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EDITORIAL

Time to Institutionalize Zero Tolerance Policy for Violence against Health Care Professionals

Lubna A. Baig*[1], Shiraz Shaikh[2]

Internationally violence in megacities has always erupted and has been one of the major issues that are dealt by city managers and mayors. It has also been observed that in most countries internationally the phenomena of violence against health care professionals (HCPs) has been rampant; this has been reported as one of the leading causes of death globally [1]. According to International Federation of Red Cross (IFRC), the basis of any violence is misuse of power,[2] in this situation it is the power of people or mobs that try to take charge of the health care professionals and start treating them in appropriately.

WHO defines violence as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development, or deprivation. This definition included "the use of power" in itself thereby expands on the conventional meaning of the word [3].

Over the years, the occupational violence, especially in relation to all stake holders of health care has emerged as major threat to HCPs. HCPs are the working officials that are engaged in delivering health to the needy population within and outside the health facilities. They may be doctors, nurses, paramedic staff, allied health professionals, ambulance service providers, health workers (especially community workers etc). The 39th World Health assembly specifically addressed the issue and agreed that HCPs are vulnerable to occupational violence ranging from blocking or interfering with timely access to care; discrimination in access to care, killing, injuring, kidnapping, harassment, threats, intimidation, and robbery to bombing, looting, forceful interference with the running of health care services etc. [3] Regrettably, there seems to be a misplaced community expectation that HCPsas members of caring professionsshould continue to provide care regardless of the risks they may face. ICRC has given detailed description of violence for[4]:

1. Health care facility:

a. Violence includes bombing, shelling, looting, forced entry, shooting into, encircling or other forceful interference with running of health-care facilities(such as depriving them of electricity and water).

b. Health-care facilities include hospitals, laboratories, clinics, first-aid posts, blood transfusion centers, and the medical and pharmaceutical stores of these facilities.

2. Wounded and Sick:

a. Violence includes killing, injuring, harassing and intimidating patients or those trying to access health care; blocking or interfering with timey access to care; the deliberate failure to provide or denial of assistance; discrimination in access to, and quality of, care; and interruption of medical care.

b. The wounded and the sick include all persons whether military or civilian who are in need of medical assistance and who refrain from any act of hostility. This includes maternity cases, newborn babies and the infirm.

3. Health care Personnel

a. Violence includes killing, injuring, kidnapping, harassment, threats, intimidation, and robbery; and arresting people for performing their medical duties.

b. Health-care personnel include doctors, nurses, paramedical staff including first-aiders, and support staff assigned to medical functions; the administrative staff of health-care facilities; and ambulance personnel.

4. Medical Vehicles

a. Violence includes attacks upon, theft of and interference with medical vehicles

b. Medical vehicles include ambulances, medical ships or aircraft, whether civilian or military; and vehicles transporting medical supplies or equipment.

The developing countries have reported high incidence of physical and verbal violence in the emergency departments but that number is not even close to the proportions seen in Pakistan particularly in Karachi, where it is a fairly common and to a certain extent acceptable phenomena. The city has a profiled trend in relation to violence against health care professionals. Over the years, several violent incidents have happened in which several innocent people lost their lives (and this does not include threats, verbal violence and extortions). The victims have ranged from doctors, nurses and health care workers etc. Pakistan Medical Association (PMA), an autonomous body that voices the issues of healthcare providers, shows that there have been almost 128 doctors killed since 1995 till 2015 across Pakistan. The highest incidents happened in 2014, when around 18 deaths were reported [5]. The violent events not only include human harm, but examples exist where the damages to the health care facilities (HCFs) and/or equipments (including ambulances)

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inflicted. South Asia Terrorism Portal (SATP) an independent site lists that between 2001 and 2015 around 50 doctors have been killed due to terrorism[6]. This number is an understatement as according to "The News" report up until August 2, 2014 more than 150 doctors have been killed and 150 kidnapped in Karachi[7].

Zarar Khan in 2002 had reported a hunger strike in Karachi on the targeted killing of 13 doctors in Karachi with an alarming number of 270 killings between 1997 and 2002.[8] The Pakistan Medical Dr. Gadit wrote about the brain drain and migration of doctors (1000 – 1500/year) due to terrorism and in search of better quality of life.[9] A nation-wide study conducted in 2009 in the emergency departments of the major hospitals reported that in within 2 months 76.9% of physicians had faced abuse (verbal or physical) from patients or their caretakers. Males were more likely than female physicians to be targeted for any kind of abuse. This in their opinion was at that time higher than such incidences reported globally.[(12)]

A recent study from Karachi's four major hospitals reported that 72.5% of HCP have experienced abuse (verbal and physical) in within 12 months. Out of these almost 30% reported physical attacks with 64% perpetrators being caregivers or attendants. This study also reported that 86% of the HCPs thought that violence could have been prevented and 64% of them also said that no action was taken against the attackers.[(11)] All the studies recommended that the HCPs should be informed of the types and possibilities of the violence in their area of practice.

