16 times higher chances of developing myopia in our study. Holding other associated factors, the risk of aggravation of bothersome eye symptoms using electronic was 4.22 times higher among myopic students.

Conclusion: Our study demonstrated myopia to be a significantly alarming issue predisposing among the medical students. The prevalence of myopia after commencement during medical years may raise concern towards different stakeholders. Age, year of study, use of electronics and tough study hours during semesters were the predictors which deteriorate the condition.

Key words: Myopia, Correlation, Environmental factors , Medical students.

عنوان: میڈیکل کالج کے طلبہ میں دور کی نظر کی کمزوری(Myopia) کے تعداد اور ماحولیاتی عوامل سے ارتباط (Corelation)

مقصد:اس تحقیق کا مقصد کراچی میڈیکل کالجوں کے طلبہ میں دور کی نظر کی کمزوری کی تعداد اور اس پر اثر رکھنے والے عوامل کی تحقیق کرنا ہے۔طریقہ: کراچی کی ۳ میڈیکل کالجوں سے 545 طلبہ نے اس تحقیق میں حصہ لیا۔تحقیق میں شرکت کرنے والے طلبہ میں بانٹے گئے سوالنامے کے ۳ حصے تھے۔پہلے حصے میں ان کی بنیادی معلومات کی تفصیل پوچھی گئی ،دوسرے میں دور کی نظر کی کمزوری کی تعداد اور تیسرے میں دور کی نظر کی کمزوری پر اثر رکھنے والے ماحولیاتی عوامل پوچھے گئے ۔جمع شدہ اعداد و شمار کو (Chi-Square) شماریاتی طریقہ سے تجزیہ کیا گیا اور اثر انداز ہونے والے عوامل کو منطقی انحداد (logistic Regression) کے ذریعے سے معلوم کیا گیا۔ نتائج: دور کی نظر کی کمزوری 81.5% طلبہ میں پائی گئی۔جن میں سے 71.4% طلبہ کو دور کی نظر کی کمزوری کی شکایت میڈیکل کالج میں داخلے کے بعد شروع ہوئی۔ 6% طلبہ کو ڈاکٹروں کی طرف سے مشورہ دیا گیا کہ وہ اپنی آنکھوں کی گرتی صحت کی بنا پر طب کی تعلیم چھوڑ دیں۔ عمومی طور پر 74.2% طلبہ آنکھوں کی پریشان کن علامات سے گزر رہے تھے۔ آنکھوں پر دباؤ اور بھینگا پن سب سے عمومی علامات تھیں۔ 31.2% طلبہ میں یہ علامات امتحانوں کے دوران بہت زیادہ بڑھ جاتی تھیں(P<0.0001) ۔ دور کی نظر کی کمزوری والے طلبہ عمر میں دوسرے طلبہ سے بڑے تھے(P=0.005)۔ عمر کی زیادتی کی وجہ سے ہماری تحقیق میں دور کی نظر کی کمزوری کا امکان 1.16 دفعہ بڑھ جاتا ہوا پایا گیا ہے۔ جب طلبہ electronics کی چیزوں کا استعمال کرتے ہیں تو پریشان کن علامات کے بڑھنے کا خدشہ 4.22 دفعہ بڑھ جاتا ہے۔ خلاصہ:ہماری تحقیق میں دور کی نظر کی کمزوری میڈیکل کالج کے طلبہ میں نمایاں اور خطرناک مسئلہ بن کے سامنے آیا ہے۔ میڈیکل کالج میں داخلے کے بعد پیدا ہونے والی دور کی نظر کی کمزوری پریشان کن ہے۔ کالج کے تعلیمی سال کے بڑھنے اور electronics کی چیزوں کا استعمال اور امتحانوں کے دوران زیادہ پڑھنے سے دور کی نظر کی کمزوری شدت اختیار کر جاتی ہے۔

INTRODUCTION

Practicing medicine is an intricate problem; studying medicine is not less than a challenge. Consistency, concentration, enthusiasm and long study hoursare required throughout the years of graduation. Studies reported negative consequences of these requisites including substance abuse[1,2] drop outs[3] and suicidal attempts[4,5]. Psychological morbidity[6,7] including stress[6,7], depression[7,8] and deteriorating physical health[9] due to academic activities have also reported in different literature. Myopia prevalence, on the other hand, appears to be increasing among academically active medical students[10,11].

Myopia is considered as an ophthalmic refractive limitation in which the conjugate focus of the retina is at some finite point in front of the eye, when the eye is not accommodating.It occurs either because of defects in the refractive media of the eye or because of the abnormally elongated eyeball[12]. Myopia further

Department of Community Medicine[1] / Students[2], Jinnah Sindh Medical University, Karachi, Pakistan.

3   Department of Research, Dow University of Health Sciences, Karachi, Pakistan.
- -
Correspondence: Dr. Ghazala Usman, Department of Community Medicine, Jinnah Sindh Medical University, Karachi, Pakistan.

Email: ghazalausman@yahoo.com

increases the risk of other vision-threatening conditions[13] e.g., retinal breaks and detachment[14], cataracts[15], and glaucoma[15,16]. Myopic medical students are being affected physically and financially[17,18] by tolerating the burden of eyeglasses and frequent ophthalmologic follow-up visits[18]. Furthermore, myopic students are left with limited career choices after basic medical education[19].

According to the national survey conducted in 2008, the prevalence of myopia among Pakistani adults is about 36.5%[20]. Although there are various statistics stating the frequency of myopia among school going[21,22] students in Pakistan, we could only come across a single study concerning Pakistani medical students and their refractive status[23]. The objective of this study is to determine frequency of myopia among medical students of Karachi and to assess associated factors of this refractive condition on the students.

METHODOLOGY

Study Setting:

A cross sectional survey was collected in 3 public sector medical colleges of Karachi. These three public sector medical colleges have an annual enrollment of about 1500 students with average per year class size of 350 students in each college. The medium of teaching is electronic in these three colleges. The teaching criteria and course outline are also similar.

Data Collection Procedure:

A total of 545 students were selected using stratified random sampling method. Accordingly, 109 medical students were chosen from 1st to 5th year. Students suffering from any eye disease or who had any eye surgery previously were excluded. Myopia was defined in students with dioptre more than negative 0.5 or already diagnosed by ophthalmologist. Participants were prior informed about the objective of the study. Written consent was taken from them.

Research Instrument:

A self-structured questionnaire was constructed which comprised of two sections mainly. First section of the questionnaires contained demographic profile including age, gender and their year of education in the medical college as shown in Table 1.

Second section included questions related to students' refractive status, duration of daily study, duration of daily usage of electronics for both educational and recreational purposes, if they develop any symptoms in the eyes while studying or using electronics, whether these symptoms aggravate during their semester

examinations, if they face difficulty while reading books or printouts, if the students developed myopia after starting MBBS or they were myopic even before, whether the myopics wear glasses/contacts all the time or not, whether their physician has ever advised them to discontinue MBBS just because of their gradually adulterating vision.

Statistical analysis:

Data was entered and analyzed in IBM SPSS v. 20. Descriptive measures of categorical variables were presented as frequencies with percentages while continuous variable such as age was expressed as mean with standard deviation. Chi square test was performed to examine association of myopia presence with demographic and study style factors. Student's t-test was performed to assess age difference between myopic and non-myopic students. Univariable and multivariable Logistic regression was executed to measure effect of different factors between the students who had myopia and the ones who did not. At univariable stage, the factors having P-value at-most 20% were included in multivariable analysis stage. Crude and adjusted odds ratio with 95% confidence intervals were computed at univariable and multivariable analyses stages respectively. Factors were considered to have significant effect if corresponding p-value was less than or equal to 0.05.

RESULTS

Among 545 students, 195 (35.8%) were males and 350 (64.2%) were females. The average age of the students was 20.16 ± 2.08 years with minimum age of 17 years and maximum 25 years. Males and females had similar age distribution (M: 20.64 ± 2.09 years and F: 20.60 ± 2.07 years).

Table 1: Effect on academic career among myopic medical students
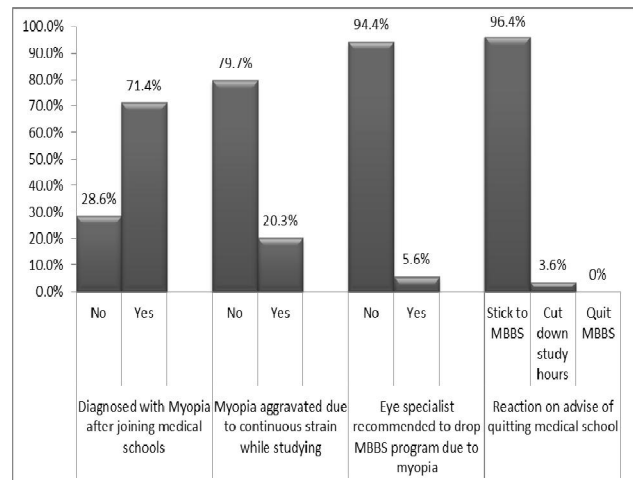
Table 2: Effect of demographic and study style factors on myopic medical students

		Myopia				P Value
		Absent		Present		
		n	%	n	%	
Age (in years)	mean and standard deviation	20.09	2.117	20.73	2.052	0.005
Gender	Male	41	21	154	79	0.263
	Female	60	17.1	290	82.9	
Year of medical education	1st year	41	37.6	68	62.4	<0.0001
	2nd year	18	16.5	91	83.5	
	3rd year	4	3.7	105	96.3	
	4th year	25	22.9	84	77.1	
	5th year	13	11.9	96	88.1	
Daily study hours	1-3 hours	33	23.4	108	76.6	0.391
	3-6 hours	33	16.8	163	83.2	
	More than 6 hours	27	16.7	135	83.3	
	Do not study daily	8	17.4	38	82.6	
Study in appropriate light	No	46	19.7	187	80.3	0.53
	Yes	55	17.6	257	82.4	
Time using electronics daily	1-3 hours	28	20.9	106	79.1	0.354
	3-6 hours	33	17.1	160	82.9	
	More than 6 hours	34	20.7	130	79.3	
	Not use daily	6	11.1	48	88.9	
Eye suffers while studying/using electronics	No	46	32.6	95	67.4	<0.0001
	Yes	55	13.6	349	86.4	
Symptom of Eye Suffering	Headache	2	5.7	33	94.3	<0.0001
	Blurred vision	15	19.0	64	81.0	
	Redness/watery eyes	11	14.5	65	85.5	
	Squinting	11	11.5	85	88.5	
	Eye strain	16	13.6	102	86.4	
	None	46	32.6	95	67.4	
Symptoms aggravated while studying during semesters	No	84	37.7	139	62.3	<0.0001
	Yes	13	7.8	154	92.2	
	Only during tough semesters	4	2.6	151	97.4	
Face difficulty while reading books or printouts	Little difficulty	2	12.5	14	87.5	0.811
	Extreme difficulty	1	14.3	6	85.7	
	Quit because of strain	0	0.0	2	100.0	
	No Difficulty	98	18.8	422	81.2	

The most frequent daily study duration of the students was 3 – 6 hours (n= 196, 36%) followed by more than 6 hours (n= 162, 29.7%). Two hundred and thirty three (42.8%) students confessed that they did not study in appropriate light.

The proportion of students who used electronics (cell phone, laptop etc) for at-least 3 hours daily was 65.5% (n= 357) while 134 participants (24.6%) used them for less than 3 hours daily. About three quarter (n= 404) students endured bothersome symptoms in their eyes while using electronics. Most of them (n= 118, 29.2%) experienced eye strain. Squinting (n= 96, 23.8%) and blurred vision (n= 79, 19.6%) were followed by redness or watery eyes (n= 76, 18.8%) and headache (n= 35, 8.7%).

Table 3: Logistic regression analysis revealed significant predictors for myopic medical students

		Crude Odds Ratio		Adjusted Odds Ratio	
		Value	95% CI	Value	95% CI
Age	in years	1.16	1.04-1.29	1.15	0.78-1.68
Year of medical education	1st year	1		1	
	2nd year	3.05	1.61-5.76	4.23	1.93-9.28
	3rd year	15.83	5.42-46.19	10.54	2.35-47.23
	4th year	2.03	1.12-3.66	1.17	0.21-6.49
	5th year	4.45	2.22-8.94	5.04	0.66-38.71
Eye symptoms suffers while studying/using electronics	No	1		1	
	Yes	3.07	1.95-4.83	4.22	2.37-7.49
Symptoms aggravated while studying during semesters	No	1		1	
	Yes	7.16	3.82-13.41	9.42	4.68-18.95
	Only during tough semesters	22.81	8.15-63.85	26.67	9.09-78.23

When asked about whether these symptoms aggravated during semester, 126 (31.2%) acknowledged the same while 119 (29.5%) confessed that the aggravation happened during tough semesters only. On the other hand, large quantity (n= 520, 95.4%) of the students did not feel any difficulty while reading hard copy of lectures or books.

Out of 545 participated students, 444 (81.5%) suffered from myopia (Table 1). Nine of them (1.7%) had eye surgery earlier in life. The proportion of students being diagnosed with myopia after joining medical school was 58.2% (n = 317). Ninety one (16.7%) students confessed their myopia aggravated due to continuous strain on their eyes while studying. About 6% (n = 25) of students were recommended by eye specialists to drop the MBBS program altogether, due to myopia. Where, none of them opted to follow the recommendation, cutting down study hours was the least preference by few students (n = 16, 3.6%). The onset of myopia was not significantly differ in the two genders (Table 2). However, myopic students were significantly older than non-myopic (P = 0.005). The proportion of myopia existence was more in clinical classes (3rd, 4th and 5th year) as compared to pre-clinical classes (1st and 2nd year). It was observed that 3rd year medical students had highest proportion of myopia followed by 5th year medical students (P < 0.0001).

Different study hours, time spent using electronics and studying under inappropriate light did not significantly associate with myopia. Though, symptoms bothering eye while studying/using electronics was significantly associated. Aggravation of symptoms during semesters had significance among myopic students (P < 0.0001).

Table 3 represents univariable and multivariable analyses of above significant factors on myopia onset. It revealed that increased age resulted in 1.16 times higher chances of developing myopia in our medical students. Taking 1st year as reference class, crude odds ratio analysis depicted that the chances of having myopia was 3.05 times higher in 2nd year students. Medical students of 3rd year had 15.83 times higher chances, 4th year had 2.03 and 5th year students had 4.45 times more chances of developing myopia as compared to 1st year medical students. Eyesymptoms including headache, redness of eyes, watery eyes, squinting,blurred vision, and eyestrainwere 3.07 times in myopic students as compared to non-myopic. Among the myopics, thesesigns intensifiedup to 7.16 times during semester exams and 22.81 timesduring tough semester exams. At multivariable stage, age produced similar but insignificant effect on myopia while controlling the effect of other factors in the model. Similarly, holding the effect of other variables, 4th year and 5th year students did not have significantly different effect on myopia as compared to 1st year students. Suffering bothersome eye symptoms and their aggravation due to strain on the eyes remained the signification predictors in multivariable stage too.

DISCUSSION

Medical students endeavor heavy study hours and deep concentration which are required acquiring good grades in examination. Consequently, the tough routine not only deteriorates their physical[9] and mental health[6-8] but alsoaggravates risk of developing myopia[11,23-25]. Our study also reported the noteworthy prevalence of myopia among medical students of Karachi. The overall prevalence was 58.2%. However, 71.4% students developed myopia after commencing their course of medicine.A longitudinal study from China also indicated a reported a significant increase of myopia from 78.5% to 84.1%[24] while in India it ranged from 45% to 63%[11,26,27]. A study on 217 Turkish medical students concluded a 32.9% incidence of myopia[25]. The prevalence of Pakistani medical students from a previous study which was conducted in Lahore reported a frequency of 57.6% myopia among 202 medical students[23]. Though, none of these studies except from China specified if the students developed myopia before or after commencing their medical school.

Concerning about gradual rise of myopia incidence, we found the aggravation during exam and increase among students of higher classes. Chaudhry et al[23] and George et al[10] also revealed higher prevalence in sophomore's students. Though, we had peak prevalence in 3rd year medical students. It might be due to the fact that as time passed the study hours and tough routine elevated too. Besides, increasing age would be confounding factor for the same[28]. Nevertheless, study duration was not produced significant effect on the frequency of myopia. This factor was also not found significantly associated in another study from Pakistan[23]. Though, Wakode et al reported that their myopics spent an average of 25hrs/week studying[28].

It is interesting to note that some students have also been advised to discontinue medicine by their ophthalmologist. Though, none of them accepted the advice. It reflected the dire consequences of the strain offered to students' eyes through endless study sessions. Nevertheless, few students preferred to cut down study hours. Use of electronics was also found affecting factor for the development of myopia. Despite the fact, the medical universities in Pakistan are now using modern technologies for teaching. Care should also be taken on display of these technologies such as adjustment of lights, font size, color of slides etc. Different environmental factors play their parts such as the long duration of study hours during examinations still dominates the picture.

Our study highlighted important factors for careful considerations while dealing with myopic medical students. The study has few limitationsaswe could cover only public sector medical institutes of Karachi. The frequency might be different for private medical students. Although, these colleges consist of heterogeneous population coming from different backgrounds, this study cannot predict the overall situation in Pakistan. Furthermore, convenient sampling was employed which would not truly representative of the population under study. These limitations would restrain the generalization of findings from our study. Further studies should be conducted to provide a deep insight resolving these issues.

CONCLUSION

Our study demonstrated myopia to be a significantly alarming issue predisposing among the medical students. The prevalence of myopia after commencement during medical years may raise concern towards different stakeholders. Age, year of study, use of electronics and tough study hours during semesters were the predictors which deteriorate the condition. In the light ofthese findings, health care professionals need to furnish some feasible and efficacious policies to restrict these growing statistics. The students shall also be advised to stay regular on their ophthalmologic examinations.

References

1. Bucher JT, Vu DM, Hojat M. Psychostimulant drug abuse and personality factors in medical students. Medical teacher 2013;35(1):53-57.
2. Habibzadeh A, Alizadeh M, Malek A, Maghbooli L, Shoja MM, et al. Illicit methylphenidate use among Iranian medical students: prevalence and knowledge. Drug design, development and therapy 2011;5:71.
3. Miah MA, Khan MAW, Talukder MHK, Begum F, Nargis T, et al. Reasons of Dropouts and Defaulters of Medical Students in Bangladesh. Bangladesh Journal of Medical Education 2014;2(2):1-6.
4. Sobowale K, Zhou AN, Fan J, Liu N, Sherer R. Depression and suicidal ideation in medical students in China: a call for wellness curricula. International Journal of Medical Education 2014;5:31-36.
5. Schwenk TL, Davis L, Wimsatt LA. Depression, stigma, and suicidal ideation in medical students. JAMA 2010;304(11):1181-90.
6. Sreeramareddy CT, Shankar PR, Binu V, Mukhopadhyay C, Ray Bet al. Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. BMC Medical education 2007; 7(1):26.
7. Tucker P, Jeon-Slaughter H, Sener U, Arvidson M, Khalafian A. Do Medical Student Stress, Health, or Quality of Life Foretell Step 1 Scores? A Comparison of Students in Traditional and Revised Preclinical Curricula. Teaching and learning in medicine 2015;27(1):63-70.
8. Paro HB, Morales NM, Silva CH, Rezende CH, Pinto R, et al. Health-related quality of life of medical students. Medical education 2010;44(3):227-35.
9. Chazan ACS, Campos MR, Portugal FB. Quality of life of medical students at the State University of Rio de Janeiro (UERJ), measured using Whoqol-bref: a multivariate analysis. Ciência & Saúde Coletiva 2015;20(2):547-56.
10. Chalasani S, Jampala VK, Nayak P. Myopia among Medical Students-A Cross Sectional Study in A South Indian Medical College. Al Ameen Journal of Medical Sciences 2012;5(3).
11. Sood R, Sood A. Prevalence of myopia among the medical students in western India visà-vis the east Asian epidemic. IOSR Journal of Dental and Medical Sciences 2014;13:65-67.
12. Edwards M, Lam C. The epidemiology of myopia in Hong Kong. ANNALS-ACADEMY OF MEDICINE SINGAPORE 2004;33(1):34-38.
13. Rose KA, Morgan IG, Ip J, Kifley A, Huynh S, et al. Outdoor activity reduces the prevalence of myopia in children. Ophthalmology 2008;115(8):1279-85.
14. Muammar A, Al-Harkan D, Al-Rashidy S, Al-Suliman S, Mousa A. Frequency of retinal detachment after cataract surgery in highly myopic patients. Saudi medical journal 2013;34(5):511-17.
15. Wong TY, Klein BE, Klein R, Tomany SC, Lee KE. Refractive errors and incident cataracts: the Beaver Dam Eye Study. Investigative ophthalmology & visual science 2001;42(7):1449-54.
16. Wong TY, Klein BE, Klein R, Knudtson M, Lee KE. Refractive errors, intraocular pressure, and glaucoma in a white population. Ophthalmo 2003;110(1):211-7.
17. Lim M, Gazzard G, Sim E, Tong L, Saw S. Direct costs of myopia in Singapore. Eye 2008;23(5):1086-89.
18. Pan CW, Ramamurthy D, Saw SM. Worldwide prevalence and risk factors for myopia. Ophthalmic and Physiological Optics 2012;32(1):3-16.
19. Fan DS, Lam DS, Lam RF, Lau JT, Chong KS, et al. Prevalence, incidence, and progression of myopia of school children in Hong Kong. Investigative ophthalmology & visual science 2004;45(4):1071-75.
20. Shah SP, Jadoon MZ, Dineen B, Bourne RR, Johnson GJ, et al. Refractive errors in the adult Pakistani population: the national blindness and visual impairment survey. Ophthalmic epidemiology 2008;15(3):183-90.
21. Alam H, Siddiqui MI, Jafri SIA, Khan AS, Ahmed SI, et al. Prevalence of refractive error in school children of Karachi. Prevalence 2008.
22. Afghani T, Vine HA, Bhatti A, Qadir MS, Akhtar J, et al. Al-Shifa-Al-Noor (ASAN) refractive error study of one million school children. Pak J Ophthalmol 2003;19(4):101-7.
23. Chaudhry R, Ali H, Sheikh NH. Frequency and underlying factors of myopia among medical students. Biomedica 2011;27(2).
24. Lv L, Zhang Z. Pattern of myopia progression in Chinese medical students: a two-year follow-up study. Graefe's Archive for Clinical and Experimental Ophthalmology 2013;251(1):163-68.
25. Onal S, Toker E, Akingol Z, Arslan G, Ertan S, et al. Refractive errors of medical students in Turkey: one year follow-up of refraction and biometry. Optometry & Vision Science 2007;84(3):175-80.
26. Dey AK, Chaudhuri SK, Jana S, Ganguly P, Ghorai S, et al. Prevalence of Refractive Errors in Medical Students. International Journal of Health Sciences and Research (IJHSR) 2014;4(8):98-102.
27. Rajdeep P, Patel R. A study of refractive errors on students of Baroda Medical College. 2013.
28. Wakode N, Wakode S, Ksheersagar D. Risk Factors for Myopia in Medical Students. International Journal of Recent Trends in Science and Technology, 8 (1) 2013:09-11.

ORIGINAL ARTICLE

The Impact of Low Haemoglobin and High Lymphocytes as Risk Factors for Childhood Asthma

Zafar Saeed Saify[1], Shafaque Mehboob[2], Muhammad Azhar Mughal[2], Khwaja Zafar Ahmed[2], Sajid Atif Aleem[3] and Darakshan Saleem[4]

ABSTRACT

Objective: To determine the association between low hemoglobin and high lymphocytes level among children in a case-control study.

Method: In this case-control analytical study sample size of fifty two (52) children's was included. Among fifty (52) children 26 control (healthy children) and 26 cases (diagnosed asthmatic) children of age group between 8-12 years and their complete blood count was done by Jinnah laboratory. SPSS version 20 was used to analyze the data.

Result: The total of fifty two (52) patients was divided into two equal groups as cases and control. Out of 52 patients 52% were male and 48% were female. Lymphocytes and hemoglobin was significantly high in asthmatic group as compare to non-asthmatic children and (P=0.014), (P=0.013) for lymphocytes and hemoglobin respectively.

Conclusion:, Elevated lymphocytes support the role of inflammation in asthma. In addition to this asthmatic children were anemic too.

Key words: Childhood asthma, lymphocytes, RBCs, biomarkers.

عنوان: معمول سے کم ہیموگلوبین کی اور معمول سے زیادہ لمفو سائٹ (Lymphocytes): بچوں میں دمہ کے خطرے کے علامات

مقصد: اس تحقیق کا مقصد کراچی کی مقامی آبادی میں ایک تجر باتی اور غیر تجر باتی (Case-Control) تجزیاتی مطالعہ میں کم ہیموگلوبین اور زیادہ لمفو سائٹ کی مقدار کا بچوں میں دمہ کے مرض سے تعلق معلوم کرنا ہے۔ طریقہ کار: اس طریقہ کار میں ۵۲ بچوں کو شامل کیا گیا جس کے دو حصّے کئے گئے۔ حصّہ "A" میں ۲۶ صحت مند (Control) اور حصّہ "B" میں ۲۶ تشخیص شدہ (Case) بچّے رکھے گئے۔ تمام بچوں کی عمر ۸ سے ۱۲ سال کے درمیان تھی۔ ان کے خون کی جانچ (CBC) جناح لیبارٹری سے کروائی گئی اور SPSS کا Version 20 کا استعمال شماریاتی تجزیہ کیلئے کیا گیا۔ ہاؤن (۵۲) میں سے ۵۲% بچے تشخیص شدہ بچوں میں لڑ کے اور ۴۸% لڑ کیاں تھیں۔ لمفو سائٹ کی مقدار صحت مند بچوں سے شماریاتی فرق کے ساتھ (P=0.014) زیادہ اور ہیموگلوبین کی مقدار شماریاتی فرق کے ساتھ (P=0.013) کم پائی گئی۔ نتیجہ: بچوں میں لمفو سائٹ کی تعداد دمہ کے خطرے کے طور پچ زیادہ ہونا دمہ کے خطرے کی علامت ہوسکتی ہے جب کہ خون کی کمی کا شکار بچے بھی سانس کے اس مرض میں مبتلا ہو سکتے ہیں۔

INTRODUCTION

Childhood asthma is a chronic and persistent disorder, characterized by airway inflammation, episodic airflow obstruction[1] and by acute exacerbations of variation in severity[2]. Persistent symptoms of asthma are usually resolved with inhaled corticosteroids (ICS) but intermittent require short-acting bronchodilators[3,4].

Although in Pakistan asthmatic condition is supposed to be very common but no data is properly available.

1   H.E.J. Research Institute of Chemistry, International Centre for Chemical & Biological Sciences, University of Karachi, Pakistan.

Department of Pharmacology[2] / Department of Research[3], Jinnah Sindh.Medical University, Karachi, Pakistan.

4   Department of Biochemistry, Sir Syed University of Engineering, Karachi, Pakistan.

Correspondence: Dr. Shafaque Mehboob, Department of Pharmacology, Jinnah Sindh.Medical University, Karachi, Pakistan.

Email: shafaque.mehboob@hotmail.com

In an old study, 24% of total cases in a local hospital of Karachi in the thoracic unit were of bronchial asthma. Although, its prevalence varies from area to area[5]. Global Initiative for Asthma (GINA) and the National Asthma Education and Prevention Program (NAEPP) highlight the importance of assessment of severity of asthma before the initiation of ICS or other medications. Severe asthmatic children who persist symptoms, are submitted to lung function test[6,7] but in symptoms free periods, it is difficult to treat children with normal lung functions[8,9].

Rather than that FEV1 gives better diagnostic approach because it is not correlated with the signs and symptoms of the disease[10,11]. FEV1 and sputum cell counts observation in over 1,100 patients confirmed the relationship between airway neutrophilia and severe asthmatic condition[12]. Infact, 10 time higher neutrophil count is observed with 92 ml decrease in post bronchodilator FEV1[13]. In addition to this, a study shows 10 folds higher neutrophil value in asthma patients[14]. Serum concentration of lymphocytes are found to be elevated in widespread narrowing of

tracheobronchial tree and T-lymphocyte activation markers had been proved to be significantly increased in a control group study[15].

METHODOLOGY

This case control study was carried out through the thoracic pediatrics clinics at different hospitals in Karachi in order to evaluate easily measurable biomarkers which play important role in the prevalence of childhood asthma in the city. The sample size of fifty two (n=52) children's in age group of 8-12 years were included in current study, keeping in view the sample size taken by Kim T. H. et al. in the study conducted to evaluate cartilage biomarkers in Ankylosing Spondylitis[16]. This was divided into two equal group as cases (test) and control (normal).

Test group consist of diagnosed asthmatic patients selected from National Institute Children Health, whereas, control group consist of healthy school going children, included in the study after the permission of school administration and concern parents. Both diagnosed asthmatic and healthy childrenwere interviewed about their activities, nutrition, residential situation, mother'diet and condition during pregnancy and father' occupation, etc. All the collected data were entered into the SPSS version 20.Frequency and percentage were calculated for gender. Mean ± SD were calculated for biomarkers. Independent sample t-test was applied to compare biomarkers in both group consider P = 0.05 as significant.

RESULTS

The study included fifty (52) patients and divided into two equal groups as cases and control. Out of 52 patients 52% were male and 48% were female as mention in Table 1.

By comparing case and control significant relationship were found in hemoglobin (P=0.013) and lymphocytes (P=0.014) as mention in Table 2.

In comparison of gender significant relationship was found in lymphocytes (P=0.008) in male but in female it found to be highly non-significant as mention in Table 3 & 4

DISCUSSION

Many studies reveal that airway inflammation may lead to the asthma[17-22]. In addition to this environmental factors and nutrition are also important points of concern[23]. In our study age group (8-12 years) was not associated with asthma but family history and social background was very important. Many asthmatic children had family history of asthma. Some Case histories of many asthmatic children showed poor nutritional values either by themselves or by their mothers during pregnancy. Very few of the children

Table 1: Descriptive Statistics of Gender (n=52)

Gender	Frequency	%
Male	27	52
Female	25	48

Table 2: Comparison of Biomarkers (n=52)

Cases	N	HEMOGLOBIN	RBCS	NEUTROPHIL	LYMPHOCYTES
Cases	26	11.99±.970	4.73±0.400	55.34±13.45	42.96±12.80
Control	26	12.85±1.38	4.73±0.488	56.84±6.51	35.34±8.35
P-value		0.013*	0.983	0.611	0.014*

Table 3: Compassion of Biomarkers with Male (n=27)

Cases	N	HEMOGLOBIN	RBCS	NEUTROPHIL	LYMPHOCYTES
Cases	14	12.25±0.89	4.68±0.34	52.14±16.32	46.92±15.41
Control	13	13.12±1.54	4.83±0.53	56.00±6.48	32.38±9.71
P-value		0.084	0.400	0.434	0.008

Table 4: Compassion of Biomarkers with Female (n=25)

Cases	N	HEMOGLOBIN	RBCS	NEUTROPHIL	LYMPHOCYTES
Cases	12	11.69±1.00	4.78±0.46	59.08±8.27	38.33±6.94
Control	13	12.57±1.19	4.63±0.44	57.69±6.70	38.30±5.66
P-value		0.058	0.425	0.647	0.992

were also used to of smoking. Studies proved that socio-economical standard correlates with high rates of asthma especially if substandard housing condition is considered[17]. The same factor was obvious in the government setup of test children because most of them have poor background, therefore, more chances of allergy and exposure to the infection. It could be the reason of high lymphocyte ratio as shown in fig-1in the test as compare to the control children who have strong social ground.

More difference of lymphocytes between male test and male control shows that male child have higher risk of infection as compare to female children.

Significant low haemoglobin level in asthmatic children may lead to other problems such as anemia or fatigue that cause poor intake of oxygen to the body cells and tissues. Therefore, the whole body can be badly affected. Proper nutrition or supplement should be provided if required.

There are many others parameters available with initial testing are to diagnose asthma and evaluate its severity. Testing may be performed to distinguish asthma from other conditions that cause similar symptoms and to identify the presence of conditions that have the potential to trigger or exacerbate asthma attacks. The goals with continued testing are to monitor lung function and asthma control, evaluate and resolve asthma attacks, and identify and address complications and side effects that arise.

Large scale studies and focused program are recommended in Pakistan like the rest of the world that should be intended not only to assess and monitor childhood asthma but to educate and encourage people to participate in the management of their condition, controlling environmental factors that can trigger or exacerbate asthma attacks, and the use of medications. Proper questionnaires assessments should be followed to evaluate the nutritional behavioral and smoking pattern in the family if any[24].

CONCLUSION

Elevated lymphocytes support the role of inflammation in asthma. In addition to this asthmatic children were anemic too. Therefore, low haemoglobin and high lymphocyte level can be indicated as risk factors in childhood asthma.

Reference

1. Lemanske RF, Jr, Busse WW. Asthma: clinical expression and molecular mechanisms. J Allergy ClinImmunol. J Allergy ClinImmunol 2010; 125:95-102.

2. Long-term effects of budesonide or nedocromil in children with asthma. The Childhood Asthma Management Program Research Group. N Engl J Med. N Engl J Med. 2000 Oct 12;343(15):1054-63.

3. Expert Panel Report 3 (EPR-3): Guidelines for the Diagnosis and Management of Asthma-Summary Report 2007. J Allergy ClinImmunol. 2007 Nov;120(5 Suppl):S94-138.

4. Aziz S, Beg Z. Pattern of non-tuberculosis admission in a thoracic unit. J Pak Med Assoc 1984;34(6):154-6.

5. Brown PJ, Greville HW, Finucane KE. Asthma and irreversible airflow obstruction. Thorax. 1984 Feb;39(2):131-6.

6. Bateman ED1, Hurd SS, Barnes PJ, Bousquet J, Drazen JM, FitzGerald M, et al. Global strategy for asthma management and prevention: GINA executive summary. Eur Respir J. 2008 Jan;31(1):143-78

7. Spahn JD, Cherniack R, Paull K, Gelfand EW. Is forced expiratory volume in one second the best measure of severity in childhood asthma? Am J Respir Crit Care Med. 2004,1;169(7):784-6.

8. Bacharier LB, Strunk RC, Mauger D, White D, Lemanske RF, Sorkness CA. Classifying asthma severity in children: Mismatch between symptoms, medication use, and lung function. Am J RespirCrit Care Med. 2004;170(4):426-32.

9. Sharek PJ, Mayer ML, Loewy L, Robinson TN, Shames RS, Umetsu DT, et al. Agreement among measures of asthma status: a prospective study of low-income children with moderate to severe asthma. Pediatrics. Pediatrics. 2002;110(4):797-804.

10. Lang AM, Konradsen J, Carlsen KH, Sachs-Olsen C, Mowinckel P, Hedlin G, et al. Identifying problematic severe asthma in the individual child--does lung function matter? Acta Paediatr. 2010;99(3):404-10

11. Shaw DE, Berry MA, Hargadon B, McKenna S, Shelley MJ, Green RH, Brightling CE, Wardlaw AJ, Pavord ID. Association between neutrophilic airway inflammation and airflow limitation in adults with asthma. Chest. 2007;132(6):1871-5.

12. Woodruff PG, Khashayar R, Lazarus SC, Janson S, Avila P, Boushey HA, Segal M, Fahy JV. Relationship between airway inflammation, hyperresponsiveness, and obstruction in asthma. J Allergy ClinImmunol. 2001;108(5):753-8.

13. Ordonez CL, Shaughnessy TE, Matthay MA, Fahy JV. Increased neutrophil numbers and IL-8 levels in airway secretions in acute severe asthma: clinical and biologic significance.ÊAm J RespirCrit Care Med. 2000;161(4 Pt 1):1185-90.

14. Corrigan C. J. and Kay A. B., CD4 T-Lymphocyte activation in acute severe asthma. Relationship to disease severity and atopic status, Am Rev Respir Dis: Apr;141(4 Pt 1):970-7.

15. Saleem T, Zaman MK, Niazi AK. Factors associated with childhood asthma. Ann Pak Inst Med Sci. 2008;4:206-8.

16. Kim T. H. et al. Cartilage Biomarkers in Ankylosing Spondylitis Relationship to Clinical Variables and Treatment Response. Arthritia & rheumatism.2005; 52(30):885–891.

17. Jafari FH, Ahmad SI, Hassan K, Jaafari MA, Ikram N, Qureshi HA. Aetiological factors of bronchial asthma in rural areas of upper Punjab. J Rawal Med Coll. 1998;2:3-5.

18. Mitchel EA, Stewart AW, Pattemore PK, Asher MI, Herrison AC, Reah H. Socioeconomic status in childhood asthma. Int J of Epidemiology. 1989;18(4):888-90.

19. Mielck A, Reitmeir P, Wjst M. Severity of childhood asthma by socioeconomic status. Int J of Epidemiol. 1996;25:388-93.

20. Mavale-Manuel S, Alexandre F, Duarte N, Albuquerque O, Scheinmann P, Poisson-Salomon AS, et al. Risk factors for asthma among children in Maputo (Mozambique). Allergy. 2004;59:388-93.

21. Neto HJ, Rosário NA; Risk factors for wheezing in the first year of life. J Pediatr. (Rio J) 2008;20:84-6.

22. Waternberg D, Ehrlich, Lilienfeld D. Environmental tobacco smoke and childhood asthma: comparing exposure metrics using probability plots. Environ Res. 1994 ;64(2):122-35.

23. Palvo F, Toledo EC, Menin AM, Jorge PP, Godoy MF, Solé D. Risk factors of childhood asthma in Sao Jose do Rio Preto, Sao Paulo, Brazil. J Trop Pediatr. 2008;54(4):253-7.

24. Szefler SJ., Wenzel S., Brown R., Erzurum SC., Fahy JV., Hamilton RG., Hunt JF., Kita H., Liu AH., Panettieri RAJ., Schleimer RP. And Minnicozzi M. Asthma outcomes: Biomarkers. J Allergy ClinImmunol, 2012; 129(3): S9-23.

— — — — —

ORIGINAL ARTICLE

Demography and Outcome of Acute Adult Poisoning Patients Admitted in a Tertiary Care Hospital; A One Year Analysis

Rukhsana Abdul Sattar[1], Muhammad Omer Sultan[1], Muhammad Arsalan Jamil[1], Rida Hanif[1], Muhammad Inam Khan[1] and Sham Kumar[1]

ABSTRACT

Objective: To study the spectrum of acute adult poisoning cases admitted in National Poison Control Centre (NPCC) to determine agents used in poisoning along with demographics and outcome.

Methodology: This Non-interventional (descriptive) study was conducted in National Poison Control Centre (NPCC) Medical Unit-I, Ward-5, Jinnah Postgraduate Medical Centre, Karachi, over a period of one year (2013). This study includes case records of 2698patients that were admitted in NPCC with acute poisoning over a period of calendar year 2013. Age, gender, marital status, demographic characteristics, agents of poisoning and outcome were analyzed.

Results: A total of 2698 cases of acute were reviewed in this study. There were 1444(53.5%) males,39.1% were married and 52.7% were belonged to age group 12-22 years.. Majority of cases (31.8%) were from District Korangi. In 850(31.5%) cases organophosphate was responsible for acute poisoning and 62(2.3%) cases were of alcohol poisoning out of which 11(17.7%) expired.

Conclusion: Acute adult poisoning is very common in young adults especially males and particularly singles. Organophosphate was the most common among all the agents employed in poisoning and alcohol carries highest mortality. District Korangi was found to be dominant in poisoning.

Key Words: Poisoning, organophosphates, alcohol, mortality, Karachi, Pakistan.

How to cite this article: Sattar RA, Sultan MO, Jamil MA, Hanif R, Khan MI, Kumar S. Demography and outcome of acute adult poisoning patients admitted in a tertiary care hospital; a one year analysis. Ann Jinnah Sindh Med Uni 2016; 2(1): 21-24.

عنوان: شدید زہر سے متاثر تیسرے درجے کے نگہداشت (Tertiary-Care) کے ہسپتال میں داخل ہونے والے بالغ مریضوں کی معلومات اور ماحاصل: ایک سال کا تجزیہ۔

مقصد: اس تحقیق کا مقصد زہر خوردنی والے بالغ مریض جو Natioanal Poision Control Centre میں پچھلے ایک سال میں داخل ہوئے۔ افراد کی وسعت، اسباب اور ماحاصل معلوم کرنا ہے۔ طریقہ کار: یہ عام معلوماتی تحقیق مرکز قومی زہر خوردنی کی روک تھام NPCCم جو میڈیکل یونٹ1 وارڈ 5 جناح مرکز برائے اعلیٰ تعلیم (Jinnah Postgraduate Medical Centre) میں کی گئی۔ اس تحقیق میں 2698 مریض جو سال2013 زہر خوردنی کی وجہ سے NPCC میں شامل ہوئے۔ ان مریضوں کی عمر، جنس، ازدواجی حیثیت، عام معاملات، زہر خوردنی کی وجہ اور حاصل شدہ معلومات کا تجزیہ کیا گیا۔ نتیجہ: دو ہزار چھ سوا ٹھانوئیں(2698) مریضوں میں1444(53.5%) مرد حضرات 39.1% شادی شدہ اور 52.7% مریض22-12 سال کے عمر کے درمیان پائے گئے۔ زیادہ تر افراد(31.8%) کورنگی ضلع سے لائے گئے تھے۔ آٹھ سو پچاس(31.5%) مریضوں میں شدید زہر خوردنی کی وجہ Organophosphate تھی اور 62 (2.3%) افراد میں شراب نوشی کا زہر خوردنی کی وجہ تھی۔ اور ان میں سے 11 (17.7%) مریض انتقال کر گئے۔ حاصل مطالعہ: زیادہ تر شدید زہر خوردنی نو جوان بالغ مردوں میں پائی گئی۔ Organophosphate سب سے زیادہ زہر خوردنی کی agent تھا۔ شراب نوشی سب سے زیادہ اموات کی وجہ بنی۔ ضلع کورنگی زہر خوردنی میں سب سے زیادہ متاثر علاقہ تھا۔

INTRODUCTION

Acute adult poisoning is one of the most common medical emergencies presenting in emergency department[1]. It can be suicidal, homicidal or accidental[2], most of the adult poisoning cases are because of intentional overdose[3,4] however accidental poisoning is common in children[5]. Easy approach to different drugs and chemical had increased the burden of poisoning cases[6].

Acute poisoning is an important medical emergency. The nature of poison used varies in different parts of the world and may vary even in different parts of the same country depending on the socioeconomic factors and cultural diversity[7]. Organophosphate poisoning is a major cause of morbidity and mortality worldwide, especially in developing countries[8], Pakistan[9] and India[10].

The rationale of the study was to update the demography and clinical outcomes of poisoning locally and to observe changing trends. The National Poison Control Center (NPCC) comprises of 50 beds and NPCC emerged as the sole World Health Organization approved center for poison control in a tertiary care hospital in Pakistan. This center is managing all types of poisoning cases, so there was a vital need to evaluate the frequency of acute adult poisoning to take effective measures regarding its

1 Department of Medicine Ward 5, Jinnah Postgraduate Medical Center, Karachi, Pakistan.

Correspondence: Prof. Dr. Rukhsana Abdul Sattar, Department of Medicine Ward 5, Jinnah Postgraduate Medical Center, Karachi, Pakistan.

Email: drrukhsana20@gmail.com

prevention, management and to device effective strategies for dealing mass poisoning cases.

METHODOLOGY

This was a non-interventional (descriptive) type study conducted at National Poison Control Center, Medical Unit -1, Ward -5, Jinnah Postgraduate Medical Center, Karachi, from 1st January 2013 to 31st December 2013. Cases of acute adult poisoning were included considering patients of age 12 years and above who got admitted within 24 hours of exposure to the poisoning agent. Only admitted patients who were residents of city Karachi were included. Our exclusion criteria included patients less than 12 years of age, reported but not got admitted and residents of areas outside Karachi. Medico-legal aspects of poisoning were not considered.

A total of 2698 patients got admitted during this period. Data retrieved from the hospital records includes age, gender, marital status, districts of Karachi, type of poisoning and outcome of poisoning. Patients' ages were divided into decades as 12-22, 23-32, 33-42, 43-52, 53-62, 63-72, and 73-onwards. In order to analyze data demographically, we categorize the Karachi city into six districts (South, Central, East, West, Malir, and Korangi), according to the district map given by City District Government Karachi (CDGK) on www.kmc.gos.pk.

Data was analyzed by using Statistical Package for Social Sciences (SPSS), version 17.0. Frequencies and percentages were computed to present different variables. Chi-square was used to determine the association between gender vs age-groups; and poisoning agent vs the districts of Karachi. The 5% level was set for significance.

RESULTS

A total of 2698 patients of acute adult poisoning were admitted to the National Poison Control Center (NPCC), during the study period of 1 year. Out of these 1444(53.5%) were males and 1254(46.5%) were females. Among these 2698 patients 1423(52.7%) belongs to age group 12-22 years, 807(29.9%) belongs to age group 23-32 years, 231(8.6%) belongs to age group 33-42 years, 123(4.6%) belongs to age group 43-52 years, 62(2.3%) belongs to age group 53-62 years, 34(1.3%) belongs to age group 63-72 years and 18(0.7%) belongs to age group 73 years onwards. Male to female ratio in different age group can be seen in Table 1. There was significance association between gender and age-groups (p<0.0001). Females of youngest age-group (12-22 years) showed higher percentage of poisoning than males patients.

Out of all the patients 1055(39.1%) were married and 1643(60.9%) were singles. Eight hundred fifty seven (31.8%) patients were from District Korangi, 523(19.4%) from District Karachi west, 410(15.2%) were from District Karachi East, 376(13.9%) were from District Karachi South, 310(11.5%) were from District Malir and 222(8.2%) were from District Karachi Central .Information regarding types of poisoning reported from different districts of Karachi can be seen in Table 2. Facts and figures shows that out of 2698 patients, in 850(31.5%) cases organophosphate was responsible for acute poisoning and 62(2.3%) cases were of alcohol poisoning out of which 11(17.7%) expires. So this makes organophosphate the most common type of poison while most mortal among all types of poisons was alcohol.There was significant difference of poisoning agents with respect to the districts of Karachi (P<0.0001). Korangi district showed the maximum number of cases as compared to other districts. District Central showed the maximum number of OPI cases and which was the main reason of significant association.

According to the records outcome of acute adult poisoning were 2243(83.1%) got discharged, 258(9.61%) were LAMA, 111(4.1%) were expired and 86(3.2%) were referred to another medical units. Details about outcomes of different types of poison can be seen in table III.

Table 1: Descriptive information by gender and age-groups

Age Group	Male n (%)	Female n (%)	Total n (%)
12-22	701(48.5)	722(57.6)	1423(52.7)
23-32	450(31.2)	357(28.5)	807(29.9)
33-42	122(8.4)	109(8.7)	231(8.6)
43-52	82(5.7)	41(3.3)	123(4.6)
53-62	48(3.3)	14(1.1)	62(2.3)
63-72	30(2.1)	4(0.3)	34(1.3)
73- onwards	11(0.8)	7(0.6)	18(0.7)
Total	1444(100.0)	1254(100.0)	2698

DISCUSSION

Multiple studies were conducted on cases of acute adult poisoning both locally and internationally. The incidence and patterns of poisoning in our part of world differs significantly from developed countries. Acute adult poisoning with the passage of time had emerged strongly as one of the most common medical emergency. In our study we found organophosphate poisoning dominant over other poisoning agents due to the agricultural nature of this part of the world[8,9]. Organophosphates comprise a wide range of compounds including insecticides, herbicides, fungicides and others, which are used in agriculture as well as in house hold gardens and are common cause of poisoning that

Table 2: The association between poisoning agents and the districts of Karachi

	Karachi South	Karachi East	Karachi Central	Karachi West	Malir	Korangi	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
OPI	117(31.1)	123(30.0)	89(40.1)	165(31.5)	78(25.2)	278(32.4)	850(31.5)
Corrosives	33(8.8)	40(9.8)	18(8.1)	40(7.6)	36(11.6)	98(11.4)	265(9.8)
Alcohol	8(2.1)	10(2.4)	3(1.4)	5(1.0)	11(3.5)	25(2.9)	62(2.3)
Opoids	18(4.8)	20(4.9)	0(0.0)	4(0.8)	10(3.2)	17(2.0)	69(2.6)
Petrochemicals	9(2.4)	12(2.9)	1(.5)	10(3.2)	7(2.3)	32(3.7)	71(2.6)
Tablet	63(16.8)	73(17.8)	19(8.6)	62(11.9)	35(11.3)	140(16.3)	392(14.5)
unknown	71(18.9)	66(16.1)	59(26.6)	67(12.8)	50(16.1)	112(13.1)	425(15.8)
Others	44(11.7)	38(9.3)	20(9.0)	137(26.2)	42(13.5)	105(12.3)	386(14.3)
Snakes	5(1.3)	6(1.5)	4(1.8)	16(3.1)	30(9.7)	16(1.9)	77(2.9)
Miscellaneous	8(2.1)	22(5.4)	9(4.1)	17(3.3)	11(3.5)	34(4.0)	101(3.7)
Total	376	410	222	523	310	857	2698

Miscellaneous includes: Carbonmonoxoids (other gases), copper sulphate, antiseptics (dettol/ pyodine) , mercury (other metals), kalapathar (paraphenylenediamine), hair removing cream, glass (sheesha), scorpion, fish, spider, insect, lizard and rat.

Table3: The association between poisoning agents and the outcomes

	Discharged	LAMA	Referred to another unit	Expired	Total
OPI	637(74.9)	83(9.7)	60(7.0)	70(8.2)	850(31.5)
Corrosives	244(92.0)	16(6.0)	1(0.3)	4(1.5)	265(9.8)
Alcohol	38(61.2)	10(16.1)	3(4.8)	11(17.7)	62(2.3)
Opoids	55(79.7)	6(8.7)	2(2.9)	6(8.7)	69(2.5)
Petrochemicals	63(88.7)	7(9.8)	0(0.0)	1(1.4)	71(2.6)
Tablet	347(88.5)	43(10.9)	2(0.5)	0(0.0)	392(14.5)
unknown	353(83.0)	44(10.3)	12(2.8)	16(3.7)	425(15.7)
Others	351(90.9)	29(7.5)	4(1.4)	2(0.5)	386(14.3)
Snakes	65(84.4)	12(15.5)	0(0.0)	0(0.0)	77(2.8)
Miscellaneous	90(89.1)	8(7.92)	2(1.9)	1(0.9)	101(3.7)
Total	2243(83.1)	258(9.5)	86(3.19)	111(4.1)	2698(100)

Miscellaneous includes: Carbonmonoxoids (other gases), copper sulphate, antiseptics (dettol/ pyodine) , mercury (other metals), kalapathar (paraphenylenediamine), hair removing cream, glass (sheesha), scorpion, fish, spider, insect, lizard and rat.

continue to result in significant fatalities. The study conducted in NPCC, Karachi from 2000-2008 showed that out of 6539 patients of acute adult poisoning 2708 (41%) patients were of organophosphate poisoning[11], while in our study of one year out of 2698 patients 850 (31.5%) were of organophosphate poisoning. This increase in poisoning cases day by day, maybe due to the easy availability, cheaper rates and over the counter sale of poisoning agents.

Out of all the poisoning agents alcohol was found to be most lethal as it shows highest mortality rate of 17.7% when compared with other poisoning agents and this fact has also been highlighted in a study conducted in Tehran, Iran from 2003-2010[12].

The most common age group according to our study was 12-22 years (52.7%) and in comparison with a international study conducted in Japan from 1995-

2004 the most affected age group was 15-24 year (40.5%), in both sexes[13] while in a local study conducted at NPCC in 2014 we see that the most common age group was 15-24 years (54.3 %)[14]. This high incidence of poisoning in youth maybe due to the issues of unemployment, lower socioeconomic status and little awareness regarding core importance of life.

It was observed in a study conducted at Srinagar, Kashmir from 2006-2014 it was found that out of 444 cases unmarried people 294 had high incidence of poisoning as compared to married people 150[15]. This is also favoring the results we found in our study that is unmarried poisoning patients were dominant over married patients. The data derived from the study clearly showed that poisoning was common in males (1444 were males and 1254 were females). This male predominance in this study is also supported by local[14,16] as well as by international[17] studies.

According to the study, District Korangi of Karachi city was found to be the area where most cases were reported, this may be due to the low literacy rate, least awareness and easy access to different poisoning agents among other districts. This study has highlighted about the changing trends of mortality from organophosphates to alcohol, we also came to know about increase number of poisoning cases among males instead of females, it has also brought light upon increase frequency of mortality among young age group as described in the studies done by others. There is a troublesome increase in poisoning cases from old era to recent times. Our study has certain limitations as it was analysis from hospital record, neither patient could be followed up nor could the data be verified. Outcome of referred cases could not be incorporated in our results because of similar reasons. History could not be taken so intention of poisoning could not be ascertained neither could we enquire about quantity of poison taken, route of exposure, any history of previous number of attempts or psychiatric illness. One notable limitation of this study was in a few number of cases type of poisoning agent was unknown. This is a single center study so the results could not be generalized or extrapolated to general population.

CONCLUSION

Acute adult poisoning is very common in young adults especially males and particularly singles. Organophosphate was the most common agent employed in poisoning. Among fatal outcomes, alcohol carries highest mortality. District Korangi was found to be dominant in poisoning.

The appropriate use of these compounds, public awareness about their harmful effects and restriction of their uncontrolled sales by legal regulations may reduce the incidence of acute adult poisoning.

References

1. Limjindaporn C. Acute poison exposure in the emergency department: a 2-year study in a university hospital. J Med Assoc Thai. 2010; 93 Suppl 7:41-9.
2. Christine HO, Karen MH. Criminal Investigation. 10th ed. New York: Cengage Learning; 2012, p.285
3. Chiu LQ, Lim BL, Vasu A, Phua DH, Goh HK. Poison exposure in emergency department: a Singaporean experience, Hong Kong J Emerg Med. 2011;18(4):197.
4. Veale DJH, Wium CA, Muller GJ. Toxicovigilance II: A survey of the spectrum of acute poisoning and current practices in the initial management of poisoning cases admitted to the South African hospitals. S Afr Med J. 2013;103(5):298-303.
5. Sawalha AF, Sweileh WM, Tufaha MT, Al-Jabi DY. Analysis of the pattern of acute poisoning in patients admitted to a governmental hospital in Palestine. Basic Clin Pharmacol Toxicol. 2010;107(5):914-8.
6. Avsarogullari L, Senol V, Akdur O, Akiin A, Durkan P, Ozken S. Characteristics of acute adult poisonings in a university hospital emergency department in central Turkey: a three-year analysis. J Pak Med Assoc. J Pak Med Assoc. 2012;62(2):129-33.
7. Abdul H, Rehana K, Reyaz ARS, Sameena M, Kewal K, Yudhvir S, et al. Pattern, profile and outcome of poisoning cases: A study at a large teaching hospital in North India. JK Practitioner. 2014;19(1-2):36-40
8. Mahdi BM, Mohammad A. Basic and Clinical Toxicology of Organophosphorus Compounds, London: Springer, 2014;p.25-43
9. Aftab T, Danyal A, Saud H, Asif D, Mansoor A. Organophosphate poisoning in the Urban Population; study conducted at National Poison Control Center, Karachi. Biomed Res J. 2008; 19(1-2):36-40
10. Syed MA, Bikramjit D, Abu N, Rajiv KS. Survival pattern in patients with acute organophosphate poisoning on mechanical ventilation: A retrospective intensive care unit-based study in a tertiary care teaching hospital. Indian J Anaesth. 2014;58(1):11-7.
11. Nadia AA, Jamal A, Ejaz K, Rukhsana AS, Rashid D. Acute organophosphate insecticide poisoning, J Surg Pak. 2008;13(2):71-4.
12. Hossein SZ, Shahrooz KE, Nasim Z, Farkhondeh J, Shahin S. Hyperglycemia Is a strong prognostic factor of lethality in methanol poisoning. J Med Toxicol. 2011;7(3):189-94.
13. Yurumez Y, Durukan P, Yavuz Y, Ikizceli I, Avsarogullari L, Ozkan S, et al. Acute organophosphate poisoning in university hospital emergency room patients. Intern Med. 2007;46(13):965-9.
14. Farhat B, Jamal A, Santosh K. Deliberate self poisoning at National poison control center. J Liaquat Univ Med Health Sci. 2014;13(1):03-08
15. Farhana B, Mushtaq AR, Bashrat S, Abdul H, Syed MK. Socio-demographic profile of the poisoning cases in Kashmir valley, Global J Med Public Health. 2014;3(6):01-04
16. Pyar A, Asma A, Babar B, Rakhshinda J, Hussain H, Karimullah M. Clinical pattern and outcome of organophosphorus poisoning, J Liaquat Univ Med Health Sci. 2012;11(1):15-8
17. Girish T, Kishore GS, Kanav K, Sureshwar P, Sudha VS. Evaluation of incidence, clinical characteristics and management in organophosphorus poisoning patients in a tertiary care hospital, J Toxicol Environ Health Sci. 2010;2(5):73-6.

— — — — — —

ORIGINAL ARTICLE

Non-Doctor Prescription Practices and Self-Medication: A Study on the Factors and Resources

Kiran Rafiq[1], Zafar Saied Saify[2], Bina Shoaib[1] and Mohammad Amin Solangi[1]

ABSTRACT

Objective: Self medication is allied with certain health hazards such as wrong opinion, excessive and prolonged use of medicine. It is the easiest way to treat self-recognized or self-diagnosed conditions or symptoms specifically in the society where illiteracy rate matters.

Methodology: In present study the conduct of general population regarding self treatment is viewed. The factors responsible for the behavior and the frequency of consumption of various medicines were also observed.

Result: According to the present study the Pakistani population was highly found practicing self medication, despite of having knowledge of side effects 50% population adopt accordingly. Moreover non prescription dispensing of medicine and other resources like media and community behavior support the practice.

Conclusion: The study reveals high Prevalence of self-medication among general population despite of being aware of its harmful effects. These outcome of study realizes the need to strengthen the monitoring systems that will help to support relationship among patients, physicians and pharmacists and as well the provision of education to all concerned on safe self medication for minimizing risks.

Key words: Self medication, health, population, patients, physicians, pharmacists.

عنوان: بغیر ڈاکٹر کے تشخیص اور خود تشخیص شدہ نسخوں کا استعمال: وجوہات اور ذرائع پر ایک تحقیق۔

مقصد: خود تشخیصی نسخوں کا استعمال بہت سے خطرات سے صحت کا باعث بن سکتا ہے۔ جیسے کہ غلط تشخیص زیادہ اور مدت دراز تک دواؤں کا استعمال۔ان علاقوں میں جہاں ناخواندگی زیادہ ہے خود تشخیصی نسخوں کا استعمال ایک آسان طریقہ علاج ہے۔

طریقہ: دو سوافراد سے سوالنامہ کے ذریعے سے خود تشخیصی طریقہ علاج کے بارے میں رائے لی گئی۔اس سوالنامے میں دواؤں اور ان کے استعمال کے وقفہ کے بارے میں بھی معلومات لی گئیں۔

نتائج: پاکستان کی عوام خود تشخیصی طریقہ علاج کو بہت پسند کرتی ہے۔ پچاس فیصد اس طرح کے علاج میں مبتلا ہے۔ اس کے علاوہ ذرائع ابلاغ اور دوسرے ذرائع اس میں مزید اضافہ کرتے ہیں۔

حاصل مطالعہ: تحقیق نے ثابت کیا کہ خود تشخیصی طریقہ علاج ہماری سوسائٹی میں عام ہے۔ تحقیق یہ بھی بتاتی ہے کہ ایک طرح کا نقصانات کا بھی علم ہے۔ جبکہ لوگوں کو اس کے نقصانات سے آگاہ کیا جائے جو کہ مریض،معالج اور عطاری کے درمیان کا تعلق واضح کرے اور افراد میں اس طریقہ علاج کے نقصانات کی تشہیر کرے۔

INTRODUCTION

Self medication is the way of selecting medicines to treat self-diagnosed conditions or symptoms and that is becoming a gradually more important area within healthcare[1]. By such practice, patients can make decisions about management of minor illnesses and sometimes they push themselves towards more severity. This is a globally common practice of treating mild to severe illness by self medication, specifically in underprivileged areas[1,2]. Consequently various medicines are sold over the counter without pharmacist's advice or prescription. The scenario is responsible for supporting self-medication practice, an alternative choice for those who cannot afford the expenses of clinical service or for the community where services are not reachable[3,4]. Furthermore the facts and figures reveal that poverty is not the one and only factor of self medication but there are many consequences that lead the society for attempting the practice like lifestyle and greater accessibility of medicines[5,6]. In this regard cultural faiths about therapy also play important role and lead to care by home remedies or by traditional healers. Majority of Pakistani nation have belief in hakeems and homeopaths that sometimes become first choice for many ailments. Consequently this traditional therapy has become a vital source of health care[7,8]. Additionally Pakistan is very rich in uncountable medicinal herbs and their traditional use for different therapies. These resources are not ignorable and this is the need of today in our society to improve health-seeking behavior of the people by providing appropriate training and amenities. A positive correlation among all the healthcare systems should be connected to

1   Institute of Pharmaceutical Sciences, Jinnah Sindh Medical University, Karachi, Pakistan.

2   International Center of Chemical and Biological Sciences, Karachi, University, Pakistan.

Correspondence: Dr. Kiran Rafiq, Institute of Pharmaceutical Sciences, Jinnah Sindh Medical University, Karachi, Pakistan.

Email: kiranrafiq@hotmail.com

improve the health of the people[9,10]. Frequency of self-medication is high in the Today's population, despite of its harmful effects. These approaches of our society led to perform the current study in order to implement strict policies.

METHODOLOGY

In present study the opinion of pharmacy, medicine and nursing students was analyzed. The study sample size was two hundred and was assessed through questionnaire of different patterns. Through that the level of population satisfaction was evaluated so as to observe problems faced by the patients and the attitude from health provider they come across. The sample of the study was general people. For the purpose four dimensional questionnaire survey was done through the queries of different sets i.e. population was asked about their attitude towards self medication; root cause of practice was asked; furthermore the population was analyzed for their experience about self medication and the choice of therapy; and one more study was done about the consumption of different medicines by the population which was conducted from twenty five pharmacy stores of different areas in Karachi.

RESULTS

Result outcomes showed that the half of population practices self medication and interestingly 73% understand that it is dangerous for health. 82% study population is aware of the severe and harmful side effects (Table 1), nevertheless majority (approx 89%) was found practicing it; and not only this, 70% people are gearing the community towards it by forcing their friends and family to adopt this exercise. (Figure 1) It was observed that 50% of the study population could not able to pay doctor and hospital charges and 15% do not feel easy discussing their ailments with doctors. Furthermore 35% participants responded that they did not have any nearby health care facility as like clinic or general hospital. Sixty percent of the subjects were influenced by media and 25% were advised by the friends, colleagues and family members for self-medication. Majority of the responded indicated that it was good for health (Figure 1). About 60% mentioned that they use 'Herbal' medicine without any prescription (Figure 2). More than 80% subjects use the self-medication for analgesics, gastrointestinal and cough & cold (Figure 3).

DISCUSSION

In present study the level of knowledge and implementation of self medication among the students of pharmacy, medicine and nursing were evaluated. The circumstances, society behaviors and weaknesses

Table-1

Queries	Agree (%)	Disagree (%)
Do you practice self-medication	50	50
Do you force others to practice	70	30
You select dose and dosage by yourself	89	11
Self medication lead to delay In recovery	53	47
The practice has various side effects.	82	18
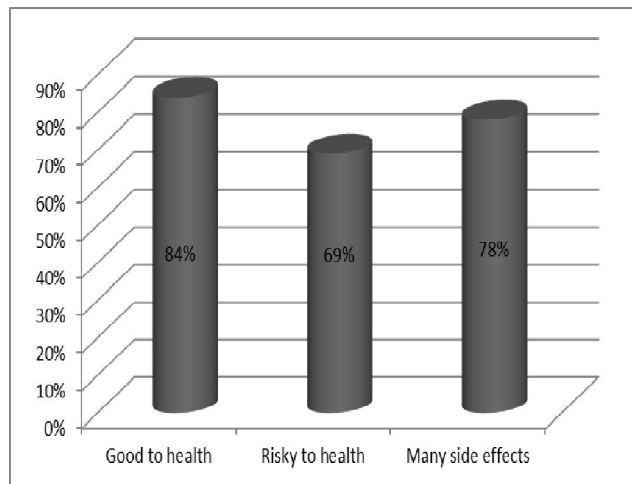
Fig.1: The Experience of Population about Self Medication
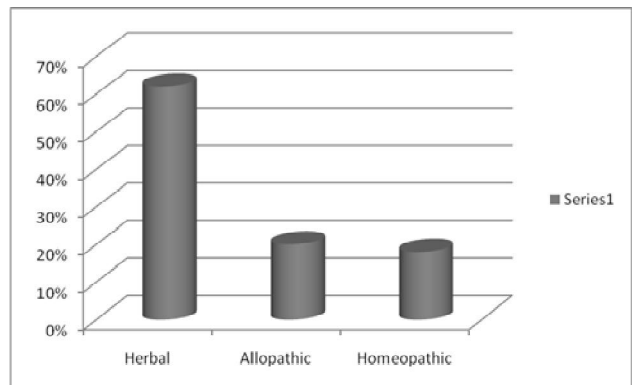
Figure 2: The choice of Population for Self Medication
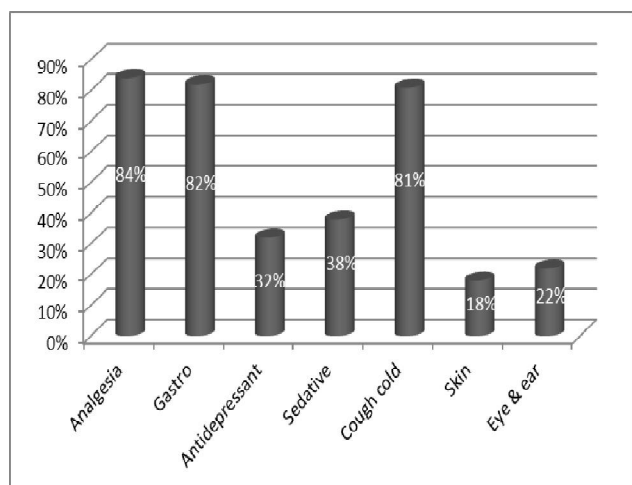
Fig. 3: The consumption of remedies by Population for Self Medication

of healthcare system were also kept in view. About half of the responded have indicated that they use self-medication, even though 73% mentioned that it is dangerous. These two indications show the weaknesses of healthcare system; it so happened that health providers do not like to go and work in low cost areas due to lack of facilities and other conditions. To overcome these health care settings should be developed and for this task the government is responsible to place the pharmacist, doctors and other healthcare professionals with more facilities and salary scales specifically in urban areas, so that proper health facilities will be provided equally in all areas and the self medication practices will be minimized to some extent[12]. Furthermore in current study it was also observed that media, including both electronic and print, have strong impact pushing the population towards self medication through the advertisements about any medicine or about alternative therapies that attracts illiterate people; hence there is a need for these to be properly regulated and controlled by the government through strong and vital health policies. Present study reveals the high prevalence of self medication among population. Strict measures are required to monitor commercialization of medicines. Physicians and pharmacists should strongly participate to educate the patients about the hazards of self-medication to minimize threats[13,14].

CONCLUSION

These results show that cognizance and adaptation of self-medication together are very high among Pakistani population. Interestingly people have enough awareness about the harmful effects of this malpractice but even they are forced towards it either due to social environment or lack of health care facilities. These outcomes indicate the need of development and implementation of health care policies and reachable, low cost clinical settings, where pharmacist should positioned to make people aware.

References

1. Deshpande SG, Tiwari R. Self medication-a growing concern. Indian J Med Sci 1997;51(3):93-6.
2. Hughes CM, McElnay JC, Fleming GF. Glenda F Fleming. Benefits and risks of self medication. Drug Saf. 2001;24(14):1027-37.
3. Smith MB, Feldman W. Over-the-counter cold medications. A critical review of clinical trials between 1950 and 1991. JAMA. 1993; 269(17):2258-63.
4. Montastruc JL, Bagheri H, Geraud T, Lapeyre MM. Pharmacovigilance of self-medication. Therapie. 1997;52(2):105-10.
5. Shankar PR, Partha P, Shenoy N. Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: a questionnaire-based-study. BMC Fam Pract. 2002;3:17.
6. Lau GS, Lee KK, Luk CT. Self-medication among university students in Hong Kong. Asia Pac J Public Health. 1995;8(3):153-7.
7. James H, Handu SS, Khalid AJ, Khaja A, Otoom S, Sequeira RP. Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students. Med Princ Pract. 2006;15(4):270-5.
8. Vucic VA, Trkulja V, Lackovic Z. Content of home pharmacies and self-medication practices in households of pharmacy and medical students in Zagreb, Croatia: findings in 2001 with a reference to 1977. Croat Med J. 2005;46(1):74-80.
9. Stewart MA. Effective physician-patient communication and health outcomes: a review. CMAJ. 1995; 152(9): 1423-33.
10. Burak LJ, Damico A. College students' use of widely advertised medications. J Am Coll Health. 2000; 49(3):118-21.
11. Blenkinsopp A, Bradley C. Patients, society, and the increase in self medication. BMJ. 1996;312:629-32.
12. Zafar SN, Reema S, Sana W, Akbar JZ, Talha V, Mahrine S, et al. Self medication amongst university students of Karachi: prevalence, knowledge and attitudes. J Pak Med Assoc. 2008;58(4):214-7.
13. Haider S, Thaver IH. Self medication or self care: implication for primary health care strategies J Pak Med Assoc. 1995;45(11):297-8.

REPORTING FOR PLAGIARISM

To inform HEC or respective Universities / Organizations of alleged plagiarism, a complaint is to be made by email, post, fax or other means to HEC Quality Assurance Division or respective Universities / Organizations. In case of lodging a complaint in the form of a letter, copy may be sent to HEC.

REVIEW ARTICLE

Association of Oral Submucous Fibrosis and Gutka Chewers

Humera Akhlaq[1], Pooja Balani[2] and Mohammed Owais Ismail[3]

ABSTRACT

Oral sub mucous fibrosis is a chronic progressive premalignant disease common in young and low socioeconomic group of Asian countries as the etiological factor like areca nut, gutka etc. are part of their dietary habit. Oral sub mucous fibrosis is commonly associated with the areca nut chewing which is available in different forms like gutka, naswar, betel nut etc. WHO defined this premalignant condition as a" slowly progressive disease in which fibrous bands form a blanched oral mucosa resulting in severe restriction of movement of the mouth associated with significant increased risk of cancer accords well with the characteristics of OSMF. The diagnosis of oral sub mucous fibrosis is made through history and clinical examination which includes oral ulceration, paleness of oral mucosa, burning sensation and presence of fibrous band. The management of OSF is done to improve the symptoms of patient and to give quality life to those patients.

Key words: Premalignant disease, areca nut, gutka

عنوان: زبان کے نیچے ریشہ پیدا ہونا اور گٹکے کا استعمال۔

زبان کے نیچے ریشہ (Oral Sub Mocous Fibrosis) پیدا ہونا ایک پرانی بتدریج بڑھنے والی ابتدائی سرطان کی نشاندہی کرنے والی بیماری ہے۔ یہ بیماری عام طور سے ایشیاء میں غریب افراد میں پائی جاتی ہے۔ علتیاتی طور پر (Etiological) اس کی وجہ کھانے میں سپاری، گٹکا، نسوار وغیرہ کی عادت ہونا ہے۔ عالمی ادارہ صحت (WHO) نے اس ابتدائی سرطان کی حالت کو آہستہ آہستہ بتدریج بڑھنے والی بیماری جس میں زبان کے نیچے ریشہ پیدا ہونا اور جس کے وجہ سے منہ کے کھلنے میں شدید کمی اور منہ کے سرطان کا خطرہ ہو جاتا ہے۔ اس بیماری کے علاج کیلئے مدتوں سے کوشش کی جاری ہے۔ ڈاکٹر اس بیماری کے مریض سرطان کی علامت، پیلا پن، جلن اور جھلی کی موجودگی تلاش منہ میں کرتے ہیں اس بیماری کے علاج کرنے پر مریض کی زندگی بہتر گزرتی ہے اور مرض کے اثرات ضائع ہو جاتے ہیں۔

INTRODUCTION

Nowadays OSF is considered as the most common precancerous white lesion, other white lesions include lichen planus, candidiasis, leukoplakia, sublingual keratosis. Oral sub mucous fibrosis is a chronic progressive premalignant disease common in young and low socioeconomic group of Asian countries as the etiological factor like areca nut, gutka etc. are part of their dietary habit[1,2]. Paymaster was the first who described the premalignant nature of Oral sub mucous fibrosis[3] with highest rate of malignant potential i.e. 7.6%[4]. Later in 1972 Pindborg put forwarded five points to confirm the precancerous nature of oral sub mucous fibrosis which include:

1. High incidence of OSF in oral cancer patient
2. High incidence of oral cancer in patients with OSF
3. Histological evidence of oral cancer
4. High frequency of epithelial dysplasia
5. Higher prevalence of leukoplakia in OSF patients[5].

OSF was first described by Schwartz in 1952 when the disease was first found in Indian women and named it as "atrophic idiopathic mucosae oris" which later was named as oral sub mucousfibrosis, diffuse oralsub mucous fibrosis, idiopathicscleroderma of the mouth, idiopathic palatal fibrosis, sclerosing stomatitis and juxta epithelial fibrosis[3] but later the final name oral sub mucous fibrosis was given by joshi in 1945 due to its histologicalnature[6].

Oral sub mucous fibrosis is commonly associated with the areca nut chewing which is available in different forms like gutka, naswar, betel nut etc.Along with the frequency and durations also plays an important part[4].

1   Department of Oral Pathology. Jinnah Sindh Medical University, Karachi, Pakistan.

2   Department of Oral Surgery, Ziauddin Medical University, Ziauddin Dental University, Karachi, Pakistan.

3   Department of Pharmacology, Ziauddin Medical University, Karachi, Pakistan.

Correspondence: Dr. Humera Akhlaq, Department of Oral Pathology, Jinnah Sindh Medical University, Karachi, Pakistan.

Email: humeraakhlaq@ymail.com

Patient with history of gutka chewing develop OSF at earlier stage than those who are habitual of betel quid[7].

Ghutka is smokeless tobacco and is manufactured in industries contains crushed areca nut, tobacco, catechu, slaked lime and sweet savoryflavorings contains a mixture of powdered tobacco, Arecanut (fruit of areca catechu) and slaked lime (aqueous calcium hydroxide),sandalwood and musk ketones .In a survey it was found that young uneducated people are more addicted to gutka usage .And the relative risk for the development of OSF increases with the usage for more than 4 years with daily consumption greater than 15 times per day Gutka is placed in the buccal vestibule (space between the cheek and the teeth and because of contact for longer duration it stimulates the fibroblast proliferation and increase collagen synthesis and decrease collagen degradation causes hardening of tissues and characteristics white fibrous bands. In Karachi 46% people were habitual ghutka userand the prevalence is more in women than men[8-12].

DEFINITION AND TERMINOLOGY:

Oral sub mucous fibrosis is a chronic inflammatory disease of the oral mucosa defined by Pindborg in 1966 as "an insidious chronic disease affecting any part of the oral cavity and sometimes the pharynx although occasionally preceded by and or associated with vesicle formation and it is always associated with juxta-epithelial inflammatory reaction followed by fibro elastic inflammatory reaction followed by fibro elastic changes of the lamina propria"[4].

WHO defined this premalignant condition as a"slowly progressive disease in which fibrous bands form a blanched oral mucosa resulting in severe restriction of movement of the mouth associated with significant increased risk of cancer accords well with the characteristics of OSMF[6,13].

Schwartz described this disease as a "Atropica Idiopathic (tropica) Mucosae Oris"[14], while Su.I.Pin in 1954 designated the condition as " Idiopathic Scleroderma of mouth"[15] but Pindborg and Sirsat felt that the more appropriate name for this condition was "juxtaepithelial fibrosis"[16]

PATHOGENESIS:

Oral sub mucous fibrosis occurs as a result disturbed equilibrium between the collagen production and collagen degradation leading to increased collagen deposition. habitual gutka user shows OSF at early stage than with traditional betel quid users due to moisture content in it due to which dry contents show increased contact with the mucosa[5]. It may be postulated that ghutka uses intensifies the oral mucosal disorders than increases the risk for cancerous lesions then one who do not consume ghutka. The most widely accepted etiopathogenesis of oral sub mucous fibrosis is that of an autoimmune response, antigen-antibody reaction[11]. Areca nut the content of ghutka contains alkaloids which stimulate fibroblasts and hence increase collagen deposition also the trauma caused from ghutka chewing causes inflammation which releases growth factors which leads to increased deposition of collagen and leads to OSF[1].

CLINICAL FEATURES:

Oral sub mucous fibrosis is a chronic, progressive premalignant diseases which is characterized by inflammation and progressive fibrosis of lamina propria[12]. The prodromal symptom include a petechaiea formation due to vascular dilation, burning sensation in the mouth when consuming spicy food, appearance of blisters specially in the palate and also generalized inflammation which results in excessive salivation.At later stages fibrotic bands appear on the mucosa and run in the vertical direction and involves the mucosa symmetrically[3]. The fibrosis may also extend from the anterior pillars into the soft palate as White interlacing strands[12].

As the fibrosis involves the lamina propria and the submucosa and extend into the underlying musculature resulting in deposition of dense fibrous band which is the hallmark of the disease and leads to the limited mouth opening[1]. With the progression of disease the mucosa becomes blanched and opaque with the appearance of white fibrous bands which involve mucosa bilaterally and are found most commonly in the buccal mucosa running in a vertical direction[3]. The anatomical and physiological integrity of the underlying musculature and the duration of disease determine the extent of trismus .Millard mentioned a nasal voice as one of the later signs[4]. Protrusion of tongue may be impaired when tongue is involved[7]. The cheeks may have mottled marble appearance with normal reddish mucosa and the floor of the mouth becomes pale and thickened. Patient also complains to dysphagia as a result of extension of fibrosis towards the esophagus[12]. Pain in ear is also a feature but it is not commonly encountered and occurs due to loss of auditory acuity due to stenosis of the pharyngeal end of the Eustachian tubes[12].

STAGES:

1. In 1955 a classification of oral sub mucous fibrosis was given by *Khanna* according to the surgical management of trismus.

Group 1: It is the initial stage and is not associated with limited mouth opening with interincisal opening greater than 35mm.
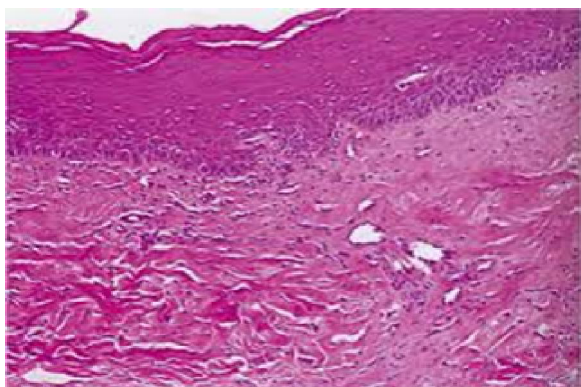
Fig 1: Histological presentation of OSF

Fig 2: Presence offibroticbands on buccal mucosa.

Fig 3: Patient with of limited mouth
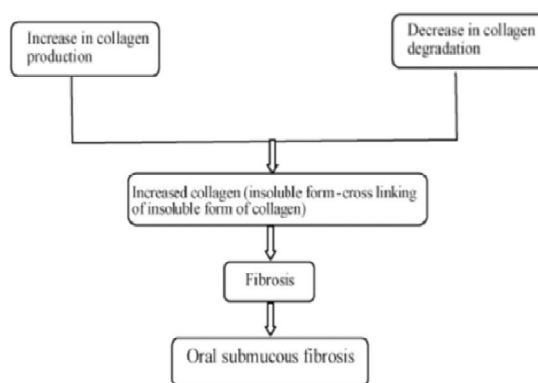
Flow Chart: 1 Showing Pathogenesis of OSF
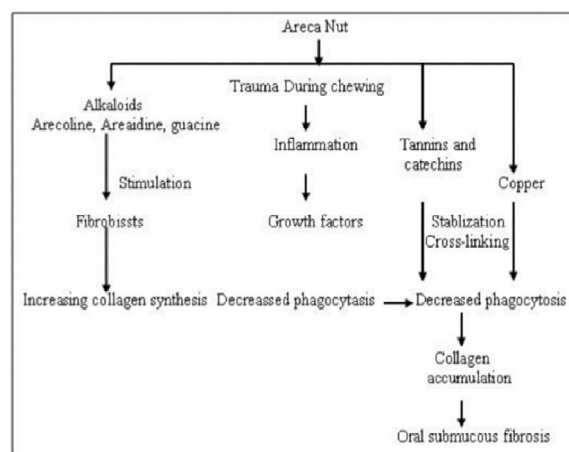
Flow Chart: 2 Showing Pathogenesis of OSF

Group 2: Involves patient with interincisal opening 26-35mm.

Group 3: Patient in this group starts developing fibrotic bands on soft palate, pterygomandibular raphe and anterior pillar of fauces with interincisal opening between 15-26mm.

Group 4a: Trismus is severe with interincisal opening less than 15mm.

Group 4b:Severe cases with development of premalignant lesion in the mucosa[12].

Bhatt AP and Dholakia HM classify patient into three different groups according to clinical features in 1971.

Grade 1: Compromised of mild and early cases with a very slight fibrous bands and little closer of mouth.

Grade 2: moderately pronounced symptoms of the diseases with fibrosis banding extending from cheek to palatal area.

Grade 3: markedly excessive amount of fibrosis banding involving cheek , palate, uvula, tongue and lips and restricting the opening of mouth[18].

Naidu SM et al in 2000 gave staging according to the clinical and functional basis:

A. Clinical staging

    Stage 1- faucial bands only
    Stage 3- faucial and labial bands

B. Functional staging:

    Stage a: mouth opening 13-20mm
    Stage b: mouth opening 11 − 10mm
    Stage c mouth opening less than 10mm[18]:

In *1989 , Pindborg* divided oral sub mucous fibrosis into three different stages on the basis of their clinical appearance :

Stage 1: stomatitis including erythematous mucosa, vesicle, mucosal ulcer, mucosal pigmentation, and mucosal petechaie.

Stage 2: Fibrosis occurs in ruptured vesicles and ulcers when they heal and that's the hallmark of the stage.

Stage 3: Involment of tongue and Eustachian tube.[12]
In *1993 baillor DN* described the criteria for OSF severity:

Grade 1: mild OSMF: Mild blanching with no restriction on mouth opening, no restriction in tongue protrusion.

Grade 2 moderate OSMF: moderate to severe blanching with 33% reduction in mouth opening and tongue protrusion along with burning sensation and palpable bands and positive lymph nodes.

Grade 3 severe OSF: sever burning sensation, patients daily routine work is affected with more than 66% reduction in mouth opening, tongue protrusion and cheek flexibility. patients in this grade also present with ulcerative lesions and fibrotic bands with positive Lymph nodes bilaterally[4].

Connective tissue changes divided into four different stages:

Very early stage: it is characterized by a finely collagen dispersed with marked edema. Inflammatory cells mainly polymorph nuclear leucocytes with occasional eosinophils are present with dialed and congested blood vessels.

Early stage: hyalinization is seen in juxtaepithelium with separate thick collagen bundles. Inflammatory cells mostly found are mononuclear lymphocytes, eosinophils and occasional plasma cells.

Moderately advanced stages: the collagen is moderately hyalinized and thickened. Collagen bundles are separated by residual edema. Adult fibroblasts are seen in this stage with constricted blood vessels. Plasma cells and lymphocytes are present.

Advanced stage: the collagen is completely hyalinized and is seen as a smooth sheet without separate bundle and discernable edema. Hyalinized areas are devoid of fibroblast. Blood vessels are narrowed and completely obliterated[10].

DIAGNOSIS:

The diagnosis of oral sub mucous fibrosis is made through history and clinical examination which includes oral ulceration, paleness of oral mucosa, burning sensation and presence of fibrous band involving the buccal mucosa bilaterally and running in a vertical directionwhich lead to limited mouth openingis the main diagnostic feature of oral sub mucousfibrosis[19,20]. The interincisalopening describes the severity of the disease[1]. But some investigations are used to confirm the diagnosis like:

Complete hemogram
Toluidine blue test
Biopsy-incisional biopsy (for histopathological assessment)[12].

The biopsy specimen is taken from the mandibular margin of the lower second molar to avoid misinterpretation for frictional keratosis[18]. The presence of slightly hyperplastic epithelium with numerous dilated and blood filled capillaries juxta-epithelially and inflammatory cells confirm the diagnosis of oral sub mucous fibrosis[3].

Following are the criteria for diagnosis of OSF on clinical ground:

1. Varying degree of burning sensation
2. Limited mouth opening
3. Presence of pallor on oral mucous membrane
4. Presence of palpable fibrous bands

MANAGEMENT:

1. MEDICAL MANAGEMENT:

Oral sub mucous fibrosis can be prevented by the reduction or elimination of habit like betel nut chewing, arecanut chewing in the form ofghutkaor mawa.Oral sub mucous fibrosis is an irreversible phenomena and there is no satisfactory treatment for OSF but management can be done to reduce the severity or symptoms of patient which include:

Nutritional support like increase intake of protein and vitamin B complex.

Increased ingestion of iodinated salt

Glucocorticoids application

Local application pf placental extract

Physiotherapy like forceful mouth opening through placement of sticks

Heat therapy through hot rinses,Luke warm water or selective deep heating therapies[6].

2. SURGICAL MANAGEMENT:

Surgical treatment for oral sub mucous fibrosis is done to improve the mouth opening of a patient. Through

surgical procedure mouth opening can be improved but not cured. The surgical options include:

Excision of fibrous band[6]
Split thickness skin grafting
Nasiolabial flaps
Lingual pedicle flaps[10]

DISCUSSION

Oral sub mucous fibrosis is the most commonly found white lesion in the South Asian population[1], with high rate of malignant transformation[4]. Rana et al also found OSF as the most common lesion in the people of Pakistan which was further supported by the study done at DIKIOHS in 2013 in which 59.6% patients with white lesions were diagnosed with Oral sub mucous fibrosis[1]. The etiology of OSF is unknown but researches have shown that several factors contribute to the development of OSF. The single most common and strongest risk factor for Oral sub mucous fibrosis if areca nut chewing in the form of *mawa* or *ghutka* .In a study done in DIKIOHS all patient suffering from oral sub mucous fibrosis had a history of arecanut chewing[1]. Caniff et al and Pindborg stated OSF as a result of hypersensitivity reaction due to capsaicin which is an ingredient of chilies[22], which causes fibrosis as a result of chronic inflammation due to continuous trauma to the oral mucosa[23] but nutritional deficiency also contribute to the development of OSF as these patients show same mucosal changes like OSF[21]. other etiological factors include ghutka chewing, pan masala habits , genetic influence are also factors causing OSF. People who chew ghutka develops OSF more frequently than who use pan or betel quid as betel quid weighs 3.5-4 gm contains more moisture content that is 70% and less dry content i.e. 1.14gm of areca nut whereas in ghutka there is more dry weight than moisture content i.e. for 3.5 gm it has 7% moisture content and 3.26gm dry weight[7]. And people who use pan are being protected by a betel leaf which contains beta carotene and hydroxychavicol which are antioxidants and protect mucosa from the toxic substance[7]. The other reason is that due to more dry content of areca nut in ghutka people are more addicted to it and consumes more amount of areca nut in the form of ghutka than others and the style of ghutka consuming plays an important role in the development of OSF as it is placed in buccal mucosa so causes micro trauma to mucosa due to whicharecanut gets easily absorbed and causes fibrosis of the mucosa. The effect of arecanut becomes more intense when used in the form of mixture (ghutka)[7]. Above flow chart shoes the effect of ghutka on mucosa. As ghutka contains fine grains which traumatized the

oral mucosa mechanically as well as chemically leads to morphologic changes in it. Along with ghutka chewing, nutritional deficiency plays a synergetic role as deficiency of vitamins and irons disturbs the inflammatory response which leads to impaired healing and eventually OSF. The frequency as well as duration plays important role, in a study by Ahmad et al 74.5% people placed ghutka for 2 to 10 minutes[7]. Oral sub mucous fibrosis is an irreversible disease so the main goal of management is to either slow down the progression of disease or symptomatic treatment to improve the quality of life. The most important part of the management is counselling of the patient for reduction or cessation of the habit. Along with this nutritional support like increase ingestion of iodinated salt or its local application, Vit B complex, Vit E also protects the oral mucosa. Fibrosis is also reduced by local application of placental extract and glucocorticosteroids as they reduce the collage production by inhibiting the fibroblastic activity. The collagen of patients with OSF is more prone to the activity of hyaluronidase as compare to collagen of normal person so local application of hyaluronidase is also favorable as it reduces the viscosity of the intercellular cement substances and reduces the formation of collagen. All these methods are for improving the patient's symptoms and reduces the progression of disease. In severe cases surgical management is required. (3)High success rates can be produced by combined therapy of peripheral vasiodilators, vitamic D, E and B complex, iodine, placental extract, local and systemic corticosteroids and physiotherapy[24,25].

CONCLUSION

Oral sub mucous fibrosis is an irreversible disease and is seen in young people with low socioeconomic level. There is no definite treatment for this disease so preventive measures should be taken to limit the prevalence of this disease which include the banning of the items which causes OSF like ghutka, pan masala, betel quid etc. and also by educating the people about it. One way to limit the use of these products is by increasing their prices so that people can't afford to have it.The management of OSF is done to improve the symptoms of patient and to give quality life to those patients. The drugs are usually administered either orally or intralesional but intralesional method is preferred for the administration of drug and it increases the concentration of the drug locally but repeated injection causes fibrosis due to trauma to the submucosa blood vessels which causes release of hemosiderin which stimulate fibroblast.

References

1. Maqsood A, Aman N, Chaudhry MAD, Oral white lesions: presentation and comparisons of oral sub mucous fibrosis with other lesions. J Coll Physicians Surg Pak. 2013;23(12):870-3

2. Krishnamoorthy B, Khan M. Management of oral submucous fibrosis by two different drug regimens: A comparative study. Dent Res J. 2013;10(4):527-32.

3. Rajendran R. Oral sub mucous fibrosis: etiology, pathogenesis, and future research. WHO Bullentin OMS. 1994;72(6): 985-96.

4. Reddy V, Wanjari PV, Banda NR, Reddy P. oral sub mucous fibrosis: correlation of clinical grading to various habit factors. Int J dent clin . 2011;3(1):21-4.

5. Guta MK, Mhaske S. Oral submucous fibrosis: Current concepts in etioathogenesis. People' s J Sci Res. 2008;1:39-44.

6. Angadi PV, Rao S. Management of oral submucous fibrosis: an overview. Oral Maxillofac Surg. 2010;14(3):133-42.

7. Javed F, Chotai M, Mehmood A, Almas K. Oral mucosal disorders associated with habitual gutka usage: a review. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2010;109(6):857-64

8. Dhumal GG, Gupta PC. Assessment of ghutka ban in Maharashtra: findings from a focus group discussion, International Journal Of head and neck surgery. 2013;4(3):115-118

9. Bathi RJ, Praveen S, Burde K, Quintessence International; 2009:40(6)

10. Tanwir F, Akhlaq H. Oral submucous fibrosis: a deliberating disease of oral cavity. Iranian J of Pathol, 2011;6(4):165-7

11. Mundra RK, Gupta SK, Gupta Y. Oral submucous fibrosis in paediatric age group. Indian J Otolaryngol Head Neck Surg 1999;51(3):60-2.

12. Sabharwal R, Gupta S, Kapoor K, Puri A, Rajpal K. Oral submucous fibrosis-A review. J Adv Med Dent Sci Res. 2013;1:29-37.

13. Shafer WG. Hine MK, Levy BM. A Textbook Of oral pathology. 4th edition. Elsevier Saunders 676-87.

14. Shah N, Kumar R, Shah MK. Immunological studies in oral submucous fibrosis. Indian J Dent Res. 1993;5(3):81-7.

15. Su IP. Idiopathic scleroderma of the mouth: Report of three cases. Arch Otolaryngol. 1954;59(3):330-2..

16. Sisrat SM. Pinborg JJ. Mast cell response in early and advanced OSMF. Acta Pathol Microbiol Scand. 1966; 70(2) 174-8.