The researchers identified the issue, media projected selected events of violence against health care, however, the true extent of the situation may be much more. This is partly because of the incidents that are least likely to be reported, such as those not requiring medical attention for example verbal abuse and incidents causing mental or psychological distress. The most alarming results the studies mentioned above were that very few institutions only in the private sector have zero tolerance policy and none of the public sector institutions have zero tolerance policy.[(11, 12)] To add to the misery the health care professionals results from local and international studies have mentioned that it is okay for the attendants and patients to be agitated (violent as well) as they are worried about their loved ones.[(9-13)] This high level of acceptance of violent behaviours and the general lawlessness and increasing violent behaviour of Pakistani communities and increase in ethnic and religious rioting is making the situation more serious.

In conclusion I want to add a quote from an ICRC Poster:

"I did not die because a bullet tore through my abdomen, I did not die because of slow continuous to blood loss, I died because the doctor who could have treated me was killed in sectarian violence."

This is the time to ponder about training our future HCPs in techniques of de-escalating violence and saying no to any kind of violence against any health care professional.

We have to develop and institutionalize policies of zero tolerance for violence against healthcare professionals.

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Measurements of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.

Temperatures should be in degrees Celsius. Blood pressures should be in millimeters of mercury, unless other units are specifically required by the journal.

Journals vary in the units they use for reporting hematological, clinical chemistry, and other measurements. Authors must consult the information for authors for the particular journal and should report laboratory information in both the local and International System of Units (SI). Editors may request that the authors before publication add alternative or non-SI units, since SI units are not universally used. Drug concentrations may be reported in either SI or mass units, but the alternative should be provided in parentheses where appropriate.

Original Article

Age Estimation of School Going Children of Pakistan by Number of Erupted Teeth Using Median Regression

Sundus N Iftikhar*[1,] Nazeer Khan[2]

ABSTRACT:
Dental age is an important age assessment tool where birth records are not properly maintained and may also help determine age of alive or dead subjects. OBJECTIVE: To estimate the age of school going children of Pakistan by number of erupted teeth using school going children and compare its results with simple linear regression analysis. METHODOLOGY: This is a secondary data analysis using anthropometric data of 9,515 students from a Pakistani survey conducted between 2007 and 2014 in all four provinces of Pakistan. A total of 11 different models of simple linear and median regressions were computed and compared. RESULTS: Median regression model with number of teeth with its squared term was found to be the most suitable model amongst all others for estimation of age. Overall the calendar age of Pakistani students can be estimated with ± 0.5, ± 1and ± 2years with 37.6%,61.6%, and 87.1% with this model respectively, however Model 9 of simple linear regression estimated the age with ± 0.5, ± 1and ± 2 years with 33.4%,58.3%, and 86.1% respectively. CONCLUSION: Median Regression showed better age estimation procedure than the other procedures.

Keywords
Age estimation, Erupted teeth, schoolchildren, school going children

ان جگہوں پر جہاں تاریخِ پیدائش کا اندراج موجود نہیں ہوتا دانتوں کی مقدار کو عمر کی معلومات کیلئے استعمال کیا جاتا ہے چاہے وہ مردہ ہوں یا زندہ۔

عنوان: وسیط انحدار (Median Rerression) کو استعمال کرتے ہوئے پاکستانی اسکول جانے والے بچوں میں دانتوں کی مقدار کے ذریعے عمر کی تخمین (Estimation)۔

مقصد: پاکستانی اسکول جانے والے بچوں میں دانتوں کی مقدار کے ذریعے وسیط انحدار (Median Rerression) استعمال کرتے ہوئے عمر کی تخمین معلوم کرنا اور اسکو آسان ارتباط انحدار (Simple Linear Regression) سے موازنہ کرنا۔

طریقہ: اس تحقیق میں پہلے سے کی گئی ایک تحقیق کے اعداد و شمار استعمال کیا گیا ہے۔ اس تحقیق میں 9515 طالبِ علموں کے دانتوں کی تعداد، قد اور وزن کی معلومات پہلے سے کی گئی تحقیق سے لی گئی۔ کل ۱۱ نموزج (Models) وسیط انحدار اور آسان ارتباط انحدار کو استعمال کرتے ہوئے بنایا اور موازنہ کیا گیا۔

نتیجے: وسیط انحدار نموزج جس مین دانتوں کی مقدار اور اسکا مربع استعمال کیا گیا سب سے بہترین نموزج تھا۔ تخمین کئی گئی عمر کے بچوں کی حقیقی عمر سے موازنہ کرنے کے بعد فرق کی 0.5±، 1.0± اور 2.10± سالوں میں تقسیم کیا گیا۔ سب سے بہترین نموزج کا فرق 37.6%, 61.6% اور 87.1% حدود میں پایا گیا۔

حاصل مطالعہ: وسیط انحدار دوسرے طریقہ تخمین سے بہتر ثابت ہوا۔

INTRODUCTION:

In anthropological investigations and identification of humans; race, sex and age are the most important factors. Among these factors age estimation is one of the most difficult and challenging task. Age assessment is an important tool for establishing an individuals' identity for every identification process. It is useful in forensic science, medical sciences, criminology and various other fields; It is also often required in justice and legislations. In forensic science, estimation of age is an important tool for identification of deceased person. In this modern era, there are still several countries like Pakistan majority of the population is unaware of their date of birth or age. There are several areas where birth records are not properly maintained. Thus, estimating age through various methods may help such individuals.

Age estimation using teeth is considered one of the most appropriate methods as teeth are naturally preserved long after all tissues and bones are disintegrated. Estimation of age with teeth is one of the acceptable methods of age determination not only because of low variations in dental indicators but also due to a typical chronological pattern in teeth development and evolution of teeth shows aging changes . Several methods are available to estimate dental age; e.g., probit analysis on number of present teeth at the time of emergence of permanent teeth , eruption time of permanent teeth and radiographic methods.

In 2010, Khan N et al estimated age by permanent teeth using simple linear regression and compared this method with number of permanent teeth present at the time of eruption of new permanent teeth. They showed that regression method is superior. Linear regression has a limitation of normally distributed error term, if this assumption is not met than linear regression ends up with erroneous results.

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In 1978, Koenker and Basset introduced Quantile Regression (QR), an alternative non-parametric approach that does not require any distributional assumption. Median regression is a special case of quantile regression. According to authors knowledge median regression has not being used anywhere in the world to estimate age using number of erupted teeth.

The aim of this paper is to 1) find appropriate method for estimating age using number of permanent teeth 2) compare the results of median and simple linear regression with the actual age.

METHODOLOGY:

This is a secondary data analysis of a Pakistani national survey conducted between 2007and 2014. The primary objective of the survey was to document the time and sequence of permanent teeth eruption in Pakistani children between the ages of 4and 15 years. The survey used systematic random sampling to assess 9,515 students from four major cities of Pakistan, namely Karachi, Larkana, Peshawar and Quetta.. Detailed methodology for collecting data is given elsewhere .For the purpose of this study, the anthropometric data of these children including their age, gender, height, weight and total number permanent erupted teeth were utilized.

STATISTICALANALYSIS:

Analysis was done using SAS 9.3. Following models were established using both linear regression and quantile regression. Accuracy of the models was assessed by error estimation.

MODEL# 1:

$$\hat{Y} = \alpha + \beta_1 X_1$$

MODEL# 2:

$$\hat{Y} = \alpha + \beta_2 X_2$$

MODEL# 3:

$$\hat{Y} = \alpha + \beta_1 X_1 + \beta_2 X_2$$

MODEL#4:

$$\hat{Y} = \alpha + \beta_3 X_3$$

MODEL# 5:

$$\hat{Y} = \alpha + \beta_4 X_4$$

MODEL# 6:

$$\hat{Y} = \alpha + \beta_3 X_3 + \beta_4 X_4$$

MODEL# 7:

$$\hat{Y} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

MODEL#8:

$$\hat{Y} = \alpha + \beta_5 X_5$$

MODEL# 9:

$$\hat{Y} = \alpha + \beta_5 X_5 + \beta_6 X_5^2$$

MODEL# 10:

$$\hat{Y} = \alpha + \beta_5 X_5 + \beta_6 X_5^2 + \beta_7 X_5^3$$

MODEL# 11:

$$\hat{Y} = \alpha + \beta_8 X_5 + \beta_9 X_6 + \beta_{10} X_7$$

Where, $\hat{Y}$ = age

X_1=Number of maxillary first molar teeth

X_2=Number of maxillary second molar teeth

X_3=Number of mandibular first molar teeth

X_4=Number of mandibular second molar teeth

X_5=Number of erupted teeth

X_6=Height in cm;