17. Deshmukh SN. Dive AM. Oral submucous Fibrosis-Review. Indian J Appl Res. 2015; 5(3): 382-5.

18. Navadagi S. Gutkha in Oral Submucous fibrosis and effect of turmeric on OSMF-A histopathological study in experimental animal [dissertation]. Bangalore: Rajiv Gandhi Uni Health Sci. 2005.

19. Gupta MK, Mhaske S, Ragavendra R, Imtiyaz. Oral sub mucous fibrosis- current concept in etiopathogenesis. People's J Scient Res;2008:1:39-44

20. Murti PR, Bhonsle RB, Gupta PC, Daftary DK, Pindborg JJ, Mehta FS. Etiology of oral sub mucous fibrosis with special reference to the role of areca nut chewing. J Oral Pathol Med. 1995;24(4):145-52.

21. Supadminidevi G, Jayanthi K, Shah B, Kamala R. Evaluation between betel quid and pan masala/ghutka habitual chewers with OSMF. World J Dent. 2012 Jan;3:37-40.

22. Jayanthi V, Probert CS, Sher KS, Mayberry JF. Oral submucosal fibrosis--a preventable disease. Gut. 1992; 33(1):4-6.

23. Ahmad MS, Ali SA, Ali AS, Chaubey KK. Epidemiological and etiological study of oral submucous fibrosis among gutkha chewers of Patna, Bihar, India. J Indian Soc Pedod Prev Dent. 2006;24(2):84.

24. Rajendar R. Oral submucous fibrosis. J Oral Maxillofac. Pathol. 2003;7(1):1-4

25. Dyavangoudar SN. Oral submucousfibrosis : Review on etiopathogenesis .J Cancer Sci Ther. 2011 Jun 17; 2009.

- - - - - -

RESPONSIBILITY OF THE INSTITUTIONS & ORGANIZATIONS

All institutions and organizations are responsible to apprise their students, teachers, researchers and staff of the definition, implications and resulting punishments in case, after due investigation, they are found guilty of plagiarism. The institutions / organizations must acquaint their students, teachers, researchers and staff with this policy and ensure that they are fully aware that all authors are deemed to be individually and collectively responsible for the contents of papers published by Journals / Publishers etc. Hence, it is the responsibility of each author, including the coauthors, to ensure that papers submitted for publication should attain the highest ethical standards with respect to plagiarism. To facilitate the institutions / organizations in creating awareness about Plagiarism, a modified version of "Little Book of Plagiarism", a publication of Leeds Metropolitan University is appended as "Annexure" to this policy. Any University or Degree Awarding Institution which does not adopt and implement this policy will have its degree derecognized by HEC.

SPECIAL REPORT

Provision of Effective Feedback to Undergraduate Health Sciences Students

Rizwan Ullah[1], Anita Shah[1] and S.M. Kefi Iqbal[2]

ABSTRACT

Feedback is a neutral description of learners' on going performance. The objective of feedback is to bridge the gap between the present and the standard performance of the learner and act as guide to improve the future performance. Effective feedback provision is an important and challenging part of the health sciences education. Properly delivered feedback is an important area that enhances the professional performance through progression in knowledge and skills of the learners and improves overall student experience at the institution. Feedback in our educational system is not still significant; therefore, need to be improved in a way to highlight the significance and importance to enhance the productive quality of feedback.

Key Words: Feedback, Effective feedback, Feedback barriers.

عنوان: میڈیکل کے طلبہ میں کارآمد تعامل (Feedback) کے اہتمام کی ضرورت۔

تعامل (Feedback) طلباء کی کارکردگی کے بارے میں ایک غیر جانبدار تبصرہ ہے۔ جس کا مقصد موجودہ اور مستقبل کی کارکردگی کو بہتر بنانا اور معیاری کارکردگی کا حصول ہے۔ موثر تعامل کی فراہمی طبی تعلیم ایک اہم جزو ہے۔ معیاری تعامل نہ صرف طالب علم کے سیکھنے اور پیشہ وارانہ کارکردگی میں اضافے کا باعث بنتا ہے بلکہ مجموعی طور پر ادارے میں طالبعلم کے تجربے کو بہتر بناتا ہے۔ ہمارے تعلیمی نظام میں تعامل کو قابلِ ذکر حصہ نہیں دیا گیا ہے۔ اس لیے تعلیمی معیار کو بڑھانے کے لئے اس کی اہمیت کو اجاگر کرنے کی ضرورت ہے۔

INTRODUCTION

Feedback is a tool to improve the teaching and learning process and it becomes the "cornerstone" of the effective healthcare education when used in an appropriate manner which helps the students to recognize and reflect upon their current progress and enables them to achieve the desired professional competence[1,2].

The term feedback is defined in a variety of ways.

Merriam-webster dictionary the most trust worthy English online dictionary defines feedback as "Helpful information that is given to someone about the product or performance and what can be done for further improvement"[3].

According to Sargeant *et al.* feedback is defined as an interactive process in which "Provision of information is through the peer, tutor etc. regarding aspects of learner understanding and performance". The aim is to provide the learner information that they can use to narrow the gap between the desired and actual performance[4].

In medical education setting feedback is referred as "Information about the learner performance in a specific assignment or activity that is designed or planned to improve learner's achievement in the same or related activity"[5].

Incorporation of effective feedback provision into our educational programs is necessary to gain the maximum benefits listed in Table 1[5-8].

According to Hattie *et al.* the feedback must covers at least three of the following areas[9].

1. The tasks, goals and performance should be accomplished by the learner according to the design of the feedback.
2. Achievement of goals based on progress of learner.

3. How to improve the performance and setting the new directions that are needed for achieving the intended goals.

These above areas in an effective feedback are mentioned as feed up, feedback and feed forward. When the feedback session is directed at right level by answering these areas with provision of opportunities

Department of Oral Biology[1]/ Department of Dental Materials Science[2], Jinnah Sindh Medical University, Karachi, Pakistan.

Correspondence: Dr. Rizwan Ullah, Department of Oral Biology, Jinnah Sindh Medical University, Karachi, Pakistan.

Email: rizwan.ullah@jsmu.edu.pk

to the learner to reflect and act on the feedback. There is an acceleration and enhancement in the learning process and reduction in the difference between the current performance and the desired goals[9].

Among the above mentioned areas the goal setting must be done prior to start of the course and should be set mutually by the learner and the tutor as feedback and feedforward depends on initial goal setting[10].

Feedback that is delivered effectively gives the learners an opportunity to understand the targeted solution in regard to the good performance and learning compared to the already set goals or standards and provide them an opportunity to plan an action plan in light of the guidance for further improvement. Once the learner feel that he/she has a control on his/her own learning this becomes the motivational factor for improvement in student learning[11,12].

Academy of medical educators (AoME) 2014, highlighted the importance of feedback and the essential values of medical educators and also defined the professional standards of teaching to medical and allied health sciences (13) The core competencies are summarized in Figure 1

Among all the above mentioned standards specified by the Academy of Medical Educators the core value which is "Teaching and facilitating the process of learning". According to which "the tutor must recognize the importance of feedback provision (using variety of methods) and answering actively which is recognized as a chief element of this core value"[13].

1. Feedback models

Feedback can be categorized into the following models.

a. Negative or Orthodox feedback

It is a frequent type which does not provide the learners' strategy or direction for improvement of skills and clinical performance that is more personal in nature and it undermines the self-confidence and motivation of learner[5,10,14]. In this feedback model the leaner is either not or rarely acknowledged by positive response in terms of appreciation but discouragement is common in form of frequent criticism (Figure 2)[10].

The student morale, confidence and learning are affected by the fear of negative feedback which gives an impression of negativism[6,10].

a. Reinforcing feedback

This category of feedback is also known as positive feedback which provides immediate, relevant and confidential support to the learner and also increases the confidence level and motivation which helps the

leaner to achieve the desired goals[6,15]. In constructive feedback the learner is appreciated for effortful performance and specific criticism is made on areas that requires correction (Figure 3)[5].

2. Models of Effective feedback delivery

There are various models for feedback provision. The simplest of these are the Feedback Sandwich and PEARL model.

A. Feedback Sandwich

The Feedback sandwich (providing positive-negative-positive comments) is a technique in which the tutor begins the discussion with positive comments in order to maintain the learner's esteem followed by some critique or corrective suggestions and ends up the session with a positive statement[16,17].

To build the trust, comfort of the learner and easier delivery of negative feedback or criticism are among the basic advantages of using this technique[18].

It is considered as less effective because the balancing effect and the problem related to the sandwich technique may focus more on positive rather than negative information, secondly if the learner has done a serious error use of sandwich technique in that circumstances may weaken the main feedback message[17-19].

B. Feedback PEARLS

Milan and coworkers suggested PEARLS technique based on skill, strategies used in clinical communication that can be applied for the provision of feedback[19,20].

PEARLS is a mnemonic for[20]

Partnership for joint solution of problems.

Empathic understanding.

Apology to the hurdles in the way of learners' success.

Respect for the choices and values of the learner

Legitimacy of the feelings and intentions.

Support for efforts at correction.

It builds trust and conveys empathy between the tutor and the learner. Therefore, creates a supportive environment for feedback session[20].

3. Guidelines for Effective feedback

The following are the guidelines to describe the effective feedback delivery.

Well Planned

It should be well planned from the beginning and all the core objectives in terms of learning objectives,

Figure : Essential values for Medical educators.
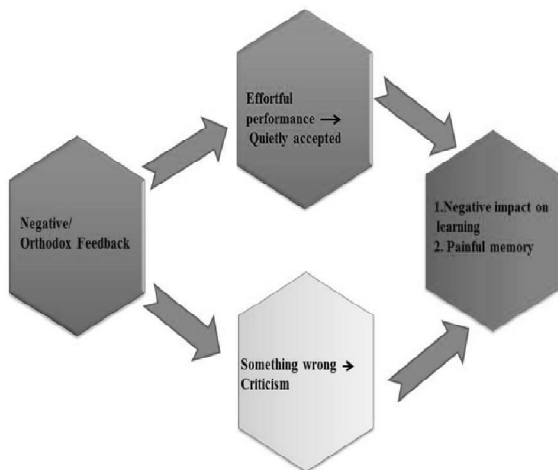
Figure : Negative or orthodox feedback.
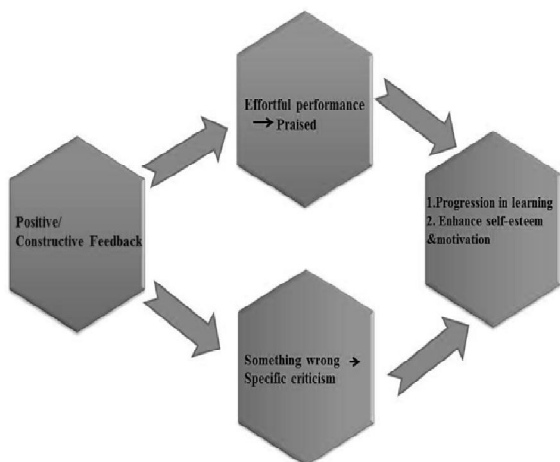
Figure : Constructive or Positive feedback.

Table 1: Benefits of feedback provision

Learner	Helps the learner to reflect on their weaknesses.
	Reinforcement to the strengths of the learner.
	Increases the problem solving and judgment skills.
	Motivation and subsequent higher learning and achievement.
Tutor	Personal and Professional development.
Program/ Institution	Promotes communication, collaboration and teamwork.
	Improvement in the standard of healthcare.
	Production of knowledgeable healthcare professionals.

standards and targets should be clear and focus on the evaluation and performance. The learner background, personality and response must also be considered to make feedback effective[5,10].

Respectful

The tutor must choose non-judgmental, positive language, good tone and word choice. It is important to create the encouraging environment for the learner in which the learner actively seek and utilize feedback message[10,11,21,22].

Timely

To build the consensus between the tutor and the learner to make the delivery system more effective and should not be dictated by either of the two, especially in health sciences education which is more based on the acquisition of facts, new skills or tasks for feedback to make more effective[11,23]. If delayed feedback is provided then the learner will not take much notice and will not remember what he/she is trying to achieve[9,14,24].

Prioritized/Specific feedback

In order to make feedback effective instead of discussing too many issues in one session, one or two specific key issues would be enough to be discussed in each feedback session because if the feedback is not specific the information will be overwhelming for the learner[22,25].

Clear Presentation

It is important in order to make the feedback effective that it must be clear either in written or oral form. The contents of the feedback should be clear, precise, relevant and elaborated without any ambiguities so the learner can understand the information provided as you intend it. Feedback should be provided by a trained tutor with brief explanation that is relevant and specific to the learner so the learner can clearly understand, accept and appropriately act on the feedback[10,11,25,26].

Mode

Feedback can be effectively delivered in a variety of different form that includes oral feedback which is either one to one, small or large group situations, written feedback that is either handwritten or through the use of electronic technology or demonstrations[11,14,27].

However, written feedback which is considered as one of the most important mode as compared to oral feedback which provides the information about the level of progression and also provides an opportunity to review the feedback of the learner according to the need[11,27].

Balanced

"No one can do everything good" keeping this mind the tutor should use positive comments in the beginning of the feedback session to describe what the learner is doing well together with some negative description of work with positive suggestions for improvement of the learner[11]. Ideally all the information presented to the learner should be typically direct observation of tutor rather than based on information provided by somebody else[5,23].

Privacy

The effectiveness of feedback is highly dependent on the environment in which it is provided. The relaxed environment has advantage as an individual feedback setting is specific to the learner needs and will be of maximum benefit provides a sense of confidentiality and safety contrary to a place with constant interruption that will be stressful for both the tutor and the learner. With the privacy allocation of sufficient time and space is also important as it promotes active involvement of the learner (two way transfer of information) rather than a process that is tutor driven (one-way discussion). Two way communication also helps the tutor to improve the teaching process[10,11,14].

Development of an Action Plan

Development of an action plan or feed forward is an important extension of the feedback process that includes specific recommendations and suggestions for the learner to minimize the gap between the current and desired performance[28].

Feedback follow-up

The primary aim of this process is to improve the skills of the learner so the follow up must be on going and in consultation with the learner in order to review the progress. Although it is important to highlight the areas that need improvement and also equally important to reinforce learners' skills. Documentation of each session should be done for future follow up and give the sufficient time before the next meeting. This not only reinforces the value of the feedback but also gives an opportunity to the learner for self-reflection[23,27].

Barriers to Feedback Delivery and Utilization

Effective feedback delivery has a powerful influence on student learning. Practically, there are a number of impediments that prevent feedback provision and utilization. Identification of these barriers to feedback provision which are present at individual (Tutor and Learner) and institution level is essential in order to overcome these barriers. Some of them are briefly summarized below.

Feedback provided by the tutors in clinical setting is usually not timely and generic due to busy schedule or complexity of the academic, research, administrative and the clinical work load of the tutors[10,16,27,28]. Fear of undermining the learner self-esteem, future uncomfortable relationship, not enthusiastic, inadequate training and lack of motivation or negative repercussions like poor evaluation of tutor by the learner may influence the quality[7,10,28,29]. Behavioral factors like lack of self-reflection including personal attitude, defensiveness, favoritism and resistant behavior which are the barriers to both delivery and utilization of feedback[10,30]. The tutor do not know how a particular learner will respond to feedback and the learner might not value the provided feedback information[5,28,31].

In order to overcome emotional exhaustion hostile verbal and nonverbal behavior that results from supervisory abuse the learner will start feedback avoidance in order to avoid further abusive encounters[31].

Cultural factors may impede feedback delivery and utilization, for example: In some cultures learners consider feedback equivalent to criticism, emphasis the respect of learner towards their tutor may sometime create an environment that could inhibit opinion expression by the learner and thus become a barrier in feedback utilization, communication barrier/ language difficulties are also reported as a possible barrier in utilization of feedback[30,32,33].

The program is structured in a way that the emphasis is on assessment process or lack of clear system that the tutors are unable to give appropriate feedback to the learners[34,36].

The key factor of feedback is the information or data.

Sometime it is difficult to get the proper data due to number of factors including inappropriate ratio between staff and the students. Therefore, the learner performance is difficult to obtain for the tutor and that results in difficulty in provision of feedback. The unsupportive environment or culture of the institution including biasness or favoritism may impede the feedback seeking and utilization[34,37,38].

Conclusion and Recommendations

The ultimate goal of feedback provision is successful achievement of predetermined skills, attitude and behaviors by the learner and to groom them into a safe, independent and expert health care provider and researcher which cannot be accomplished in the absence of effective feedback.

In our observation the most of the currently running undergraduate programs in the country are focused on assessment in form of logbooks, workbooks, gradebooks, attendance, disciplinary, psychological / personal records, whereas feedback delivery within the programs is either blurred or overlooked.

In order to gain the maximum benefits following suggestions are summarized as described by the various authors.

i. High quality learning only take place when feedback becomes the integral part of teaching and learning process by making it primary part of the curriculum in a well aligned pattern.

ii. Faculty development / quality assurance programs especially for the clinicians who are not trained educators and often consider evaluation as feedback. The key objective is to achieve the different modalities by enhancing and closely monitoring the provision of the feedback.

iii. Proper Receiving and utilizing feedback is as important. Therefore, It is important to encourage and empower our learners with skills that are needed to be received and utilize feedback delivery system.

iv. Undergraduate education is one of the important stages of learners' training. It is the mutual responsibility and best in the interest of the institutions, tutors and learners to value feedback culture and strive together to overcome the barriers that are in way of effective feedback provision.

v. Feedback should be provided by the person who is experienced enough and in a position to make a direct valid observation of the learner's performance rather than the person having the highest position in an institution.

References

1. Stengelhofen J. Teaching students in clinical settings. Springer; 2013.
2. Archer JC. State of the science in health professional education: effective feedback. Med educ 2010; 44(1):101-8.
3. Feedback. Merriam-Webster.com 2016 [cited 2016 27-1-2016].
4. Sargeant JM, Mann KV, van der Vleuten CP, Metsemakers JF. Reflection: a link between receiving and using assessment feedback. Adv Health Sci Educ Theory Pract. 2009;14(3):399-410.
5. Dent J, Harden RM. A Practical Guide for Medical Teachers: Elsevier Health Sciences UK; 2013.
6. Wells L, McLoughlin M. Fitness to practice and feedback to students: a literature review. Nurse educ pract. 2014;14(2):137-41.
7. Altmiller G. The role of constructive feedback in patient safety and continuous quality improvement. Nurs Clin North Am. 2012;47(3):365-74.
8. Nottingham S, Henning J. Feedback in clinical education, part I: Characteristics of feedback provided by approved clinical instructors. J J Athl Train. 2014;49(1):49-57.
9. Hattie J, Timperley H. The Power of Feedback. Rev Educl Res. 2007;77(1):81-112.
10. Clynes MP, Raftery SEC. Feedback: An essential element of student learning in clinical practice. Nurse educ pract. 2008;8(6):405-11.
11. Brookhart SM. How to give effective feedback to your students. ASCD; 2008.
12. Conaghan P, Lockey A. Vom Feedback "zum Feedforward". Notfall + Rettungsmedizin. 2009; 12(2):45-8.
13. Professional Standards for medical, dental and veterinary educators: Academy of Medical Educators; 2014 [cited 2014]. 3rd:[Available from: http://www.medicaleduc ators.org/index.cfm/linkservid/1A667ECF-EE53-7D4A-A6E0FC3B95EF2617/showMeta/0/.
14. Carr SE, Siddiqui ZS, Jonas-Dwyer D, Miller S. Enhancing feedback for students across a health sciences faculty. 2013.
15. Ellis R. Corrective Feedback and Teacher Development. L2 Journal. 2009;1(1):3-18
16. Anderson PA. Giving feedback on clinical skills: are we starving our young? J Grad Med educ. 2012;4(2):154-8.
17. Kogan JR, Conforti LN, Bernabeo EC, Durning SJ, Hauer KE, Holmboe ES. Faculty staff perceptions of feedback to residents after direct observation of clinical skills. Med educ. 2012;46(2):201-15.
18. Parkes J, Abercrombie S, McCarty T. Feedback sandwiches affect perceptions but not performance. Adv Health Sci Educ Theory Pract 2013;18(3):397-407.
19. Schartel SA. Giving feedback - an integral part of education. Best Pract Res Clin Anaesthesiol. 2012; 26(1):77-87.
20. Milan FB, Parish SJ, Reichgott MJ. A model for educational feedback based on clinical communication skills strategies: beyond the "feedback sandwich". Teach Learn Med. 2006;18(1):42-7.

21. Shrivasta SR, Shrivasta PS, Ramasamy J. Effective feedback: an indispensable tool for improvement in quality of medical education. J Pedagogic Dev. 2014.

22. Norcini J, Burch V. Workplace-based assessment as an educational tool: AMEE Guide No. 31. Med Teach. 2007;29(9):855-71.

23. Bienstock JL, Katz NT, Cox SM, Hueppchen N, Erickson S, Puscheck EE. To the point: medical education reviews—providing feedback. Am J Gynecol Obstet .196(6):508-13.

24. Evangelinou-Yiannakis A. 8 - Improvements to formative feedback: views of staff and students A2 - Nair, Chenicheri Sid. In: Mertova P, editor. Enhancing Learning and Teaching Through Student Feedback in Social Sciences: Chandos Publishing; 2013.p. 171-99.

25. Shute VJ. Focus on formative feedback. Rev Educ Research. 2008;78(1):153-89.

26. Connor DM, Chou CL, Davis DL. Feedback and remediation: reinforcing strengths and improving weaknesses. InRemediation Med Educ 2014 (pp. 249-263). Springer New York

27. Fowler P, Wilford B. Formative feedback in the clinical practice setting: What are the perceptions of student radiographers? Radiography. 2016;22(1):e16-e24.

28. Kogan JR. How to Evaluate and Give Feedback. In: Roberts WL, editor. The Academic Medicine Handbook: A Guide to Achievement and Fulfillment for Academic Faculty. New York, NY: Springer New York; 2013. p. 91-101.

29. McQueen SA, Petrisor B, Bhandari M, Fahim C, McKinnon V, Sonnadara RR. Examining the barriers to meaningful assessment and feedback in medical training. Am J surg. 2016;211(2):464-75.

30. McKimm J. Giving effective feedback. Clinical Teaching Made Easy: A Practical Guide to Teaching and Learning in Clinical Settings. 2010:41-50.

31. Whitman MV, Halbesleben JRB, Holmes O. Abusive supervision and feedback avoidance: The mediating role of emotional exhaustion. J J Organ Behav. 2014;35(1):38-53.

32. Nair CS, Mertova P. 7 - Approaches to Student Feedback in the Health and Medical Sciences. Enhancing Learning and Teaching Through Student Feedback in Medical and Health Sciences. Oxford: Chandos Publishing; 2014. p. 123-7.

33. Broquet KE, Punwani M. Helping international medical graduates engage in effective feedback. Academic psychiatry. Acad Psychiatry. 2012 Jul 1;36(4):282-7.

34. Fry H, Ketteridge S, Marshall S. A Handbook for Teaching and Learning in Higher Education: Enhancing Academic Practice: Taylor & Francis; 2008.

35. Burgess A, Mellis C. Feedback and assessment for clinical placements: achieving the right balance. Adv Med Educ Pract. 2015;6:373.

36. Al-Haqwi AI, Al-Wahbi AM, Abdulghani HM, van der Molen HT. Barriers to feedback in undergraduate medical education. Male students' perspective in Central Saudi Arabia. Saudi Med J. 2012;33(5):557-61.

37. Hounsell D, McCune V, Hounsell J, Litjens J. The quality of guidance and feedback to students. Higher Educ Res Dev. 2008;27(1):55-67.

38. Lefroy J, Watling C, Teunissen PW, Brand P. Guidelines: the do's, don'ts and don't knows of feedback for clinical education. Perspect Med Educ. 2015;4(6):284-99.

ASSOCIATION FOR EXCELLENCE IN MEDICAL EDUCATION (AEME) CONFERENCE 2017

AEME 2017 is being organized and co-hosted by Aga Khan University and Jinnah Sindh Medical University, Karachi, Pakistan. **March 03-05, 2017, Karachi, Pakistan.**

Who Should Attend ?

All individuals belonging to the health professions of education community-deans, heads of medical, dental, nursing and allied health institutions, clinical and basic scientists, government and policy makers, education administrators.

The conference will feature inter-professional viewpoints across the health care profession. Participants from pharmacy, veterinary, medicine, dentistry, nursing, physical therapy, social work and other allied profession should also make it a point to attend.

For further information please visit "**www.ae-me.org**".

CASE REPORT

Congenital Recto-Vestibular Fistula with Colonic Atresia and Colo-colic Fistula

Naima Zamir[1] and Jamshed Akhtar[1]

ABSTRACT

The association of the imperforate anus with colonic atresia is a rare entity. We are presenting a case with such an association in female patient who also had colo-colic fistula. The anomaly was not suspected preoperatively. The anorectal malformation was of intermediate type and primary anorectal pull through was planned. Presence of septate vagina and abnormal position of vestibular fistula lead to change in the plan of surgery and laparotomy was done which revealed colonic atresia with colo-colic fistula.

Key words: Imperforate anus , Colonic atresia, Rectovestibular fistula, Congenital colo-colic fistula.

How to cite this article: Zamir N, Akhtar J. Congenital recto-vestibular fistula with colonic atresia and colo-colic fistula. Ann Jinnah Sindh Med Uni 2016; 2(1): 40-41.

عنوان: پیدائش بصیر چھید والے مقعد (Anus) اور (Colonic Atresia) بڑی آنت کا بند ہونے کا تعلق ایک منفرد اکائی ہے۔

ہم اس طریقے کی ایک بیماری کی کیفیت (Case) جس میں ایک خاتون مریضہ میں یہ تعلق پایا گیا اور اس میں (Colo-Cloic) تعلق تھا پیش کرتے ہیں۔ یہ خلافہ قاعدگی اس مریضہ میں اس سے پہلے مشتبہ نہیں تھی۔ Anorectal کی بے ترتیبی درمیانی درجہ کی تھی اور Anorectal Pull تجویز کیا گیا۔ اندام نہانی پردے کے ذریعے دو حصوں میں تقسیم Vagina کی موجودگی اور Vestibular موارخ کی غیر طبعی جگہ کی وجہ سے جراحی کی تجویز کو تبدیل کیا گیا اور شکم کا آپریشن کیا گیا جس نے Colonic Atresia دیوار دار اندام نہانی اور مع Colo-Cloic تعلق کو ظاہر کیا۔

INTRODUCTION

Imperforate anus is a common congenital anomaly. Approximately 20- 80% cases of anorectal malformation are associated with other congenital anomalies[1]. Congenital atresia of the colon is a rare anomaly and accounts for 5-15% of all intestinal atresias[2]. An association of colonic atresia with imperforate anus is extremely rare and only few cases are reported in literature[3]. Imperforate anus with rectovestibular fistula is the most common form of anorectal malformation in females but its association with colonic atresia is rarely reported. This report describes one such case.

CASE

Three and half month old female having imperforate anus presented with passage of stool from an opening in vestibule. No abnormal bowel habit was reported. On examination there was a large fistulous opening in the vestibule with mild excoriation. A plan of primary anorectal pullthrough was made. Patient was scheduled

Department of Paediatric Surgery, National Institute of Child Health, Jinnah Sindh Medical University, Karachi, Pakistan.
- -
Correspondence: Dr. Naima Zamir, Department of Paediatric Surgery, National Institute of Child Health, Jinnah Sindh Medical University, Karachi, Pakistan.

Email: naimazamir@yahoo.com

for surgery and during initial examination under general anesthesia normal urethral opening found. Just posterior to this three openings were noted, arranged in triangular fashion. Endoscopy was done which revealed anterior two openings leading to two hemivagina (septate vagina) and the third opening was that of vestibular fistula (Fig. I).

After endoscopy abdominal approach was made through left lower quadrant. It was difficult to deliver sigmoid colon. On further exploration ascending colon was found opening distally into the sigmoid colon while another cord like extension arising from it continued into proximal transverse colon which was blind ending while transverse colon continued distally into sigmoid colon (Fig. II). A diagnosis of type IIIA colonic atresia with colo-sigmoid fistula was made. Distal end of ascending colon was separated from the sigmoid colon and brought out as colostomy on the right side of the abdomen. The proximal blind end of transverse colon was brought out as mucous fistula on the left abdominal wall. Defect in the sigmoid colon from where ascending colon was detached, closed with polyglycolic acid sutures. Postoperative recovery was smooth. Three months later anorectoplasty was done without any problem. In third leg of operation colostomy was closed. At follow up patient is well and continent for stool and urine. Counseling as to the timing of septate vagina was also done.
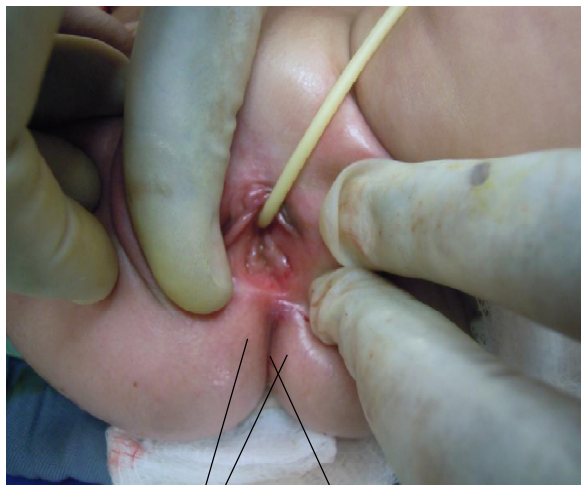
Two openings of Vagina   Another fistulous opening
(rectovestibular fistula)

Fig. I Perineal Examination (Showing normal urethral opening, two vaginal openings and a vestibular fistula.)
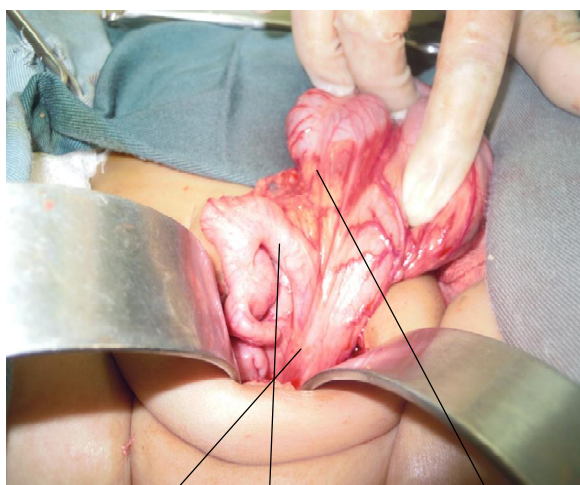
Sigmoid Colon

Ascending Colon
Communicating
with Sigmoid Colon   Atretic Proximal
Transverse colon

Fig. II Peroperative findings. (Ascending colon entering directly into sigmoid colon while proximal transverse colon is atretic and attached by a cord like structure to ascending colon).

DISCUSSION

Anorectal malformations (ARM) can have varied spectrum of presentation[4]. Associated anomalies with ARM are more common in males. Most of these anomalies relate to the gastrointestinal tract with high variety of ARM[5]. The reported associated gastrointestinal anomalies occur in 9-36 % of cases[6]. In female patients this association is more common with cloacal malformation and rarely reported with rectovestibular fistula. Colonic atresia is one of the least common associated gastrointestinal anomalies[7]. Few cases are found in the literature including single case associated with rectovestibular fistula[8].

The embryological events leading to colonic atrseia are either mesenteric vascular compromise or the failure of recanalization of gut lumen during intrauterine life[9]. Index case was unusual as colonic atresia was associated with fistulous tract opening into sigmoid colon distally. This lead to passage of meconium and later stool from fistulous opening in the vestibule as there was associated imperforate anus. One suggestive explanation for fistulous communication of ascending colon with sigmoid colon might be an intrauterine adhesions following vascular compromise of colonic blood supply and spontaneous fistulization of adherent gut loops. With the current practice of primary definitive procedure for low anomalies, there are chances of missing such rare anomalies[10].

References

1. Niedzielski J. Congenital anomalies associated with anorectal malformations – 16-year experience of one surgeon. Arch Med Sci 2009;5(4):596-601.
2. Mirza B, Iqbal S, Ijaz L. Colonic atresia and stenosis: our experience. J Neonatal Surg. 2012;1(1):4.
3. Goodwin S, Schlatter M, Connors R. Imperforate anus and colon atresia in a newborn. J Pediatr Surg. 2006;41(3):583-5.
4. Bãlãnescu RN, Topor L, Moga A. Anomalies associated with anorectal malformations. Chirurgia (Bucur). 2013;108(1):38-42.
5. Ratan SK, Rattan KN, Pandey RM, Mittal A, Magu S, Sodhi PK. Associated congenital anomalies in patients with anorectal malformations--a need for developing a uniform practical approach J Pediatr Surg. J Pediatr Surg. 2004;39(11):1706-11.
6. Holschneider AM, Hutson JM. Anorectal Malformations in Children. Berlin: Springer; 2006.
7. Singh S, Wakhlu A, Pandey A, Singh A, Kureel SN, Rawat J, et al. Esophageal atresia associated with anorectal malformation: Is the outcome better after surgery in two stages in a limited resources scenario? J Indian Assoc Pediatr Surg. 2012;17(3):107–10.
8. Heinen FL, Prieto F. Rectovestibular fistula associated with colonic atresia J Pediatr Surg. 1987;22(11):1021-2.
9. Petropoulos AS, Mouravas V, Kepertis , Dimopoulos C, Roussis X. Imperforate Anus Associated with atresia of Transverse Colon: A case report. Eur J Pediatr Surg. 2004 Aug;14(4):290-2.
10. Goodwin S, Schlatter M, Connors R. Imperforate anus and colon atresia in a newborn. J J Pediatr Surg. 2006 Mar; 41(3):583-5.

– – – – –

ABSTRACTS

14th International Conference On Statistical Sciences:

Statistics for Better Decision-Making and Development

March 14-16, 2016

Jinnah Sindh Medical University (JSMU)

Karachi, Pakistan

Jointly organized by

Jinnah Sindh Medical University (JSMU)

Islamic Countries Society of Statistical Sciences (ISOSS)

001:
Asymptotic Theory of Simultaneous Estimation
of Weibull Reliability Functions

Muhammad Kashif Ali Shah[1], Supranee Lisawadi[1] and Syed Ejaz Ahmed[2]

1 Department of Mathematics and Statistics, Thammasat University, Thailand
2 Department of Mathematics and Statistics, Brock University, Canada

For a two-parameter Weibull distribution, we have developed the asymptotic theory for the simultaneous estimation of reliability functions under the homogeneity assumption.Some improved estimation strategies are discussed based on the restricted, preliminary test and the Stein-rule shrinkage principles.Using a squared error loss function and the sequence of local alternatives, asymptotic distributional quadratic bias and risk expressions are derived. We have compared the risk performance of listed estimators relative to the benchmark maximum likelihood estimator.A detailed Monte-Carlo simulation study is given to assess the robustness of estimators.

002:
Simultaneous Estimation of Kurtosis Parameters
from Multivariate Populations

Nighat Zahra[1], Supranee Lisawadi[1]and S. Ejaz Ahmed[2]

1 Department of Mathematics and Statistics, Thammasat University, Thailand
2 Department of Mathematics and Statistics, Brock University, Canada

An asymptotic theory for the improved estimation of kurtosis parameter vector is developed for multi-sample case using uncertain prior information (UPI) that several kurtosis parameters are the same. Combined estimator is a good choice when assumption of homogeneity holds but it becomes inconsistent as assumption violates, therefore pretest and Stein-type shrinkage estimators are proposed as they combine sample and non-sample information in a superior way. Asymptotic properties of suggested estimators are discussed and their risk comparisons are also mentioned. Positive part Stein-type estimator proved to be superior among ordinary shrinkage estimators in utilizing sample and non-sample information.

003:
Some Properties of Size Biased Double Weighted
Exponential Distribution

Zahida Perveen, Zafar Iqbal and Muir Ahmad

National College of Business Administration and Economics, Lahore, Pakistan

In this paper, we develop the size biased form of Double Weighted Exponential Distribution (DWED) name as Size Biased Double Weighted Exponential Distribution (SDWED).Shape of the distribution is studied in detail. Various properties of size biased DWED are discussed. Maximum Likelihood Estimation (MLE) has been used to estimate the parameters of the size biased DWED. To justify the use of SDWED; SDWED is fitted to Ball Bearing records set.

004:
Instructional Technology: A Way of Better Learning

Aamna Irshad[1] and Irshad Ullah[2]

Centre for Counseling and CareerAdvisory, National University of Sciences & TechnologyIslamabad Pakistan

Department Education Government of Khyber Pakhtunkhwa Islamabad, Pakistan

The objective of the study was to investigate the impact of instructional technology on 10th class students' learning of Wah Cantt. Mere transference of the bookish knowledge is not enough for effective teaching and clarification of concepts so teaching should be supplement with other ways also. These ways may be new teaching models and methods and new emerging technology. So the study focused on the importance of technology for better instruction and learning. For this purpose, empirical research was done. Two hundred students of Government Secondary Schools of Wah Cantt were randomly selected for the study. The questionnaire was prepared in the light of literature by researcher herself on the parameters of effective learning, development of interest, first-hand experience, provision of depth and variety of learning, use of audio-visual aids by teachers for effective learning, clear concepts, everlasting learning, natural and consequently easy learning, development of understanding, and direct impact of textbooks and instructional material to check the importance of instructional technology in teaching. Descriptive statistics was applied for analysis of these parameters. The results of the study revealed that audio-visual aids bring accuracy to get firsthand knowledge for obtaining the desirable objectives and effective learning of students. Instructional material is very necessary in education system, it provide basis for the development of understanding. The chances of students' learning increase with the help of these teaching aids. Students' learning becomes more easy, quick and long-lasting because these aids leave high impressions on the mind of students. Teaching aids are very helpful for teaching even difficult and complex concepts. No one can deny the important role that technology plays for students' learning.

005:
Computer Science Algorithms in Education

Irshad Ullah[1] and Aamna Irshad[2]

Department Education Government of Khyber Pakhtunkhwa, Islamabad, Pakistan

Centre for Counseling and CareerAdvisory, National University of Sciences & TechnologyIslamabad Pakistan

Computing Science or Computer Science is the study of theoretical foundation of knowledge and computation, with practical methods for their implementation and execution in computer environment. It may be described as the meaningful study of the algorithmic processes which transform and generate information. In this study algorithms from the field of data mining were applied to the field of education. This is to show that how efficient, useful and better are these algorithms for the said field. To study the performance a solid input threshold were given to the algorithms. The outcome from these algorithms will be compared by applying it to some well-known and standard algorithms. The experiment will be performed by applying the algorithms to databases, data warehouses of different size. The results obtained will be analyzed that how these are useful for the field of education.

006:
Mathematical Risk Assessment Model for War Against Terrorism

Naila Rozi

Madrassatul Islam University, Karachi, Pakistan

Pakistan continuous to suffer heavy losses both in the economic field and in security while a substantial portion of national resources both men and material has been diverted to counter the security challenge According to ESP(Economic Survey of Pakistan)the country has faced loss worth $102 billion till 2014fromlast thirteen years. At least 141 people died in December 2014 in army public school ,Peshawar. In the wake of this extraordinary disaster, insurerand reinsurers havebeen excludingterrorism risk from their offering with grave consequences. In this paper a risk model generate by applying game theory and search theory.

007:
Prevalence Rate and Determinants of Depressive Symptoms among Adolescents Population in Dubai, 2011

Sami Manaa, Nehad Hassan, Waleed al Fiasaland Hamid Y Hussain

Dubai Health Authority, Dubai, UAE.

Background: Adolescent depression is a significant health problem which can lead to detrimental consequences on the adolescents, their families and their communities; presence of elevated depressive symptoms is a significant predictor of depression.Objectives: To study the prevalence of depressive symptoms among secondary school students and investigate associated factors. Methods: cross-sectional survey was carried out in 20 secondary schools in Dubai, including students of 10, 11 and 12 grades. Self-administered children depression inventory (CDI) was used for assessing depressive symptoms using cutoff point of 19. Socio-demographic data questionnaire was used to investigate the associated factors. Results: the study revealed that based on children depression inventory (CDI score = 19), about 17.5% of students have elevated depressive symptoms (95% Confidence intervals = 15.43-19.57), andout of 27 factors affecting depressive symptoms only 9 factors showed statistically significantpredictive effect by step wise logistic regressionanalysis like, beingGovernmental schools with 1.8 odds ratio (95% CI: 1.17-2.85), more than 5siblings with 1.84 odds ratio (95% CI: 1.19-2.86), bad relationship with parents with 4.89 odds ratio(95% CI: 1.71-14..07) , bad relation with colleagues with 2.57 odds ratio (95% CI: 1.66-3.99), no family support with 4.21 odds ratio (95% CI: 2.15-8.29), no colleague support with 1.21 odds ratio (95% CI: 1.14-2.94), physical abuse with 13.2 odds ratio (95% CI: 3.56-48.970), verbal bulling with 4.03 odds ratio (95% CI: 1.89-8.59), and physical inactivity with 2.33 odds ratio (95% CI: 1.52-3.58). Conclusion: depressive symptoms were found to be common among secondary school students and significantly related to socio-demographic variables. There is a pressing need to prioritize mental health of school students through implementing effective and integrative mental health programs.

008:
A Short History of Developments in Modern Survey Sampling, Principally Based on Contemporary Quotas

Muhammad Hanif

National College of Business Administration & Economics, Lahore.

In this talk history of development of the survey sampling has been traced out from the beginning of the development of survey sampling till today.

009:
Application of Statistical Techniques and Information Technology in Art and Scientific Research

Bilal Ahmad Bhat[1] and Nusrat[2]

1 Division of Social Science, Faculty of Fisheries, Rangil Ganderbal,
Sher-e-Kashmir University of Agricultural Sciences & Technology Kashmir, J&K, Pakistan
2 Faculty of Music and Fine Arts, University of Kashmir, Srinagar J&K, Pakistan

Statistics and information technology are closely related. It is observed that any advancement in information technology results in advancement in statisticaltechniques. Information technology has invaded almost all spheres of human activity such as public health, education, transport, etc. People look for new ways to increase efficiency and to raise the quality and level of services by means of information technologies. The advancement of Information technology has provided innovation in teaching and research. This paper aims to explain in general why and what statistics we use in researchand further examine the role of statistical techniques and Information Technology in art and scientific research. This study is in the form of a survey conducted to obtain quantitative data. The data collected can explain the level of IT usage, the level of statistics knowledge, and teachers attitudes in the application of statistics and IT via a questionnaire which uses the simple random sampling technique. The sample consists of 100 research scholars and 100 teachers from different universities of Jammu and Kashmir State.The results showed that the level of application of IT and Statistics among teachers of Art was still at a moderate level as compared to teachers of Science stream. Further, the level of IT and statistics knowledge was high among science scholars as compared to Art scholars. It is concluded that for any art or scientific research knowledge of statistics and IT are very important. Further, for fruitful research to be accepted globally training and courses related to statistics and IT teaching must be increased and taken into account by the responsible parties.

010:
An Efficient Ratio Type Estimator of the Population Mean in the Presence of Non-response

Adnan Khan, Muhammad Azeem, Amjad Ali and Hassan Zeb

Department of Statistics, Islamia College, Peshawar, Pakistan

In hand paper, a more robust ratio type estimator of the population mean is developed while considering the matter of non-response using double sampling. Information available on two auxiliary variables is considered in such way to minimize the systematic error to the great extent. The performance measures of the proposed estimator such as bias and mean square error are derived to the second degree of approximation. Moreover, the conditions under which our proposed estimator performs better than their competitive estimators are mentioned. Empirical studies in support of proposed estimator are done through simulation as well as real datasets.

011:
Impact of Violence shows in Electronic and Print Media
in University of Karachi Students

Ammara Aftab[1] and Nabeel Afzaal[2]

1 University of Karachi, Karachi, Pakistan
2 Hamdard University, Karachi, Pakistan

The basic theme of the study is "Depression" in which the students affected by different ways like printand electronic media. Basically Depression is simply mantelillness noticed by sadness and emotional feelings etc.whereasMedia refers to different kind of channels which work to transformnews from one place to other,weather itis a print media or electronic,here we focused on thenegative impact of these. As both of these combinetogether and make a sense of our object which is"Impactof violence shows in electronic and print media".Media technologies are becoming animportant aspect of today's society. Each and every day, people interact with media in many differentforms.Media is commonly defined as being a channelofcommunication. Radio, newspapers andtelevision are also examples of media. It is impossible to assume that media is made up of completelyunbiased information and thatthemedia companiesdo notimposetheirown controlupon theinformation being supplied to media users. Since many people use media very frequently, it is obviousto assume that it has effects on people. According to the text book Media Now, "media effects arechanges in knowledge, attitude, or behavior that result from exposure to the mass media. This leavesus with many unanswered questions about media and its influences. This paper will look at how theeffects of media are determined and explore the main effects on today's society - violence, prejudiceand sexualbehavior.Especially,the violence shows on media is assume to contributing inincreasing aggression and lower tolerance in society leading to hyper reaction of people.In this study we focused on the students of "University of Karachi".Alsowe also found that therewere different types of depression or we can say different stages of depression. These types of studentsreally need correct guidance/treatment. At some places it is observed that this type of student have totry to move up for their better future they have to spend more time with their jolly friends ,They exactly may not know wheretogo for help, or they may believe that treatment won't help. Questionnaire technique will be used for data collection. The sample size of our study is 100; we areusing stratified sampling and divided the samples into 4 strata on the basis of their age, sex etc. tomeasured expression and itseffecton studentsdailyroutine.Data isanalyzed by using SPSSsoftware.Wehaveusedhypothesistesting(Chi-squaretests)instatisticaltoolsforevaluation of our main hypothesis. For this we will make supporting hypothesis related toquestions included in questionnaire which willhelp to define ourmain hypothesismoreclearly. Chi-square technique is used to test independency between variables.After the resultwe conclude that more than 80% of the students are depressed and affected their daily routine.

012:
Demand or Supply Which Causes the Contraction in Bank Loans in Recession Periods:
A Case Study of SME's in Lahore, Pakistan

Muhammad Khyzer Bin Dost

Hailey College of commerce, Punjab University, Lahore, Pakistan

This study investigates whether the contraction in bank lending in recession periods has been a result of the reduced demand of the bank loans by SME's or the reduced supply of loans by banks to SME's. Using the questionnaire as research tool as well as secondary data collection by books and journals, the study concludes that the contraction in bank loans in recession periods is due to reduction in demand of bank loans by SME's. Furthermore, the research reveals that the reason behind the reduced demand of the bank loans by SME's is the reduced demand of the products of the SME's. Due to this reduced demand of the products, SME's cut downs their industrial production level and start manufacturing less amount of products. The reduced industrial production level becomes the reason for the increased unemployment rate. So, due to the reduced demand, fall in production level and increase in unemployment rate, SME's are suffered a lot and are unable to take bank loans.

013:
Estimation of Common Correlation Coefficient Using R

Masood Anwar

COMSATS Institute of Information Technology, Islamabad, Pakistan

This paper presents a program in R for estimating a common correlation coefficient, ñ by four different methods after drawing k ?2 independent samples of different sizes drawn from bivariate normal populations. Efficiency comparison of these estimators is done through a simulation study.

014:
Transmuted Exponentiated Kumaraswamy Distribution and its Properties

Saleem Arshad[1] and Zahoor Ahmad[2]

1 Department of Statistics, University of Gujrat, Pakistan
2 University of Southampton, UK

In this paper, the three parameters Exponentiated Kumaraswamy distribution is generalized by introducing a new parameter, using the quadratic rank transmutation map studied by Shaw and Buckly (2007). The new proposed Transmuted Exponentiated Kumaraswamy distribution is more flexible and tractable, and contains three sub models as special cases. Various characteristic properties of the proposed distribution are discussed and explicit expressions for moments, moment generating function, mean deviation, characteristic function, reliability function, hazard function, mean residual lifetime function, Renyi entropy and order statistics are derived. Expressions for Bonferroni and Lorentz curves are also obtained. Furthermore, method of maximum likelihood is used to estimate the parameters of proposed distribution. Finally, application of the proposed distribution is discussed using two real data sets. Likelihood ratio criteria such as AIC, CAIC and BIC are used to compare the performance of the distribution. Findings revealed that our proposed distribution best fit the data.

015:
A Statistical Study of Domestic Violence
Against Married Women in District Peshawar

Umair Khalil

Department of Statistics, Abdul Wali Khan University Mardan, Pakistan

Women are extremely important to the growth and development of any nation.Full community development is impossible without knowledge, understanding and cooperation of women. Considering the importance of women as mother, sometimes breadwinners, teachers and guardians, they deserve respect, recognition and better treatment but the opposite is usually the case. In our community women are treated harshly because of poverty and they suffer from neglect, discrimination and exploitation. They are also suffered to different forms of violence by their husbands. Domestic violence is a pattern of behavior which involves violence or other abuse by one person against another in a domestic context, such as in marriage or cohabitation. Intimate partner violence is domestic violence against a spouse or other intimate partner. A clinical or behavioral definition is a pattern of coercive behaviors, including physical, sexual, and psychological attacks, as well as economic coercion, that one person use against their intimate partner. The relationship between Islam and domestic violence is disputed. Even among Muslims, the uses and interpretations of sharia, the moral code and religious law of Islam, lack consensus. Some other forms of domestic violence are: physical abuse, emotional abuse, sexual abuse, technological abuse, financial abuse, abuse by immigration status. Effects of domestic violence can badly effect women's health and can also have sociological effects. In this study we have tried to find the causes of domestic violence against married women in Peshawar and to explain the domestic violence including physical violence, sexual violence, emotional violence and economic type violence on married women by their husbands in Peshawar. We also have tried to illustrate factors associated with domestic violence against married women in Peshawar.

016:
Sindh Multiple Indicator Cluster Survey

Shah Nawaz Jiskani

MICS Coordinator and Director Bureau of Statistics,
Planning & Development Department, Government of Sindh

The Multiple Indicator Cluster Surveys, known as MICS, has become the largest source of statistically sound and internationally comparable data on women and children worldwide. Since its inception in 1995, over two decades, close to 300ÊMultiple Indicator Cluster Surveys have been carried out in more than 100 countries, generating data on key indicators on the well-being of children and women, and helping to shape policies for the improvement of their lives. The trained field teams conduct face-to-face interviews with household members on a variety of topics – focusing mainly on those issues that directly affect the lives of children and women. MICS has been a major source of data on the Millennium Development Goals (MDGs) indicators and will be a major data source in the post-2015 era i.e. Sustainable Development Goals (SDGs). The MICS in Sindh province was carried out in 2014 by Sindh Bureau of Statistics, Planning & Development Department, Government of Sindh. Technical support was provided by the UNICEF while Pakistan Bureau of Statistics provided sampling support, Pakistan Council of Research on Water Resources PCRWR provided support on drinking water testing and Global Alliance on Improved Nutrition provided support of salt iodization component of this survey. In Sindh MICS five sets of questionnaires were used: 1) a household questionnaire which was used to collect basic demographic information on all de jure household members (usual residents), the household, and the dwelling; 2) a questionnaire for individual women administered in each household to all women age 15-49 years; 3) an under-5 questionnaire, administered to mothers (or caretakers) for all children under 5 living in the household; 4) a water quality testing questionnaire was used in selected households to record information on quality of household drinking water 5) a questionnaire form for vaccination records at health facility to obtain the vaccination record of all children age two years or less.A two-stage stratified systematic sampling approach has been used for the selection of the survey sample. A certain number of urban and rural clusters have been selected in each district using probability proportional to size(PPS) method, and then a fixed number of households (in this case 20) have been randomly selected within each of those clusters. In Sindh MICS, data was collected from 17,014 households, while from these households 26,647 eligible women (15-49 years age) were interviewed and data of 16,605 children under five years was taken from their mothers/primary care takers. Planning, Implementation, Analysis and Report writing process of this survey took around three years including 6 months of field data collection. Around 300 field staff was trained by National and International experts in a 21 days standard resident training before deployment in the field. Data were entered using the CSPro software, Version 5.0 by a team of 20 trained data management team. Data were analyzed using the Statistical Package for Social Sciences (SPSS) software, Version IBM PAWS 18 (SPSS). The Key Findings Report and the Final Report of this Survey have been printed and being disseminated among planners. This report provides data on more than 100 indicators on Mortality, Nutrition, Mothers and New Born health, Children Health, Water and Sanitation, and other many thematic areas. This report has data on various disaggregation's i.e. Urban/Rural, Gender, Division, District etc. Micro data will be released in few weeks for researchers.

017:
The Indus Basin of Pakistan:

Syed Iazaz Ahmad Bukhari and Shahid Hassan Rizvi

Islamia University of Bahawalpur, Bahawalpur, Pakistan

Pakistan is a flood prone country and it experienced a 'super flood' in 2010 which occupied 1/5th part of the country. The flood affected 20 million people and killed another 1985.It affected 17,553 villages, also damaged 1.6 million houses and economic losses as a result of this flood was estimated as US$ 10,000 million. It affected 10,436 education centers, 515 health centers, 25,088 kms long communication facilities, in energy sector it damaged 52 grid stations and 6841 water and sanitation schemes. It damaged standing crops over an area of 1.93 million acres and killed 0.3million large and 1.2 million small domesticated animals. Productivity of cotton crop reduced to 11.76 million bales against the expected output of 14 million bales. In private sector it damaged 146 industrial units and 0.1 million hotels or shops. In financial sector it affected 90 banks and 10 ATMs.

018:
Quality Assurance System in Higher Education of Pakistan

Muhammad Qasim Rind[1] and Nadia Qasim[2]

1 National College of Business Administration, Lahore, Pakistan
2 Agilenex Enterprise Solutions, Leeds, UK

The main objective of the study was to know quality assurance system of higher education in Pakistan. The historical prospective of education system in Pakistan was reviewed. A primary and secondary data was collected from Education Departments of Government of Pakistan. Interviews were conducted from education experts to know their opinion regarding quality education status in Pakistan. On the basis of this data the paper has been prepared. The paper also narrated organizational structure of the quality assurance system in higher education of Pakistan. Higher Education System in Pakistan had a major change after the establishment of Higher Education Commission (HEC) in 2003. To maintain quality in Higher Education Quality Assurance Agency was established which further opened Quality Enhancement Cells (QEC) in state owned universities and assigned them the task of carrying out measures of quality as approved by the agency. These Cells are headed by Quality Assurance Expert. Study reveals that quality assurance model of Higher Education Commission is predominant model of quality assurance in the higher education sector of Pakistan. There is no linkage between internal and external quality assurance practices in the higher education sector of Pakistan. It is recommended that the gap between internal and external quality assurance can be filled in by introducing internal quality assurance practices in the ranking criteria and making periodic peer review and external academic audit compulsory for all the public and private higher education institutes of Pakistan. In order, to create awareness about quality assurance in higher education, workshops and trainings programs should be introduced.

019:
Cloud Computing in Higher Education

Nadia Qasim[1], Muhammad Qasim Rind[2] and Muhammad Saleem Sheikh[3]

1 Agilenex Enterprise Solutions, Leeds, UK
2 National College of Business Administration, Lahore, Pakistan
3 Preston University, Islamabad, Pakistan

Today education is associated with the Information Technology on the content delivery, communication and collaboration. The need for servers, storage and software are highly demanding in the universities, colleges and schools. Cloud Computing is an Internet based computing, whereby shared resources, software and information, are provided to computers and devices on-demand, like the electricity grid. Currently, Infrastructure as a Service, Platform as a Service and Software as a Service are used as business model for Cloud Computing.This paper describes cloud computing, its key characteristics, deployment and service models, relationship between them. Then paper describes the role and challenges of cloud computing in higher education. The paper also introduces the cloud computing infrastructure provided by Microsoft, Google and Amazon Web Service. The results obtained are encouraging and support the use of Cloud solutions in universities by improving knowledge in this field and providing a practical guide adaptable to the university's structure. Many educational institutes have introduced cloud computing by outsourcing their student email provision.Email is a basic, fairly standardized Service, can be provided easily by third parties. Both Google and Microsoft offer email services for free to the educational Sector in many countries.

020:
Organizational Predictors of Debt Specialization:
Review and Directions

Kanwal Iqbal Khan[1] and Faisal Qadeer[2]

1 National College of Business Administration, Lahore, Pakistan
2 Lahore Business of School,ÊThe University of Lahore, Lahore, Pakistan.

Recently, scholars have made extensive efforts to understand the debt structure composition of the organizations. Specifically, to know the reasons for including fewer debt types in their debt structure, i.e. knowing about the reasons of debt specialization, concealed in identifying the predictors of it. Previously, researchers have confirmed thirteen factors as predictors of debt specialization, but still we are in infancy to generalize them. This highlights the need to go beyond the traditional factors and scrutinizes the role of some new and unplumbed organizational factors in explaining debt specialization decision of the organizations. Therefore, this paper is intended to provide an extensive review of literature regarding the theoretical and empirical foundations for the predictors of debt specialization. We systematically reviewed the literature identified twenty two organizational factors, divided in eight major groups. Additionally, we attempt to explain the extent to which traditional capital structure theories adequately explains these predictors and highlight the empirical short comings. Finally, we conclude by summarizing unanswered questions and areas for future research..

021:
Comparative Analysis of Test Management Tools:
Spira, HP Quality Center and Mercury Quality Center

Syed Fakhar Abbas, Mumtaz Ahmad, Zahid Miraj and Mamoona Humayon

University Institute of Information Technology, Rawalpindi, Pakistan

Software Testing plays an important role in improving software quality. Software engineers always have a goal: "There is always one more bug". To ensure quality, it is very hard to quantify amount of testing needed. is one of the most crucial parts of the software life cycle but is often neglected or proper tools are not used which can make this process more efficient and manageable. Test management software's are available that can make the life of software engineers easier and are quite economical. In this paper, we will give the comparative analysis of different testing tools such as Spira, HP Quality Center and Mercury Quality Center on the basis of different test management activities.

022:
Imputation of Missing Values in the IN/OUT Procedure of Random Forest

Amjad Ali, Qamruz Zamanand Syed Jawad Ali Shah

Department of Statistics, University of Peshawar, Peshawar, Pakistan

The missing data problem is common and often unavoidable especially when dealing with large data sets from several real-world sources. Many new computationally tools have been developed to tackle missing data problems. In some cases, the sought after missing data processes engage temporary removal or surrogate of missing data. Existing methods have been successfully applied to well-defined parametric models, such as Gaussian regression, and Log Linear models. However, the usefulness of these models has yet to establish for tree-based models, such as Classification and Regression Trees (CART) and Random Forests (RF), which are usually considered as non-parametric models.The problem of missing value, out-of-bag error and misclassification rates in imbalanced data are difficult to deal in Random Forest technique. In this article, a new imputation method has been proposed for In/Out procedure of Random Forest; its performance has been evaluated and compared with non-missing data sets. It is concluded that new proposed method i.e. non parametric bootstrap iterative value imputation reduced the Out-Of-Bag error in case of missing values.

023:
Ratio-In-Regression-Cum-Ratio-Product Estimators
for Two-Phase Sampling Using Multi-Auxiliary Variables

Ogunyinka Peter I[1] and Sodipo A.A[2]

1 Department of Mathematical Sciences,
Olabisi Onabanjo University, Ago-Iwoye, Nigeria
2 Department of Statistics, University of Ibadan, Ibadan, Nigeria.

This research has developed finite population means called Ratio-In-Regression-Cum-Ratio-Product Estimators in Two-phase sampling utilizing multi-auxiliary variables for full information case, partial information cases and no information case. Saqib estimator was improved using Cochran ratio estimation method. Estimators with full information case, partial information case-I and no information case claimed superior efficiency over corresponding estimators established by Saqib while partial information case-II claimed equivalent efficiency with the corresponding estimator as established by Saqib. An empirical asymptotic comparison using simulated data was carried out to ascertain the quantitative percentage of efficiency. The efficient estimators claimed 57.2% efficiency for full information case, 57.3% efficiency for partial information case-I and 56.6% efficiency for no information case over the corresponding Saqib estimators.

024:
Effect of E-marketing Adoption Strategy on Export Performance of Smes:
An Empirical Evidence From Pakistan

Humaira Erum, Hamid Rafique and Asghar Ali

NUML University, Lahore, Pakistan

Purpose - The purpose of this study is to analyze the effect of e-marketing adoption strategy on export performance of SMEs in Pakistan. The mediating effect of marketing activities on the relationship between e-marketing adoption and export performance is also investigated. Design/methodology/approach – Data was collected from 169 SMEs from four sectors, namely textile, leather, medical and surgical goods and services. The five constructs namely e-marketing budget, e-marketing tools, pre sales activities, after sales activities and export performance linked through eight hypotheses were tested using structural equation modeling in AMOS version 5. Findings - This study finds the positive impact of allocation of e-marketing resources for marketing activities and confirms that mere adoption of e-marketing tools is not sufficient for improving marketing activities. Similarly, SMEs export performance is positively influenced by allocation of e-marketing budget, adoption of e-marketing tools and after sales activities, but pre sales activities does not produce significant effects on export performance of SMEs. Research limitations / implications -- The data collected for this study was cross sectional in nature, whereas longitudinal approach is more suitable for such a study. Moreover, the data was collected from four sectors from Pakistan (a developing country), therefore, care should be taken while generalizing the results of the study. Practical implications – The study points out that SME sector needs to be facilitated by providing IT infrastructure, training employees and resources for utilizing e-marketing at its full potential.

025:
Some New Developments for Modified Burr XII Distribution

Fiaz Ahmad Bhattiand Munir Ahmad

National College of Business Administration and Economics, Lahore, Pakistan.

In this Paper, we have proposed more flexible Modified Burr XII (MB XII) distribution. Some properties of the proposed distribution are derived like Moments, negative moments, central moments, L-Moments, TL- moments, Cumulants, Renyi's Entropy and other Entropies, Lorenz curve, Bonferroni Curve, Zenga Curve,reliability model, Stress-Strength Multicomponent Reliability Model, Characterization of Modified Burr XII are studiedthrough some new different methods. Goodness of fit of Probability distribution through different methods is studied.

026:
Inequality Measures and Characterization of
Exponentiated Momen Exponential Distribution (EMED)

Fiaz Ahmad Bhattiand Munir Ahmad

National College of Business Administration and Economics, Lahore, Pakistan.

In this paper, some basic new properties of the proposed distribution are derived, Uncertainty and Inequality Measures like Incomplete moments, Mean Deviation, Lorenz Curve, Bonferroni Curve, Zenga Curve, Exponentiated moment exponential distribution is characterized through conditional expectations, hazard rate functions, reverse hazard rate functions, Mean Inactivity Times, ratio of truncated moments and some other methods.

027:
Prevalence of Depression, Anxiety and Associated Risk
Factors among Hyperthyroid Patients in Karachi, Pakistan

Farah Zahra, Sidra Sharif, Samra Tariq, Raiya Mansoor, Sana Soomro, Asra Batool, Abdul Azeem, Fazail Zia, Sohiba Ghazal, Nazain Zaheer and Muhammad Usama

Department of Community Medicine, Institute of Physical Medicine and Rehabilitation
Jinnah Sind Medical University, Karachi, Pakistan

Background:It is estimated that 5-10% of Pakistani population is suffering from thyroid disorders. Depression and anxiety are two very common symptoms of hyperthyroidism and patients with these symptoms are often misdiagnosed as having any psychiatric disease. The objective of our study was to determine the prevalence of depression and anxiety among hyperthyroid patients in our population of Karachi, Pakistan.Methods: Cross-sectional study was conducted in which 200 patients visiting the OPD of Jinnah Postgraduate Medical Centre, Karachi, Pakistan, were inducted. Subjects were classified as hyperthyroid and euthyroid. Convenient sampling technique was used. Data collection tool was a questionnaire in which socio-demographic questions and Hamilton Depression Rating Scale and Hamilton Anxiety Rating Scale were included. Logistic regression was used to determine the association of depression and anxiety with socio-demographic factors among hyperthyroid patients. OR, 95% CI and P values were calculated.
Results: Depression and anxiety among hyperthyroid patients were found to be 84% and 58% respectively. In multivariate analysis for hyperthyroid patients, age group of 18-40 years and females were more than two times (OR=2.716, CI=0.886-8.332), (OR=2.587,CI=0.827-8.095) depressed, compared to age group of 41-60 years and males, respectively, after adjusting for covariates. Similarly, females were found to have anxiety more than one times (OR=1.771, CI=0.720-4.356) compared to males while age group of 18-40 years was 30.5% (OR=0.695, CI=0.286-1.689) less likely to have anxiety compared to age group of 41-60 years.Conclusion: The results of our study revealed that depression and anxiety are a common finding among hyperthyroid patients. Therefore hyperthyroidism should always be considered in the differential diagnosis of patients who present primarily with neuropsychiatric symptoms.

A Comparative Study Of Sudoku Square Design
With Balanced Incomplete Block Design

Shamsa Kanwal and Munir Ahmad

National College of Business Administration and Economics, Lahore, Pakistan

Sudoku square design with balanced incomplete block design and the related Sudoku square design (Subramani, 2009) and Graeco latin Sudoku square design (Aslam, 2015) are a special type of comparative design. There are two factors of primary interest, treatments factor and square factor, and several nuisance factors. The chief advantage of Sudoku square design with BIBD over the Sudoku square design is that it attempts to control the error by identifying a portion of the total variation with the square means as well as treatment means. The analysis of Sudoku square design with BIBD is very similar to that of Sudoku square design. As the squares are orthogonal with SSD' treatments and BIBD's treatments so any variation due to the squares is independent of the SSD's treatment and BIBD's treatment variation. The squares as squaring factor in Sudoku square design with BIBD are only effective if the variance between squares is significantly larger than the variance within the squares.

A Primordial Approach Tostatistical Research

M. Inam Khokhar1 and Zahida Habib2

5041 Silver Saddle Ct., Dublin, Ohio 43016, USA.
University of Education, Lahore, Pakistan

A Primordial approach to statistical research may provide some clues and some challenges to statisticians and scientists. In the current paper an attempt is made to illustrate this view with specific examples in the context of the Quran and authentic Hadiths.. The examples are provided in the domain of randomness, fetal development and instinctive evolution. The objective of writing this paper is to inspire the statistical researchers to pay due attention to this approach.

Estimation Of Missing Observations in Sudoku Square
Design with Balanced Incomplete Block Design

Shamsa Kanwal and Munir Ahmad
National College of Business Administration and Economics, Lahore, Pakistan

Sudoku square design is a special type of mathematical form called generalized Latin square. Sudoku square design in conjunction with balanced incomplete block design is use to control more factors at different levels which has never been done before. In addition to rows, columns and treatments another source of variation called squares is introduced with balanced incomplete block design's treatments. In this design the experimental materials are laid out in 'n' rows squares, 'n' columns squares, 'n^2' rows, 'n^2' columns and 'n^2' treatmentsin such a way that every treatment must place only once in each row square, in each column square, in each row, in each column and in each square. In this paper we deals with the missing observations of Sudoku square design with balanced incomplete block design. For this purpose we follow the method suggested by Yates (1933) for estimating the missing values in Latin square design to arrive at the corresponding formulae for estimating the missing values in Sudoku square design with balanced incomplete block design' s treatment.

031:
Normality Tests: A Brief Review

Munir Ahmad

National College of Business Administration and Economics, Lahore.

Normality tests have been developed by statisticians and non-statisticians to assume ifÊsample aÊ.
In this paper, a comprehensive review of normality tests is presented.

032:
Calibration and Partial Calibration on Principal Components when the Number of Auxiliary Variables is Large

Cardot, H., Goga, C. and Shehzad, M.-A.

Department of Statistics, Bahauddin Zakariya University, Multan, Pakistan

In survey sampling, calibration is a very popular tool used to make total estimators consistent with known totals of auxiliary variables and to reduce variance. When the number of auxiliary variables is large, calibration on all the variables may lead to estimators of totals whose mean squared error (MSE) is larger than the MSE of the Horvitz-Thompson estimator even if this simple estimator does not take account of the available auxiliary information. We study in this paper a new technique based on dimension reduction through principal components that can be useful in this large dimension context. Calibration is performed on the first principal components, which can be viewed as the synthetic variables containing the most important part of the variability of the auxiliary variables. When some auxiliary variables play a more important role than the others, the method can be adapted to provide an exact calibration on these important variables. Some asymptotic properties are given in which the number of variables is allowed to tend to infinity with the population size. A data driven selection criterion of the number of principal components ensuring that all the sampling weights remain positive is discussed. The methodology of the paper is illustrated, in a multipurpose context, by an application to the estimation of electricity consumption for each day of a week with the help of 336 auxiliary variables consisting of the past consumption measured every half an hour over the previous week.

033:
The Fractal Dimension Description of Ionosphere Virtual Height of F2 Layer at Pakistan Atmospheric Region

Bulbul Jan andM. Ayub Khan Yusuf Zai

Institute of Space and Planetary Astrophysics, University of Karachi, Karachi, Pakistan

It is known that ionosphere is a highly variable system and plays a vital role in radio wave communication. It absorbs large amount of radiant energy from the sun, thus becoming heated and ionized. To describe the state of ionosphere is to deal with the critical frequencies that directly reflects the electrical signals through ionospheric layers especially F2 that is under study. It is the earth's higher atmosphere and the F2 layer is the external layer of the ionosphere which is essential for radio wave propagation, via frequency range of 3 to 40 MHz.The term virtual height of ionospheric F2 layer could be termed as the wave is refracted and bent down gradually rather sharply. When the incidence and returned rays are extrapolated to a vertex they meet at a height h' is called virtual height. The F2 layer has a stable existence; even from side to side the height varies on a daily basis. The estimation of virtual height is very important because it provides information about the frequencies at which variations occur, as well as the time where they occur. This study discusses the estimation of virtual height using fractal dimension to observe the complexity of the process. Higher the complexity of the phenoimena lower will be the smoothness or wise versa.Further we estimate the Hurst exponent associated with fractal dimension. Fractal dimension describes the complexity of the virtual height on the basis of Hurst exponent. This study will encourage the investigators working in the same field to verify the complex nature of ionospheric signals.

034:
Wavelet Characterization of Maximum Useable Frequency (MUF) for Ionosphere Region of Pakistan

M. Ayub Khan Yusuf Zai and Bulbul Jan

Institute of Space and Planetary Astrophysics, University of Karachi, Karachi, Pakistan

In this communication, we have described that the propagation of electromagnetic waves in the ionosphere is considered as complex by the fact that this medium is inhomogeneous, anisotropic, turbulent, non-stationary and multipath. As we know that the ionosphere consists of plasma formed in the upper layers of the atmosphere, at heights corresponding to mesosphere and thermosphere, with high density of free electrons. Ionosphere therefore behaves as a large system showing a strong variation is of major importance to address both practical (radio-communication and navigation systems) and theoretical (Space–Earth coupling, climatological global change, and human activity impact) issues. Therefore, establishing a mathematical and statistical description of ionosphere variations and relating them to potential driving sources such as global solar and geomagnetic activities constitute important stakes. Often, ionosphere (F-region) variations are described in terms of long-term trends versus short-term fluctuations. Ionospheric variability appears of great importance because of its impact influence on communication with ground.
One of the terms used in the Sky wave propagation is Maximum useable frequency (MUF) that refers to the highest possible frequency for high frequency (HF) communications that can be used to transmit over a particular path under given ionospheric conditions that fluctuate continuously due to temporal variations of the ionosphere. The aim of this research is to study maximum usable frequency (MUF) using Wavelet analysis over Pakistan region. Wavelet transform can map the power of a particular frequency at different times, giving an expression of the signals in both time and frequency.This study will encourage the investigators working in the same field to verify the complex nature of ionospheric signals.

035:
A Study of Measuring Return in a Well Diversified Portfolio

Ammara Nawaz Cheema[1] andAhmad Nawaz Cheema[2]

1 Department of Mathematics,Air University, Islamabad, Pakistan
2 Snl Financial, Islamabad, Pakistan

In this study we increased awareness regarding the benefits of investment in a well-diversified portfolio and the investment options ever. We took two types of investor, one who invest his capital in one company, the other invest his capital in more than one company. For drawing the inference we used regression model, best subset selection, and proportion test. After applying these tests we found that the return on investment in a well-diversified portfolio for a short period of time as well as for a long period of time is greater than the return on investment in an undiversified portfolio.

036:
Ratio-cum-Exponential Estimator of Population Mean in the Presence of Non Response under Two Phase Sampling

Amjad Ali, Adnan Khan andMuhammad Azeem
Department of statistics, Islamia College, Peshawar, Pakistan

In this paper, the problem of estimating population mean in the presence of non-response utilizing information on two auxiliary variables is considered under double sampling. Numerous attempts has been made to utilize auxiliary information in one way or other. In the present study a ratio-cum-exponential type estimator is developed which utilizes information on two auxiliary variables in such a way to get optimum accuracy as compared to the available estimators. The expressions for bias and mean square error have been derived up to second order of approximation. The efficiency of proposed estimator is compared with their competitive estimators in same scenario and it is found that the efficiency of the proposed estimator is better than available estimators under certain conditions. Moreover, empirical studies are conducted in support of our estimator results.

037:
Causes of Teacher's Favoritism and its Effects on the University Students:
A Case Study of khyber Pakhtunkhwa (Pakistan) Universities

Amjad Ali[1], Mujeeb Hussain[1]andDost Muhammad Khan[2]

1 Department of Statistics, Islamia College, Peshawar, Pakistan
2 Department of Statistics, Abdul Wali Khan University, Mardan, Pakistan

This study aims at exploring & examining the causes of teacher's favoritism and its effects on the university students. Quantitative tools are applied to collect data for the study and to check its reliability. The results of the data reveal that the teachers favor the students on the basis of gender, race, area, similar political ideology and family/blood relation. The study also indicates that a teacher's favoritism in the class affects boldness, mutual trust &respect between students and teacher which results in the student's struggle for favoritism instead of studies and academic achievements.Moreover, the students may opt for leaving the institute in which favoritism exists. The study also shows that both male & female students have the same opinions regarding different factors and effects of favoritism. The study concludes that the students' flair, potential, abilities and academic achievements should be emphasized as essential criteria for testing and grading the students' academic performance. It will, further, compel the students to focus on their studies, rather than on gaining teacher's favor.

038:
Some Properties of MM Double Exponential Distribution (MMDED)

Mubbasher Munir[1], Zahida Parveen[2]andAhmed F. Siddiqi[1]

1 University of Management and Technology, Lahore, Pakistan
2 Lahore Garrison University, Lahore, Pakistan

The exponential distribution is one of the most significant and widely used distributions in statistical practices. In this paper, we introduce Double Exponential Distribution (DED) and find some properties with application to real life data. Maximum Likelihood Estimation (MLE) has been used to estimate the parameters of DED. Finally, we provide results of entropies and compare DED with other distributions for best fitted.

039:
Extended Weibull-geometric Distribution

Zahra Sultan[1], AzeemAli[1], Muhammad MoeenButt[2]and MunirAhmad[3]

1 Government College University, Lahore, Pakistan
2 University of Management and Technology, Lahore, Pakistan
3 National College of Business Administration and Economics, Lahore, Pakistan

In this paper, wewillpropose a new four-parameter distribution, called Extended Weibull-Geometric Distribution.We will also explore different properties of the newly proposed distribution such as its shape, moments, quantile, mode, order statistic, mean deviation andRenyi entropy. The estimation of parameters is studied by maximum likelihood method. The benefits of new distribution will be studied by an application on real data set.

040:
A study exploring Significant Risk Factors and Effect of
New Treatment on Survival for Oropharyngeal Cancer

Mueen-ud-Din Azad, Ahmed F. Siddiqi,M. Moeen Butt and Mubashir Munir

University of Management and Technology, Lahore, Pakistan

There are non parametric and parametric methods available in the literature to compare the survival distributions. This research is a case study exploring two such methods. This study includes 195Oropharyngeal Cancer patients which are randomly selected, six factors (gender, treatment, grades, age, condition ,T-stage and N-stage) that would be expected to relate to survival time. The objectives of the study are to find out the most significant factors effecting the survival time and to compare two treament methods (standard and test) with respest to patients survival time. The Cox-Proportional Hazard Model has been used to find out the most significant risk factors. The Product Limit method is used to estimate the survival functions and hazard rates. On the paremetric side the hazard rates follow the Log-Normal distribution. The parameters of Log-Normal distribution have been estimated by maximum likelihood method and survival functions have been obtained. The goodness of fit test has been applied to confirm the distribution of survival data. The survival functions of Log-Normal and Product Limit methods have been compared.

041:
Implication Role of Statistics in Fish Taxonomy

Musarrat-ul-Ain[1], Zubia Masood[2], Rehana Yasmeen Farooq[1] and Bushra Saleem[1]

1 Department of Zoology, University of Karachi, Karachi, Pakistan
2 Department of Zoology, Jinnah University for Women, Karachi, Pakistan

Fish scales are remarkable structures which plays a significant role in fish taxonomy. Therefore, a study was carried out to notice the significance of different scale parameters such as; scale length (TLS), scale width (WDS), number of ctenii in horizontal row (HRS), number of ctenii in vertical row (VRS) and number of radii (RDS) in fish taxonomy using statistical calculations. About 54 specimens of Scatophagus argus were collected from the commercial landings at fish harbours of West wharf and Korangi creek, Pakistan. Different parameters of scales (i.e., TLS, WDS, HRS, VRS and RDS) were studied under SMZ stereomicroscope. The relationship among these scale parameters were studied with the help of linear regression equation ($Y= aX^b$). All results were found highly significant ($p<0.05$). The correlation between fish length and different parameters of fish scales shows moderate ($r<0.60$) to strong ($r>0.70$) correlations. In order to find the relationship between fish length and different parameters of scales the null hypothesis was set as; H_0: r=0 (the X and Y variables are uncorrelated) and the alternate hypothesis was Ha: r?0. The null hypothesis was rejected when p-value was less than the specified significant level of 5% ($p<0.05$). Hence, shows that the growths of scale parameters are mostly proportional to fish body length. The result of present investigations shows that statistical analysis of different parameters of fish scales is a useful technique in systematic classification of fishes.

042:
Comparative Evaluation of Functional Properties of Basalt Structure

Hafsa Jamshaid[1,2], Rajesh Mishra[1]andJiri Militky[1]

1 Technical University of Liberec Chezk Republic
2 National Textile University, Faisalabad, Pakistan

This study aims that the production of basalt non-hybrid and hybrid woven fabric. The aim of doing this research is to analyses the functional properties like thermal, electrical and acoustic properties of structures on the basis of fiber properties and weaves. An attempt has been made to measure the resistance of different hybrid fabrics in order to understand the effect of fabric structure on the resistance of fabric. It will help to design technical textiles from fabrics where thermal, electrical resistance property is required during use.To analyze the effect of weave, and fiber on these properties, ANOVA tests were conducted.

043:
Modeling the Growth of Half-Smooth Golden Pufferfish, Lagocephalus Spedicious Using Statistical Methods

Kashif Ayoub

WWF-Pakistan, Karachi, Pakistan

Half-Smooth Golden Pufferfish (Lagocephalus Spedicious) is a marine fish, also found in brackish water. Maximum length has been reported as 37.4cm TL while, common in 25cm TL. It is a toxic fish and possibly lethal to humans. This pufferfish is widely distributed in Indo-West Pacific and also a Lessepsian migrant in to the eastern Mediterranean, Lebanon and Aegean Sea. For this research about 502 specimens of L. spedicious ranging 12.50 to 23.5cm were collected from the commercial landing site at Karachi Fish Harbour during Jan 2013-Dec 2013. Fresh samples were analyzed in the laboratory. Fishes were measured to the nearest 0.1cm from tip of the snout to the end of the caudal fin while, fishes were weighed to the nearest 0.01gm. For sex determination, fishes were dissected from the abdominal region. Gonads were carefully removed from body cavity and weighed to the nearest 0.01gm. Identification of sex was made by both the macroscopic and microscopic examination of gonads. The growth pattern of L. spedicious was estimated using linear regression equation ($W=aL^b$). For the estimation of wellbeing of the fish, Fulton's condition factor was estimated by: $K=Wx100/L^3$. For the determination of breeding season, gonadosomatic index (GSI) of male and female sexes were also estimated by GWx100/BW. The growth pattern was found negatively allometric for combined, male and female sexes and found highly significant. The condition factor specifies the poor health of fishes landed at Karachi fish harbour. The sex ratio was found not significantly differed from the expected value of 1:1. The findings of present research enhanced the significance of statistical methods and calculations in stock assessment and contribute a role in fisheries management and conservation of fish species.

044:
A Time Series Analysis of the HouseholdElectricity Consumption of Middle Class Family in Chittagong

Sharmin Jahan,Md Shahidul Haqueand Md. Rokonuzzaman
Department of Statistics, University of Chittagong, Bangladesh

The aim of this study is to find out the average monthly electricity consumption and fit a suitable time series model to predict. Electricity is a necessity in the modern world and has attained a very important place in every household on this planet. It is a major contributor towards improvement of the standard of living of any individual, family and society at large. Monthly electricity consumption of a middle class family in Chittagong from January 2001 to November 2015 are considered in this analysis. STATA software is used to analyze this dataset. There have no seasonalvariation but have a statistical significant between the monthly average electricity consumptions. The data are found to be a stationary time series data. From the ACF and PACF function we get the cut off point for AR and MA part are 3 and 2 respectively. Further as ARCH effect is significant for this data set we use ARCH family regression with ARIMA disturbances model, After comparing the different value of the parameters, ARCH(1) with ARIMA (3,0,2) disturbancesis best fit for this data set.For better prediction one can consider to select a representative size of sample families with at least 20 years data. Also some covariates like family size and electronic items used in the family can be considered and can try to fit a GARCH or TGARCH model.

045:
Shewhart Control Charts for Rayleigh Distribution
in The Presence of Type I Censored Data

Syed Muhammad Muslim Raza[1], Muhammad Moeen Butt[2]and Ahmad F. Siddique[2]

1 Department of Mathematics and Statistics, Virtual University of Pakistan
2 School of Business and Economics, University of Management and Technology, Lahore, Pakistan

This article explains shewhart control charts for monitoring the mean level of the Rayleigh lifetimes under the type I censored data. The control chart for the type I censored data is developed based on the conditional expected values (CEV). The results of CEV based control charts are compared with simple/traditional shewhart structures. The CEV control chart outperforms traditional control chart when the data is censored. The proposed method is illustrated by an example.

046:
Interpretation of Data of Various Nature Using Statistical Operations

Maria Taj Muhammad and Muhammad Nasiruddin Khan

Department of Chemistry, University of Karachi, Karachi, Pakistan

Statistics is a tool for data collection, analysis, organization, presentation and interpretation in the field of medicine, environment, social sciences etc. When the data is large and difficult to interpret with its proper meanings, it's a big task to simplify the data without losing its essence. To solve this problem there are many statistical tools available which can change the look of the data and help in drawing the conclusion by simplifying the results in a best possible manner. By applying ANOVA, ANOM, CA, PCA, we can handle our data in more simplify and elaborate way. Applying statistics on the data, a large data start giving their self-explanatory meanings. In the present presentation, various appropriate statistical tools were applied to the data of different fields to explain the need of the statistical tools for data description.For this purpose, research data of asthma patients were discriminated, samples of rain water, collected from different areas, were separated on the bases of their physico-chemical characteristics, honey samples were distinguished on the bases of their origin, and coal data were separated according to their classification.

047:
Relating Geostatistical cokriging with Multivariate Statistical Approaches to Assess Groundwater Salinization in Faisalabad

Maqsood AhmadandSohail Chand

College of Statistical and Actuarial Sciences, University of the Punjab, Lahore, Pakistan

Drinking water is an essential part of human life usually known as life blood. Pure drinking water makes our life disease free whereas contaminated water causes several diseases like hepatitis, diarrhea, cancer, stomach disorder, diabetes, and back bone problems. Therefore, it is necessary to know the physio-chemical parameters of drinking water that whether they meet world health organization (WHO) standards or not. Modelling the available parameters at monitored locations and their prediction at unmonitored locations is important for health perspectives. For this research, 220 water samples were collected from district Faisalabad and tested for 12 physio chemical parameters: Total Dissolved Solids (TDS), Sulphate), Nitrate , Potassium , Sodium , Magnesium , Calcium, Bicarbonate , pH, Chlorides), Fluoride and Sodium absorption ratio (SAR) where the last one is important chemical parameter to ensure water suitability for irrigation purposes. We used R statistical software to analyze the data. At initial stage, exploratory analysis was taken to compare each parameter with permissible standard value of WHO and percentage of alarming samples were declared. Multivariate correlation matrix displayed graphically showed the linear pairwise dependencies among these parameters. Principal component analysis (PCA) was executed for grouping the correlated parameters. Dendrogram based on these parameters was constructed using Cluster analysis (CA). PCA and CA suggested same variables having significant importance and strong interrelation. Furthermore, geostatistical cokriging was carried out to capture the spatial dependence of studied physio-chemical parameters. Seven significant variables were processed: concentration ofand , as primary variables, while data on TDS concentration was taken as auxiliary variable. Normality of each studied parameter was initially assessed and skewed parameters were normalized by using Box cox transformation. Since spatial dependence is prerequisite of geostatistical prediction; therefore, the ratio of sill to range confirmed spatial autocorrelation among all samples with each of the studied chemical parameter. We applied four covariance functions: spherical, exponential, Gaussian and Matern for variogram modelling. Parameters of variogram, sill, range and nugget were estimated by maximum likelihood estimation (MLE) and restricted maximum likelihood (REML) method. For both estimation techniques, the nugget/ sill depicted a high spatial dependence between sampled observations. Relatively more parameters among twelve, supported REML method on the basis of reduced root mean squared prediction error (RMSPE). We utilized the estimated parameters in cokriging which is known as the best geostatistical prediction methods for mapping the prediction results. Spatial maps of all significant parameters have been shown. Set aside data was cross validated and cokriging was compared with ordinary Kriging which consequently outperformed because it captured the spatial dependency more accurately. Cross variography revealed the real picture of relationship among variables along spatial scale which is not described by simple pairwise correlation. This study demonstrates that multivariate statistical and geostatistical techniques together make effective prediction of un-sampled locations. The generated spatial maps of district Faisalabad highlighted the high risk zones which are helpful for policy makers to treat the contaminated water.

048:
Improved Ratio-type Estimators of PopulationMean in Ranked Set Sampling using Two Concomitant Variables

Lakhkar Khan[1]and Javid Shabbir[2]

Higher Education Department, Khyber Pakhtunkhwa, Pakistan
Department of Statistics Quaid-i-Azam University, Islamabad, Pakistan

In this paper, we propose an efficient class of ratioin-exponential-typeestimators with two concomitant variablesunder Ranked Set Sampling (RSS) scheme. Expressions for biasesand Mean Square Errors (MSEs) of the proposed estimatorsare obtained upto first degree of approximation. Comparisonsamong the proposed and competitor estimators are made throughsimulation study. It is found that when the variable of interestand the concomitant variables jointly follow a trivariate Gammadistribution, the proposed class of estimators dominates all theother competitor estimators.

049:
Skin Detection in Spatial Domain

Arfa Hassan, Unsa Tariq, Asim IqbalandMuhammad Adnan Khan

Department of Computer Science, Lahore Garrison University, Lahore, Pakistan

This article is about skin detection. Skin detection plays very important role in fields like computer sciences, medical and electrical etc. There are several techniques to detect a skin in spatial domain as well as in frequency domain. The skin color varies from people to people andregion to region, so it is very difficult to introduce a uniform method for skin detection. Most ofthe research done in the fields of skin detection has been trained and tested on human images ofMongolian, African and Anglo-Saxon ethnic origins. Although there are several intensityinvariant approaches to skin detection, the skin color of Pakistani have not been focusedseparately. The approach of this research is to focus the detection of Pakistan-like skin by usinghistogram approach in spatial domain, to optimize the detection criteria, and to find someefficient parameters to detect the skin area from the image.

050:
Association of Obesity with Dietary Behaviors and Its Associated Factors among Women of Three Ethnic Groups from Karachi, Pakistan

Zehra Parveen[1*], Arif Ali[2], Tahira Mohsin Ali[1]and Abid Hasnain[1]

1 Department of Food Science & Technology, University of Karachi, Karachi, Pakistan
2 Department of Research, Dow University of Health Sciences, Karachi, Pakistan

Objective: To find the association of obesity with dietary behaviors and socio-demographic variables among Pakistani women belonging to Aga Khan, Dawoodi Bohra and Memon communities. Methodology: This cross-sectional study was undertaken on 322 women, aged between 18-60 years, living in Karachi and belonging to Aga Khan, Dawoodi Bohra and Memon ethnic groups. Dietary behaviors were assessed through a structured interview-cum-questionnaire. Binary logistic regression was used to find possible associations. Results: Findings of the study showed that increasing age increased the risk of both central and general obesity and women belonging to Aga Khan community were thrice more likely to be generally obese 3.2 (95% CI: 1.75-6.01). Descending level of education ascended the risk of all types of obesity and single women were less likely to be centrally obese 0.41 (95% CI: 0.20-0.82). Older women were more likely to be careless eaters 1.05 (95% CI: 1.01-1.11) while younger ones were more prone to be snacker and fast food eater 0.9 (95% CI: 0.87-0.93). Memon and Aga Khani women were more likely to be overeater and snacker/fast food eater. Lesser education was associated with all type of unhealthy dietary behavior. Higher total family income has significant positive association with unhealthy meal pattern 1.80 (95% CI: 1.03-3.13) and snacking/fast food eating behavior 2.13 (95% CI: 1.11-4.05). The risk of general and central obesity increased with frequent practice of unhealthy meal pattern, overeating, careless eating and snacking/fast food consumption. Conclusion: Our findings revealed a definite association of obesity with dietary practices and socio-demographic factors among Pakistani women on community basis.

051:
Sample Size Issues in Multilevel Logistic Regression Models

Sabz Ali[1], Amjad Ali[2] and Sajjad Ahmad Khan[3]

Department of Statistics, GPGC No. 1, Abbottabad, Pakistan
Department of Statistics, Islamia College University Peshawar, Pakistan
Department of Statistics, Abdul Wali Khan University, Mardan, Pakistan

Educational researchers, psychologists, social science researchers, epidemiological and medical researchers are often dealing with multilevel data where students are nested in classes, individuals nested in households and patients are nested in doctors. Most of the time the outcome variable seems to be non-continuous and then such a non-continuous variables (Binary, Multinomial and Ordinal) need to be analyzed through Multilevel Logistics Regression Models. The main theme of this paper is to provide guidelines for the analysts to select an appropriate sample size while fitting multilevel logistic regression models for different threshold parameters and different estimation methods. Simulation study will be performed for obtaining the optimum sample size for Penalized Quasi-likelihood Method and Laplacian Approximation Likelihood Methods.

052:
Health Anxiety in Association With Anxiety
& Depression in Medical Students

Ramsha Sana, Wajeeha Jamil, Urooj Imdad and Amerta Langhani

Sindh Medical College, Dow University of Health Sciences, Karachi, Pakistan.

Background & Objective: Evidence for the widely held notion that medical students are more likely than others to have excessive anxiety about their health- due to reasons such as their exposure to medical education, clinical experiences and increased psychological distress- is weak. Health anxiety is often thought to be associated with, or a symptom of, a mental health condition such as depression or anxiety disorder. While studies have shown high levels of anxiety and depression among medical students, no substantial research is available to show if any relationship exists between these psychological conditions and health anxiety. Our study aimed to evaluate the prevalence of health anxiety and its correlation with anxiety and depression, in medical students. Methods: A cross sectional, descriptive study, of a thousand medical students, half each from public and private colleges of Karachi, Pakistan, was undertaken. A self-administered questionnaire, with three standardized self-rating scales i.e. Health Anxiety Questionnaire, Zung Self-Rating Anxiety Scale and Zung Self-Rating Depression Scale, was used to assess health anxiety, anxiety and depression respectively in the participants. Frequency statistics were used to determine prevalence of health anxiety, anxiety and depression in the target population. T-tests and ANOVA were performed to assess variations among demographic populations. Pearson correlation was used to assess association between health anxiety and anxiety and depression. All analysis were performed using SPSS v.21. Results: 28.5% of the participants were males and 71.5% females, from all medical years. 73.1% participants scored low for health anxiety, 24.8% scored moderately and only 21 (2.1%) scored high. Health anxiety was found to decrease during the course of medical studies. No significant differences were seen in levels of health anxiety on basis of gender and sector of medical college. A high prevalence was found for anxiety (54.7%) and depression (30.1%). Pearson correlation showed a significant positive correlation between health anxiety and anxiety (p=0.527) and health anxiety and depression (p=0.386). Furthermore, of the students who scored high for health anxiety, all (100%) were screened to be anxious and 85.7% were also found to be depressed. Conclusion: The current study shows that medical students are not excessive health worriers. It reveals a high prevalence of anxiety and depression among them. It further demonstrates an association between health-related anxiety and psychological distress which is stronger with anxiety than with depression, indicating that health anxious students are more likely to be anxious than depressed. Psychiatric comorbidity at higher levels of health anxiety indicates the need to screen all health anxious medical students for anxiety and depression and to come up with possible interventions to reduce the mental distress associated with medical studies.