X_7=Weight in Kg

RESULTS:

Among 8375 school going children, 4399(52.5%) were males and 3976(47.5%) were females. Mean (SD) age was 9.3(2.3) years. The Mean(SD) height, weight and BMI were, 130.56(13.86) cm, 27.88(9.87) Kg and 15.97(3.64) Kg/m^2 respectively (Table 1).Median regression-Model 9 was found to be the most suitable model amongst all others for estimation of age. Overall the calendar age of Pakistani students can be estimated with ± 0.5, ± 1 and ± 2 years with 37.6%, 61.6%, and 87.1% with this model respectively, however Model 9 of simple linear regression estimated the age with ± 0.5, ± 1 and ± 2 years with 33.4%, 58.3%, and 86.1% respectively (Table 2).

DISCUSSION:

Estimation of age is one of the most important concerns of forensic science and in this regards dentistry play an essential role. A number of different procedures have been established namely Demerjian method, counting number of permanent teeth, Kilian's method evaluation, Cameriere's Seven Teeth Method, atlas approach and scoring system, time of eruption, Kashyap and Koteswara Rao's evaluationto estimate age. Demerjian method is one of the most applied methods in this aspect but it has been shown that this method has few limitations and is not applicable on Pakistani population.Statistical techniques regression and probit analysis havealso been applied to estimate age. Khan N et al [(4)], Gillet, Foti et al favored regression analysis over counting number of permanent teeth and probit analysis.

Median regression has not been applied yet anywhere to estimate age. In this paper we have applied this statistical method and compared it with the results of simple linear regression. The results showed Median regression model 9 to be better than other models. Using only number of permanent teeth and its square term at the time of eruption of any tooth one can estimate the age of children by 62% and 87% of accuracy within ±1 and ±2 years respectively.

CONCLUSION:

Median Regression showed better age estimation and may be used to estimate age just using total number of erupted teeth.

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Table 1: Descriptive statistics for demographic information

	Overall	Male	Female
	n=8375	n=4399	n=3976
Age (years)			
Mean±SD	9.3±2.30	9.14±2.21	9.14±2.21
Median(IQR)	9(7-11)	9(7-11)	9(7-11)
Min-Max	4-15	4-15	4-15
BMI (kg/m$^{2)}$			
Mean±SD	15.97±3.64	16.33±4.04	15.54±3.09
Median(IQR)	15.31 (13.85-17.36)	15.53 (13.89-17.84)	15.09 (13.72-16.83)
Min-Max	5.94-59.49	7.06-59.49	5.94-51.44
Height (cm)			
Mean±SD	130.56±13.86	131.63±14.16	129.37±13.42
Median(IQR)	130 (121-140)	131 (121-141)	129 (120-139)
Min-Max	78-192	78-192	78-192
Weight (kg)			
Mean±SD	27.88±9.87	29.02±10.63	26.62±8.80
Median(IQR)	26 (20-33)	27 (21-35)	25 (20-31)
Min-Max	7-95	7-95	7-94

Table 3: Error estimation-Overall

	Models										
	1	2	3	4	5	6	7	8	9	10	11
Simple linear regression											
-0.5 to 0.5 (%)	28.5	19	19	14.5	18.3	19.5	21.6	33.4	33.4	32.8	33.8
-1 to 1 (%)	31.2	33.9	36.2	28.5	37.8	39.6	41.9	59	58.3	58.3	56.6
-2 to 2 (%)	60.9	63	66.7	58	68.4	71	73.4	86.2	86.1	85.9	82.7
Median regression											
-0.5 to 0.5 (%)	16.6	17.5	19.9	14.5	19.8	21.3	22.6	34.1	37.6	36	34.0
-1 to 1 (%)	46.0	48	51.9	43.9	54.8	53.4	56.0	59.9	61.6	62.4	56.7
-2 to 2 (%)	72.3	75.1	78.9	71.1	79.5	80.9	83.1	86.8	87.1	87.2	82.5