053:
Impulse Response Function Analysis: An Application To Macroeconomic Data of Pakistan

Fariha Shafiq, Muhammad Arif andMuhammad Yaseen

Department of Mathematics & Statistics, University of Agriculture, Faisalabad, Pakistan

Impulse response function (IRF) is increasingly common in financial markets; it is significantly related to policy changes of Government or the firm. An IRF of any dynamic model is its reaction to some external fluctuations emerged with brief input signals over time. It is a way to examine and evaluate the impact of external shocks. To make a comprehensive view of Pakistan's macro-economy, six typical macroeconomic indicators: Exchange Rate (ER), Consumer Price Index (CPI), Money Supply(MS), Wholesale Price Index (WPI), Import rate and Export rate focused for analysis. Data of equal length and same scale studied for necessary transformations. In this study the impact of one variable to all other variables with respect to external shocks has valued description. For empirical analysis Vector autoregressive (VAR) model is used that describe the relationship between macroeconomic variables. To give the strength to the idea of causality between variables, granger causality also included in this study and the relationship between the variables and effect of any external shocks on variables explained by the IRF. By the help of IRF it can be concluded that exchange rate, Import rate, export rate and money supply in Pakistan have strong relation between them and show a considerable reaction in future for the impulses occur in each other so the model of these four variables have sound predictive validity and used for better forecast.

054:
BLS Knowledge: A Comparison Between Clinical and Basic Medical Professionals

Anam Rehman, Ujala Shujat, Nuha Mahmood, Hafsa Naseem,
Maryam Siddiqui,Sohaima Samad, Amim ul Haq, Aatra Mahfooz,
Sadaf Athar, Bareera Akhtarand Ammara Shaikh

Sindh Medical College,Dow University of Health Sciences, Karachi, Pakistan

Introduction:Cardiopulmonary resuscitation (CPR) is performed on sudden cardiac arrest patients. There is significant morbidity and mortality due to SCA and choking. This high incidence raises a question regarding knowledge of BLS in health care professionals. Therefore, we will be assessing knowledge of BLS among clinical and basic medical health care professionals. Methodology:A cross-sectional study was conducted on the Medical professionals of Jinnah Sindh Medical University (JSMU) and Jinnah Postgraduate Medical Centre (JPMC) to assess their knowledge of BLS, within a period of 10 months. Data was collected from 94 participants using a pretested questionnaire through convenient sampling technique. Adequate knowledge was assessed and compared between medical professionals of JSMU and JPMC. P-value was taken significant if it were <0.05 after applying chi-square test.Result:The mean age of participants was 33.0 ± 8.66 years. 48% candidates were related to Academics Faculty whereas 52% were Clinical Faculty. Overall 60 (63.8%) responders had "Adequate Knowledge". Out of those, 23 (38.3%) were from JSMU and 37 (61.6%) were from JPMC. There was a significant difference of knowledge of BLS among the institutes(p-value= 0.003). There was also significant difference of adequate knowledge of participants of JSMU who have had previous BLS training and those who haven't (p value =0.05).Conclusion:BLS knowledge of medical professionals should be frequently revised and updated because they should be competent enough to handle any emergency situation, be it in a hospital or outside of it. Furthermore, this updated knowledge will have a positive effect on their students.

055:
Impact of Faculty Satisfaction on Students' Performance-
A Case Study of FAST-National University

Farrukh Idrees

FAST National University of Computer and Emerging Sciences, Islamabad, Pakistan

Higher education is a linchpin of the Pakistani economy. The research intends to explore the impact of students' intake quality on their entry test performance in higher education which is a paradox among educators and researchers. This paper takes a statistical approach by applying descriptive statistics, correlation and regression to assess the impact of satisfaction of 100 faculty members. The unit of analysis of the study is FAST National University, Islamabad Campus. The paper provides insight for future evaluation of higher education learning environments by linking faculty satisfaction on student's performance. Further research may be done to explore the impact of other factors impacting learning behavior of students. In addition, more rigorous quantitative techniques e.g. factor analysis, ANOVA, design of experiments etc. may be used to triangulate the findings. Further, sample size may be enhanced to generalize the findings of the study.

056:
Managing Students' Intake Quality- A Case Study of An Engineering School of Pakistan

Farrukh Idrees

FAST National University of Computer and Emerging Sciences, Islamabad, Pakistan

The research intends to explore the impact of students' intake quality on their entry test performance in higher education which is a paradox among educators and researchers. This paper takes a statistical approach by applying descriptive statistics, correlation and regression to assess the impact of intake quality measures in an engineering school through assessing a dataset of 130 students. The unit of analysis of the study is FAST School of Engineering. The paper provides insight for future evaluation of higher education learning environments by linking student intake quality measures with their entry test performance. Further research may be done to explore the impact of geographical factors on students' entry test performance. In addition, more rigorous quantitative techniques e.g. factor analysis, ANOVA, design of experiments etc. may be used to triangulate the findings. Further, sample size may be enhanced to generalize the findings of the study.

057:
Interrelationship among Species and Environmental
variables using Spatial Analysis by Distance Indices

Imtiaz Husain

Department of Mathematical Sciences,Federal Urdu University of Arts,
Science and Technology, Karachi, Pakistan

Distance Indices methods are widely used to measure the interrelationship among the species and environmental variables and their neighboring grids point. Identification of the location and movement pathway enable us to detect association in several scales. Arbitrary coordinates systems were applied to rule out the initial and boundary positions of the species and their associated environmental variables and their distances in various block sizes. We observed each grid unit and measures the distances of one hundred and forty four nearest neighboring grid units. Mean distances among species and environmental variables were calculated in different block sizes. The distance between centroids of the grid unit and the counts of species population were found to be 0.644 with maximum distance between sample units is 202.233 units with mean $=39.173$, variance 6.032 and Index of dispersion was determined as 22.021. The absolute over all flow in the study area is found to be 2.213 at probability $(p<0.003)$ with index of aggregation 1.960.

058:
Topic: Impact of Health Promotion Policies on Public Sector Development

Zareen Abbasi

Department of Public Admn, University of Sindh, Jamshoro, Pakistan

In this global village and competitive age where the concept of quality plays very important role to develop organizations. The health of human resource is also important. The purpose of this research article to analyses available policies that are unable to provide health promotion. It is also necessary to find out the reasons that why still our public sector organizations are unable to introduce, to implement, to analyses and to decide in right direction with reference to health promotion practically. The aim of this paper to check available statistical data of other countries and compare with Pakistan to identify and diagnose where and by whom this ignorant and negligible behavior appear and why? What type of policy and law making initiatives are essential and by whom this can be done and how? In this paper both qualitative and quantitative research methodology will be used. The paper suggests in best by using statistics as a field to get productive and feasible result oriented results.

059:
Trends in the Selection of Field For Undergraduate Studies:
A Case Study From Admission Data

Syed Mohammad Ali and Naseer Muhammad

Department of Economics, University of Karachi, Karachi, Pakistan

The choice of a field for undergraduate studies is an important decision for students. At the one hand, it depicts interest of student in the field and their perception for job market in future. While one the other hand, it reflects, society's values and norms to various areas of studies. Research in this area has been limited due to unavailability of data. This paper attempts to investigate the trend in undergraduate studies. It uses undergraduate students' admission data to find: a) What are the choices of students? b) Which area of studies is chosen by the students, most? c) Which discipline is marginally selected? d) Does gender has any difference in the selection of areas of studies? Given limited data, this research provides some important insights in undergraduate studies education.

060:
Measuring Kurtosis of a Weibull Distribution by Various Approaches

Rahila Hafiz and A.Z. Memon

The Institute of Management Sciences (Pak-AIMS), Lahore, Pakistan

In statistical literature there exists a controversy about the real purpose of Pearson's measure of Kurtosis. A number of measures of peakedness,Êshoulder heaviness and tailedness have been proposed; such as byÊHorn (1983), Bonett and Seir's (2003), Hosking (1990), Blest (2003), and Zenga (2005). Weibull family of distributions assumes shapes with varying levels of skewness and peakedness as well as other characteristics depending on the shape parameter of the distribution. In this paper we follow the above approaches for measuring kurtosis of Weibull distributions and attempt to explore broad relationships among them.

061:
Are We Ready to Accept the Challenge of Ebola Virus: Perception of Healthcare Providers

Syed Arif Ali, Masood Hussain Rao, Summaiya Siddiqui and Razia Siddiqui

Dow University of Health Sciences, Lahore, Pakistan

Introduction: Ebola virus disease (EVD), formerly known as Ebola hemorrhagic fever, is a severe, often fatal illness in humans. It is a rare and deadly disease caused by infection with Ebola virus. The virus is transmitted to people from wild animals and spreads in the human population through human-to-human transmission. The average EVD case fatality rate is around 50%. Case fatality rates have varied from 25% to 90% in past outbreaks. Because of its high, EBOV is also listed as a Risk Group 4 Pathogen (requiring). Objective: To determine the clinical manifestations of viral hemorrhagic fever, and to assess the awareness and knowledge in health care providers about Ebola virus. Methodology:This crosssectional non-probability convenience sampling study was conducted on doctors, nurses and paramedical staff of all Medical, surgical and pediatric units, ICU and emergency department of civil hospital Karachi. We have selected 370 health care providers including doctors, nurses and paramedical staff.Ethical approval from the Institutional Review Board of DUHS and a writing consent from each participant were taken. The questionnaire was filled through interview.Data was entered in SPSS 17.0. Mean ± S.D. was calculated for all quantitative data whereas frequency and percentages were calculated for all the qualitative variables. Chi-square test was applied for statistically significance level of the data at P=<0.05.Results: Out of 370 participants, 249 (67.3%) were ever heard about Ebola virus. Out of these, majority know the symptoms as fever, bleeding severe headache and muscle pain. Regarding appearance of these symptoms, only 53% of 249 participants have the correct knowledge. The way of transmit of the Ebola virus was known by 69.45% participants whereas 64.6% know the PCR is the best for lab diagnosis of this virus. Only 27.7% of health care providers know that it is spread in the community through animals and infected persons. Very low percentage of the participants (32.4) was ready to handle the Ebola virus patients in the hospital; however majority (79.2%) were ready to get training on this issue. Physicians were less ready for handling the Ebola virus patient as well as to get training materials for it as compared to nursing staff (P<0.001). Similarly year of service is directly correlated with the owning the responsibility of handling the patients and to get training for handling the Ebola virus as compared to nursing and other health care providers. (P<0.001)Conclusion:The Ebola virus is life threating but the knowledge and proper prevention proceduresof health care providers was not up to the standard. Their behavior shows that our health care providers are not yet ready to accept the challenge of it. It is therefore essential to provide them basic knowledge regardingIdentification of high-risk patients, symptoms and precautions to hand blood and body fluid of patients to reduce the risk of spread of such viral hemorrhagic fevers.

062:
Recent Trend in Specialty Choices of Dow Medical College Students, Karachi

Syed Hussain Zaidi,Arif Ali, Hasham Naim,Salman Farrukhand Haris Hamid

Dow Medical College, Dow University of Health Sciences, Karachi, Pakistan

Introduction:Most of the countries around the world are experiencing severe shortage of doctors especially in developing countries. Lack of physicians poses a serious threat to the delivery of basic health care facilities in already susceptible societies. In the prevalent shortage of trained Physicians it is important to know the changing trend.Result of this study has guided us to understand most preferred specialty by young generation of medical students and which field is least attractive for future physicians and their criteria for choosing their desired specialty and their future prospects of working in the Homeland or practicing abroad.Objective: To determine the recent trend in medical specialty choices of Dow Medical College students. Method:This research project was a cross sectional survey conducted at Dow medical, Karachi. The ethical approval of study was taken from Dow University of Health Sciences' Institutional Review Board. A verbal consent of the participants was taken prior to their involvement in the study. The questionnaire, consisting of open and close-ended questions (related to their personal information, student specialty choices, factor affecting the specialty choices).Result:Out of 260 medical students,15.4% Internal medicine, 11.9%cardiology, 10%general surgery and 9.6% pediatrics were the 4 highest ranked of specialties, with internal medicine ranked top as both the 1st and 3^{rd}choice. Cardiology was the top ranked at firstchoice among male while internal medicine was in female students (15.3% versus 17.8%).Conclusion:Medical students chose a wider range of specialties. The results of this survey may be useful for Karachi medical council in order to sustain, support to develop interest of medical students in those medical specialties that are less likely chosen by them.

063:
Evaluation of Perceptions of Health Providers Regarding Use of Electronic Medical Records in a Tertiary Care Hospital of Karachi

M. ZakaUddin, Dr. TayyabaAamir, Saba Wajeehand MasoodHussainRao

Dow University of Health Sciences, Karachi, Pakistan

Background: The computer-based patient record is an essential technology for health care.The concept of electronic health record was generated in 1990s but due to lack of technological standards, difficulty in using the systems; and System cost implementation of such system was not widespread.The idea that the EHR is needed to transform the health system to improve quality and to enhance safety.Pakistan has also recently expressed a great deal of interest in electronic medical health records in healthcare system. The rational of the study is to reduction of errors and Perceived ability to deliver high-quality patient care through quick accessibility about past health conditions.Objectives: (1) To determine the level of acceptance of electronic medical record in the physicians and other health care providers. (2) To evaluate the barriers/ misconceptions regarding the use of electronic medical records by physicians and healthcare officials. (3) To develop the awareness and need of electronic health record of each patients in the hospital. Methodology:Study was conducted in Memon Medical Hospital.The study population wasconsultants, doctors and paramedics who are using this system atleast for therlast three months. Face to face interaction with consultants, doctors & paramedics for getting information. Overall 80 questionnaires were filled by targeted population. Permission was taken from the institute and Consent was taken from the participants.Results:Most of the physicians and paramedics 42.0%, were using it and found it easier or slightly easier to use the electronic medical record whereas 44% either not sure about it or did not reply at all. The main beneficial points of electronic medical record were ordering or obtaining the lab and radiological record directly. The main barrier/misconception was security of the information, lack of training and storage of the data.Conclusion:According to consultants, doctors & paramedics EHR system is quite easy to use, time saving, reduction of errors, data safety and security, timely retrieval of records and authenticity. However Reluctances were found in some consultants and few para medic staff due to complexity of infrastructure it cannot be implemented. EMR system implementation must include establishing connections to all the clinical data including linking to pharmacies, labs, and radiology with privacy assurance and accountability.

064:
Effect of Macroeconomic Variable on Equity Returns-
a Saloman Brother's Approach

Syed Monis Jawed and Muhammad Abdul Rehman

Department of Statistics,University of Karachi, Karachi, Pakistan

The purpose of this study is to assess the impact of macroeconomic variables on Karachi Stock Exchange (recently renamed as Pakistan Stock Exchange). For investigating this relationship we have applied Saloman's Brother Approach. This model used to assess the equity return through six macroeconomic factors- economic growth, business cycle, long term interest rate, short term interest rate, inflation and exchange rate. Saloman's Brother does not only suggest the macroeconomic fundamentals but they have also described the proxies that can depict the above mentioned macroeconomic fundamentals. Many previous studies have used this to explain the equity returns for different stock exchanges around the globe; but so far, this model has not been investigated for Pakistan. We are intending to explore this relationship via the usage of Vector Autoregression (VAR) Model. The time period considered in this study is from October 2003 to December 2012. It is found that under the Saloman's Brothers model framework, the economic growth directly affects the performance of stock market, whereas other macroeconomic variables included in the model indirectly imparts their impact on KSE-100 index. We conclude that KSE-100 index responds to macroeconomic factors included in Saloman Brothers model directly as well as indirectly, thus channels of transfer to KSE 100 index from macroeconomic factors can be determined on the basis of findings of this study.

065:
Volatility Spillovers across Financial Markets of Pakistan

Syed Monis Jawed, Syed YasirAlam and JunaidShamshad

Department of Statistics,University of Karachi, Karachi, Pakistan

Asset allocation decision is a major task in portfolio management. Effective asset allocation leads to successful diversification which eventually lowers down the exposure of risk in a certain portfolio. One of the most popular ways of doing diversification is to make investments across different financial markets or assets. In this paper too, we are following the above defined diversification technique. Most of the previous research work in this area is concerned with observing the relationships between or among the asset returns of different financial markets or assets. However, in this paper we have investigated the relationships among different financial markets by considering the risk factor among them. In this paper, we are considering the relationship among the risk factor of stock index, money market rate and gold prices in the context of Pakistan. The time period which is considered in this study is from January 2000 to December 2012. For figuring out the risk factor, volatility of the said markets is estimated in a multivariate framework. A dynamic conditional correlation (DCC) model, which comes under the category of multivariate GARCH models, is applied. The results revealed that the risk factor prevailing in money market is linked with the risk factor in stock and commodity market, thus in order make any portfolio diversify, money market assets should not be combine with stock or commodity market assets'.

066:
A Comparative Study of Pakistan, Bangladesh and India
on the Basis of Mortality Rate Under Five Years

Asad Ali, Sadia Qamar, Muhammad Zubair, Noureen Akhtar and Muhammad Iqbal Ch.

Department of Statistics, University of Sargodha, Sargodha, Pakistan

In present study, we are going to find the rate and pattern of mortality under 5 years (per 1000) in Pakistan, Bangladesh and India. For the purpose of comparison descriptive statistics been utilized and for trend analysis forecasted values are calculated by using Box-Jenkin's methodology. The analysis showed that mortality rate under 5 years was not similar for these three countries. It can also be observed from the present and forecasted values that Bangladesh improves much more as compared to India and Pakistan.

067:
Unemployment and its Determinants: A Case Study of Pakistan

SairaAyub andM. Azhar Khan
University of Haripur, KPK, Pakistan

This study is designed to investigate the unemployment and its determinants in Pakistan over a period of 1980-2013 by examining the empirical relationship among unemployment, inflation, population growth, gross domestic product, foreign direct investment and gross savings. The data has been taken from secondary sources.The stationary properties of the time series data are examined by using graphical method and Augmented Dickey-Fuller (ADF) test. In order to find out the long run relationship among the variables, Johansen – Juselius co-integration technique is applied. The empirical results reveal that inflation and GDP has negative and significant relationship with unemployment over a long period of time. Population growth has positive significant impact on unemployment. FDI and gross savings have also positive and significant impact on unemployment in long run. The study also used the heteroskedasticity and serial correlation tests and their results are showing that the model of the study is free from heteroskedasticity and any serial correlation.

068:
Studying the Distribution of Dental caries experience of Larkana and Peshawar children

Syed Adnan Ali[1], Nazeer Khan[2] and Mudassir Uddin[1]

1 Department of Statistics, University of Karachi, Karachi, Pakistan
2 Jinnah Sindh Medical University, Karachi, Pakistan

In the present study assumption of Normal distribution for dental caries data was tested using Kolmogrov –Smirnov and Shapiro –Wilk test experience by the children of Larkana and Peshawar, by the help of test values and studying normality plots it was found that data was not normally distributed to see further insight inherent in the data. Skewness and kurtosis were estimated to assess the shape of distribution, Kolmogorov-Smirnov Z-test further used to compare the distribution of dmft, primary dmft and secondary dmft between Larkana and Peshawar. Results of this study showed that distribution of dental caries did not follow the normal distribution, primary dmft and dmft distribution of Larkana children found comparatively highly positively skewed than Peshawar children, primary dmft and dmft distribution of Peshawar children was found platy-kurtic while Larkana child have these distribution shapes as meso-kurtic. Result of kolmogorov –smirnov Z-test further showed that dental caries distributions of two cities were not similar.

069:
Performance Analysis of Skin Detection Using GIE and Without GIE Techniques

Arfa Hassan, Unsa Tariq, Asim Iqbal andMuhammad Adnan Khan

Department of Computer Science, Lahore Garrison University, Lahore, Pakistan

The Skin detection is a computerize method of locating the Skin in the digital image. It is an important challenge to locate skin from uncontrolled and indistinguishable background of the digital image. This paper presents comparison between GIE and without GIE based human skin detection from the colored images. Skin color segmentation is used for localizations of skin colored components in the digital image. After seeing the result of skin detection with and without GIE based methods, we can conclude that both techniques give us the approximate same results in skin detection but in HSV domain without GIE based method gives better results as compared to GIE based method. But it's not true for all cases; it depends upon the quality of acquired images.

070:
Structural Equation Modeling to Study the Relationship of Cotton Fiber Traits

Sheeza Khan, Muhammad Yaseen,Nadia Idressand Madiha Ghamkhar

Department of Mathematics & Statistics, University of Agriculture, Faisalabad, Pakistan

Stagnant seed cotton yield (kg/ha) from the last few years is not adequate to meet the increasing demands of textile sector, a comprehensive research is needed to investigate the effects of combining different yield contributing characters to achieve maximum yield. This research work provides us complete information about fiber quality characters, which are direct concern of textile industry. Structural equation modeling is a statistical technique which is used to check the causal relationship between exogenous and endogenous variables. In this study, classical econometric (observed variables) model was developed with three exogenous variables (fiber length, fiber strength and fiber fineness) and three endogenous variables (seed cotton yield, fiber yield and ginning percentage). Data was collected from the research area of University of Agriculture, Faisalabad during cotton growing season (2012-2013). In this model parameters were estimated by two-stage least square estimation by using same package of R software. Generally, it was observed that the fiber length had a negative association with all three endogenous variables whereas; fiber strength and fiber fineness had a positive correlation with all three endogenous variables. In case of endogenous variables seed cotton yield had positively affected the fiber yield and ginning percentage whereas, fiber yield was found positively correlated with the winning percentage.

071:
Modeling Volatility in Financial Time Series: Evidence From Asian Indexes

ShumilaRamzan[1] and ArslanMaqbool[2]

Statistics & DWH Department, State Bank of Pakistan, Karachi, Pakistan.
Merchandising Department, Interloop limited, Faisalabad, Pakistan.

This study examines the volatility or uncertainty in financial data with an application to multivariate generalized autoregressive conditional heteroscedasticity model in daily returns of Pakistan and Japan stock markets. High frequency data, daily closing stock pricesof KSE100 index of Karachi stock exchange (which is Pakistan's largest and one of the most recognized stock trade in South Asia by market capitalization and also listed amongÊ) and Nikkie225 of Tokyo stock exchange (which is the largest stock exchange in Japan) selected over the period from January 2014 to December 2015, for empirical estimation. As financial analysts are often interested in time varying behavior of financial data, several univariate and multivariate models are proposed to capture these volatility dynamics in financial data and most of them have become standard tool for modeling conditional volatility and co movements of financial markets. In this paper most common stylized fact of real financial data such as volatility clustering & conditional variance are captured with an application of econometric modeling and variability of conditional variance is modeled & estimated. The empirical results reveal that stock indices of KSE and Nikkie225 are non-stationary over time, these non-stationary indices converted into stationary by calculating log returns and stationarity of log returns is confirmed by applying graphical analysis, unit root test &correlogram test. Jarque-Bera test Statistic used to check normality of stock returns. Significant parameters of estimated multivariate model indicate own-volatility spillover effects in selected financial markets and persistence of own stock market's volatility. We have found strong evidence of volatility linkages in case of own previous shocks as compare to cross country effect. Several univariate and multivariate diagnostic measures are adopted to check the efficiency of estimated multivariate GARCH model e.g. graphical analysis of standardizes residuals, autocorrelation test, unit root test and Hosking and Li McLeod multivariate Portmanteau test. Diagnostic test results support the presence of own-volatility spillover effects and conditional normality of standardized residuals of estimated multivariate GARCH model (which is the assumptions of estimated multivariate model) examined by QQ plot test for normality. We can conclude that major changes in selected financial markets are due to their own innovations. The findings of this research study will create awareness to financial investors and decision makers to understand the behavior of stock markets trends and about diversification opportunities for portfolio investments in stock markets.

072:
Modeling the Dynamic Linkages of KSE with Some Emerging and Developed Equity Markets: A Multivariate Garch Approach

Shumila Ramzan[1] andMuhammad Arif[2]

1 Statistics & DWH Department, State Bank of Pakistan, Karachi, Pakistan.
2 University of Agriculture, Faisalabad, Pakistan

The main purpose of this empirical study is to examine volatility interactions and dynamic linkages of Karachi Stock Exchange (KSE-100) with some emerging stock markets and developed stock markets. Emerging stock markets include Bombay stock exchange (BSE SENSEX), Jakarta composite index (JCI), Bovespa composite index (BCI) and developed stock markets, Shanghai composite index (SCI) and London stock exchange (FTSE-100 index). For conventional analysis, volatility modeling and dynamic linkages of financial stock markets, the data consist of 144 monthly closing stock prices for the period of January 2001 to December 2012. Co-movements of financial returns often varies over time and financial investors and decision makers are often interested to model and predict the dynamics linkages of co-volatility in financial data. Different formulations of multivariate generalized autoregressive conditional heteroskedasticity model are investigated and applied in present study to effectively capture own and cross volatility linkages and spillovers effects between six stock markets. In particular, we choose three multivariate GARCH models BEKK, Constant Conditional Correlation (CCC) and Dynamic Conditional Correlation (DCC) to conclude our empirical study based on the critical analysis of diverse sort of multivariate GARCH models. Univariate and multivariate tests like, Ljung-Box Q test, Hosking Portmanteau test and Li McLeod test are used to check model adequacy and three forecast evaluation measures Mean Square Error (MSE), Root Mean Square Error (RMSE) and Mean Absolute Percentage Error (MAPE) have been used to capture the dynamics of volatility of stock markets. The empirical results indicate that there are small but significant volatility spillovers from emerging to develop stock markets. DCC (1, 1) MGARCH model outperforms others in fitting the data. The estimated parameters alpha and beta in DCC (1,1) MGARCH model are positive and highly significant at 1% level of significance indicating high persistence in volatility and sum of these estimated coefficients less than one, this means the dynamic conditional correlations are mean reverting. All other significantly positive correlation parameters indicate that news arriving from any of these markets (except JCI and SCI) positively affect the KSE market. In forecasting CCC (1, 1) and DCC (1, 1) MGARCH models performed well, while the forecasting performance of DBEKK MGARCH model is good for JCI and FTSE markets. The findings of this research project creates awareness to economic and financial decision makers, international and regional Investors, investment agencies and banks about the opportunities of portfolio diversification benefits, funds management and to know the stock markets' trends.

073:
Use of Kalman Particle Filter for Crack Propagation and Lifetime Estimation of an Airfoil

a. Moeez and M.A. Khan

Institute of Space Technology, Islamabad, Pakistan

Current methods used in industry to calculate the rate of crack propagation and lifetime estimation in structures involves analytical equations of fracture mechanics, which often produces inaccurate results. The inaccuracy lies in the fact that these analytical equations ignore some of the important real time variables at once among which working conditions, material defects and impurities are more pronounced. In aircraft and space industry, where these inaccurate results become more significant, a minor ignorance can lead to severe loss of capital, time and human life. Apart from using analytical equations, acoustic sensors are also used to estimate crack propagation. Strain waves are encountered when a crack occurs due to the breakage of molecular bonds; the acoustic sensor detects these waves and the results can be used to determine if a crack exists and whether it is propagating or not. However, it is possible to develop algorithms for more robust calculations of crack propagation rate and lifetime estimation by using Bayesian filters. Among many Bayesian filters, Kalman particle filter has been proven to be more efficient and accurate in these calculations. Kalman particle filter is not only restricted to a one-degree freedom problem but can also be extended to a three-degree complex systems and outperforms all other filtering methods. Kalman particle filter aims to use both the analytical equations and the sensor results in conjunction to give even better results. In this paper, an algorithm has been developed to compute the rate of crack propagation and lifetime estimation of an airfoil.

074:
Evaluation of Lifestyle Modification of Type-II Diabetes Mellitus (DM)
Related Knowledge, Attitude and Practices of Pakistani Patients

KinzaTasadduq, UnzaShaikh, AreebaEhsan, BushraZulfiqar, Aiman Fatima Naqvi and Arif Ali

Dow Medical College, Dow University of Health Sciences, Karachi, Pakistan

Introduction: The number of type-II diabetic patients continues to rise, primarily because of increases in the prevalence of sedentary lifestyle and lack of knowledge and practice regarding diabetes. The chronicnature of type-IIDiabetes leads to devastating morbidities via the micro vascular and macro vascular damage that in the end leads to early mortalities. Type-II Diabetes Mellitus has both a genetic and an environmental etiology. Where the genetic cause cannot be controlled by human intervention, the environmental causes can be altered and negated to prevent diabetes or to lessen its morbidity. The key towards achieving optimum blood glucose seems to be an extensive and thorough approach to modify several risk factors all at a time.Objective: To evaluate the knowledge, attitude and practice towards lifestyle modification in type-II diabetics.Method:A cross-sectional study was done using the non-probability convenient sampling.The study was conducted between January 2015 and July 2015. Data was collected by a face to face interview employing a structured questionnaire from a total of 457 type-II diabetic patients attending outpatient departments (OPD) of Civil Hospital Karachi and Sindh Institute of Urology and Transplant were interviewed. Baseline characteristics of these patients were obtained after informed consent and their knowledge, attitude and practices regarding lifestyle modification were assessed.Result:Among 457 participantsmore than half were males 62.8% and the mean age was 54 years with standard deviation of 10 years.Only 14.2% were reported to be current smokers and 10.1% being past smokers. More than half 60.8% had a positive family history of diabetes. BMI of 44.6% were in overweight range (BMI: >25 - <30).More than one-third 38.1% of the participants had controlled blood glucose levels. In this research 338(74%) of the patients had good knowledge about their disease, 359(78.6%) had a positive attitude towards their disease management while only 84(18.4%) showed good practice regarding lifestyle modifications of diabetes. Conclusion:Despite having good knowledge and positive attitudes about lifestyle modification of diabetes, they are not able to manage adequate practice of lifestyle modification. There is a critical need to develop diabetes educational programs that could help patients in diabetes management and support to change lifestyle modification.

075:
Classification of Meniran (Phyllanthus niruri) from Places of OriginBased on FTIR Spectra

Siti Mahmuda[1], Farit Mochamad Afendi[2] and Mohamad Rafi[3]

Department of Statistics, Bogor Agricultural University, Indonesia
2 Department of Chemistry, Bogor Agricultural University, Indonesia

Indonesia is home to many medicinal plants, one of them is theMeniran (Phyllanthus niruri).Meniran is known as herbal medicine or medicinal plant because it contains bioactive compounds. This medicinal plant thrives in tropical climate regions, so itcan be found around Asia, such as Indonesia, China, Philippine, and India.Meniran grows in regions of Indonesiawith different condition. So, it is possible that Meniran from one region have different FTIR spectra than others, and possessing many different contents (important compound or amount of compound of Meniran as medicinal plant) as well.There are eight places of origin of Meniran in this experiment, the places of origin are Bogor, Cianjur, Sukabumi, Garut, Karanganyar, Semarang, Malang, and Probolinggo. That places are part of province in Indonesia (West Java, Central Java, and East Java). Bogor, Cianjur, Sukabumi and Garut be included in West Java, Karanganyar and Semarang be included in Central Java, Malang and Probolinggo be included in East Java.Fourier transform infrared (FTIR)spectroscopy was developed in order to overcome the limitationsencountered with dispersive instruments. The main difficulty was the slow scanning process. A method for measuring all of the infrared frequencies simultaneously FTIR can be used for identity unknown materials, determine the quality or consistency of a sample and the amount of components in a mixture. This study attempted to classify Meniran from places of origin based on FTIR spectra. Absorbent number of FTIR spectra will be produced in wavenumber range of $400\text{-}4000$ cm^{-1}. In preprocessed, the wavenumber ($400\text{-}4000$ cm^{-1}) can be selected to get significant peaks of spectral.The principle component analysis (PCA) was used to get the spectral classification from eight different places of origin (Bogor- Cianjur-Sukabumi-Garut (West Java), Karanganyar-Semarang (Central Java), Malang-Probolinggo (East Java)). The first two principal component (PCs) of thedata score plot on this set data represent 66% of the total variance (PC1= 24%, PC2= 42%). PCA Slope variation, scatter effects and baseline drifts were removed with preprocessed IR spectra (SNV and derivatization) to get better classification. In this study, The Meniran successfully can be classifyin twogroups, first group is West Java (Bogor, Cianjur, Sukabumi and Garut), the second group is Central Java and East Java (Karanganyar, Semarang, Malang, and Probolinggo).Theresults show that FTIR spectra can be used to classify Meniran from places of origin. The Classification of Meniran may be indicated by difference important compound or amount of compound of Meniran in Java.Characters regions such as climate, topography and geology can be factors of Meniran differences.

076:
Islamic Microfinance Institution: The Capital Structure, Growth, Performance and Value of the firm in Pakistan

Majid Riaz[1] and Muhammad Qasim[2]

1 House # 19, Makkah Street# 1, Kot Khawaja Saeed Nazamabad, Lahore, Pakistan
2 Street#9, House#52, Canal Park, Muridke, Pakistan

The aim of study is to examine the capital structure and growth to profitability and its impact on the value of firm on Islamic microfinance institutions in Pakistan. This research meant to measure the current performance of Islamic Micro Financial Institution and to investigate the influence of positive performance of Islamic Micro Financial Institutions. The Islamic microfinance institutions have to become more strong and play healthy role in the micro economy , they will have to improved their performance ultimately which leads to increasing incomes to make them wealthy and have better living standard and poverty alleviation in economy. For this purpose researcher selected four Micro financing institutions such as: Akhuwat, CWCD, helping hands and Naymet and considered eight years financial data from 2007 to 2014 for analysis. Researcher conducted two types of analysis such as: financial and econometric analysis. In this research researcher used financial analysis ratio in order to find out the capital structure, growth, profitability of firm and value of the firm. Debt to equity ratio measure the firms leverage and this ratio express proportion of debt on financing of the firm. So debt is the basic ingredient of the capital structure and capital structure is a mean to progress firm's productivity and performance. Growth means percentage change in total assets either decrease or increase practiced by the firm during the period. Growth rate indicates that how much effectively firm use its debt as a source of financing. Normally growth assets negatively effect on financial performance of firm. Profitability is the ratio which measures the performance of effective management that how they generate the returns from investment. Researcher used ROE for measuring profitability of the firm because ROE show the ability to generate return from equity and show the performance of the firm. Value of the firm is very important everyone wants maximize its wealth or value of firm. In order to find out the value of firm researcher use econometric analysis. In econometric analysis researcher used multiple regression to compare the effect of capital structure and growth to profitability on the value of firm. ROE measure the financial performance of the firm and have positive significant on the value of the firm. And on the other hand researcher proved that leverage ratio, investment and managerial skills have influence on the value of the firm. Thus ROA have negative impact on the value of the firm. The consequence, capital structure, growth and profitability have an immense relationship to the value of the firm. Concurrently, the capital structure, growth and profitability have significantly on the value of the firm. Researcher can concluded from the research that variable capital structure have effective relationship on the value of the firm as well as positive impact on the profitability of the firm and have a huge contribution on the profitability of the firm. On the other hand variable growth does not have the effective relationship and have negative impact on profitability of the firm. Simultaneously growth and capital structure combine have significant impact on the profitability of firm.

Evolution of Corporate Governance Practices and Conventional Banks Profitability

Nadeem Iqbal[1], Nur Hilal A. Syahrir[2] and Abdus Subhan[3]

1 Faculty of Management Sciences, Ghazi University DG Khan, Pakistan
2 Bogor Agricultural University, Indonesia
3 Indus International Institute DG Khan, Pakistan

This study has been conducted to discover the good governance practices influence on profit of conventional banking system. Prime aim is to discover the application of these practices in the corporation for betterment. This research based on mixture of primary and secondary data. Sample for primary data collection for study is different conventional banks of Pakistan. Observation method and structured questionnaires is used to obtain the data from respondents (banks employees). Obtained data is analyzed through statistical software SPSS. Regression analysis is done to check out the effects of corporate governance and its determinants on profitability of conventional financial institution. So findings possess that banks profit tend to be enhance with the espousal of ethical practices in corporate culture. Study concluded that if financial institution behave ethical manner, socially obliged and invest for well-being of society after that they will get and enhance profit from social capital in addition to be considered as socially responsible corporations by adopting regulatory system aptly.

Bayesian Inference and Ranking of Factors Influencing the Terrorism in Pakistan Using Method of Paired Comparisons

Adil Hussain, Amara Aslam and Muhammad Aslam

Department of Statistics, University of Gujrat, Gujrat, Pakistan

A sensitive and composite issue all over the world is terrorism. Like other countries Pakistan is facing the same problem since a long time. A variety of researches have recognized several conditions and situation that explore various factors of terrorism. The objective of this research has to identifying the important influencing factors of terrorism in Pakistan and to rank them. Malik et al. (2014) identified the risk factors generating terrorism in Pakistan. This research considers the Bayesian inference for the factors of Terrorism in Pakistan. The data is collected from faculty. Bayes' estimators are computed that reflect overall worth probabilities ofeach factor. The ranking is done and posterior predictive probabilities are computed for each of the twenty one pairs of factors of terrorism for future single comparisons of each pair. Results analyses are computed in C language and programs coding are designed for seven parameters' inference. Furthermore, to ensure the appropriateness of the model, the goodness of fit criteria is used as used by Aslam (2002). The model ensures good fit to the data of factors of terrorism. The research aims to play a dynamic role in overcoming the national level problem of terrorism by providing the preferences probabilities, predictive probabilities andthe rankings of factors.

Time Series Analysis, Modeling and Forecasting of Crude Oil Prices in Pakistan
(Box and Jenkins Approach)

Abaidullah, Asad Aliand Mahvish Hyder

Department of Statistics, University of Sargodha, Sargodha, Pakistan.

This paper used Box-Jenkins methodology in Modeling and Forecasting Pakistan Crude Oil Prices obtained from January 1986 to December 2014 from the World Bank website (Pakistan). The descriptive statistics obtained showed, between other statistics, the mean to be 42.3159 USD per Barrel with a standard deviation of 33.1719 USD/Barrel. The Augmented Dickey -Fuller test exposed that the time series data has unit root i-e non-stationary. First order differencing was done to convert the non-stationary time series into a stationary one - a situation that permitted the use of the univariate Box- Jenkins modeling approach. The time series, the ACF and the PACF plots of the first order difference of the crude oil price data recommended ARIMA (7, 1, 6). It was exposed that a lot of the model parameters was unnecessary therefore settling for only statistically significant parameters of the model resulted to fitting ARIMA (1, 1, 0) which led to a reduced and parsimonious model. From the investigative plots, an overall stability with the white noise process was noticed. The paper additional compared the different selected models from the spike of ACF and PACF on the basis of their information criterion statistics and ARIMA (1, 1,0) coped better and was used to make forecast. Further for evaluation, t-test is used to check the significance of observed and actual values and results indicate that no significance difference.

A Statistical Study on Impact of Drug Use on Cognitive Abilities

Sadaf Manzoorand Hina Iqbal

Islamia College, Peshawar, Pakistan

Under the Pakistan panel code (PPC), illegal use of narcotic drugs is a criminal offence, still we observe many victims in our society. Literature provides strong evidences of bad effects of drug use on physical mental and behavioral health. The main objective of this study is to observe the impact of different prohibited drugs on the cognitive abilities of their users. The main parameters selected for discussion are: hope level, life satisfaction, curiosity & exploration and meaning of life. Different Statistical tools such as Principal component analysis and t-test have been used and the results provide strong negative impact of drug use on one's cognition.

TQM Practices and Customers' Satisfaction

Sadaf Manzoor and Umar Hayat

Islamia College, Peshawar, Pakistan

Peshawar, the Capital of Khyber Pakhtunkhwa and a metropolitan city, is a cultural land with a population of more than 3 million people. Last decade has seen a significant change in the lifestyle with an increasing trend of dining-out. Zakuan et al. (2010) in their study measured organizational performance through two categories: satisfaction level (employee + customer) and business results.Total Quality Management (TQM) is a method by which management and employees are involved in the continuous improvement of the production of goods and services. The main purpose of the present study is to check the performance of different restaurants in Peshawar under the light of parameters cited in above reference and to investigate the relationship between implementation of TQM practices and customer satisfaction. Principal Component Analysis and ANOVA have been used and it has been found that there is a strong relationship between TQM practices and customer's satisfaction.

082:
Impact of Numeracy on Self-Efficacy & Problem-Solving Abilities

Sadaf Manzoor and Hina Iqbal

Islamia College, Peshawar, Pakistan

Self-efficacy is an individual's belief that how much he/she is motivated and able to accomplish a specific task and to make wise decisions. A psychologically sound person should have good critical thinking, problem solving abilities and high self-efficacy. The organization for Economic Cooperation and Development (OECD) defines numeracy as: the ability to 'access, use, interpret and communicate' mathematical information and ideas, in order to engage in and manage the mathematical demands of a range of situations in adult life. The purpose of this study is to find the impact of Numerical abilities on one's self-efficacy and Problem-solving abilities.Few standard psychological tests have been used and a questionnaire for problem solving abilities has been constructed. It's Reliability and validity has been checked statistically. Principal component analysis and t-test has been used for analysis and results show a strong positive impact of studying numerical subjects on self-efficacy and abilities to solve different problems in life.

083:
Predicting Total Fertility Rates (TFR) of Pakistan Usingarima Models

Hira Fatima Waseem[1] and Farah Yasmeen[2]

Department of Statistics, University of Karachi, Karachi, Pakistan

Fertility is one of the main demographic features of any population. Nowadays, decline in fertility has been a primary determinant of population aging and projected levels of fertility have important implications on the age structure of future populations, including the pace of population aging. The total fertility rate (TFR) is one of the key components in population projections. The aim of this study is to predict total fertility rates of Pakistan by using Box-Jenkins Autoregressive integrated Moving Average (ARIMA) methodology. We fit ARIMA model to the secondary data of total fertility rates from 1984 to 2007, obtained from Pakistan Demographic Surveys (PDS). The forecastaccuracy of ARIMA modelscan be measured in terms of root mean square of error (RMSE), mean absolute percentage error. (MAPE), mean percentage error (MPE), whereAkaike's information criteria and graphical techniques(autocorrelation function (ACF) and partial autocorrelation function (PACF) plots)can be used to determine the best ARIMA models. We also predict total fertility rates (TFR) of Pakistanfor the next fifteen years using the best ARIMA model. The predicted values of fertility will help the government in planning children services and also give an idea to allocate future resources.

084:
Time Series Analysis and Forecasting of Water Reservoir in Pakistan

Zakia Batooland M.Yaseen

Department of Math & Stat., University of Agriculture Faisalabad, Pakistan

In water resource management daily flow to the reservoir is most important factor, in this study the daily flow to the reservoir as well as upstream has been forecast by different models. Autoregressive Integrated Moving Average (ARIMA) and Autoregressive Moving Average (ARMA) models has been used to forecast daily flow of different dams and linked canals in Pakistan. Application in practical science ARIMA model plays an important role. Both ARIMA and ARMA model has been used to compare the capability of autoregressive forecast of daily dam reservoir inflow. Forecast accuracy of Tarbela Dam reservoir inflow has been increased if we increase the number of parameter in ARMA and ARIMA models. To forecast Dam reservoir inflow polynomial for ARMA and ARIMA models was derived up to four and six parameter. Root mean square error conclude that ARIMA model can be used to forecast the level of water for different rivers in Pakistan with less error than ARMA model.

085:
Assessing the in-control Robustness of Progressive Mean Control Chart

Nazish Nazir and Muhammad Yaseen

Department of Mathematics & Statistics, University of Agriculture, Faisalabad, Pakistan

Control charts are widely used in adjusting stability or investigation of process in a variety of industries. Control charts stay ranked into two groups; memoryless control charts and memory control charts. Shewhart –sort quality organize charts are considered as memoryless for example they employ merely recent information for the finding of special reasons and are minor subtle to moderate in accumulation to minute shifts in the progression. One more methodology to tackle the minor shifts is just before employ memory control charts. Exponentially Weighted Moving Average (EWMA) control chart and Cumulative Sum (CUSUM) control chart are best admired for finding of tiny plus uncertain shift by using present and past facts. Most of the time planned for the enlightening of minute and large shifts, Progressive Mean (PM) control chart is recycled and it is considered additional than classical CUSUM control chart and EWMA control chart. EWMA is robust for Normal, Gamma and t-distribution. The idea of this study was to examine the presentation of PM control chart in diverse environments of distribution and center of attention on retrieving in-control robustness of PM chart to check either PM will robust for Normal, Gamma and t-distribution by using simulation study when the process mean along with standard deviation both are well-known.

086:
Interpolating CD Metal in Soil Using Spatial Techniques in Metropolis Areas of Faisalabad

Adeela Munawar, Muhammad Arif, Muhammad Yaseen, Saif Ullah and Hamad Raza Ahmad

University of Agriculture, Faisalabad, Pakistan

Heavy metals in soil are hazardous for humans, plants and animals as their high concentration may lead to serious environmental and health problems. With the development of industrial sector, the urban areas are getting more polluted and have severe impact on human health where one source is plants. Cadmium is a toxic metal and its uptake from soil gets multiplied in plants. Study was conducted to investigate the soil contamination due to Cadmium to restrict vegetation in four Industrial towns of Faisalabad; Lyallpur, Iqbal, Jinnah and Madina town where it was present in high concentration during 2009-2012. The samples were selected over a grid of 4km×4km near the plants from 0-15cm depth of soil. Rather than using inverse distance weighted approach to detect Cd level at unobserved locations in four industrial towns of Faisalabad,ordinary kriging was applied as a spatial modeling tool as the former technique only take into account distance but not the spatial pattern among observations. To overcome the problem of skewness in the data and to achieve normality, Box-Cox transformation was applied before using spatial techniques. Various variogrammodels were fitted through classical and mixed modeling approach. Measurements were found to be spatially correlated within range of 8-10 km distance. For the purpose of estimating the amount of heavy metal above a certain threshold and alarming value, indicator kriging was applied. Cd level was found to be very low in Lyallpur, Iqbal and Jinnah towns but a little high in Madina town. The clustered area from East to North in Madina town detected through ordinary kriging was also confirmed using indicator kriging. This statistical technique is not being used in Pakistan.

087:
Skin Detection Using GIE in Spatial Domain

Arfa Hassan, Unsa Tariq, Muhammad Adnan Khan, Asim Iqbaland Usman Bhatti

Department of Computer Science, Lahore Garrison University, Lahore, Pakistan

The skin detection became a very interested topic for a person who belongs to computer science, medical and engineering fields. The researches introduced different kinds of algorithms for skindetection. But in this paper, implementation of skin detection is based on the range of pixels ofHue component from HSV color space using Global Image Enhancement (GIE) method in spatialdomain. Skin detection using GIE is the extraction of skin-colored pixels and regions from image.Skin detection plays an important role in many fields of science. It provides us the foundation inmany applications such as, face detection, skin diseases, figure prints matching, gesture analysis,face tracking, emotional computing, biometric surveillance, face attribute classification, facialimage coding compression, human pose modeling, image and video indexing and retrieval, imageediting, vehicle drivers, drowsiness detection, controlling users, browsing behavior (e.g., surfingindecent sites) and steganography and human computer interaction etc.

088:
Drought Forecasting using Seasonal Autoregressive Integrated Moving Average Models and Artificial Neural Networks

Tayyaba Sultana Lodhi and Muhammad Yaseen

Department of Mathematics & Statistics, University of Agriculture, Faisalabad, Pakistan

The demand for water has increased distinctly because of the development of agricultural, growth of population, energy and industrial zone. Nearly every year, numerous parts of the world suffered due to shortage of water. Drought is a temporary and the frequent climatological event originates due to the deficiency of rainfall for a prolonged period of time and has an impact on life probability, economic performance, social sectors and food production. High wind, temperature, duration of rain, humidity and intensity played a significant role for the occurrence of drought. Different indices such as Palmer Drought Severity Index (PDSI), Standard Precipitation Index (SPI), BhalmeMooley index (BMI), Effective Drought Index (EDI), Percent of Normal (PN), China Z index (CZI), a Modified China Z index (MCZI) were used to calculate indices for drought in recent era. SPI and PDSI explore dry and wet conditions but failed to discover intensity. Standard Precipitation Evapotranspiration index (SPEI) is an extension of SPI which takes into account precipitation and potential evapotranspiration (PET) in determining drought even for limited data available. SPEI can be calculated at different time scales from 1 to 48 months. Seasonal Auto-Regressive Integrated Moving Average (SARIMA) and Artificial Neural Network (ANN) were used to measure drought indices. Drought data from 11 different stations of Punjab province were taken and investigated. Intensity of drought for Jehlum SPEI 1 month observed as 1.98 for maximum observation and -2.36 for minimum, most of the values lied between -1 and 1, hence the trend of drought nearly normal. Several ARIMA models were developed for drought forecasting using the SPEI-1 and different Seasonal ARIMA models such as $(1, 0, 1, 1, 1, 1)12$, $(0, 0, 1, 1, 1, 1)12$, $(1, 0, 0, 1, 1, 1)12$, $(2, 0, 1, 1, 1, 1)12$, $(3, 0, 1, 1, 1, 1)12$ were calculated and compared by taking small values of MAE, MAPE, MSE, MASE, AIC, BIC since Seasonality present in the time plot and $(1, 0, 0, 1, 1, 1)$ considered as best model for Jehlum SPEI-1 and obtained as= 0.08-0.24 -+ . 1 input layer, different hidden layers, 1 output layer, Biplot Sigmoid function with momentum 0.5, learning rate 0.05 and 10000 iterations were used to calculate ANN for Jehlum SPEI-1. It was found that the pattern of rainfall predicted by the ANN model matched closely the observed rainfall with 1 year time lag. ANN for $(1, 9, 1)$ layers considered as best for ANN Jehlum SPEI-1 prediction. In general SARIMA and ANN models are efficient tool to model and predict SPEI-1 month.

089:
Bayesian Network for Modeling Relationships among Variables of Neonatal Sepsis

Muhammad Irfan and Muhammad Yaseen

Department of Mathematics & Statistics, University of Agriculture, Faisalabad, Pakistan

Neonatal sepsis is a predominant cause of illness and death rate and reason for frequent hospital admissions of children in developing countries. In the present study, data of 846 neonatal (Early onset, Late onset,) with 8 variables (sepsis diagnose, outcome, white blood cells, platelet cells , blood culture, c-reactive protein, granuloma, after birth time period) were taken. Bayesian network suggested a way out to the problem of finding the joint cause and effects of neonatal sepsis. Findings from this study indicate that there are two, major responses that are identification of sepsis in neonate patients, and outcome (survived and expired newborns) in this model. Other variables are used for prediction purpose in this model. Basically second one that is outcome helps in determining severity levels of other variables.C-reactive protein white blood cells and blood culture are comparable and valuable for the identification of neonatal sepsis. When white blood cells and C - reactive protein are jointly study accuracy of sepsis diagnose in neonates increased.

090:
Development of a Tool for the Assessment of English and Urdu Handwriting of Bilingual Students

Hafiz Tahir Jameel[1],Tanzila Nabeel[1]and Muhammad Yaseen[2]

1 Department of Special Education, Allama Iqbal Open University, Islamabad, Pakistan
2 Department of Math & Statistics, University of Agriculture, Faisalabad, Pakistan

Good handwriting appeals the teachers in school. It creates better approximations in the teachers' mind about a student. Teachers guess the quality of handwriting of the students at a glance in school setting. It is a time saving and informal method to assess functional aspect of handwriting of students.There was a need of a standardized tool for the assessment of handwriting. The present study was designed to explore the components of good handwriting of bilingual students of elementary schools. English and Urdu languages were taken to assess their components of legibility of handwriting. The components of handwriting were taken according of school teachers perception about English and Urdu languages. To know about the legibility components of English and Urdu handwriting of bilingual students of primary school as per teacher's view point was main objective of this research. The responses about both languages were taken from 402 primary school teachers on 5 Point Likert Scale. In the study, exploratory factor analysis outcomes the presented data of the teacher suggested with two factors; Essential components of legibility of handwriting and unessential constituents for legibility. The data also exposed preliminary evidence of the reliability of legibility scores. Initial estimates of convergent validity for legibility scores were also described.It was perceived that most of the legibility components were similar for both languages. Betterment in the legibility of one language legibility may increase the legibility of other language. Though, the differences remained there in written expression of English and Urdu languages.This study may help the teachers to assess handwriting of both languages in a school setting.

91:
Big Data and Official Statistics: Some Recent Developments

Syed Wasim Abbas and Munir Ahmad

National College of Business Administration and Economics, Lahore, Pakistan

Official Statistics is the main source to track economic, demographic, social and socio-economic conditions in any country/region. Policies are developed, implemented and monitored on the ground of these statistics. National Statistical Organizations (NSO's) require accurate, timely and faster data using minimal resources. Rising hype of big data technologies brought revolutionary opportunities and measurement challenges for these NSO's. Big Data has potential to improve accuracy, timeliness and reduce costs for the Official Statistics. In this research we have reviewed some recent developments ofOfficial Statistics as Big Databy different statistical organizations around the world. Several opportunities and challenges faced by these NSO's are also examined.

092:
Human Development Index For Pakistan

Nazishand M. Azhar Khan

University of Haripur, KPK, Pakistan

The current study calculates the Human Development Index for Pakistan as well as for its all provinces by using secondary data for the period 1979-2015."The Human development index is a summary measure for assessing long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living". The results of this study show the consistent improvement in all three indicators of Human development index during the whole period of study. Educational attainment index shows that education system of the country becomes better and has achieved the significant improvements.Health status index also shows the better progress in life expectancy, due to enhance of funding in health sector by Gov. as well as private sector. Many health related programs are initiated by Government of Pakistan to providing the health related facilities to the citizens of Pakistan. Similarly income index also shows the more expansion in income component of HDI due to better education, training and health facilities. In this sector Government of Pakistan also started many programs i.e. Benazir income support program, poverty alleviation fund, individual financial assistance (IFA), establishment of Pakistan sweet homes (orphans), child support program (CSP), establishment of vocational training centers and People program I and II. Waseela-e-rozgar, waseela-e-haq, waseela-e-sehat and waseela-e-taleem programs were also initiated under the Benazir income support program.

093:
An Empirical Investigation of Economic Variables of
Pakistan by Using Autoregressive Distributed Lag Model

HiraZafar, Muhammad Arifand Muhammad Yaseen

Department of Mathematics & Statistics, University of Agriculture, Faisalabad, Pakistan

In this research two main techniques of time series analysis, Co-integration and Autoregressive Distributed Lag (ARDL) model were discussed with the advantages of one technique over the other. This study used to investigate the relationship between five economic variables of Pakistan by using monthly data for the period 1975 to 2015. ARDL model was used to study the relationship between Exchange Rate on Consumer Price Index, Money Supply, Imports and Exports. This work inspects the Short Run (SR) dynamic and Long Run (LR) relationship with the aid of autoregressive distributed lag (ARDL) model. First apply Augmented Dicky- Fuller (ADF) test and Phillips-Peron (PP) Test for checking the stationary of variables. The second step was ARDL-Bound Test and it concluded that variables have long run relation with each other. After ARDL-Bound Test next step was selection of lag length for ARDL model. The diagnostic test inspected that model is good to fit. The ARDL model exposed significant and non-significant long run relation. The coefficient of ECM (−1) indicates how much of the disequilibrium in the short-run was fixed (eliminated) in the long-run.

094:
A Comparative Study of CPU Scheduling Algorithms

Khadim Hussain, Muhammad Waqar, Muhammad Israr and Muhammad Adnan Khan

Computer Science Department, Lahore Garrison University, Lahore, Pakistan

CPU scheduling is the key function of a modern operating system. Since many jobs are entering into memory at a certain instant, this needs to be handled efficiently. The main objective behind short term scheduling is to keep the main resource, CPU, busy most of the time by executing more and more jobs. Many scheduling algorithms have been introduced like FCFS (Non-Preemptive), SJF (Preemptive & Non-Preemptive), Priority (Preemptive & Non-Preemptive), FCFS (SJF) etc. for a multiprogramming operating system. This paper presents a performance analysis between these existing scheduling algorithms. The algorithms have been analyzed using difference evaluation models like deterministic and queuing model to determine which algorithm has better performance.

095:
Impact of Vocational and Technical Education Towards Women Empowerment in Pakistan

Farhat Jahan

Khadim Ali Shah Bukhari Institute of Technology, Karachi, Pakistan.

This study investigated and focused on the impact of vocational and technical educationtowards women empowerment in Pakistan. Specific objective was to explore on the status of women can be change by providing them vocational and technical education. Research shows that vocational and technical educations are closely related with the women empowerment for their economic growth and are capable to create employment for their income generation. Vocational and technical educations are designed to develop the skills, ability and knowledge necessary for employment, income support and development of women empowerment. The acquisition of these vocational and technical skills will greatly help to empower women economically.Ardiansyah et al.(2011) defined that empowerment is basically not an only enhancing confidence levels. It also improves women skills to participate in political,social and economical life on international level. Ojobo (2008) explained women empowerment is also influenced by education which improves women's status and living standard. Geethanjali and Prabhakar(2012) defined women empowerment as "Empowerment is a process of awareness and capacity building leading to greater participation, to greater decision making power and control and transformative action. Empowerment of women signifies harnessing women power by conscientising their tremendous potential and encouraging them to work towards attaining a dignified and satisfying way of life through confidence and competence as person with self-respect, rights and responsibilities the progress of any nation is inevitably linked with social and economic plight of women in that particular country."Mustafa et al.(2005) explores that the need of vocational training and education is increasing day by day which generated the results as trained individuals and employments.Targeted population was women who live underserved areas in Karachi and different areas of Pakistan. Data was collected from the sample size of 130. For analysis of data statistical tools ANOVA, REGRESSION ANALYSIS was used. The results were highly significant. This study was limited to women of Karachi and different cities of Pakistan. It had limitations due to time and budget constraints and some of these limitations. This study revealed that status of women was alarming in Islamic countries, particularly in Pakistan. Our total population consists of Women comprises of more than 50 percent of Pakistan's total population. Rate of poverty level is very high in different region of Pakistan.There are several root causes which directly influence on women empowerment in Pakistan are rape, acid throwing, honor killings, forced marriages, forced prostitution, several women are unaware from their legal rights due to lack of education and knowledge. This western society is male dominating society so women are not encouraged. There is less respect of women than a man. There is no proper guideline for a woman to lead a life. It is emphasized that there was a need of vocational and technical education for enhancement the economic and social empowerment of women and helpful for the country for their intellectual capital.

096:
Bayesian Approach: An Alternative of Additive Main effect
and Multiplicative Interaction (AMMI) Model for Genotype-by-Environment Interaction (GEI)

Umar Waqas Khan, Muhammad Yaseenand Muhammad Arif

Department Math & Stat., University of Agriculture, Faisalabad, Pakistan

Genotypes of different genetic structure behave differently in different environmental conditions. Genotype-by-environment interaction (GEI) is referred as differential responses of different genotypes across different environments; GEI has great importance because of higher performance of genotypes to be assessed by GEI. But presence of GEI makes analysis more complicated. To up-root these assessment complications several methods have been proposed such as Principal Component Analysis (PCA), Cluster Analysis, Additive Main effects and Multiplicative Interaction(AMMI) models and Genotype plus Genotype by Environment interaction (GGE). These methods neither overcome the problem of over parameterization nor use the prior information. The aim of this study is to use such technique which can address these problems. For this purpose a wheat crop data comprised of 30 genotypes test across 13 different locations of punjab, Pakistan for two consecutive years was used. The layout of the experiment was Randomized complete Block Design(RCBD).In this study a comparison was made between Classical methods AMMI, GGE biplot and Bayesian approach using Von-Mises Fisher distribution as prior. classical methods showed that genotype V-11098 was the most desirable genotype based on stability and high yield performance. Bayesian approach was used for GEI because it makes statistical interpretation rather easy by relaxing some constraints and it uses the prior information, also provides solution for these by using MCMC algorithm. Bayesian strategy for analysis of GEI was used to assess the general, specific performance of genotypes and risk related to genotype. Analysis revealed that bilinear terms $u_{25,1}$ for genotype NS-10 genotype and $v_{13,1}$ for environment S13 (Piplan-14) were found significant indicated that these have effect on interaction. It was observed that Bayesian approach can nicely explore GE interaction.

097:
Occupational Preferential Analysis

Samiah Ahmed and Alia Ahmed

National College of Business Administration and Economics, Lahore, Pakistan

An individual after going through many years of formal education and schooling, enter the period of adolescence,where he or she sorts his or her thoughts and feelings and align them with desired job or occupation, paving way towards career aspirations. Career aspirations yield to occupational preference. Occupational/job preference refers to the preference as one's likes and dislikes, ranging from what is desired to what would be least tolerable regarding a job or an occupation. It is more of an attraction, interest and favorite tendency of choosing among various occupations and jobs.This resurrects occupational gender segregation, which is the extent to which an occupation is perceived to be carried out mainly by men or by women.Vocational or occupational interests are important characteristic of human behavior in organizational and educational settings, where it is extremely pivotal to make occupational choices to accomplish professional success. Literature suggests that future research should investigate the preferences of the students in occupations in other countries. This research aims to tap the occupational preferences of the students at intermediate and ordinary bachelorlevel and to further canvass the mixture of intrinsic and extrinsic factors determining the preferences of occupation in Pakistan. Data for the occupational or job preferences shall serve as guideposts in searching for promising occupations or jobs worth further exploration for the students and shall also allow employers to design work environments to attract more youth to their organization.

098:
Role of Training on Employee's Turnover Intention

Muhammad Awais Siddiqui and Ali Asad

House #1, Street # 4, Qaddafi Street New Anarkali, Lahore, Pakistan.

Training played a vital role in increasing efficiency of employees as well as business competency. The purpose of this study is to address the impact of training related variables (effective training program, and perceived benefit of training) on employee turnover intentions and Job satisfaction as mediating variable among academic staffs one of the public hospitalsin Pakistan. These training related variables are widely accepted in theories but lack of research on health workers of hospital failed to shed light on the relationship between training,job satisfaction and employee turnover. The sample size of the study is 95 and respondents were health care workers from the public hospitals of Lahore. For this study, convenience sampling approach assumes to apply in this survey and results assumed to be calculated using regression analysis technique. This approach assumes to achieve higher response rate from the respondents conveniently.The findings of the study reveal that training have a positive significant impact on job satisfaction among health care workers.However, there is a negative relationship found between job satisfaction and employees' turnover intentions.The result of the study has significantdecision-making suggestions for hospital administration that how to decrease turnover intentions of employees by providing them efficient training programs and supportive working environment which benefits employee as well as the organization. Training programs not only increase the value of employees but also the effectiveness of the business.

099:
Perceptions/Misconceptions of Hypertensive and Diabetic Patients Regarding Adoption of Preventive Measures to Avoid Cardio Artery Disease

Yousuf Tahir, Yousuf Osman, Wahaj Ahmed, Arif AliandMasood Hussain Rao

Dow Medical College, Dow University of Health Sciences, Karachi, Pakistan

Introduction: Coronary Artery Disease (CAD) is the most common type of and cause of . The disease is caused by building up along the inner walls of the , which narrows the of arteries and reduces blood flow to the heart. Rational of the study is to assess the public knowledge among the patients (suffering with diabetes and hypertension) about the cardio artery heart diseases, its symptoms, preventive measures and misconceptions.Objective: To determine the level of current Coronary Artery Disease knowledge and preventive behavior among hypertensive and diabetic patients. Methodology: This was a descriptive cross sectional study conducted through Non Probability purposive sampling technique during Jan 25th to 28th Feb, 2015 with calculated sample size 320.IRB approval was taken from DUHS and consent was taken by each participant fulfilling the inclusion criteria. The study was conducted at Civil Hospital Karachi (CHK). A structured questionnaire was developed specially for this project to collect the data regarding demographic information, knowledge about coronary artery disease and major risk factors, measurement of blood pressure, weight and height. Preventive measure and misconceptions were evaluated and finally they were guided for CAD prevention not known to them free of cost. The data was analyses through SPSS 16. Mean and SD was calculated for all quantitative variable whereas frequency and percentages was calculated for all qualitative variable. Chi-square test was applied for significance of the data at $P<0.05$. Results: Over all mean age of the participants was 44.7 ± 11.3 years. Majority were married. Out of the participants 92% were diabetics and 97% were hypertension. Controlled blood pressure was found in only 32% participants. The family history of cardio artery disease was found in 42% of the participants. Knowledge about CAD was found in only 28% of the participantswhereas only 26%participants have the knowledge about the risk factors of Coronary Artery Disease. The symptoms of heart disease were known by only 16% participants. Relax activity was done by 34% participants, whereas only 44% participants were doing exercise to overcome the problem. Preventive measures of Coronary artery disease were known by 68% of the participants.Conclusion: over all knowledge about the Coronary artery disease was not up to the standard in high risk group people which proven that awareness should be developed in general public for such disease on a larger scale to reduce the disease pattern.

100:
On Size Distortion for Linear Regression Model with Heteroscedastic and Non-normal Errors

Haris Khurram and Muhammad Aslam

Department of Statistics, Bahauddin Zakariya University, Multan, Pakistan.

The assumptions of error terms in linear regression models are much considerable before adopting any estimation procedure. The error terms are usually exposed to be heteroscedastic in many practical situations and this problem results in inefficient estimation and incorrect inference. One of the major consequences of heteroscedasticity is the size distortion as the usual tests tend to over-reject the true null hypotheses. The available literature suggests many methods to cope with this situation. In addition to the issue of heteroscedasticity, it is also possible for the error terms that they may not be normally distributed. However, the available literature does not address the heteroscedasticity and non-normality and the same time. The present work focuses on the same. The main aim of the work is to assess size distortion of the usual tests when the errors terms are both heteroscedastic and non-normally distributed. With the help of Monte Carlo simulations, different level of heteroscedasticity has been generated and different distributions of error have been studied, namely, t, uniform, exponential and normal distribution. Normal distribution of error has been taken for comparing the results obtained from the stated non-normal distributions. After application of the ordinary least squares, a comparison of null rejection rate is made for the usual t and F-tests in order to assess the size distortion.

101:
Association of Musculoskeletal Pain with Heavy Bag Packs among School Children

Syed Mustansir Hussain Zaidi, Fahim Ahmed Ansari,
Hira Fatima Waseem, Sania Fahimand and Muhammad Irfan

Department of Statistics, Liaquat National Hospital, Karachi, Pakistan

School bag carried by school children as daily load becomes a health problem such as musculoskeletal pain. Most common example of musculoskeletal pain is low back pain. Back pain is seen to occur more in healthy children. Back pain in children is much more likely to have a serious underlying disorder. Now a day's student is often seen with heavy school bags and it is observed that it is influencing their health in this transitional period of life to adulthood over many years. Many students carry school backpacks that exceed 10 percent to 15 percent of their body weight, which puts them at risk for back pain and related disorders. Carrying backpacks increases the risk of back pain and possibly the risk of back pathology. The aim of the study is to investigate the association of musculoskeletal pain with heavy bag packs among school children. A cross-sectional study will be conducted among school children having age of 9-16 years. Data will be collected using a questionnaire regarding gender, side of back pain, time to arrive to school, type of bag, mode of transport, posture of carrying bag, pain intensity level and measure weight of student with and without bag and their height. Data will be analyzed using statistical package for social sciences (SPSS). Mean and standard deviation will be computed for quantitative variable and frequency and percentage will be calculated for qualitative variables. Chi-square and logistic regression will be applied to see the association of musculoskeletal pain with independent variables. Preventive measures and appropriate guidelines with regard tosafe load carriage in school children are therefore needed to protect this age group.

102:
Sample Size Estimation of Diagnostic Test Studies in Health Sciences

Syed Mustansir Hussain Zaidi, Hira Fatima Waseem, Fahim Ahmed Ansari,
Muhammad Irfan and Sania Fahim

Department of Statistics, Liaquat National Hospital, Karachi, Pakistan

Sensitivity and specificity are terms used to evaluate a clinical test. Sensitivity and specificity measure inherent validity of a diagnostic test against a gold standard. Adequate sample size is precisely estimate the validity of a diagnostic test. They are dependent on the prevalence of the disease in the population of interest. The sensitivity and specificity of a quantitative test are dependent on the cut-off value above or below which the test is positive. The purpose of the study is to provide concept of sample size calculations of diagnostic test accuracy in various conditions and test outcomes. We will use formula in MS excel for sample size calculation of diagnostic test which include sensitivity, specificity, absolute precision, known prevalence of disease, and 95% confidence level. This could be easily used to determine the sample size for estimating the sensitivity or specificity of a diagnostic test. This would help out the medical professionals for designing diagnostic test studies of adequate sample is chosen based on statistical principles in order to guarantee the reliability of study.

103:
Fertility Forecasting in Urban and Rural Areas Ofpakistan:
an Application of Product-ratio Functional Model

Farah Yasmeen and Hira Fatima Waseem

University of Karachi, Karachi, Pakistan

This paper is an application of coherent functional models of Hyndman, Booth and Yasmen (2013) on the disaggregation of fertility forecasts by regions. In this paper, we intend to obtain coherent forecasts of age-specific fertility rates of Pakistan for the two broader regions, namely, Urban and Rural areas. We found on the basis of previous studies, that fertility rates in rural areas are higher than those of urban areas. Here, we can assume that the future fertility rates of rural areas will remain higher than those of urban areas, for all age groups. Hence, the fertility forecasts thus obtained are assumed to be coherent or more realistic with the historical fertility rates.At first, we describe the concept of coherence in the context of age-specific fertility and discuss some problems with using independent functional time series models, separately for urban and rural regions. Then, we apply the coherent functional model to the age-specific fertility data. An empirical comparison of the independent and coherent models based on the fertility rates has been made. The purpose here is to see the performance of coherent forecasting models for the fertility rates of the set of regions of Pakistan and to find the fertility forecasts which are more realistic.

104:
Developing a Sensitive Non-Parametric Control Chart under the Repetitive Sampling Scheme

Nasrullah Khan[1], Muhammad Azam[1], Liaquat Ahmad[1],
Muhammad Aslam[2] and Munir Ahmad[3]

1 University of Veterinary and Animal Sciences, Lahore, Pakistan
2 Department of Statistics, Faculty of Sciences, King Abdulaziz University Jeddah,Saudi Arabia.
3 Department of Statistics, National College of Business Administration and Economics, Lahore, Pakistan

A control chart is the most extensively used graphical tool for monitoring the manufacturing process. The early detection of the out-of-control process is the major concern of any control process under usage. For this purpose the improved control chart for different sampling scheme have been developed. In this paper, we will propose three non-parametric control charts using the repetitive sampling. The proposed control charts are more sensitive to detect early shift in the process. A simulation study is given to show the efficiency of proposed charts. A real data example is given to illustrate the proposed control charts.

105:
A Comparison Between the Components of FTS Models Applied on Breast Cancer Incidence Rates of Karachi and United States

Farah Yasmeen and Sidra Zaheer

1 Department of Statistics, University of Karachi, Karachi, Pakistan
2 Dow University of Health Sciences, Karachi, Pakistan

Recent studies are showing that the breast cancer increased rapidly among women in Pakistan and it became first malignancy among females of Pakistan. Although, the incidence rates may contain important evidence for understanding and control of the disease, however in Pakistan, the breast cancer incidence data have never been available in the last five decades since independence; rather, only hospital-based data are available.In this study, we intend to see the difference between various components of Functional Time Series (FTS) models applied independently on the breast cancer incidence rates of Karachi and United States. Several studies have already forecasted that the incidence of U.S. breast cancer cases is expected to increase in the coming decades, largely the result of an aging population. A progressive increase in the number of new cases is already predetermined by the high birth rate that occurred during the middle part of the century, and it will lead to nearly a doubling in the number of cases in about 4 decades. We also obtain 20-years predictions of Breast Cancer incidence rates in United States and compare them with the 20-year forecast curves for Karachi. Development of methods for cancer trend forecasting can provide a sound and accurate foundation for planning a comprehensive national strategy for optimal partitioning of research resources between the need for development of new treatments and the need for new research directed toward primary preventive measures.

106:
The Role of Visionary Leadership in Organizational Effectiveness: Meditating Analysis

Ali Asad

National College of Business Administration & Economics, Multan

The purpose of this study is to determine the relationship between visionary leadership in organizational effectiveness and financial performance with meditating role of corporate culture. Leaders with high levels of transformational leadership were predicted to be reported as having more effective organizations. Data from 200 executive organizational leaders were collected from hospital of Multan city. Significant relationships were found between visionary leadership and perceived organizational effectiveness. Regression analysis also showed some significant correlations between high leadership behaviors and perceived organizational effectiveness. Visionary leaders with high leadership skills facilitated the greatest perceived organizational effectiveness in their respective organizations. The study also provides useful guidance to the firm leaders about culture and its importance in boosting up the performance of the hospital.

107:
Challenges to the Implementation of TQM in Readymade Garment Sector of Pakistan

Kamran Yousef Sandhu and Ahmed Zogo Memon

Institute of Management Sciences (Pak-AIMS), Lahore, Pakistan

Total Quality management (TQM) has become an imperative pillar for local and international organizations to satisfy the customer's need by providing them required quality products and services. Pakistan being the 4th largest producer of cotton and 3rd largest consumer of cotton, its Textile and Clothing sector is a vital backbone of Pakistan'seconomy as it contributes 65% export share and offers 40% employment to the human resource of Pakistan. Garment manufacturing units in Pakistan are well established but its international brands are at a level far below than that of China, Bangladesh, and India. This research focuses on the readymade garment industry to understand the nature and gravity of challenges that it faces for implementation of TQM principles.By using convenience sampling technique, we selected 41 garment factories (members of Pakistan Readymade Garment Manufacturers and Exporters Association -PRGMEA). Data on twenty five aspects of TQM (an instrument proposed by (Muller et al., 2015) was collected to identify the hindrances in TQM practices. Questionnaire items included lack of management commitment, leadership, customer focus; lack of planning for implementation of TQM culture, lack of budget, lack of training, lack of continues improvement, lack of resources, department communication, and obsolete technology. The analysis of data has revealed some highly useful information. The paper provides the results based on this survey of 41 garment factories. Generally it is found that higher management support, new technology, system and cultural change are crucial to support the productiveness of an organization. The underutilization of tangible and intangible resources for manufacturing excellence is mainly attributable to lack of compliance with TQM guidelines. Based on this survey we recommend that there is an urgent need to change the mindset of management through training & development and providing the required resources for developing quality conscious environment accordingly.

108:
Frequency and Awareness of Thalassemia in Families with Cousin Marriages

Faizan-ul-Haq, Muhammad Muizzuddin, Muhammad Mannan Ali Khan,

Sundas Sajid, Asma Sarfaraz, Namerah Nasir, Aneeba Nazim,
Ghuncha Kamran, Bushra MaqsoodandAmna Ahmed

Dow Medical College, Dow University of Health Sciences, Karachi, Pakistan

Aim:To find out the frequency of thalassemia in families who have had cousin marriages and their level of awareness about the disease. Objectives: To assess the frequency of thalassemia in families with cousin marriages.To assess the awareness of thalassemia in affected parents.Methodology:This cross-sectional study was conducted at Afzal memorial thalassemia foundation,Omair Sana Foundation and Husaaini Blood Bank,Karachi from January to December 2015. A total of 100 sample sizes were recruited in this study design. All thalassemic people having consanguineous marriages were included in the study. Parents of patients having other blood disorders like hereditary spherocytosis, sickle cell disease and others were excluded. The information was collected by interviewing thalassemic parents or their close relatives. An informed verbal consent was taken from the parents before the start of interview. The collected information includes diagnosis i.e. thalassemia, age and method of diagnosis, along with family history of the disease. A pilot study was conducted to assess the authenticity of questionnaire. Structured questionnaire was devised to collect the data from patients and then data was entered and analyzed using SPSS version 20 with frequencies, percentages, confidence interval and p value of 0.05 was considered as statistically significant. Result: Out of 100 (48% males and 52% females patients).56% (p=0.166) patients had the prevalence of thalassemia in their families with 28% (p= 0.268) had deaths in their families due to thalassemia. 92% of parents with cousin marriages had no awareness about thalassemia before their thalassemic child and 63% (p= 0.135) were not even aware about treatment for thalassemia. Regarding screening test for thalassemia 62% (p= 0.12) were aware of it and 98% (p=0.46) agreed to go through this before marriage/during pregnancy. When they were asked if they would have aborted this child if they would have known about the thalassemic child 66% (p= 0.37) parents said yes. If patients' siblings get neglected or not 61% (0.06) parents denied the neglection of their other children. Thalassemia is one lifelong disease 91% (p= 0.43) were aware of it. Conclusion:The study concludes that cousin marriage among families who possess thalassemic trait is one of the major causes of thalassemia. In our study it is appreciated that majority of the patients had a trend of cousin marriages in their families and they want to be screened now in their future conception as they know about consequence of thalassemia. Awareness of parents of the patients was inadequate. General public, parents and families of the patients should be educated in this regard. And other sources of media should be used for this purpose.

109:
Impact of Corporate Social Responsibility on Profitability of Islamic and Conventional

RashdaQazi and NadeemIqbal

Ghazi University, D.G. Khan, Pakistan

The purpose of this paper is to compare the level, impact of corporate social responsibility (CSR) among Islamic and Conventional Banking system in relationship with earning per share (EPS), return on asset (ROA), return on equity (ROE). An empirical analysis is conducted, based on the annual reports of 4 banks for the year 2010-2011. To verify the relationship between EPS, ROA, ROE and CSR regression models are used. The results shows that there is lack of CSR in Pakistan and the regression model shows that there is positive relationship between profitability (EPS, ROA, ROE) and CSR practices.

110:
Modeling of Survival Data Using Survival Ensemble Techniques

Syed Jawad Ali Shah, Qamruz Zaman, Gohar Ayuband Syed Habib Shah

Department of Statistics, University of Peshawar
Institute of Management Sciences, Kohat University of Science & Technology, Kohat

Survival data can be modeled through different statistical techniques. Structure-base modeling and specially, survival ensemble techniques have got popularity in the past few years in the field of survival analysis. In this article, two recently introduced survival ensemble techniques "Random Survival Forest" and "Rotation Survival Forest" are reviewed and these techniques are applied on a real data set. The data set is related to a disease, called as Coronary Artery Disease (CAD) that has affected a lot of people in Pakistan for the past few decades. The data is collected on 215 patients of Post Graduate Medical Institute, Lady Reading Hospital (LRH), Peshawar, Pakistan. Moreover, the resultant models (based on above mentioned two ensemble techniques) are compared with a model developed by the conventional survival analysis techniques.

111:
Improved Sequential Regression Imputation

Faisal Maqbool Zahid and Christian Heumann

Department of Statistics; Ludwig-Maximilians-University, Munich, Germany.

Missing data is a common issue in applied research. The problem is confronted in every field of knowledge. Analyzing the data without appropriately filling the missing values leads to misleading results. Multiple imputation is an increasingly popular approach for filling missing data with plausible values. There are a number of algorithms for multiple imputation are available in the literature. But fitting of sequence of regression models face problems of non-convergence and rank deficiency with increasing number of covariates relative to the sample size. We are proposing an algorithm that cannot only handle the situation of large predictors relative to the sample size but also performs good for rank deficient regression models. The performance of proposed algorithm is compared with the existing approaches in a simulation study using Mean Squared Error and Mean Absolute Error.

112:
Bootstrap Confidence Intervals after Nearest Neighbors Imputation

ShahlaRamzan, Christian Heumannand Gerhard Tutz

Department of Statistics; Ludwig-Maximilians-University, Munich, Germany.

Missing values are a common problem in many research areas. The presence of missing values complicates the downstream analysis; therefore an imputation procedure is needed to fill in these data. Many techniques have already been presented in literature for imputation of missing values which provide valid estimates under certain conditions. We present a new and improved nearest neighbor imputation procedure that provides estimated values for the missings which have not only smaller MSEs, but also provide better inference, when one variable is a response variable and the rest of the variables are predictors in a linear regression model. The confidence intervals for the regression coefficients are constructed using bootstrap sampling. Simulation results show that the suggested imputation method provides promising results and the bootstrap has the desired nominal coverage.

113:
Public Attitude Towards Senior Citizens and Their Opinion Regarding Old Age Homes

Muhammad Atif[1],QamruzZaman[1], KhazanSher[1], Abdul Majid[1],
FarooqAhmad[1] and GoharAyub[2]

Department of statistics, University of Peshawar, Pakistan
Department of statistics, University of Swat, Pakistan

The present study was carried out to analyze the attitude and behavior of young generation towards senior citizens and old age homes. The main purpose of study is to find why negative attitude towards senior citizens increases on the daily basis and the necessity of old age homes are increasing.A sample of 442 respondents was selected from various sectors of district Peshawar. Respondents were asked to share their views and thoughts about old age people and the increasing phenomena of old age homes in Pakistan. Results of the study indicate that the young generation of this region adopts the western culture with a great acceleration, and they do not like to spent time with their elders at home. Mostly they prefer to spend their time with friends rather than with their parents and other family members. Mostly the inhabitants prefer to living in a nuclear family system and avoid joint family because they don't want to follow the instructions by their elders. On the basis of analysis it is conclude that respondents were against OAH's, they shouldn't adopt this trend. Howeveron the other hand, mostly children neglect old people they feel lonely, dishearten and their expectation from their children are ruined. OAH's are increasing because children think that their parents are burden on them and they hesitate to spend money on their parents.

114:
Reasons of Joining Old Age Homes by Senior Citizens in Pakistan:
A Case Study of Senior Citizens Living in Old Age Homes

QamruzZaman[1], Muhammad Atif[1], KhazanSher[1], Abdul Majid[1],
FarooqAhmad[1] and GoharAyub[2]

1 Department of statistics, University of Peshawar, Pakistan
2 Department of statistics, University of Swat, Pakistan

The last century has witnessed a rapid increase in the population of the elderly people in almost every part of the world. This phenomenon is not restricted to the western world only, but many countries specifically Pakistan is now feeling the impact of this transaction. Government and Non-Government efforts are increasing rapidly in the field of contemporary, social, economic, public interest and other factors to reduce maltreatment against the senior citizens. The objectives of this research are to scrutinize the reasons of joining old age homes by these elderly citizens and the problems faced by them. In this research five old age home (OAH) of Islamabad and Rawalpindi are selected and the citizens living there were interviewed. The study showed that there are 95 senior citizens living in these five OAHs. The study reflects that the residents of OAH are from different caste and spoke different languages. Result of the study revealed that there are different reasons thoseinline senior citizens to the joining OAH. But the most common root cause is the ignorant behavior of their children, who are not ready to take the responsibility of looking after their elders. Mostly the senior citizens have problems with their children so they join the OAHs to spend an independent and peaceful life.

115:
Factors which Affect the Cricket Match Results

Qamruz Zaman, Farooq Ahmad, Khazan Sher, Muhammad Atif,
Gohar Ayob and Jawad Ali Shah

Department of Statistics, University of Peshawar, Pakistan.

The data for the study was obtained from the internet and using the website Wikipedia and ESPcricinfo.We collect the total 447 matches from the 2008 to 2014. After collecting the data, data putting in SPPS and apply some statistical techniques for testing the effect on the result of the match. Chi-square is used for testing various factors on the result of the match. Result of the study showed that minimum matches were won the team who win the toss and take the decision of batting in Indian premier league, on the other hand if the decision of bowling taken them minimum matches were lose in Indian premier league. The main factor our study is the effect of local player on the result of the match.   So this study shows that Bowling of fourth, fifth, sixth and seventh of batting local player and batting of 2ndbowling local player are effect on the result of the match.

116:
Effect of Bowlers Combinations used in Test Cricket

Farooq Ahmad, Qamruz Zaman, Khazan Sher, Muhammad Atif,
Gohar Ayob and Jawad Ali Shah

Department of Statistics, University of Peshawar, Pakistan.

The present research was conducted to study the effect bowlers combination used in the test match on the match result and to perform some statistical treatment of the collected data.The data for the study was obtained from the sources of internet and using the website cricinfo test matches result (by year).From the start of test matches since 1877 up to May 2013 total played matches are 2085. After collecting data for the analysis SPSS 17.0 was used. Result of the study shows that majority matches were won the team who batted first. And the team which is hosting the match because they have the home ground advantage. For the analysis of the data, using $\div 2$- test showed that only first innings combination effect the match result. Only the right arm fast attacker are effective on the match result and left arm fast are affective in first and second innings. Comparison between left and right arm fast the right arm fast are more effective on the match result. Comparison between left and right arm spinner the left arm spinner are more effective on the match result. Form the whole analysis conclusion were made that result of the toss, the right arm attackers, attack combination of the first innings, number of right arm fast and left arm spinner used in a test match have a significant effect on the match result.

117:
Influence of Terrorism and War Against Terrorism on Children

Qamruzzaman, Abdul Majid, Muhammad Atif, GoharAyub, Khazan Sher,
Farooq Ahmad and Jawadali Shah

Department of Statistics, University of Peshawar, Pakistan

The aim of this research is to know that whether children are socially and psychologically affected due to terrorism and war against terrorism. For this purpose the research was conducted and data was collected independently through survey from the IDPs of Khyber Agency presently camped Jolozi. There were 257 respondents containing 64.6% males and 35.4% females. Convenience sampling technique was used in collecting the data. The interviewers asked the question in Pashto from the respondents and then after they marked questions according to respondents response. Chi-square, odds ratio were used to analyze the data. 26.5% children are primary students, 26.8% children are middle students, 30% children are high school students and 16.7% children are illiterates so hence we can say that most of the children are educated and almost the same number of respondents contribute from middle, primary and high school students. The results show that there is significant influence of war and war against terrorism on children. There is significant association between the distress and disturbance of social life.

118:
Comparative Study of Top Two Squash Players: A Statistical Review

Abdul Majid andQamruzzaman

Department of Statistics, University of Peshawar, Pakistan

The present work has been done to make the comparison between the two great squash players Jahangir Khan and Jansher Khan. Performed some statistical analysis on the collected data and got the detail comparison among the squash game players. Secondary data has been used for the analysis. Data collected from internet. Data was based on the scores of the matches played between the concerned players. Performed analysis includes chi-square test of independence and odds ratio for the most likely player to win the set and match. From the study, it has been observed that Jahangir khan was more efficient than Jansher Khan, the number of winning matches by Jahangir Khan is more than the number of winning matches by Jansher Khan. Most of the time Jahangir Khan defeated Jansher Khan by winning first three sets nonstop.

119:
A Comparative Study of the Top Two Football Players

Abdul Majid, Qamruz Zaman, Gohar Ayub, Muhammad Atif, Khazan Sher,
Farooq Ahmad and Jawad Ali Shah

Department of Statistics, University of Peshawar, Pakistan

The present study conducted to know the view of football player of Peshawar about the top two football players Ronaldo and messi. For this purpose a sample of size 150 selected to know the view of local football players from Peshawar. The questionnaire technique was used to obtain the information from the respondents and convenience sampling technique was used for the study. The data was analyzed through statistical software "SPSS". Chi-square technique for test the independency and odds ratio for to know the more likely the player were used. The results show that most of the respondents were in favor of Ronaldo according to different characteristics. 67 percent of the respondents gave their opinions in favor of Ronaldo. A number of different characteristics were considered for the comparison including Goal ability, Free kicks, passing ability, penalty ability, and efficient player. One third of the respondents were in favor of Ronaldo as having Goal ability, Free kicks, passing ability, Penalty kick ability and also Ronaldo were considered as an efficient player.

120:
Gold Price Forecasts: Comparison of Predictions of Economists with Forecasts of Econometric Model

Syed Ali Sajjad and Javed Iqbal

Institute of Business Administration, Karachi, Pakistan

Forecasting and predicting the price of gold is very important as large sums of money have been invested in gold. Hence economist at the close of 2014 predicted the price of gold for the year 2015. These predictions were primarily based on demand and supply factors of gold. This paper contributes by comparing the predictions of economists with the forecast of econometric models i.e. ARIMA and VECM by using monthly data from 1973 to 2014. The results indicate that forecasts by econometric models are closer to the actual average price for the year 2015 than the predictions of economists. Hence econometric models are superior than predictions of economists Furthermore, among the econometric techniques i.e. ARIMA and VECM, VECM is slightly better

Estimation of Population Mean of a Sensitive Variable Using Randomized Response Method in Two-Phase Sampling

Muhammad Noor-ul-Amin[1] and Muhammad Hanif[2]

1 COMSATS Institute of Information and Technology, Lahore, Pakistan
2 National College of Business Administration and Economics, Lahore, Pakistan

We propose estimators for population mean of a sensitive variable using nonsensitive auxiliary variable based on randomized response technique in two-phase sampling. Under two-phase sampling, the expression of bias and mean square error (MSE) up to the first-order approximations are derived. Simulation studies and real data are presented to demonstrate the performance of proposed estimators.

122:
Selection of Stable Genotypes Using Univariate and Multivariate Techniques for National Uniformity Wheat Yield Trials in Pakistan

Ghulam Murtaza and M. Inayat Khan

Department of Statistics, Allama Iqbal Open University, Islamabad, Pakistan

Plant breeding program achievement is based on its ability and quality. The selection of genotypes is depending on their phenotypic value in different environments. National coordinated program of wheat at National Agriculture Research Center (NARC), Islamabad is conducting National Uniformity Wheat Yield Trials (NUWYT) in Pakistan every year to make recommendations for genotypes which are yielding high for different environments. However, sophisticated data analysis for such trials is seldom conducted. In this study we applied the rigorous statistical techniques on NUWYT to arrive at logical conclusions about the competing genotypes on the basis of their stability with respect to different environments prevailing in the country.Multivariate analysis methods supported the results from the method of Eberhart & Russell.Stability, genotypes performance, genetic divergence between genotypes and the environments that optimize genotypes performance formed by Additive Main effects and Multiplicative Interaction (AMMI) model. (GGE) biplot and AMMI both are enough methods to explain the genotype × environment interactions and genotypes optimizes performance in mega environment because the graphic analysis of the Genotype plus Genotype × Environment interaction (GGE) method added to AMMI information on environmental stratification, which define mega-environments.

123:
Wavelet Analysis of Discontinuitiesin Astrophysical Signals

M.Ayub Khan Yousuf Zai[1], Khusro Mian[2] and M.Rashid Kamal Ansari[3]

1 University of Karachi, Karachi, Pakistan.
2 Sir Syed University of Engineering and Technology, Karachi, Pakistan

In this communication we have utilized Wavelet assessment to detect the exact instant when a signal changes. The sites of the change have been identified with their amplitude. This clearly suggests the presence of high frequency information i.e. a sudden change or discontinuity. We have determined that the spikes approximation level to of perturbed, unperturbed & mean concentration and parcel velocity of ionospheric F2& ES layers respectively at Pakistan air space. It has been found out that during the spikes of mean concentration & parcel velocity the unperturbed concentration and parcel velocity is very smooth. This process shows the corresponding perturbed concentration & parcel velocity while the spikes of mean concentration & parcel velocity at that instant show the strength of the signal.Similarly, at the instant when the spikes exist in unperturbed concentration & parcel velocity there is comparatively very smooth behavior obtained for the data set of mean concentration & parcel velocity. This clearly emphasizes that solar flare activity is responsible for perturbed concentration & parcel velocity.

124:
A Modified Class of Estimators in the Presence on Non-response

Saba Riaz

Department of Mathematics and Statistics,Riphah International University, Islamabad, Pakistan.

In the present paper, the problem of occurrence on non-response is addressed inthe variable of interest. A modified class of biased estimators is suggested for estimatingthe unknown mean of the study variable using information of the auxiliaryattribute. Expressions for the asymptotic variance of the proposed class are derivedup to the first degree of approximation. Efficiency comparison of the suggested classis acquired with the linear regression estimator theoretically and numerically. It hasbeen shown that the proposed class of estimators is more efficient than the linearregression estimator.