Table 2: Regression coefficient

Predictors	Simple linear regression models										
	1	2	3	4	5	6	7	8	9	10	11
Intercept	6.74**	8.93**	6.02**	7.17**	8.61**	6.17**	5.60**	5.47**	5.34**	5.58**	1.61**
No. of maxillary 1st molar teeth	1.40**	-	1.57**	-	-	-	1.16**	-	-	-	-
No. of maxillary 2nd molar teeth	-	1.28**	1.40**	-	-	-	0.40**	-	-	-	-
No. of mandibular 1st molar teeth	-	-	-	1.12**	-	1.27**	0.46**	-	-	-	-
No. of mandibular 2nd molar teeth	-	-	-	-	1.50**	1.53**	1.26**	-	-	-	-
Total no. of permanent teeth	-	-	-	-	-	-	-	0.24**	0.26**	0.18**	0.18**
Total no. of permanent teeth^2	-	-	-	-	-	-	-	-	-0.0007*	0.006*	-
Total no. of permanent teeth^3	-	-	-	-	-	-	-	-	-	-0.00014*	-
Height	-	-	-	-	-	-	-	-	-	-	0.03**
Weight	-	-	-	-	-	-	-	-	-	-	0.01**
Predictors	**Median regression models**										
Intercept	6.00**	9.00**	6.00**	7.00**	8.00**	5.97**	5.50**	5.52**	5.46**	5.75**	1.61**
No. of maxillary 1st molar teeth	1.50**	-	1.50**	-	-	-	1.25**	-	-	-	-
No. of maxillary 2nd molar teeth	-	1.50**	1.50**	-	-	-	0.50**	-	-	-	-
No. of mandibular 1st molar teeth	-	-	-	1.00**	-	1.52**	0.50**	-	-	-	-
No. of mandibular 2nd molar teeth	-	-	-	-	2.00**	1.50**	1.00**	-	-	-	-
Total no. of permanent teeth	-	-	-	-	-	-	-	0.24**	0.26**	0.097**	0.19**
Total no. of permanent teeth^2	-	-	-	-	-	-	-	-	-0.0007*	0.014**	-
Total no. of permanent teeth^3	-	-	-	-	-	-	-	-	-	-0.0003**	-
Height	-	-	-	-	-	-	-	-	-	-	0.03**
Weight	-	-	-	-	-	-	-	-	-	-	0.02**
*P-value<0.05; **P-value<0.0001											

Original Article

Comparison of Pain on First Postoperative Day in Laparoscopic Hernioplasty vs Open Mesh Lichtenstein Hernioplasty

Ashfaq Ahmed Mangi[1], Sajid Atif Aleem[2], Qazi Jalaludin Ahmed[1], Shabana Ashfaq[3]

ABSTRACT:
Objective: To compare frequency of pain on first postoperative day in laparoscopic hernioplasty v/s open mesh Lichtenstein hernioplasty in patients undergo inguinal hernioplasty at tertiary care hospital. Methods: The randomized control trial study was conducted at General Surgery Department, Kalsoom Bai Valika Social Security Hospital Karachi Sindh (K.V.S.S., S.I.T.E). Male patients between 20 to 60 years of age who enrolled during 22nd Jan 2014 to 22nd Dec 2014 were included. Patients were randomly divided into two groups. Group A (laparoscope inguinal hernioplasty) and group B (with open Lichtenstein hernioplasty. Patients complaining with unilateral primary inguinal hernia with American Society of Anaesthesiologists (ASA) Status I and II were included and were undergo elective surgery. Post operative pain was assessed through Visual Analogue Scale (V.A.S) SPSS version 20 was used to analyze the data. Results: Sixty four patients (64) thirty two (32) in each group were enrolled in the study. Mean age of the patients in group A was 37.9±11.7 years and in group B was 42.7±11.8. There was statically significance difference in pain (6.25% in group A versus 31.25% in group B; P=0.011). The mean duration of hernia in group A was 7.59±2.69 and in group B was 8.25±2.24 months. Conclusion: It is to be concluded that Laparoscopic total inguinal hernioplasty TEP, is effective surgical procedure associated with less post-operative pain, as compared to Open Lichtenstein hernioplsty.

Keywords
Inguinal hernia, open inguinal hernia repair, laparoscopic inguinal hernia repair, post operative pain, preperitoneal repair.

عنوان: Open Mesh Lichtenstein Hernioplasty/Laproscopic Hernioplasty کے طریقہ علاج کے پہلے دن میں درد کا دباؤ۔

مقصد: ایک تیسرے درجہ کے اعلیٰ ہسپتال میں دو طریقہ علاج (Open Mesh Lichtenstein Hernioplasty/Laproscopic Hernioplasty) کے مریضوں میں آپریشن کے بعد پہلے دن کے درد کی میں کثرت کا تقابلہ۔