125:
Prevalence of First Permanent Molar Caries among 8 to 12 Years Old School Going Children Living in Dammam, Kingdom of Saudi Arabia

Soban Qadir Khan, Abdul Khabeer, Imran FarooqandFaraz Ahmed Farooqi

University of Dammam, Saudi Arabia

Background: First permanent molars (FPMs) most commonly erupts during the age of 6-7 years (1) and due to this early eruption, theyundergo challenges from occlusion and external environment such as acids and microorganisms at an early stage (2). Moreover, due to their anatomy and location, the FPMs are also most susceptible to dental caries (3, 4). Objective: The aim of the study was to determine caries prevalence in first permanent molars among children aged between 8 − 12 years.Method:This cross sectional study was performed during May to November 2014 on school going children living in Dammam, Saudi Arabia. 540 children aged between 8 to 12 years were randomly selected from different schools of Dammam,out of which there were 322 boys and 218 girls. Numbers of carious FPMswerenoted for each jaw separately. Results:There were more boys in the study then girls; 322 (59.6%) boys and 218 (40.4%) girls. The prevalence of caries in FPMs among 540 examined children was 51.1% (276 Children). Among these276 children, 101(18.7%) children had only onecariousmolar, 75(13.9%) children had caries in two molars, 46(8.5%) children with three carious molars and 54(10%) children had caries in all four FPMs. Prevalence of caries was more frequently observed in lower jaw as compared tothe upper jaw. In upper jaw, 152(28.2%) children out of 540 were affectedfrom caries while 219(40.6%) had caries in the lower jaw. Prevalence of carious FPMsamong boyswas50% while it was slightlyhigher in girls (52.7%) (Figure-1). There was no statistically significant difference betweenprevalence of carious FPMsand gender. With increase in age, it was observed that the prevalence of caries also increased (Figure 2). Among 8 yearsold, the prevalence of caries was found in only 25.9% children, while in 9 years old 38.5% children were affected. In 10 years old, the caries prevalencewent upto58.9%, while in 11 years and 12 years it was 61.9% and 78.9% respectively.Thiscontinuous increase in caries prevalence with increase in age was found statistically significant (P-value = 0.00). Conclusion:Prevalence of caries in FPMs was found to be 51.1%, which isrelatively low as compared to other studies conducted in KSA and other countries (5-7). Findings of more than 50%untreated carious FPMs, out of total screened teeth, should bea point of concern for dental health care professionals.Multiple factors can be attributed to this high caries prevalence such as socioeconomic status, culture, and easy access of cariogenic food. Irrespective of the exact cause, an early intervention by educating children in the schools about the etiological factors and consequences of dental caries is highly desirable.

126:
Stability and Numerical Analysis of Facebook Users via Fractional Order Mathematical Model

M. Khalidand Fareeha Sami Khan

Department of Mathematical Sciences, Federal Urdu University for Arts,
Sciences and Technology, Karachi, Pakistan

Every facility comes with its specific advantages and disadvantages. The same goes for the internet and its usage, particularly the use of popular social networking websites called Facebook, which boasts of billions of users around the globe. Facebook is the most popular of all other social apps of today; its use is uniform amongst teenagers, adults and older people. Sometimes, however, this faux social interaction becomes a habit, then an addiction as the user is entangled in the cyber world, and ends up costing him his real life happiness with respect to relationships and personal goals. In this paper, through a new mathematical model, four types of Facebook users have been introduced. The worldwide stability and functionality of this model will be discussed via Lyapunov stability theory. Moreover, verification of this model will be provided through the numerical solution for integer order, and its fractional order. The graphical solutions devised in this paper will be able to easily predict the future behavior of these Facebook users. Its equilibrium points will be discussed mathematically.

127:
Age Related Cataract and its Types in Patients with and Without Type 2 Diabetes Mellitus:
A Hospital Based Comparative Study

Muhammad Faisal Fahim

Al-Ibrahim Eye Hospital, Isra postgraduate Institute of Ophthalmology, Karachi, Pakistan

Objective:To know the frequency and types of age related cataract in diabetic type 2 patients as compared to non-diabetic patients attending Al-Ibrahim Eye Hospital Karachi (AIEH).Materials & Methods:This comparative cross-sectional study was carried out at Isra Postgraduate Institute of Ophthalmology/ Al-Ibrahim Eye Hospital (AIEH) Karachi after the approval of Research Ethical committee. A total of 49384 patients attending outpatient department of AIEH from July 2014 to June 2015 were divided into diabetic and non-diabetic groups on the basis of history and laboratory tests (random blood sugar levels and later by fasting blood plasma level and glycated hemoglobin [HbA1c]). All patients enrolled in this study had their ocular examination, including best corrected visual acuity (BCVA), bio-microscopic examination of anterior segments, measurement of intra ocular pressure (IOP) and dilated pupil examination of lens and fundus. The criterion for diagnosis of a cataract for this study was "sufficiently advanced lens opacity that caused impaired vision and/ caused un-gradable images on mydriatic fundus camera for retinal screening. Cataract was classified on morphological basis into cortical, nuclear, posterior sub-capsular and mixed types. Data was analyzed through the software SPSS 20.0. Continuous variable were measured by mean $\pm$ Standard Deviation while categorical variable were measured in frequency. Univariate and multivariate logistic regression analysis was applied to see factors associated with the presence of cataract. Odds ratio and 95% confidence interval was recorded for age, gender and diabetes with respect to presence of cataract. P-value < 0.05 considered to be Statistically Significant.Results: Frequency of cataract in the diabetics was 42.9% as compared to 15.7% in non-diabetic respondents. Diabetic versus non-diabetic adjusted odds ratio (95% Confidence Interval) was 4.40 (range 4.11-4.71) with P value of <0.001. Male to female adjusted odds ratio (95% Confidence Interval) was 2.05(range 1.95-2.15) with P value of < 0.001. Frequency of cataract in both the groups increased with the age more so in diabetic group. Nuclear sclerosis was the commonest type (46.6%) of cataract in diabetic respondents whereas posterior sub-capsular Cataract was the commonest type (32.3%) in non-diabetics. Cataract was significantly associated with age, sex, and diabetes in Univariate analysis (by one to one variable association). Adjusted Odds Ratio also shows that being old and diabetic will increase the risk of cataract in males twice as compare to females. In diabetic patients' cataracts was reason of un-gradable photos in 33% whereas 17% of diabetics with cataracts had DR.Conclusion: Diabetes, gender, and age are important risk factors for cataract development in our country just like western world. Cataract was four times more common in diabetes. Males were twice more vulnerable to develop cataract than females. Nuclear sclerosis was the commonest type of cataract in diabetic patients while sub-capsular cataract was common in non-diabetic.

128:
Application of Log-linear Models in Clinical Trial in Painful Muscle Spasms

Mohammad Aslam

Department of Statistics, University of Karachi, Karachi, Pakistan

A multicentre clinical trial was performed by a team of doctors in several cities all over Pakistan to study the efficacy and tolerability of Ternelin in acute painful muscle spasms in the back, neck and shoulder regions. Each patient filled a questionnaire about the age, sex, site of muscle spasms and pain and duration of treatment by Ternelin. The data was compiled in the form of contingency tables 1 and 2 and analysed by fitting log-linear models 1,3,4,5 by the statistical software Statgraphic 3. Ternelin is equally efficacious and tolerable in muscle spasms in neck back and shoulder. The proportion of cured patients of muscle spasms, pain and posture disorder significantly increases with duration of treatment at P-value < 0.00001. A modified circular diagram introduced, which display the pattern of association among the different categories of two attributes of contingency table 3, 4 and 5 in figure 1, figure2 and figure 3 respectively. The areas of component a circle at visit 1, 2, 3 was substantially-larger for cured as compared to not cured patients.

129:
Machine Learning and Knowledge Representation: An Application of Statistical Packages and Social Science Research in Producing Scientific Knowledge

Shah Abbas

Department of Econometrics and Statistics, Pakistan Institute of Development Economics, Islamabad, Pakistan

The advancement of technology has changed the nature of research and communication as a result machine learning is become central to the scientific research. Machine learning include the software,statistical packages for scientific investigation either produced data, simulation, use data as an input, are an important tool for the researchers in both social science and natural science. The researcher draws inferences about the reality based on data by using the different statistical packages. The statistical analysis is performed by the many researchers with an inadequate understanding and background information of statistical packages and method as a result produced misleading results. In order to make inference require understanding about the statistical method and application of packages. This study investigate an application of statistical packages in producing scientific knowledge, particularly concerned about the use of statistical packages in social science research and address the following questions, does machine learning represent knowledge? Does is it important to use statistical packages in social research? What are the main implication of statistical packages in social research? Does statistical packages producing empirical results link social research with scientific knowledge?

130:
Relationship between Economic Growth and the Unemployment Rate of Four Asian countries

Maria Haider, Bisma Shamsand Samreen Fatima

Department of Statistics,University of Karachi, Karachi, Pakistan

Unemployment is one of the major concerns of today's world. Due to this countries are facing many economical and social problems such as law and order situation and poverty etc. This study examines the unemployment rate of four Asian countries and also finds how the economy of the countries is affected by the unemployment rate.The selected countries are Bangladesh, India, Pakistan and China. Data from 1991 to 2013 are selected for the analysis. Using different statistical techniques it has been observed that India and China have negative correlation between unemployment rate and economic growth, indicating that increase in economic growth will decreasing unemployment. However, Bangladesh and Pakistan have positive correlation shows unemployment and economic growth either will increase or decrease at the same time.The analysis of variance showed there is a significant difference among the mean unemployment rate of the four countries. Fisher's least square difference, Tukey's honestly difference test and Scheffe's test confirmed that the unemployment rate in Bangladesh and India, and, China and India, does not differ significantly, while the unemployment rate between the other pairs of countries differs significantly.

131:
Generalized Exponential Type Regression Estimator by Using Two Auxiliary Information

Naureen Riaz and Mian Muhammad Hanif

National College of Business Administration and Economics, Lahore, Pakistan

In this paper, generalized exponential type regression estimators under simple random sampling without replacement has been proposed for estimating the finite population mean of study variable by using two auxiliary information in single phase sampling. The mean square error of proposed estimator is obtained up to first order approximation and bias expressions have been derived up to second order approximation. Under the theoretical condition proposed estimators are better than some existing estimators. An empirical study has been derived to demonstrate the efficiency of proposed estimators.

132:
Exchange Rate Volatility Can be Affected by the Price of Gold and Price of Oil, A Case Study

Sadia Khatoon and Samreen Fatime

Department of Statistics, University of Karachi, Karachi, Pakistan

Exchange rate is one of the important indicators of an economy's overall health. Instability in Exchange rate provide opportunity to investors to invest in foreign currency (dollars) to get higher returns and thus resulting in the strengthening the dollar against the home currency, which directly affected prices of exports and imports and their growth rates. A major portion of Pakistan's imports consist of gold and crude oil that have a strong impact on PKR/USD exchange rate. In this study we want to find due to which determinants volatility is higher either oil or gold prices because they affected PKR/USD exchange rate. In order to find the volatility in exchange rate, gold and crude oil we used volatile models such as ARCH, GARCH and EGARCH. First we used ARCH LM test to confirm the data are volatility. The data which we used for the study is 1995 to 201. Using MSE it is found that EGARCH model is suitable for all the variables because it has minimum MSE.

Successive Sampling over Two Successive Occasions based Control Chart using Repetitive Sampling Scheme

Asma Arshad[1], Muhammad Azam[2] and Muhammad Aslam[3]

1 Department of Statistics, Government College University, Lahore, Pakistan.
2 Department of Statistics and Computer Science, University of Veterinary and Animal Sciences, Lahore, Pakistan.
3 Department of Statistics, Faculty of Sciences, King Abdulaziz University, Jeddah, Saudi Arabia

The aim of present study is to propose a repetitive sampling based variable control chart to monitor the process mean by using successive sampling. The quality characteristic under study possesses sudden change in the running process over two successive occasions. The average run length (ARL) formulas that are one of the most useful indicators to monitor the process for in-control and out-of-control processes are derived. The simulation study is performed to compute study parameters for the target in-control average run length (ARL) and minimum average sample size (ASS) by an optimization search. The proposed control chart exhibits superior performance than existing (Shewhart) control chart in terms of early detection of process mean shift. The strategy of proposed control chart has been implemented on a real life industrial data.

134:
Effectiveness of Leadership Style on Employee's Performance

Hammad Waseem, Muhammad Ibrahim Shamsi, Sadiq Ali, Zohaib Azizand Rafique Abid

National University of Computer & Emerging Sciences – FAST, Karachi, Pakistan

Effective leadership has always played an important role in the growth and better performance of the organization. The managers usually get stuck while thinking about different styles of leadership to follow. To solve this problem, we have focused on two successively used leadership styles which includes transformational and transactional. Several studies highlighted that transformational leadership style leads to employee motivation whereas, the transactional leadership style achieves productivity by giving rewards and punishments to the employees. Our hypotheses was that transformational leadership style has positive impact on employee performance in such a way that it shifts employee performance towards the ability to do assigned works efficiently and transactional leadership style has negative impact on employee performance because in this style, there is a pressure on employee to achieve goals successfully and before deadlines. Two hundred employees and employers from various software houses of Karachi city were targeted as the respondents. A multifactor leadership questionnaire was constructed to measure the leadership style – independent variable, and the employee performance – dependent variable. Regression analysis was performed and proposed two models using SPSS. The results of statistical tests were concluded in a way which leadership style is most effective in terms of productivity and job satisfaction. The final results showed that transformational leadership style is better for employee's performance.

135:
The Effects of Illiteracy as a Main Cause on Corruption

Meghna Jadav, Syeda Mahrukh and Muhammad Ibrahim Shamsi

National University of Computer & Emerging Sciences – FAST, Karachi, Pakistan

Corruption is the seed which is rooted deeply in our country. It is now becoming more common as the public prefers easy and unethical ways to get their work done without having to work hard. Corruption is taking place on large and small scales as well. Corruption can be a result of a number of things but the main reason can be identified as illiteracy. Illiteracy is becoming a common problem in our country. Our public does not give enough importance to education. A reason might be insufficient help from the government or due to lack of enough resources and poverty. Unfortunately, this has a negative effect on the nation as a whole. This research would include the questions about how importantly the educational ratio of the nation affects its people's mentality and how that effect the corruption involved, mainly in the name of economical welfare and political decisions. This research topic emphasizes on answering the question of how the eradication of illiteracy can help in eradicating corruption from the society. The purpose for this study is identifying the thinking of people which leads to corruption in the country. We analyzed the concepts built about corruption in the minds of the public of our country. We also identified the difference of mentality of students of different ages and different educational statuses. We have used a questionnaire and interviews in our survey to collect the data from 200 respondents, to find the factors which are the result of illiteracy and become the reason of corruption. The findings proposed a solution which might help in eradicating illiteracy, and mainly the ideas which sow the seeds of corruption in people's minds.

136:
On Building Trust in Online Shopping the Impact of Logistics Support

Adila, Suffah Aftaband Muhammad Ibrahim Shamsi

National University of Computer & Emerging Sciences – FAST, Karachi, Pakistan

Shopping is one of those things which had evolved over time and as world became globalized, means of shopping also started to change. Pakistan being a developing country has not particularly adopted the concept of online shopping. The most important thing which behaves as a hurdle in the growth of online customers is "trust". Due to lack of trust people do not prefer to shop online. Three logistics supports have been discussed in this study that highly influenced the trust in online shopping – Product quality, Transaction security and Timely delivery. The data was generated from a questionnaire surveyed from 200 online customers. The multiple linear regression model was developed to predict the influence of the logistics support on building trust. The study concluded that the concept of online shopping could be common among people to save their time and effort, if we focused on the quality logistics supports through building the trust.

137:
On the Labor Rights the Effects of Corruption in Construction Businesses

Muhammad Wahaj Khan, Muhammad Abdul Waheed Haris and Asif Aminand Deepak Kumar

National University of Computer & Emerging Sciences – FAST, Karachi, Pakistan

Human, is consider the wisest creature in the entire universe. The modern era divided the people equally and distributed the people with some rights. In every aspect of life the society standardized some status and sort of rights and laws on which the independence and freedom of the person occur. But what happen when these rights are usurp by the greedy behavior of human and make the life of the innocent in danger. Unfortunately, the similar situation is now facing by the labor society of Pakistan due to the greedy and corrupt behavior of their supervisors. The "Labor" sector of the country is also one of them, that play a vital role in the society development, but in Pakistan the situation is even worst. The problem is due to the corruption in the governmental level it spread its roots to the every major aspect of development even it covers the construction business in which many workforce of labor working on the daily wages and due to corruption, they don't get their due share and sometime it may cost their own life. This study mainly focused on the effects of corruption on the labor rights in construction business. The Wages and Safety measures have been considered as the influential factors in measuring labor rights. We have targeted 150 labor class people working in different construction sites in Karachi. The data was generated through a multifactor rating scale questionnaire and analyzed using SPSS. Regression and correlation analysis were used to conclude the results. The findings concluded that there is a negative relationship between the usage of labor rights and involvement of corruption in it.

138:
Impact of Operating System Attributes on Customer Satisfaction.

Hafiz Muhammad ZubairHasan, Muhammad JamilUsmani, HamzaGodil and ShariqMasood

National University of Computer & Emerging Sciences – FAST, Karachi, Pakistan

Over the past we have seen that many operating systems have failed to do business in market due to various factors. For example Vista failed due to lack of stability and Windows 8 failed due to GUI. Hence, there is a need to find the attributes which cause an operating system to do sufficient business in market. It is a need of a computer scientist as a developer to perfectly understand the requirements of the customers. In this study we are trying to analyze the needs of customer related to the operating system. To do so, we are trying to cover all of the most major factors which cause the customer dissatisfaction, so that the future operating systems can be more innovative and updated to modern technology along with covering all the aspects of customer needs. To guide the OS industry to produce such OS which will get approval of customer.Factor analysis was performed to extract the dimensions in the nine attributesUser Interface, reliability, Glitches, bugs, processing speed, security, user friendly, size of OS, interact with I/O devices. Almost 250 computer scientists were selected to answer these questions. The result concluded that GUI, Speed and Stability are the major concern of the customer and due to weakness in these three attributes many operating systems in the past have failed. Hence, in order to produce an operating system which will win users approval these factors should be kept in mind by the developers.

139:
Exponential-Type Ratio Estimators for Population Mean
using Two Auxiliary Variables under Non-response

Sadaf Manzoor[1], Lakhkar Khan[2] and Imad Khan[2]

Department of Statistics, Islamia College University, Khyber Pakhtunkhwa, Pakistan.
Higher Education Department, Khyber Pakhtunkhwa, Pakistan.

In this paper, we proposed exponential-type ratio estimators for estimating the finite population mean of the study variable Y using information on two auxiliary variables under the situations when certain observations for some sampling units are missing. These missing observations may either be in auxiliary variable or study variable. Expressions for biases and Mean Square Errors (MSE) of proposed estimators are obtained up to first order of approximation, under different situations of non-response. Comparison of the proposed estimators with revised ratio-type estimators are made both theoretically and through simulation study. The finding indicates that proposed estimators are more efficient as compared to all other competitor estimators.

140:
Loss Given Default (LGD) & Exposure at Default (EAD):
in view of BASEL III(Credit Risk Estimation Techniques)

Sohaib Ahmed and M. Toobab Zubair

Department of Actuarial Science and Risk Management, University of Karachi, Karachi, Pakistan

The New Basel Accord allows internationally active banking organizations to calculate their credit risk estimation techniques using an internal rating based (IRB) approach, subject to supervisory review. One of the modeling components is loss given default (LGD), the credit loss incurred if an obligor of the bank defaults. The parameter loss given default (LGD) of loans plays a crucial role for risk-based decision making of banks including risk-adjusted pricing. Depending on the quality of the estimation of LGDs, banks can gain significant competitive advantage. For bank loans, the estimation is usually based on discounted recovery cash flows, leading to workout LGDs. In this paper, we reveal several problems that may occur when modeling workout LGDs, leading to LGD estimates. The flexibility to determine LGD values tailored to a bank's portfolio will likely be a motivation for a bank to want to move from the foundation to the advanced IRB approach. This paper gives the detail description of "Credit Risk Estimation Techniques" and proposes a portfolio credit risk model with loss given default (LGD) in the context of credit portfolio losses, which allows for a reasonable economic interpretation and can easily be applied to real data. We build up a precise mathematical framework and stress some general important issues when modeling dependent LGD, whereasEAD is taken as gross exposure in the event of obligor default, typically in 3 months.

141:
A Statistical Study of the Use of Social Network Sites
among the Students at University of Peshawar

Khazan Sher,Qamaruz Zaman, Farooq Ahmad, Muhammad Atif,
Abdul Majid, Gohar Ayuband Jawad Ali shah

Department of Statistics, University of Peshawar, Peshawar, Pakistan

The present study carried out to check the use of social network sites by the students of university of Peshawar and its impacts on the students' performance. A random sample of 200 graduate and undergraduate students was randomly selected who participated in the study by responding to a well-designed questionnaire. The results of the study reveals that the students uses SNS for socialpurposes more than for academic, while mostly used sns site is Facebook. The use of sns depends on their gender and age. Also the uses of SNS improve their communication skills but having a diverse effect on their studies.

142:
Comparative Study of Factors Causing the Hepatitis 'B' Using Logistics Regression Analysis:
A Case Study of Hyderabad District of Sindh Province

V. Suthar and Ovais Khan

Department of Statistics, Sindh Agriculture University, Tando Jam, Pakistan

Hepatitisis characterized by the destruction of a number of liver cells and the presence of inflammatory cells in the liver tissue (Janice, 2010). It is a major global health problem.Worldwide, an estimated two billion people have been infected with the hepatitis B virus (HBV), and more than 350 million have chronic (long-term) liver infections (WHO 2010).The World Health Organization (WHO) has estimated that 10 million people are suffering from Hepatitis in Pakistan. Even though one out of 10Pakistanis suffers from the virus of either Hepatitis B or C. It is estimated that nearly 4 million populations in the country is exposed to hepatitis B. Hepatitis B virus is prevalent in certain districts of Balochistan, Sindh and Punjab due to already existing hepatitis B cases and low coverage of hepatitis B vaccine in this high risk population. Secondary data was collected from Different Hospitals in District Hyderabad. Using logistic regression analysis was performed on 500 cases; of these, 378 were recoded to be infected prediction in one of two categories of outcome (infected or not infected) on the basis of variables that were assumed to enhance the predictor variable. It was very surprising for us that the some factors which were found significant like surgical operation, blood transfusion, dental surgery and the history of hospitalization are mainly concerned with doctors and the hospitals. The proposed model is comparatively better model than that of Lawson et al. (2004),who developed the logistic regression model and correctively predicted about 51% of total cases while the logistic model of the present study correctly classified about 81.2% of cases. Furthermore, it is obvious that all the coefficients of sex, education, occupation, number of earners, household size, age dependency and wage rate to be significantly different from 0 at the 0.05 level of significance.

143:
Progressive Data Modelling

Zahoor Ahmad and L-Chun Zhang

University of Southampton, UK

Currently a substantial initiative is taken at the National Statistical Offices to make full use of administrative data in statistical production. Many administrative data sources, unlike sample surveys and censuses, do not always have a closing date, after which the data become static and can only be altered in editing. Reporting and registration delays and corrections can occur a long time after the statistical reference date, whether by allowance or negligence. Thesetypes of data sets are of progressive nature. For example the VAT data are said to be progressive in the sense that VAT reports (or observations) of a particular time period t of interest may arrive at various points long after t, whether by arrangement or not. For timely prediction of the VAT turnover total before all the data have arrived, a critical issue is when the timeliness of VAT reporting is related to VAT turnover i.e. informative reporting. In this work we develop new approaches for handling informative reporting, drawing on the relevant techniques for informative sampling and informative nonresponse. We study approaches to modeling the potential informative report, methods for estimation, including maximum likelihood and estimation equations, and illustrate the methodology.

144:
New Factor-Type Estimators of Population Mean in the Presence of Non-Response

HassanZeb, SareerBadShah,MuhammadAzeem, Amjad Ali and Adnan Khan

Department of Statistics, Islamia College Peshawar, Pakistan.

In sample surveys while collecting data from the respondents, information may be missing on either (i) study variable, (ii) auxiliary variables or (iii) both study and auxiliary variables. This paper proposes new factor-type estimators of population mean using two auxiliary variables in the presence of non-response. For the suggested estimators, expressions for bias and mean square error havebeen derived and comparisons with some of the existing estimators have been made.It is found that the proposed estimators perform better than the existing estimators. Asimulation study has also been carried out to verify the results.

145:
Study the Wavelet Interpretation of Resonance for Seismicity Patterns at Coastal Regions of Pakistan

Syed M. Haroon Rashidand M. Ayub Khan Yousufzai

Institute of Space & Planetary Astrophysics, University of Karachi, Karachi, Pakistan

Estimation of Power Spectra (Spectral Windows) is used for analytical research work on seismic waves propagation in the coastal region. Their transient periods are detectable through wavelet application and interpretation reflects the impact, their intensity and attenuation process in the coastal environment. Albeit the seismicity pattern is an indicator of Body and surface waves propagation with emission of heat due to geothermal gradient of the region but shock waves are dominant with vibrational mode of particles. Earthquake ground motion which is transient motion and energy dissipation due to quality factor, loss factor and specific damping capacity are used for evaluating the nonlinear response of the system. However, there are number of physical phenomena that result in non-deterministic manner where future instantaneous values cannot be written in a deterministic sense. Such phenomena have unpredictability of their value at any future time which is also explained by the random vibration. The degree of randomness in the process depends upon the understanding of parametric values of the variable associated with the phenomena and the ability to control them. It has been said that phenomena who's out come at a future instant can be predicted as they are classified as non-deterministic factorial Brownian motion. The response of a system to a random excitation is also random phenomena. Because of the complexity involved, the description of random functions in terms of time does not appear as a particularly meaningful approach, and a new approach of analysis must be adopted. Random vibrations are met rather frequently in nature and may be characterized as vibratory processes in which the vibration particles undergo irregular motion cycles that never repeat themselves exactly. So, seismic activities during the period of 1980- 2006 appear to follow the major structural and tectonic features of latitude $24^O - 28^O$ and longitude $64^O - 70^O$ on tectonic map of Sindh – Baluchistan coastal belt.To obtain a complete description of the vibration, an infinitely long time record is theoretically necessary. This is overcome by using these methods which based on statistical mechanics and wavelet analysis involves concepts such as amplitude probability distributions and probability densities and continuous vibration frequency spectra in term of mean square spectral densities.

146:
Investigating the Influence of Cosmic Rays on the Biosphere for Pakistan Air Space

Faisal Nawaz[1], M.Ayub Khan and Yousuf Zai[2]

1 Mathematical Science Research Centre, Federal Urdu University of Arts,
Sciences and Technology, Karachi, Pakistan
2 Department of Applied Physics, University of Karachi, Pakistan.

In the present study monthly data of Cosmic ray intensity obtained by spatial interpolation method (krigging method) and Cloud cover for different regions at different time scale from the period 1984 -2006 have been studied to investigate the effects of cosmic ray intensity on the Cloud cover. This work stems from observed correlation between cosmic ray intensity and the cloud amount for the period under study. It has been found from our investigation that the cosmic ray and cloud cover have positive correlation but for some regions this may be the negative. This sort of study confirms about our visualization relating the space and the atmospheric variables.

147:
Classification of Potato (Solanum Tuberosum L.) Genotypes by Using Cluster Analysis

Irum Raza, Sobia Naheed, Muhammad Zubair Anwar,
M.Asif Masood and Shazia Erum

National Agricultural Research Centre, Islamabad, Pakistan

In the present study cluster analysis by average linkage method was used for classification of potato genotypes on the basis of phenotypic traits. Cluster analysis is a multivariate technique used to group the data into clusters in a way that the observations within in a cluster are similar whereas the clusters are distinct from one another. Data on thirty five potato genotypes were evaluated in the field experiment for 3 qualitative traits namely number of eyes/tuber, tuber shape and tuber skin type. The amalgamation steps in the cluster analysis showed that the similarity level decreased by increases of about 6 or less until it decreased by 13 at the step from four clusters to three. This shows that four clusters are logically sufficient for final partition. The resulting dendrogram displayed the information in the form of a tree diagram. In the present data, potato genotypes such as CIP01, CIP25, CIP2, CIP4, CIP10, CIP24, CIP32, CIP 09, CIP20, CIP27, CIP29, CIP33, ASTRIX, DESIRRE, ZINA Red, HZD2 1499, CIP 07, CIP16 and CIP30 made up the first cluster, CIP12, CIP14, CIP28, CIP31and CIP17 made up the second cluster, CIP03, CIP06, CIP08, CIP11, CIP15, CIP05, CIP13, CIP18, CIP19, CIP34 made up the third cluster and CIP22 made up the fourth cluster. These genotypes are grouped into clusters based on the similar phenotypic characteristics that is number of eyes/tuber, tuber shape and skin type are associated in each of the distinct cluster. This classification of genotypes with the help of cluster analysis could assist breeders to select and identify genotypes with desirable characteristics for inclusion in variety breeding programs.

148:
Classification of Subjects for Categorical Data by Using Barycentric Discriminant Analysis

Shazia Sadaf, Rabia Munir,Muhammad Arif, Syed Imtiaz Hussain Shah

Department of Mathematics & Statistics, University of Agriculture, Faisalabad, Pakistan

As an exploratory multivariate technique Discriminant Analysis has extensive use in Biostatistics in order to assign patients into predefined categories on the basis of easily observable but sometimes fallible symptoms. In Pakistani healthcare system where specialized physicians of some physical diseases whose diagnosis leans heavily on apparent symptoms are not available in all the areas, this symptom based methodology of categorizing patients into pre-determined disease groups can aid general practitioners in timely diagnosis and treatment. A study was conducted to categorize patients suffering from Spinal Stenosis, Thoracic Outlet Syndrome and Sciatica from National Hospital and Medical Center Lahore, who were reported from January, 2016 to June 2016. A Sample of eighteen diagnosed patients (six from each group) was taken. Four doctors who were unaware of patients' disease rated their apparent symptoms, on 24 descriptors, on the basis of their expertise independently. A specialized and recently developed version of Discriminant Analysis for categorical data termed as Barycentric Discriminant Analysis (BADIA) was applied to group patients into their respective categories. This technique is specially designed for clinical trials where researcher faces the critical situation of more variables and less sample size. To check the plausibility of the model, computer based cross validation techniques such as bootstrap and jackknife along with their graphical display were adapted. Significance of the fitted model was also checked by using computer based iterative tests. This research will broaden scope for collaborative projects of medical science and statistical discipline.

149:
On a Decile-Based SIA-Estimator of the Shape Parameter of the Log-Logistic Distribution

Kessica Xavier and Saleha Naghmi Habibullah

Kinnaird College for Women, Lahore, Pakistan

Habibullah and Fatima (2015) introduced the terminology Self-Inverse at A (SIA) to represent the distribution of the random variable X for which the distribution of X/A is identical to the distribution of A/X where A is the median of the distribution of X. The SIA property is able to provide estimators of distribution parameters that are more efficient than well-known estimators leading to probability models that fit relevant real-life data-sets with greater accuracy than that which is achievable through estimators that are generally used. The log-logistic distribution (also known as the Fisk Distribution) is characterized by two parameters, shape and scale, and finds applications in a variety of areas including economics, survival analysis, hydrology and networking. In this paper, we utilize the fact that the log-logistic distribution is a member of the class of SIA distributions to develop an SIA-estimator of the shape parameter based on the first and the ninth deciles. Through Monte Carlo simulation, we show that this estimator is more efficient than the non-SIA estimator obtained by utilizing the first decile or the ninth decile. We fit the distribution to a data-set picked up from the literature, the objective being to demonstrate that the newly derived estimator provides a better fit than either of the two that are not based on the SIA property. Given that the log-logistic distribution has applications in important areas such as hydrology, economics and cancer studies, the importance of accurate modeling cannot be over-emphasized.

150:
On a Decile-Based SIA-Estimator of the Scale Parameter
of the Log-Cauchy Distribution

Aiman AliandSaleha Naghmi Habibullah

Kinnaird College for Women, Lahore, Pakistan

Self-Inversion at A (SIA) is a property possessed by some of the well-known distributions of non-negative continuous random variables. If Y is a non-negative continuous random variable with median A, self-inversion at A implies that the distribution of Y/A is indistinguishable from the distribution of A/Y. The class of SIA distributions possesses an interesting property that has recently been utilized for developing estimators of distribution parameters that are more efficient than estimators obtained by well-known methods and the adoption of which yields a better fit to real-life data. The Log-Cauchy distribution is a member of the class of SIA distributions and finds applications in situations where there is a possibility of encountering significantÊoutliersÊor extreme results.It has also been proposed as a model for species abundance patterns in addition to having found an application in Bayesian statistics. In this paper, we obtain a new estimator of the scale parameter of the Log-Cauchy distribution based on the first and ninth deciles. By conducting a simulation study based on 10,000 samples of various sizes drawn from the Log-Cauchy distribution, we show that the coefficient of variation of the newly developed estimator is smaller than the coefficient of variation of the non-SIA estimator derived through the first decile or through the ninth decile. We fit the log-Cauchy distribution on a data-set picked up from the literature in order to demonstrate the usefulness of the newly developed SIA-estimator.

151:
Effects of Course Repetition on Students' Subsequent Progress: Need for Supplementary Exam

Muhammad Hassan, Noor us SabaandFaqiha Sultan

FAST-National University of Computer and Emerging Sciences, Karachi, Pakistan

The aim of this study is to explore the impact of course repetition on students' subsequent academic progress at undergraduate level. This issue has attracted considerable attention among the university students. This research refers to the way chosen for clearance of a student's course, if one fails in the first attempt, which can be either by appearing in a supplementary exam or by repeating the complete course, where each method has its own implications and influences the subsequent academic success of the affected students. This study claims that offering a supplementary exam is much better than course repetition. To demonstrate this, students from different universities of Karachi are divided into two categories according to the way chosen for clearance of a failed course and both the groups are asked about their academic growth. From each category, a sample of 100 students is picked out and the survey is conducted through questionnaires. A comparative study between two categories is conducted and the obtained results support the hypothesis.

152:
The Impact of Socioeconomic Status on Body Mass Index

Amjad Hussain, Umer Farooq and Faqiha Sultan

FAST-National University of Computer and Emerging Sciences, Karachi, Pakistan

This study investigates the effects of socioeconomic status (SES) on body mass index (BMI) and determines the association between income and BMI.The BMI problem arises because of not only low-income level, but also lack of education and food security are contributing to unhealthy BMI's. The gap between the income levels, the breakin food quality and the awareness are the individual contributors to healthy and unhealthy BMIs. To explore these effects and find the relation between income and BMI, general classification of SES as upper class, upper middle class, middle class, and lower middle class is used and a random sample of size 60 from each category is selected. A total of 240 individuals is surveyed using questionnaires.BMI of each individual will becalculated according to the information collected in our surveys. RegressionÊanalysiswill be appliedto estimate the relationshipbetween two main variables of this study.

153:
Imputation Techniques Using Exponent Term

Jawaria Nasir and Javid Shabbir

Quaid-e-AzamUniversity, Islamabad, Pakistan

Imputation is one of the method which deals with missing data. The problem of missing data is one of the most frequent and wide whose solution is required to obtain using statistical techniques. Several methods of imputation by using exponent term are suggested in this paper and their corresponding estimators are also given. Bias and MSE's are taken for comparing estimators with each other and with other well-known estimators. It is found that all proposed estimators are more efficient as compare to the well-known estimators. Bias and MSE's are taken using first degree of approximation. Numerical based efficiency is studied with the help of simulation study.

154:
Privatization of Pakistan International Airlines: Effects on General Public and Employees

Sauman Balkhi, Hammad Khan, Akif Jawed, Hasan Khan and Faqiha Sultan

FAST-National University of Computer and Emerging Sciences, Karachi, Pakistan

The main purpose of this research is to recognize the effects the privatization of Pakistan International Airlines (PIA)will throw on the general public and PIA employees and their perspective about it. The changing worldwide air transport environment creates challenges for the administration of the airline.PIA is in decline and has had financial losses since last ten years that may push it into accepting fundamental changes very rapidly. This paper underlines latest changes in government arrangement and privatization of PIA, which are expected to create a more successful and cognizant air industry and influence the public and PIA employees. For this purpose, the data is collected from two groups affected by this change in PIA administration. 50 PIA professionals and 200 public individuals are surveyed using different questionnaire for each group. Statistical analysis for both the groups is carried out by using SPSS and the financial impact of PIA privatization on these groups is compared.

155:
Prevalence of Depression and its Associated Risk Factors among Post-Graduate Dental Residents at a Tertiary Care Hospital of Karachi

Bushra Abdul Ghani Shekhani

Altamash Institute of Dental Medicine, Karachi, Pakistan

BACKGROUND:Depression among post graduate dental residents not only affects their professional and personal lives, but also may have serious impact on health behavior of the community in general. Risk factors identified have ranged from increased work load, to increased financial constraints and to lack of time for academics due to hectic schedule.OBJECTIVE:The objective of this study was to determine the prevalence of depression among post graduate dental residents at a tertiary care hospital in Pakistan and to explore the associated risk factors contributing to depression in them.METHODS:It was a cross sectional descriptive study conducted at the Operative Dentistry Department ofAltamash Institute of Dental Medicine, Karachi. This study comprised of a total sample of 104 participants (post graduate dental residents) ranging in age from 25-35 years of age of either gender respectively It was done from August 2015 till January 2016. Participants were selected by a non-probability consecutive sampling technique. Zung Self-Rating Depression Scale was administered among 104 post graduate dental trainees. Self-administered questionnaires were used to assess the associated demographic and occupational risk factors. Adjusted odds ratio (OR) were calculated by logistic regression.Descriptive statistics were calculated for quantitative and qualitative variables and frequencies and percentages were determined. Risk factors were determined by Chi-Square test.RESULTS:Depression in the overall sample was 104 (50%). Data was analyzed by using the SPSS version 20. Mean age of the participants was 27.3 ± 1.5. Out of 104, female participants were 65 (62.5%) and male participants were 39 (37.5%). The prevalence of depression among them was found to be 52 (50%). Multiple logistic regression analysis revealed that working hours less than 7 hours (OR 3.71; CL= 1.67, 8.23) and greater than 7 hours (OR 3.15; CL= 1.42, 6.97) and none or occasional peer support (OR 2.05; CL= 1.01, 4.18) were independent predictors for depression among the post graduate dental residents.CONCLUSION:Half of our sample population was depressed. Therefore they should be encouraged to recognize and seek treatment. This study also indicates that lack of peer support, financial strain and increased work load causes depression.

156:
Bayesian Analysis of van Baaren Model (V) for Paired Comparison Allowing Ties

Sadia Qamar[1], Amna Nazeer[2], SaminaSatti[3]

1 Department of Statistics, University of Sargodha, Pakistan
2 COMSATS Institute of Information Technology, Islamabad, Pakistan
3 University of Wah, WahCantt, Pakistan

This study consists of Bayesian analysis of van Baaren model (V) for paired comparison with tie effect in a unique way. It is hoped that this study will enhance the importance of tied observations in paired comparisons and will serve to increase interest in analysis of the paired comparison through Bayesian paradigm. The two non-informative priors namely uniform and Jeffreys prior are used for Bayesian analysis of the model by using Quadrature method. The posterior means, preference, predictive and posterior probabilities for hypothesis testing are computed. Graphical presentations of marginal densities are also provided. The appropriateness of the model has been checked by using Chi-square statistic.

157:
Public Knowledge and Awareness of Antibiotic Use in Karachi

Sana Ahmed, Saqiba Rasool, Juweria Khan, Fakhsheena Anjum, Tariq Ali and Sana Ghayas

Dow College of Pharmacy, Dow University of Health Sciences

OBJECTIVE:To investigate the knowledge of antibiotic use among the general public in Karachi.METHODOLOGY:This study was conducted from July to December, 2015. This descriptive, observational study was done recruiting 400 randomly selected individuals aged 15-70 years throughout Karachi. Completely filled questionnaires were collected for analysis by the researchers.RESULTS:A total of 390 completely filled questionnaires out of 400 werereturned by the public (response rate= 97.5%). The majority (83%) of the respondents knew that antibiotics are medicines that are used to kill bacteria. However around 40% responded that antibiotics are used to treat viral infections and only 30% knew that antibiotics are not used to treat cold and cough. More than 55% of the public knew that antibiotics can kill the normal flora and almost 60% disagreed that antibiotics are medicines used to relieve pain and fever. In addition around 80% respondents knew that antibiotics may cause allergy and about 90% knew that antibiotics can cause side effects also.It was revealed that around 70% respondents knew that taking the full course of the prescribed antibiotics is healthier than taking lesser antibiotics. It was found that around 45%stopped taking antibiotics when their symptoms improved and almost 40% stocked antibiotics at home in case of emergency.CONCLUSION:Knowledge regarding antibiotics use among the public was quite satisfactory, however their awareness for completion of antibiotic course and related factors should be enhanced by health care professionals in future campaigns to prevent cases of antibiotic resistance and lessen disease burden in our city.

158:
Statistical Study of Malaysian Health Sector

Imran Anwar Ujan, M.Malook Rind and Mohd Adam Suhimi

Kulliyyah of Information & Communication Technology, International Islamic University, Malaysia

With the vast reserves in Information Technology (IT), the IT has become gradually important. Societies endure to the welfares from IT. Furthermore, the influence of technology on health sector consequences such as patient's satisfaction and quality of hospital. The effort in identifying impacts from technology has been the separation of benefits of IT from other factors that may also subsidize to organizational presentation.Malaysia is a vibrant and dynamic country enjoying continued economic growth and political stability since its independence 55 years ago. Malaysians today are generally healthier, live longer, and are better disposed to be more productive. The overall level of health attained is one of the key measures of the success of country. Good health enables Malaysians to lead productive and fulfilling lives. In addition, a high level of health contributes to increased prosperity and overall social stability.The data taken from Ministry of health Malaysia Annual Report 2012, which shows Health Status, public health, Medical , Oral health and Pharmacy. The Ministry of Health mission is to facilitate and support people to: (i) fully attain their potential in health (ii) appreciate health as a valuable asset (iii) take individual responsibility and positive action for their health

159:
Factors Effecting Fixed-line Telecom Services' Customer Retention: A Study of Pakistan

M. Malook Rind, Tami Alzabi, Imran Anwar Ujan and Asadullah Shah

Kulliyyah of Information & Communication Technology, International Islamic University, Malaysia

The use of fixed-line telecom services in Pakistan is declining gradually since past few years. The purpose of this research is to propose an integrative model that helps to evaluate the main determinants of fixed-line telecom services' post purchase intention. This research proposes a comprehensive integrated framework that may help to measure the relationship among stability, content quality, responsiveness, staff attitude, functional value, perceived customer value, monetary value, perceived service quality, customer satisfaction and their impact on post-purchase intention of telecom services. Based on the proposed research framework built through a thorough literature review, authors intend to adopt quantitative, clustered sampling approach for data collection. A Structured Equation Modeling (SEM) approach will be adopted to test and validate the acquired data. Findings of this research will help operators to make proactive, feasible decisions towards best the utilization of their resources in maximizing profit, retaining customer base and achieving organization goals.

160:
Integral Operators and the Solution of Linear Differential Equations

Zulfiqar Ahmed[1] and Muhammad Kalim[2]

GIFT University, Gujranwala, Pakistan.
National College of Business Administration & Economics, Lahore, Pakistan

Integral operators perform a key role in the solution of differential equations. An ordinary differential equation consists of differential operators, which can be removed by applying integration in a technical way. Operator factorization is a technique which helps to convert the operator associated with nth order differential equation into n first order linear operators. This leads us to generate new formulae, called "solution formulae" to solve ordinary linear differential equations. This paper deals with the higher order differential equations in which operator factorization is applied to derive some solution formulae.

161:
Generalized Integral Jensen-mercer Inequality and Integral Means

Muhammad Maqsood Ali and Asif R. Khan

University of Karachi, Karachi, Pakistan

In this paper, we prove an integral version and a refinement of M. Niezgoda's extension of the variant of the Jensen's inequality given by A. Mc. Mercer. The generalized weighted quasi-arithmetic, geometric, harmonic and power means are established with respect to the properties of input functions g, fÊand h. Some integral inequalities involving means are derived using the results.Back ground of the study: Jensen' inequality is a well-known inequality, relates the value of a convex function of an integral to the integral of the convex function. A. McD. Mercer proved the variant of Jensen's inequality, called Jensen-Mercer's inequality. The extension of Jensen-Mercer's inequality is given by M. Niezgoda, which is said to be Niezgoda's inequality. We proved an integral version and a refinement of M. Niezgoda's extension.

162:
Recent Development in Entropies

Abdul Basit, Anam Riaz, Zafar Iqbal and Munir Ahmad

1 S&DWH Department, State Bank of Pakistan, Karachi, Pakistan
2 National College of Business Administration & Economics, Lahore, Pakistan
3 Government Post Graduate College S/Town Gujranwala, Pakistan

Statistical entropy of a distribution provides the loss of the distribution and amount of the uncertainty. In the literature there are various types of entropies available with their properties and limitations. In this article we provide the review and comparison of the entropies. Mathematical expressions of each entropy are derived for Weighted Exponential Distribution (WED) and compared them with each other.

163:
Entropy of Weighted Exponential Distribution

Abdul Basit, Anam Riaz, Zafar Iqbaland Munir Ahmad

1 S&DWH Department, State Bank of Pakistan, Karachi, Pakistan
2 National College of Business Administration & Economics, Lahore, Pakistan
3 Government Post Graduate College S/Town Gujranwala, Pakistan

Probability theory has different branches and Information theory is one of them which has extensive potential applications to the communication system. Shannon (1948) introduces the entropy to measure the amount of information. In this article, we have found and compared the entropies of Exponential Distribution (ED) and Weighted Exponential Distribution (WED). Mathematical expressions of entropies are derived w.r.t ED and WED and compared them through relative loss function of entropies.

164:
Effect of Gender and Ramadan Fasting on Anthropometric Measurements, Blood Pressure and Physical Activities among Medical Students

Nazeer Khan, S.M. Tariq Rafi, Shameem Siddiqui, Saba Shakeel and Haseeb-ur-Rahman,

Jinnah Sindh Medical University, Karachi, Pakistan

Objective: To determine the change in anthropometric measurements, blood pressure and physical activities due to Ramadan fasting, categorized by gender among Muslim and non-Muslim medical students in a public medical university.Methodology: Fifty-nine Muslims students with at least 20 days of fast and 11 non-Muslims students participated in complete duration of the study. Students were requested to visit 3 times (last 10 days of Shaban, Ramadan and Shawwal) to fill a questionnaires and give blood samples for biochemical analysis. Blood pressure, height and weight were also measured in each visit. The study was funded of Jinnah Sindh Medical University (JSMU) and approved by Institutional Review Board of JSMU. Results: Mean age of Muslim students was 1.25 years higher than non-Muslim students. However, there was no significance difference in height, weight, waist and hips between Muslim and non-Muslim students in the first visit. Mean weight was reduced insignificantly from Shaban to Ramadan, but trend was same for Muslim and non-Muslim students. As expected the gender showed significant difference as co-factor. BMI showed same results as weight of the students. However, gender also did not show any significant difference. Waist and Hips ratio also did not show any significant difference in three readings. Systolic Blood Pressure reduced significantly in Ramadan. However, diastolic blood pressure did reduced in Ramadan, but not significantly. Muslim students showed better physical exercise activities than non-Muslim students. However, these activates were reduced to more than 50% for Muslim students during the Ramadan period. Conclusions: Study showed that the changes of eating and physical habits in Ramadan have mixed effects in anthropometric measurements and blood pressure. Gender showed significant effects as co-factor, but there was no significant difference among Muslim and non-Muslim students.

165:
Effect of Gender, BMI and Fasting on Lipid Profile, Glucose Level, Protein and Uric Acid among Medical Students in a Public University of Karachi

Nazeer Khan, S.M. Tariq Rafi, Shameem Siddiqui, Haseeb-ur-Rahman and Saba Shakeel

Jinnah Sindh Medical University, Karachi, Pakistan

Objective: To determine the change in lipid profile, glucose level, protein and uric acid due to Ramadan fasting among medical among fasting and non-fasting medical students with gender and body mass index (BMI) in a public medical university. Methodology: Eighty six Muslim students who intended to fast at least 20 days in Ramadan consented to participate in the study. Only 26 non-Muslim students consented to participate in the study as control. Students were requested to visit 3 times (last 10 days of Shaban, Ramadan and Shawwal) to fill a questionnaires and give blood samples for biochemical analysis. Blood pressure, height and weight were also measured in each visit. By the end we have only 59 Muslims students with at least 20 days of fast and 11 non-Muslims who have visited all the three times. Blood samples were analyzed for lipid profile, glucose level, protein and uric acid at reference laboratory of Jinnah Postgraduate Medical Center.Results:Mean cholesterol level increased insignificantly among Muslim students in Ramadan, but decreased significantly in Shawwal. However, there was significant different trend among non-Muslim. There was continuous increase in mean HDL value from Shaban to Shawwal in both Muslim and non-Muslim students. Shawwal level was significantly different from Ramadan and shaban. Females had different trend from Ramadan to Shawwal as compared to males. Mean LDL increased little bit among Muslim students in Ramadan but decreased significantly in Shawwal. However, the trend was not the same for non-Muslim students. For mean triglyceride, Muslim students showed significantly sharp decrease than non-Muslim students. There was no significant change in mean protein values in three visits, but there was trend of dropping the values in Ramadan and then increasing in Shawwal. Mean glucose level increased significantly in Ramadan and then decreased in Shawwal among Muslim students. However, these values keep increasing in three visits for non-Muslim students. This change of trend was significant. Mean uric acid increased significantly in Ramadan and reversed in Shawwal among Muslim students, but trend was opposed among non-Muslim students. There was no significant effect of BMI of any of the analyzed elements. Conclusions: Study showed that the change in Ramadan have mixed effects in lipid profile, glucose, protein and uric acid levels, and there were some differences of these elements among Muslim & non-Muslim and males & females.

166:
Some Properties of Gamma-Weibull Distribution

Muhammad Ahsan ul Haq[1] and Ahmed Zogo Memon[1,2]

1 College of Statistical & Actuarial Sciences, University of the Punjab, Lahore, Pakistan.
2 Institute of Management Sciences, Lahore, Pakistan

The four-parameter Gamma-Weibull distributionis used in analyzing the life of industrialproducts. In this paper we identify the subfamilies of this distribution that display similar shapes of its hazard curves.Comparative properties of these subfamilies are also investigated.

167:
Comparative Study of Socio-economic Demeanor of
Rural Urban Population: Evidence from Khyber Pakhtunkhwa

Sajjad Ahmad Khan and Muhammad Ali

1 Department of Statistics, Islamia College, Peshawar, Pakistan
2 Department of Statistics, Abdul Wali Khan University, Mardan, Pakistan

The purpose of this study is to investigate the socio-economic characters of urban-rural population in Khyber Pakhtunkhwa (KP). The analysis based on primary data and the data is collected from 300 households in five districts of KP through cluster sampling technique and analyzed with the help of SPSS software. The persistent increase in overall price level is fundamental to expand the gap between poor and rich as well as rural and urban population which is a serious problem of the day. For the measurement of this gap and identification of extent of difference(s), in this study different statistical techniques have applied to compare the socio-economic characters of urban and rural populations. The results indicates that there is no significant difference in respect of education between rural and urban households up- to degree level, however at master level the difference is at five percent among the two regions. It is also observed that there is a larger difference between the two regions regarding natural gas facility. Generally we find that the urban households' standard of living appear higher than the rural households' standard of living. The households of the rural areas are not satisfied from the available services and facilities. In order to minimize the disparities among the standard of living of urban-rural population in Khyber Pakhtunkhwa, it is mandatory for the government to develop proper policies for the welfare and prosperity of two types of households.

168:
Petrol Prices Analysis of Pakistan Using ARIMA Modeling

Asghar Ali

Department of Mathematics & Statistics, University of Swat, Pakistan

Objective:The study aim to check stationarity of the data and fit a forecasting model for monthly petrol prices of Pakistan from Oct 2008 to Nov 2013. Methods: Secondary data was used in the analysis which was obtained from Pakistan State Oil (PSO). Box-Jenkins (BJ) Autoregressive integrated moving average is used to forecast petrol prices of Pakistan. Stationarity of the data has been checked both graphically and empirically. The data evidence stationarity after first difference. ARIMA (1,1,1) identified as a best forecasting model for the observed data. Results:The study shown that among all ARIMA models ARIMA (1,1,1) is the best model having high R-square, adjusted R-square, minimum Akaika information criterion (AIC) and Shwartz information criterion (SIC). Also residual obtained from fitted model by applying residual diagnostic test found white noise. This implies that ARIMA (1,1,1) support the model assumption (i.e. residual is white noise). The model was then used to obtain forecasting graph of Petrol Prices. Also residual obtained from fitted model by applying residual diagnostic test found white noise. This implies that ARIMA (1,1,1) support the model assumption (i.e. residual is white noise). The model was then used to obtain forecasting graph of Petrol Prices. Conclusion:The study concluded that the ARIMA modeling is mostly accurate in short term forecasting while in long term forecasting the forecast error increase significantly.

169:
Effect of Gender and Age-group on Blood Pressures
among Ramadan Fasting Hypertensive Patients

Nazeer Khan[1], Amna Qureshi[2*], Raazia Aftab[2], Waqas Farooqi[2],
and Muhammad Masood Khalid[3]

1 Jinnah Sindh Medical University, Karachi, Pakistan
2 Dow University of Health Sciences, Karachi, Pakistan
3 Hamad Medical Corporation, Doha, Qatar

Objective: The objective of the study is to determine the effect of Ramadan fasting on the blood pressure with covariate of gender and age group among hypertensive patients. Methods: One hundred seventeen hypertensive patients were selected conveniently from the staff and faculty members of Dow University of Health Sciences and other locations of Karachi. The field investigators visited three times (last ten days of Shaban, Ramadan and Shawwal) for collection of data. A structured questionnaire was completed before clinical examination. Blood pressures were measures 3 times in sitting position. Three patients were lost in the follow up. Results: The mean age of the 114 hypertensive patients was 54.34±11.3 years. Mean systolic blood pressure (SBP) of male and female patients decreased significantly from Shaban to Ramadan, but rose with statistically significant to Shawwal. Mean SBP decreased significantly in each age group from Shaban to Ramadan then upswing in Shawwal. But reversal of the SBP was not significant in any of the age group, except the elders groups. Diastolic blood pressure (DBP) also decreased significantly from Shaban to Ramadan among both the gender, but bounced back significantly in Shawwal. Mean DBP decreased significantly from Shaban to Ramadan for the age group 51-60 years only and increased significantly from Ramadan to Shawwal for the age group of = 40 years and = 60 years. Overall mean SBP and DBP of all the sample was reduced significantly from Shaban to Ramadan, but reversed back significantly to Shawwal. There was no significant effect of gender, age group and its interaction in the changes of SBP and DBP in three readings. Conclusions: The study revealed that Ramadan fasting has some positive effect in controlling the blood pressure even though the timing and doses of the anti-hypertensive medicines are altered. Large scale clinical studies could be conducted to observe the physiological changes due to Ramadan fasting effect among hypertensive patients.

170:
Hepatotoxic Effects of N-hexane Extract of
Trichodesma Indicum in Mice

Khwaja Zafar Ahmed[1], Zafar Saeed Saify[2], Shafaque Adnan[1],
Sajid Atif Aleem[1] and Nadia Parveen[3]

1 Institute of Pharmaceutical Sciences, Jinnah Sindh Medical University, Karachi, Pakistan.
2 H.E.J. Research Institute of Chemistry, International Centre for
Chemical & Biological Sciences, University of Karachi, Pakistan.
3 College of Pharmacy, Government College University, Faisalabad, Pakistan.

Objective: The objective of the study was to evaluate the hepatotoxic effects n-hexane extract of Trichodesma indicum in Swiss albino mice.Methodology: The animals were divided into control (group l) and four treated groups. Five animals were placed in each group. Group-I receivedonly vehicle normal saline (1 ml/kg/day orally), once daily for 15 days. Plant extract was administered to remaining four groups. Group-II received 500mg/kg, group-III received 1000mg/kg, group-IV received 2000mg/kg and group-V received 4000 mg/kg. All animals received drugs for 15 days by oral rout. At the end of the treatment period, evaluation of hepatotoxic effects of Ehretia laevis was done on the basis of biochemical parameters and histopathological examination of liver tissues. Results: The significantly increased in different biomarkers such as ALT, AST, ALP and globulin confirmed its hepatotoxic effects in dose dependent manner compared to the control group. In addition to this, histopathological examination proved alteration in liver structure, vacuolation, karyorrhexis, pyknosis, chromatolysis and necrosis in mice liver tissues.Conclusion: Therefore, we conclude that the methanolic extract of Ehretia laevis has hepatotoxic effects; thereby, precautions should be taken during its traditional therapeutic use.

171:
Impact of Age, Weight on Blood Pressure
With a Spotlight on Sex Differences

Shahla Siddiqui[1], Sara Wahab[2] and Sumrat Rasheed[3]

1 Education and Literacy Department Sindh, Karachi, Pakistan
2 Research Department, Jinnah Sindh Medical University, Karachi, Pakistan
3 Department of Statistics, University of Karachi, Karachi, Pakistan

Background& objective: In western and eastern countries blood pressure problems increases with age and weight. We examine the impact of age, weight and gender on systolic blood pressure. Method: A cross sectional study of 150 adult hospital patients was conducted in private hospital in Karachi. Patients were selected by using convenience sampling and their demographic was recorded on pre designed questionnaire. Linear regression Analysis was used to develop suitable model to estimate systolic blood pressure. Statistical Analysis has been done by SPSS 16.0. Results: The total of 150 patients was involve in the study among them there were 50% male with age group of 18 to 74 years and 50% female with the group 18 to 68 years. The mean weight and systolic pressure of individuals were (150.07 ± 29.83) and (130.52 ± 12.67) respectively. The blood pressure is associated with age and weight. The overall regression coefficient for both the sexes were 0.490($p<0.05$) and 0.160($p<0.05$) respectively. Conclusion: Overall it appear that for both the gender obesity and old age give positive effect on blood pressure and it also indicate that to estimate more accurate result of Blood pressure we should include effect of weight, age and gender in our regression model.

172:
Job Related Stresses among Nurses Working
in Tertiarycare Hospitals of Karachi

Farhat Khan and Sajid Atif Aleem

Jinnah Sindh Medical University, Karachi, Pakistan

Background: Today when world became global village medical profession especially registered staff nurses need to be fully equipped with high Tec roles and responsibilities but that roles and responsibilities also act as a source of stress. Nurses in the health care field, attain special emphasis and importance because of their role and valuable contribution among the entire healthcare provider. Objective: To assess Job related stresses among staff nurses working in tertiary care hospitals.Methods: The sample of two hundred and fifty (250) nurses from (5) different hospitals of Karachi were included in this study. The questionnaire consisted of 22 questions based on sources of stress were distributed. Out of twenty two (22) questions nine (09) questions were related to management, seven (07) were related to environment and six (06) were related to work load. The questionnaire consist of close ended option and each option had assign a score i.e. score 0 (not at all), 1(a little), 2(quite a bit), 3 (a lot). Stress were divided into four categories i.e. (1) Little (2) Mild (3) Moderate and (4) Severe stress.Score = 20 will be label as little stress. Score 21-30 will be label as mild stress. Score 31-40) will be label as moderate stress Score = 41 will be label as severe stress. Results: Findings of this study showed that 23.2% nurses had little stress, 20.8%, 19.6%, and 36.4% had mild, moderate and severe stress respectively. Significant difference was found in job related stress among nurses of public and private sector hospitals i.e. (P =0.0001). In compression of job related stress with education level and job experience highly significant difference were found i.e. (P=0.0001). Conclusion: The study results show that there was a significant relationship between work place, education level, job experience and job related stress among nurses.

173:
Modeling and Forecasting Fertility Rates of Pakistan

Farah Yasmeen[1], Iqra Fatima[2] and Ayesha Latif[3]

1 Department of Statistics, University of Karachi, Karachi, Pakistan
2 Department of Actuarial Science & Risk Management, University of Karachi, Karachi, Pakistan

Fertility is the most important component among the components of population growth, as the fertility trends in any country determine factors related to social and economic condition of the region. Fertility is determined by different measures but our main focus is on the indicator TFR (Total Fertility Rate), the number of children who would be born per woman during her child bearing years.There is linkage between total fertility and other demographic and social indicators. Fertility change directly affects population growth and dependency ratios. In fact, during the past century fertility has been the most important determinant of population growth, far exceeding the contributions of migration and mortality. The purpose of this paper is to introduce various models of TFR to check which models appears to be the most appropriate for forecasting it. Data is collected from censuses (1951, 1961, 1972, 1981 and 1998) and Pakistan Demographic Health Surveys. Data is taken from year 1960 to 2005. Different non-linear (Exponential Model, Modified Exponential Model, Logarithm Model, Reciprocal Logarithm Model and Vapor Pressure Model) and ARIMA models are fitted to forecast the TFR of Pakistan. To evaluate the forecasting performance of the models, post sample forecast accuracy criterion such as mean absolute error (MAE) and mean absolute percentage error (MAPE) are used. Thirty five points are used in order to evaluate the forecast accuracy. Results showed that ARIMA (1,2,2) model appeared to be the best model as it has the smallest ME, MAE and MAPE values which are -0.0076, 0.060 and 1.5% respectively. Hence, based on the ARIMA model, Pakistan's TFR is forecasted up to next twenty years (2016-2035) with the prediction bounds. Based on the forecasts, the TFR in Pakistan is projected to decline and will slowly level off and is expected to be approximately 1.25 (average number of children per women) for the year 2035. A 95% confidence level for year 2035 is in the range of -1.608 to 4.109 children per women.Decreasing fertility has contributed to improve maternal health, reduce child mortality, combat poverty and enhance economic growth. Increased infant and child survival, greater access to education and health services, especially for women, together with the advances made in empowering women and improving their participation in the labor force have contributed to postpone child bearing and to reduce the number of children women have over their lifetimes.

174:
Concept of Drug Disposal among Karachiites

Rabia Shahid, Alishba Ahmed, Sana Islam, Faksheena Anjum, OmairAnwar and Sana Ghayas

OBJECTIVES:To study drug disposal practices among the Karachiites.METHODOLOGY:This survey was conducted from August toDecember, 2015 using an especially designed proforma which were filled by the respondents in the presence of the researchers. These werethen collected by the researchers for analysis using descriptive statistics.RESULT:Out of 350 proforma, 300 were filled completely by the participants (Response Rate=86%). It was found that 58% persons had no unused or expired medicines at home and approx. 51% kept medicines at home until expired. It was mentioned by 56% respondents that they kept unused medicines in case they needed them later. Most of the respondents (45%) disposed their medicines with household trash. It was found that 73% respondents had never been educated about medicines disposal and according to about 24% respondents, PakistanPharmacy Council is responsible to create awareness about proper medicines disposal. More than 40%persons believed that not taking or finishing medication course as directed by the physician is a strong reason for the increase in expired medicines. About 66% respondents thought that medicines are hazardous to environment if not disposed properly. Around 88% respondents agreed to provide information regarding availability of a secured disposal location to others. CONCLUSION:Awareness about drug disposal to general public is necessary since drugs are potentially hazardous substances. Proper and secure disposal location should be made available in order to ensure pollution free environment.

175:
Estimating Deaths and Injuries due to Road Traffic Accidentsin Pakistan

Sabih Sheikh and HaiderMujhtaba

Department of Actuarial Science and Risk Management, Karachi University, Karachi, Pakistan

Introduction:Road traffic accidents (RTA) are an important yet preventable cause of death anddisability in developing countries like Pakistan. Injuries due to accident result in major financial and productivity loses to nations while inflicting tremendous personal burden on the injured and their families.Objective:To analyze the number of accidents in four province of Pakistan.Methodology: A methodical review of published government literature of number of accidents and its impact under taken and data collected for all types of injuries (fatal and non- fatal) on 1998 to 2009 period and analyzed by using Statistical Software SPSS16.0. Results: We found that nonlinear relationship between years and number of deaths in all provinces and also high number of accidents in Punjab. Mean number of accidents in Punjab, Sindh, KPK and Balochistan are 5034, 1951, 2641,432 respectively. Results are significant with $p<0.05$.Conclusion: It is quite reasonable to assume that the incidence of accidents is much larger than actually reported.Road traffic injuries and deaths in Pakistan are a much more substantial healthproblem than is evident from official statistics.Pakistan must institute an information system to evaluate the true impact of injuries and develop national safety measures.

176:
Applications of Statistics in Satellite's Attitude Determination

Muhammad Jawed Iqbal

Institute of Space and Planetary Astrophysics, University of Karachi, Karachi, Pakistan

It is very important to determine the attitude of a space vehicle for its initial tracking and guidance. The accurate attitude determination is mandatory for maintaining the appropriate orbit configuration. This presentation describes state models for attitude determination problem using different attitude estimation techniques (Batch Least Square, Weight Least Square and Linear Minimum Variance Estimation). However, these techniques are static. The multiplicative extended Kalman filter (MEKF) is adynamics approach which is used for attitude estimation. This presentation aims to show how to apply multiplicative extended Kalman filtering using quaternions to determine a true state vector (initial orbit).

177:
Optimizing System Information by its Dimension

Mirza Jawwad Baig and Muhammad Jawed Iqbal

Institute of Space and Planetary Astrophysics, University of Karachi, Karachi, Pakistan

In order to analyze any business system its nature linear or nonlinear plays an important role. In case of nonlinear again the questions arises that how many factors are involve in the evolution of output value. In this paper an attempt is being made to get close to the answers of some of these and other issues. For this purpose an economic indicator data is being taken. In existing techniques, some linear regression methods and approximations are so far being successfully applied. After the advent of nonlinear dynamic theory, now its possible for one to look more in-depth a system. Here a measure of nonlinear theory namely fractal dimension is calculated for an economic indicator. This measure not only helps us to understand the nature (linear or nonlinear) of the system but also gives important information regarding its sensitivity. For this purpose a phase space is constructed. Having such information about the system, one will be confident to take any decision and also aware of its consequences. The significance of duly weighted decision in any business scenario is priceless. In developed economies significant attention is being given to this science. An expert, in his study of monetary aggregates, filtered out the internal rate of growth over the period. This method has appeal of simplicity, but it assumes a constant rate of growth, which is unrealistic. As we know, economic growth is not constant, but varies over time. This mode and length of fluctuations in economic growth can enable us to make reasonable forecasts.

178:
Significance Value of Bootstrap Likelihood Ratio Test Statistic in Latent Class Model

Bushra Shamshad and Junaid Saghir Siddiqi

Department of Statistics,University of Karachi, Karachi, Pakistan

In Latent class model (LCM) the null distribution offails to be asymptomatically. Moreover, other parsimony measures like AIC, BIC etc. and fitness indices like and have some drawbacks. Thus, no classical testing procedure is available. This paper presents bootstrap method for the calculation of the significance value of through its empirical distribution for LCM's having a single dichotomous latent variable with a number of classes in a frequentist framework (i.e., using maximum likelihood estimates obtained through the EM algorithm).

179:
Empirical Null Distribution

Bushra Shamshad and Junaid Saghir Siddiqi

Department of Statistics,University of Karachi, Karachi, Pakistan

In latent class model (LCM) and mixture distributions it is known that the asymptotic distribution of does not follow chi-square distribution due to regularity conditions (Aitkin et al. (1981)). In this paper we present bootstrap technique for finding the empirical distribution of (for t-1 and t class model we will define as). We use LCM in frequentist framework (that is, EM algorithm). Non-central distribution with df = , ncp = thus found to be a very well fitted empirical null distribution.

180:
Predicted Factors Reducing Risk of Coronary Artery Disease among Patients with Chest Pain

Mehwish Hussain[1], Nazeer Khan[2] and Mudassir Uddin[1]

Department of Statistics, University of Karachi, Karachi, Pakistan
Jinnah Sindh Medical University, Karachi, Pakistan

Despite many preventive strategies imposed by the investigators worldwide, the epidemic of coronary artery disease (CAD) is ubiquitous worldwide. Previous study illustrated that identifying hazardous factors at the onset of perceptible symptoms of CAD could assist reduction in the prevalence of the disease. This paper is in the series of a research study for ruling out coronary artery disease by determining predicted factors for the same. This study used community based data from Kingdom of Saudi Arabia. Chest pain in past was taken as time of onset.Applications of duration modeling were executed to determine hazardous predictors for coronary artery disease. Predictions were made using both non-parametric and parametric duration models.

181:
Forecasting Volatility of South Asian Equity Markets
by Means of Garch-type Models

Muqaddas Jelani, Tooba Naveed, Javeria Vohra andMariam Latif

Department of Statistics, University of Karachi, Karachi, Pakistan

The aim of our study is the assessment of performance of a number of diversified GARCH family models and comparison between their forecast accuracy with normal and fat-tailed distributions, for three south Asian equity markets. The evaluation of forecast is in accordance with a set of statistical loss functions. For the purpose of analysis we used daily market data. Overall, on the basis of the criteria our result indicates that GRJ-GARCH is best fitted among all.

182:
Factor Affecting Academic Performance of
Public Primary School at Tehsil Babozai District Swat

Mian Haider Ali

Department of Mathematics & Statistics, University of Swat, Swat, Pakistan

Objective: The aim of this study is to examine the main causes that affect the academic performance of Public Primary Schools. And to present long term solutions and suggestions to solve the problem that affect the academic performance of Public Primary Schools in Tehsil Babozai District Swat.Methods:The study was conducted in tehsil Babozai district Swat. Simple random sampling technique was used. The research study was descriptive in nature. The researcher used a closed ended questionnaire and the respondents were the (M/F) teachers of the Public Primary Schools in Tehsil Babozai District Swat.Results: The significant factors include; all needed facilities available in primary schools ($p<0.01$), availability of one teacher for one class ($p<0.05$), the focus of administration on academic performance ($p<0.05$), the involvement of the teachers in extra duties other than teaching as polio, exam, meetings, election, census etc.($p<0.05$), the satisfaction of curriculum ($p<0.05$), the interest and attention of administration to solve the problems of the students and teachers, ($p<0.05$) most of the valuable time of the teachers is spent in aimless written/clerical work during duty hours ($p<0.05$), most of the teachers leave schools to solve their problems of service books, pay scales, arrears, medical bills etc in education office or finance department ($p<0.05$), most of the teachers came to the job not by choice but by chance ($p<0.05$), satisfaction of the teachers by their jobs ($p<0.05$), and the rude behavior of teacher disappoint the student ($p<0.05$). Conclusion: It is concluded that there are a number of factors e.g. all needed facilities available in public primary school, availability of one teacher for one class etc which can affect the academic performance of public primary schools of Babozai district Swat in which the availability of facilities is the major contributor.

183:
Oil prices and its Impact on Financial Crisis in Pakistan

Tanzeela Yaqoob and Hafiz Sohail Ahmed

University of Karachi, Karachi, Pakistan

This paper aims to investigate the behavior of oil prices and its impact on stocks, exchange rate and inflation in Pakistan. Utilizing the data from January 2000 to December 2014 we first explain the descriptive and correlation analysis to avoid the suspected multicollinearity problem and then create the crisis dummies for stock, inflation and exchange rate. Since the financial data is usually non-normal, we employed binary logistic model as it does not require any strict assumptions about normality and take crisis dummies as dependent variable and oil prices as an independent variable. Empirical analysis revealed positive relationship between oil prices and probability of currency and inflation crisis. Moreover the increase in oil price is associated with a decrease in stock returns.

184:
Number Densities, Cosmic Variances, Data Analysis and All Sky Galaxy Surveys

Syed Faisal ur Rahman and Muhammad Jawed Iqbal

ISPA, Karachi University

With advancements in antenna technologies, imaging techniques and powerful computing machines, it has become possible to look into deeper into our sky way more than it was imaginable few decades ago. These developments provided hope for understanding some of the important questions about our universe and its cosmic history. We now have the capability to observe millions of galaxies with highly sensitive telescopes. We are going to present applications of spherical harmonics and fisher matrix analysis for measuring auto-correlations and cross-correlationsfrom the galaxy survey data. This is particularly important in constraining Dark Energy especially when cross-correlating galaxy survey data with Cosmic Microwave Background data to measure Integrated Sachs-Wolfe Effect. We will also discuss the optimal survey strategy to achieve SNR of around 4 for significant detection of the signal.

185:
Proposal for the Methodology for Evaluation of Team Kagawa Project

Mariam Soomro, Tomohiro Hirao, Masaaki Tokuda, Noorullah Soomro, Najeebullah Soomro

University Brunei Darussalam, Kagawa University, Mehran University of Engineering
and Technology, The University of Sydney

Diabetes mellitus among adults is a growing epidemic worldwide. According to the World Health Organization (WHO) more than 346 million people worldwide have diabetes, which is likely to double by 030. Currently there are more than 16 million people in Japan who are diabetic or on the verge of being diabetic. Team Kagawa Project (TKP)is a multi-faceted project dedicated for the control of diabetes mellitus in Kagawa prefecture, Japan since 2009. The purpose of TKP was to decrease the number of diabetics in Kagawa prefecture & improve the patient's prognosis; but the effectiveness of this program has yet to be evaluated. Therefore, a study was designed to evaluate the impact and limitations of team Kagawa project. The paper describes a proposal of a methodology to evaluate the impact of TKP on controlling DM by introducing the? Logic Model to deal the information flow among inputs, outputs, outcomes, assumptions and external factors. The study was conducted using a cross sectional design and monitoring evaluation approach. Key informants, academics & administrators from University of Kagawa provided the information about the project during the process. The most significant limitation highlighted by them was lack of proper implication of this project till now. It was found out that the project was still in its trial stage therefore, conclusive evidence showing a significant change in epidemiology of diabetics will take several years.

INSTRUCTIONS TO AUTHORS

Prior to submission, authors are requested to visit our website (www.jsmu.edu.pk/ajsmu) where the full instructions and guidelines for authors, together with the Uniform Requirements for Biomedical Journals and submission checklists can be found. Manuscripts that do not conform to the Instructions to Authors may be subject to delay.

The Annals of Jinnah Sindh Medical University (AJSMU) is an open access, peer reviewed, bi-annual publication. Authors are invited to submit articles with a wide spectrum of coverage reporting original work, epidemiology, public health, indigenous disease and standards of health care from Pakistan and overseas. Basic research with clear clinical implications will also be considered. Review articles of current interest and high standard are welcomed for consideration. There are also sections for Case Reports, Short Communication and letter to editors. To encourage the young investigators, AJSMU also includes a 'Student Section'. All submissions must conform to the Uniform Requirements for Biomedical Journals of International Committee of Medical Journals Editors (ICMJE).

AJSMU is copyright under the Berne Convention. All rights reserved. AJSMU is an Open Access journal and will not charge readers, or their institutions for access. From the Budapest Open Access initiative (BOAI) definition of open access, the reader has the right to "read, download, copy, distribute, print, search, or link to the full text of the articles". Articles published in AJSMU are distributed under the terms of the Creative Commons Attribution-NonCommercial License (CC BYNC). Readers may copy, distribute, display, and perform the work, and make derivative works based on it for noncommercial purposes with the proper citation of the original work. Please note, however, if an article contains a figure from another source that is protected by copyright, the republication is not allowed without seeking permission from the original source of publication.

Submission of Manuscripts: Manuscripts, or the essence of their content, must be previously unpublished and should not be under simultaneous consideration by another journal. The authors should also declare if any similar work has been submitted to or published by another journal. They should also declare that it has not been submitted/published elsewhere in the same form, in English or in any other language, without the written consent of the Publisher.

We are happy to consider articles that have been previously published in another language, or in a local journal with limited distribution, on the condition that there is an appropriate citation included in the references, and written consent is obtained.

If any article is already made publicly available on an institute website or repository, this will not affect our decision to publish, but we do need to know this. Failure to disclose this is unethical. Following publication the author should update the repository and include a citation to the published work. Furthermore, if any study is already presented orally or in poster form in an international conference and the abstract or full paper is available in the conference 'abstract book' or in proceedings, can be consider for publication in AJSMU.

The authors should also declare that the paper is the original work of the author(s) and not copied (in whole or in part) from any other work. All papers will be automatically checked for duplicate publication and plagiarism using TURNINIT software. If detected, appropriate action will be taken in accordance with guidelines of Higher Education Commission's plagiarism policy. All Tables and Figures must be original and not adapted from other work unless specified and with the appropriate references and copyright permission. By virtue of the submitted manuscript, the corresponding author acknowledges that all the co-authors have seen and approved the final version of the manuscript. The corresponding author should provide all co-authors with information regarding the manuscript, and obtain their approval before submitting any revisions. Participation solely in the acquisition of funding or the collection of data does not justify authorship. Manuscripts are only accepted for publication on the understanding that the authors will permit editorial amendments, though galley proofs will always be submitted to the corresponding author before being sent finally to press. There is no submission or publication charges for AJSMU to avoid any extra financial burden on the investigator. The authors should be able to provide upon request the raw material of any study or the quality assurance assessment of any study under publication. To avoid any delay in processing manuscripts, prior to submission, all authors should refer to the appropriate checklists according to the type of the manuscript and comply with their guidelines:

Randomized controlled trials: CONSORT Checklist
Observational studies in epidemiology: STROBE Checklist
Diagnostic accuracy studies: STARD Checklist
Systematic reviews and meta-analyses: PRISMA Checklist
Qualitative research: COREQ Checklist.

Prior to the initial submission of a new manuscript, please carefully consider that all authors' names are included as no change to authors' details will be permitted after the initial submission.

Ethical standards: AJSMU is committed to upholding the highest standards of research, editorial, and publication ethics, and follows international guidelines, procedures, and policies (eg. Committee of Publication Ethics [COPE], and Office of Research Integrity [ORI]) when dealing with any cases of suspected ethical misconduct. If such cases arise, the journal may share relevant information with necessary third parties (for example, authors' institutes, Pakistan Association of Medical Editors or Higher Education Commission). All information will be treated in a confidential, factual, and non-judgmental manner. AJSMU will also retain the right to pursue any issues of ethical misconduct even after rejection or withdrawal of a manuscript from the journal.

Electronic submission of Manuscripts: Manuscripts can be submitted electronically through email: ajsmu@jsmu.edu.pk

Online submission will be started soon. Electronic submission saves time and postage costs, and allows the manuscript to be handled in electronic form throughout the review process.

Figures and Illustrations should be provided in jpeg format (resolution 300 DPI). Titles and detailed explanations belong in the legends for illustrations (on a separate sheet), not on the illustrations themselves. Upon acceptance of the manuscript for publication, authors are required to provide the original copy of the assignment of copyright dully signed by all authors.

Manuscript Preparation: Manuscripts including tables, references and figure legends, must be typewritten on 8 1/2 x 11 inch (21.5 x 28 cm) or size A4 paper, with margins of at least 1 inch (2.5 cm). Pages should be numbered consecutively, beginning with the title page and continuing through the last page of typewritten material. Manuscripts must be accompanied by a covering letter signed by the author and all co-authors. All Case Reports must include at least one figure. The journal recommends that authors should consider having their manuscripts professionally edited prior to submission; even more so for authors for whom English is a second language.

Word Limits: Original articles should be no longer than 3000 words, (excluding abstract and references). Short review could have up to 1500 words, systematic review could have 4000 words and expert review will be free from word limitation. Short and systematic review articles may include up to 50 references, and Original articles may include up to 25 references. Articles may include a maximum of 6 tables and/or figures in total.

Urdu Text: An Urdu translation must be submitted for: (1) title of the article, (2) each author's name and affiliation, and (3) abstracts.

Title Page: The title page must contain (1) title of the article in Urdu and English, (2) first name, middle initial and family name of each author plus highest degrees, not more than 2, in that specific order (3) Urdu translation for all authors names (4) any disclaimers, and (5) a short running title of no more than 40 characters (count letters and spaces). The second page should include in English and Urdu (1) name and address of the department(s) and institution(s) from where the research was carried out for each author; affiliation address should be a record of where an author is currently working. If the study was previously carried out at another institute this should appears as "formerly of ...." (2) current position and affiliation address for the corresponding author and (3) first name, address, telephone number, fax number and E-mail address of author to whom correspondence should be sent if it differs from the first author. Review articles should consist of one or 2 authors, only Clinical Review or Meta-analysis may include multiple authors. Case Reports should preferably not exceed 4 authors.

Abstracts: For original articles a structured abstract of 250 words should include the following subheadings: Objectives (may include background in one line if pertinent), Materials/Subjects/Patients and Methods (place and duration of study, design, patients/respondents, brief methodology), Results (key findings only), Conclusion. For review articles

and case reports the abstract should be unstructured with not more than 150 words. The abstracts should also include Urdu translation however if author(s) are unable to do so, then the editorial board of the journal will provide the translation service free of cost.

Introduction: For original research articles the introduction should be fully referenced with not more than three paragraphs and a maximum of 15 pertinent references. The introduction should end with the rationale of the study leading to the research question/study objectives. For case reports the introductory section should include a maximum of 10 pertinent references and end with the objective and reason of presenting the case.

Methods: This section should include setting, study design, sampling technique and sample size estimation. In studies of diagnostic accuracy, the methodology should be detailed and include the inclusion and exclusion criteria of patients involved in the study together with information on patient recruitment. Textual re-use of portions of an author's previous work in the methods section will be considered, providing that an explanatory note is included with appropriate referencing: "The methods are exactly as published in the previous publication....."

Statistical Analysis: The author(s) should adequately describe or reference all statistical procedures used in a paragraph at the end of the methods section. It is expected that the statistical tests used are appropriately selected and applied, with an indication of the related assumptions and how they have been tested. The ambiguous use of statistical terms should be avoided such as random with the meaning of haphazard, correlation instead of association, etc. Exact p-values and confidence intervals are to be used. Standard guidelines must be used in reporting the results of clinical trials, studies assessing diagnostic tests, etc. The statistical software package used must be specified and properly referenced.

Tables: Tables should be double spaced on a separate sheet of paper. Do not submit tables as photographs. Number tables consecutively in the order of their first citation in the text and supply a brief "stand-alone" title for each. Give each column a short or abbreviated heading. Place explanatory matter in footnotes, not in the heading. Explain in footnotes all non-standard abbreviations that are used in each table. For footnotes use the following symbols, in this sequence *, †, ‡, §, **, ††, ‡‡, §§ etc. Bar graphs and pie charts should only be used where absolutely indicated and should be provided in pattern. If the author is interested to print the graphs in color, he/she has to pay color printing. Where possible the information should be presented in table format.

Discussion: Discussion should include the comparison and critical analysis of the study results with the contemporary references. The references cited in the introduction should be made use of in the discussion. This section should also include the comments of the author(s) on their study and should not be a repetition of the results. Discussion should not be more than six paragraphs.

Conclusion and Recommendations: Conclusions should directly relate to the objectives of the study and not

hypothetical statements by the author(s). The conclusions may include recommendations (if any), however it is not a requirement of the journal.

Acknowledgment: Acknowledgment should conform to the Uniform Requirements for Biomedical Journals which states: List all contributors who do not meet the criteria for authorship, such as a person who provided purely technical help, writing assistance, or a department chair who provided only general support. Financial and material support should also be acknowledged. Groups of persons who have contributed materially to the paper but whose contributions do not justify authorship may be listed under a heading such as "clinical investigators" or "participating investigators," and their function or contribution should be described, for example, "served as scientific advisors," "critically reviewed the study proposal," "collected data," or "provided and cared for study patients." Because readers may infer their endorsement of the data and conclusions, all persons must have given written permission to be acknowledged.

References: For research reports a maximum of 25 pertinent references and for review papers a maximum of 50 pertinent references can be cited. References should be numbered consecutively in the order, in which they are first mentioned in the text, not alphabetically, and formatted according to Vancouver style. References must be superscripted throughout the text of the manuscript. List all authors when there are 6 or fewer; when there are 7 or more, list only the first 6 and add "et al". References older than ten years should be updated to the most recent. Acceptable references are from the last ten years with a minimum of two from the last five years, however, one or 2 historical references may be used if necessary. All references must be cited in the text or tables. Where references are cited in tables only, the first reference number used in the table should follow on numerically from the last reference number used in the main text of the article. Where previous studies are mentioned in a table the authors' names should appear in Vancouver style, with the names and reference numbers appearing in one column, and any other necessary information appearing in a separate column. Unpublished data and personal communications may be cited as references. Please try to avoid using conference papers or abstracts as references, these can only be allowed if published by journals included in Index Medicus or a well-known publishing company and are within one year from the submission date of the manuscript. Only 1-2 up to date references should be used for each particular point in the text. Only few website references can be accepted. The download dates should be mentioned in such references.

References to journal articles should include, in this order: (1) authors, (2) title, (3) journal name (as abbreviated in Index Medicus, if not included in Index Medicus journal title should be given in full), (4) year, (5) volume, (6) page numbers (start and end). Volume and edition numbers and specific page numbers should be included when appropriate. Secondary references are not acceptable. The author is responsible for the accuracy and completeness of the references and for their correct textual citation. When a citation is referred to in the text by name, the accompanying reference must be from the original source. Upon acceptance

of a paper all authors must be able to provide the full paper for each reference cited upon request at any time up to publication. Failure to do so may result in the paper being withdrawn from the journal. Example of correct reference form is given as follows:

Journal: Khan NB. Treatment needs for dental caries in schoolchildren of Riyadh: A-follow-up study of the Oral Health Survey of Saudi Arabia. Saudi Med J 2003; 24 (10): 1081-1086.

Al-Nozha MM, Al-Maatouq MA, Al-Mazrou YY, Arafah MR, Khalil MZ, Khan NB, et al. Diabetes mellitus in Saudi Arabia. Saudi Med J 2004; 25(11): 1603-1610.

Book Chapter: Thilander B. Ronning O. Introduction to Orthodontics. Stockholm: Gothia; 1995. p. 43-49.

Review Articles should include an extended bibliography up to 100 references. Original Articles and Case Reports should include up to date references, preferably not exceeding 40 and 15 respectively. Brief Communication should include a maximum of 5 references.

Illustrations: All figures or photographs should be submitted in a high resolution (minimum 300 DPI) electronic version saved in jpeg format. Original hard copies of all figures may be requested when necessary.

Photographs will be accepted at the discretion of the Editorial Board. All lettering, arrows, or other artwork must be done by an artist or draftsman. If arrows are used please ensure they appear in a different color to the background color, preferably black with a white border, or white with a black border. If arrows distinguish different items on the figure then different arrow styles should be used ie. long, short, wide, narrow. Written informed consent for publication must accompany any photograph in which the subject can be identified. Written copyright permission, from the publishers, must accompany any illustration that has been previously published. All illustrations ("figures") must be numbered as cited in the text in consecutive numeric order. With color illustrations, the author must bear part of the expense for color reproduction. Titles and detailed explanations belong in the legends for illustrations, (on a separate sheet), not on the illustrations themselves. If the authorship does not include a radiologist, please ensure that all radiology figures are reviewed and written approval submitted from a radiologist. Please note, this will not qualify for authorship, however, an acknowledgment may be included.

Units of Measurement: Le Systeme International d'Unites (SI) is preferred Equivalent values in traditional units should be given if thought to be necessary.

Abbreviations and symbol: Use only accepted international abbreviations. Avoid abbreviations in the title and abstract. The full term for which an abbreviation stands should precede its first use in the text unless it is a standard unit of measurement. The following is a list of abbreviations which may be used without expansion. CD; CD-ROM;

Ethical consent: All manuscripts reporting the results of experimental investigations involving human subjects should include a statement confirming that informed consent was obtained from each subject or subject's guardian. All

manuscript must include an approval letter from ethics committee or institutional review board, even the study does not include human or animal subjects. Ethical approval is necessary not only for patient consent, but to avoid duplication of work from the same institute, and confirms that the institute gives approval to release the data. When reporting experiments on animals, authors should indicate whether the institutional and national guide for the care and use of laboratory animals was followed.

Conflict of interest: Authors are responsible for recognizing and disclosing financial and other conflicts of interest that might bias their work. They should acknowledge in the manuscript all financial support for the work and other financial or personal connections to the work. Conflict of interest of reviewers, editors and staff can be seen in Conflict of Interest page.

Corrections, retractions and expressions of concern about research findings: Editors must assume initially that authors are reporting work based on honest observations. Nevertheless, two types of difficulty may arise. Firstly, errors may be noted in published articles that require the publication of a correction or erratum of part of the work.

It is conceivable that an error could be so serious as to vitiate the entire body of the work, but this is unlikely and should be handled by editors and authors on an individual basis. Such an error should not be confused with inadequacies exposed by the emergence of new scientific information in the normal course of research. The latter require no corrections or withdrawals. The second type of difficulty is scientific fraud. If substantial doubts arise about the honesty of work, either submitted or published, it is the editors' responsibility to ensure that the question is appropriately pursued (including possible consultation with the authors). However, it is not the task of editors to conduct a full investigation or to make a determination; that responsibility lies with the institution where the work was carried out or with the funding agency.

The editor should be promptly informed of the final decisions, and, if a fraudulent paper has been published, the journal must print a retraction. If this method of investigation does not result in a satisfactory conclusion, the editor may choose to publish an expression of concern, with an explanation.

The retraction or expression of concern, so labeled, should appear on a numbered page in a prominent section of the journal, be listed in the contents page, and include in its heading the title of the original article. It should not simply be a letter to the editor. Ideally, the first author should be the same in the retraction as in the article, although under certain circumstances the editor may accept retractions by other responsible people. The text of the retraction should explain why the article is being retracted and include a bibliographic reference to it.

If a published paper is found later to be extensively plagiarized and is found to be a duplicate or redundant publication, a note of retraction will be published, the indexing services will be notified, and copies of the correspondence will be sent to the authors' head of institute,

Pakistan Association of Medical Editors and Higher Education Commission.

The validity of previous work by the author of a fraudulent paper cannot be assumed. Editors may ask the authors' institution to assure them of the validity of earlier work published in their journals or to retract it. If this is not done they may choose to publish an announcement to the effect that the validity of previously published work is not assured.

Permission to Reprint: Whenever a manuscript contains material (text, tables dosages, figures etc.), which is protected by copyright, it is the obligation of the author to secure written permission from the holder of the copyright.

Galley Proofs: The research team of any study should assign one of the authors as the corresponding author. The Editorial Office will send proofs of the manuscript to the corresponding author for final proof reading and it will be the responsibility of the corresponding author to return the galley proof materials appropriately corrected within the stipulated time. Proofs will not be accepted from any other of the authors without an accompanying authorization letter from the corresponding author. After the corresponding author has signed the galley proof, they will bear the burden of responsibility for any publication errors missed on the galley proof found after publication. No major changes such as deletion, shortening or expansion of sentences in the text will be accepted at this time. During the proofing process, no addition of information is allowed, however, if there new relevant information to be added to the manuscript, this can be included as an addendum to the article. The corresponding author(s) is required to sign on each page of the galley proof indicating their approval of any Editorial amendments and agree that the meaning of their article has not been altered. The author should review this carefully, as he/she is responsible for all changes in his work, including changes made by the copy editor. It is the duty of the corresponding author to respond promptly to any query from the Editing Department as failure to do so may result not only in delay of the article but also return of the article to the author without publication. Papers will be published only when finally accepted manuscript signed by the corresponding author or designated corresponding author is received in the Editorial Office. If a manuscript is sent out for proofing and no response is received from the corresponding author, this manuscript will be deferred for one issue only. The proof will then be resent after four months and if there is still no response from the corresponding author at that time the paper may be withdrawn from the Journal. If the Editorial Office is able to proofread the article and answer any outstanding queries, it will be at the Editor's discretion to proceed with the publishing of the paper including a statement that this has not been proofread by the corresponding author. If there are a substantial number of unresolved queries then the paper may be withdrawn from the Journal.

Submit manuscripts to: Editor, Annals of Jinnah Sindh Medical University, Jinnah Sindh Medical University, Rafiqui H.J. Shaheed Road, Karachi 75510;

Phone: 021-35223811-15, Ext. 358, Fax: 021-99201372.

E-mail: ajsmu@jsmu.edu.pk

JINNAH SINDH MEDICAL UNIVERSITY
KARACHI

APPNA INSTITUTE OF PUBLIC HEALTH

SINDH INSTITUTE OF ORAL HEALTH SCIENCES

INSTITUTE OF PHARMACEUTICAL SCIENCES

SINDH MEDICAL COLLEGE

INSTITUTE OF HEALTH & BUSINESS MANAGEMENT

Progress Through Knowledge

RAFIQUI H.J SHAHEED ROAD, KARACHI. For Contact 021 35223811 - 15 EXT 301 - 307

URL : WWW.JSMU.EDU.PK