طریقہ کار: یہ Randomized Control Trial تحقیق شعبہ جنرل سرجری کلثوم ویکا سوشل سیکیورٹی ہسپتال SITE میں ۲۰ جنوری ۲۰۱۴ سے ۲۲ دسمبر ۲۰۱۴ کے درمیان کی گئی۔ اس میں صرف ۲۰-۶۰ سال کے مرد شامل کئے گئے۔ مریضوں کو دو حصوں میں امکانیہ تقسیم (Randomized divided) گروپ A (Laproscopic Hernioplasty) اور گروپ B (Open Mesh Lichtenstein Hernioplasty) کی گئی۔ اس تحقیق میں ان مریضوں کو شامل کیا گیا جو (Urilateral primary inguinal) کے ایک اور دو درجہ کی شکایت کر رہے تھے اور ان کی سرجری کی گئی تھی۔ آپریشن کے بعد ان کے درد کی تکلیف کو (Visual analogue scale) کے ذریعے معلوم کیا گیا۔ SPSS کے ذریعہ اعداد و شمار کا تجزیہ کیا گیا۔

نتائج: کل ۶۴ مریضوں کو تحقیق میں شامل کیا گیا۔ ہر حصہ میں ۳۲ مریض تھے۔ حصہ A کے مریضوں کی اوسط عمر 37.91±11.75 سال تھی اور حصہ B کے مریضوں کی اوسط عمر 42.78±11.82 سال تھی۔ حصہ A اور حصہ B کے مریضوں میں درد کی اوسط 6.25% اور 31.25% بالترتیب تھی جو شماریاتی فرق ثابت ہوئی۔ ہرنیہ کی اوسط مدت 7.59±2.69 ماہ اور 8.25±2.24 ماہ حصہ A اور حصہ B میں بالترتیب تھی۔

حاصل مطالعہ: یہ تحقیق نے ثابت کیا کہ Laproscopic Hernioplasty بمقابلہ Open Mesh Lichtenstein Hernioplasty سے کم درجہ کے درد محسوس کرتی ہے۔

INTRODUCTION:

Inguinal hernia is most common anomaly occurring in males from young to old aged worldwide. Most common surgical procedures for repair are being performed in the world are open repair with suture (Shouldice/Bassini) / mesh repair Lichtenstein, Laparoscopic repair with mesh/mesh plug[1,2,3,4]. The conventional methods with suture repair associated with tension in line causing ischemia of tissue ultimate leads to failure and recurrences. Thus in 1989, Lichtenstein came out with polypropylene mesh implant with tension free which has gained acceptable popularity in the world is being practiced still, but owing to considerable post operative pain and numbness is experienced by patients. D.koole and his colleague has modified the Lichtenstein technique and claimed that Transinguinal Preperitoneal hernioplasty brings less post operative pain than Lichtenstein Inguinal hernioplasty[6]. The advent of laparoscopic Inguinal hernioplasty in 1990 has brought revolution in the world, owing to less post operative pain, faster post operative recovery, early return to work and resume normal activities[7,8,9]. Laproscopic inguinal hernioplasty has gained popularity over open mesh hernioplasty owing to less postoperative pain (13.5%)[10] and speedy postoperative recovery than open mesh inguinal hernioplasty (25%)[15]. Laparoscope inguinal hernioplasty is practiced by two procedures TAPP and TEP respectively.[11,12,13] TEP is considered superior to TAPP and has gained more popularity over later, owing to less postoperative pain few complications and devoid of entry in to peritoneal cavity[14,15,16]. The surgery for a groin hernia is the most common operation in general surgery. Recurrent rate in non-specialized center is high and post-operative pain and discomfort assessed is common among three tension-free methods hernioplasty techniques. With use mesh in Open tension-free hernia surgery the recurrence rate and rehabilitation period has been reduced compare to suture repair. Laparoscopic TEP is superior to tension-free Open Lichtenstein hernioplasty as compare to the post-operative rehabilitation variables, with pain, time to full recovery and sick leave [16,17].

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If results of my study will prove laparoscopic inguinal hernioplasty is superior to open mesh Lichtenstein hernioplasty in controlling pain than this procedure will be recommended in future to be practiced. Results of my study also will be helpful for other health professionals.

METHOD:

This randomized control trial was conducted at General Surgery Department, Kalsoom Bai Valika Social Security Hospital Karachi Sindh (K.V.S.S, S.I.T.E). The total of sixty four (64) patients was randomly divided into two groups A and B. In group A patients were treated with laparoscope inguinal hernioplasty and in group B with open Lichtenstein hernioplasty. All the male patients of age group between 20-60 years complaining with reducible swelling from 2 to 12 months, unilateral primary inguinal hernia, ASA status I and II, duration of hernia from 2-12 months were included in the study. Patients with history of major surgery in lower abdomen, appendectomy, Cancer, immune deficiency, ASA status 3 or 4, massive scrotal-inguinal Hernia, sliding hernia, infection and coagulation defect were excluded from the study.

In laparoscope inguinal hernioplasty group A all patients were operated under general endotrachial anesthesia. An infra umbilical incision was made on ipsilateral to open anterior rectus sheath, preparitoneal space was created by space maker balloon dissector. 10mm port for Camera inserted, under direct vision. Two more ports were created ipsilateral infra umbilical for dissection, Co2 insufflations, and polypropylene mesh insertion. In open Lichtenstein hernioplasty group B All patients were operated under spinal anesthesia preferably and for laproscopic hernioplasty group A general anesthesia were given by conventional method making incision at medial inguinal region 1.25 cm above pubic tubercle oblique fashion towards deep inguinal ring. The inguinal canal opened from superficial to deep ring, contents delivered in the wound, sac dissected from cord, hernia sac opened contents reduced, sac twisted and transfixed at neck. The floor implanted with polypropylene mesh affixed with loose stitches 3-0 vicrly at pubic tubercle and around. Pain were assess through Visual Analogue Scale (V.A.S) 0-1 score were labeled as no pain and score greater than one (1) was consider as pain and assessed within twenty four (24) hours postoperatively by researcher himself. Oral Paracetamol 1g tid, for mild, moderate and severe pain injectable Diclofen 50 mg intramusculary bid +oral Paracetamole 1g tid were used postoperatively. All the collected data were entered into the SPSS version 20 for statistical analysis. Mean ± SD were calculated for age and duration of hernia. Frequency and percentage were calculated for postoperative pain. Fisher's Exact test was applied to compare the postoperative pain in both group considered $P \leqslant 0.05$ as significant.

RESULTS:

The study included sixty four (64) patients thirty two (32) in each group with age range of 20-59 in laparoscopic group (A) and 20-60 in hernioplasty group (B) and mean age was 40.34±11.94 years. Mean duration of hernia was 7.40±2.477 months as shown in Table 1. By comparing both the groups 6.25% (2) patient in group A and 31.25% (10) patient in group B were complaining the pain postoperatively within 24 hours and P-value found to be significant i.e. P (0.011). Significant association was found in age group (20-40) $P \leqslant 0.05$, no association was found in age group (41-60) $P > 0.05$ as shown in Table 2 & 3.

DISCUSSION:

The results of current study revealed that patients who underwent for Laparoscopic Lichtenstein Hernioplasty under General anesthesia have shown significant statistical difference than those who were treated with Open Lichtenstein hernioplasty under spinal anesthesia in response of pain experience on first postoperative day.

In this study total 64 patients were included in the study, maximum number of patients with reducible unilateral inguinal hernia were less than 60 years of age, the youngest subject being 20 years. Mean age (37.91) in A group Laparoscopic Inguinal hernioplasty total extra peritoneal (TEP) and in B group Open Lichtenstein hernioplasty with mean age (42.78). encountered average age range 60 (20-95) for TEP and 66 (16-95) years for Open in their series, whilst Hasan[2] encountered Mean age of (55 years).

There is wide variation in sex incidence in different studies. Inguinal hernia most common in male gender than female gender.[18] In our study only males were included as previously mentioned by Gollap et al[4]. However, male and female included by Kumar et al[3] encountered in his study male: female ratio 232:8 for TEP repair and 204:10 for Open Lichtenstein repair. Asad[11], encountered male: female ratio 98:2. Male gender remained predominant in with male: female ratio (10:1) with mean age of the patients was 50 years, given by Hindmarsh et al[13]. Traditionally the lower number of females patient in some series is not significant due to shy attitude of female's, conservative and modest in our social setup in Asian studies. Furthermore, majority male surgeons are hovering in health industry. This study is comparable to our study, where again male have dominant role in developing inguinal hernia disease. His study is comparable to our study where only male gender was included in the study owing to the disease's trend toward male gender than female. There is great concern over post-operative pain and discomfort is common after groin hernia surgery, Bringman et al[10] conducted study over 90% of patients where operated as day case surgery and post-operative pain assessed by (VAS) was lower in patients undergoing Laparoscopic TEP repair than those undergoing Lichtenstein and mesh plug procedure. The median sick leave was 5 days in the Laparoscopic TEP group, 7 days in mesh plug and 7 days in Open Lichtenstein group. He further added that median time to full recovery was significant shorter in Laparoscopic TEP group patients compare to those in other groups. The results of this study is comparable to our study where total 64 patients were treated and discharged after 24 hours of operation. Now a day's inguinal hernioplasty is the most common surgical procedures performed by general surgeon. The Laparoscopic approach has been associated with less post-operative pain, shorter hospital stay and increased patient satisfaction. Sana[16] and colleague observed that with Laparoscopic TEP hospital stay was shorter and pain medication was smaller during hospital stay as compare to Open Lichtenstein repair (3.0 versus 4.4 doses) respectively (p=0.02). The risk when the prosthetic mesh is secured in a continuous suture along the inguinal ligament or when the external spermatic vessels are

divided to skeletonized the cord whilst mesh fixed with number tacks used and the incidence of pain. This associated reached statistical significance when more than six tacks were used (p=0.008)[9]. In our study we used four tacks in Laparoscopic TEP. That was more convincing as pain-free.

CONCLUSION:

It is to be concluded that laparoscopic total inguinal hernioplasty TEP, is effective surgical procedure associated with less post-operative pain, faster recovery, as compare to Open Lichtenstein hernioplsty. Therefore, this procedure should be used in future regularly to avoid the morbidity and complications.

Table 1: Descriptive Statistics (n=64)

Age in Years	40.34±11.94	P-Value
Laparoscopic Group (n=32)	37.91±11.75	0.103
Hernioplasty Group (n=32)	42.78±11.82	
Duration of Hernia in months	**7.40±2.477**	**P-Value**
Laparoscopic Group (n=32)	7.59±2.69	0.651
Hernioplasty Group (n=32)	7.25±2.24	

Table 2: Comparison of Pain by group (n=64)

GROUP	PAIN		P-VALUE
	YES	NO	
Laparoscopic Group (n=32)	2 (6.25%)	30 (93.75%)	0.011
Hernioplasty Group (n=32)	10 (31.25%	22 (68.75%)	

Table 3: Comparison of Pain by age group (n=64)

Age (20-40)	Pain Yes	No	P-value
Laparoscopic Group (n=18)	1	17	
Hernioplasty Group (n=16)	6	10	0.021

Age (41-60)	Pain Yes	No	P-value
Laparoscopic Group (n=14)	1	13	
Hernioplasty Group (n=16)	4	12	0.190

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Original Article

Awareness and Interest for Research among Preclinical and Clinical Students of Medical College, University of Dammam, Saudi Arabia

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ABSTRACT:

Objectives: Purpose of the study was to evaluate the awareness and interest of medical students towards research projects in their education and to check the difference of approach among male and female students. **Methods:** This cross sectional study was conducted at College of Medicine, University of Dammam. Male and female students from second to sixth year participated in the study. Close ended questions were asked to evaluate their behavior and interest for research. Chi-square test was used to check any significance between male and female responses. **Results:** There were 687 students participated in the study, response rate was 93.2 percent.Majorityof them reported that they performed research during their under graduation. Significantly high number of females performed research compared to males. Majority of the students were aware with the importance of research and keen to continue research in future. Results showed that the students'did not have enough awareness about oral presentation of research article. **Conclusion:** It had been found through this study that medical students in University of Dammam did engage in research and they were quite enthusiastic to be a part of future researches. Students were aware about the importance of research in their education. It is required to provide them faculty/supervisors' support to encourage them for research. It is required to give them exposure of scientific journals and conferences. So, they would be more aware about scientific journals and oral presentation of research article.

Keywords

Medical Students, Students Behavior, Medical Research, Research Projects

عنوان: جامعہ دمام سعودیہ عربیہ کے کلیہ طب کے طالب علموں میں علمی تحقیق کی معلومات اور اس میں دلچسپی۔

مقصد: اس تحقیق کا مقصد طالب علموں برائے طب میں طبّی تحقیق میں دلچسپی اور اس میں ان کی معلومات کا تجزیہ کرنا ہے اور معلوم کرنا ہے کہ اس سلسلہ میں لڑکے اور لڑکیوں میں کیا کوئی فرق ہے۔

طریقہ: یہ عمومی تحقیق کلیہ طب، جامعہ دمام میں منعقد کی گئی۔ دوسرے سے چھٹے سال کے طالب علموں (لڑکے اور لڑکیوں) نے اس تحقیق میں حصّہ لیا۔ ربوط سوالات کے بارے میں معلومات حاصل کی گئیں۔ شماریاتی تجزیہ Chi-Square کے ذریعہ سے ان میں موازنہ کیا گیا۔

نتائج: کل 687 طالب علموں نے اس تحقیق میں حصہ لیا جو کل کا 93.2 فی صد تھا۔ زیادہ تر نے اپنے علم طب کے دورِ طالب علمی میں تحقیق میں حصہ لینے کا اقرار کیا۔ لڑکیوں نے لڑکوں کے بنسبت زیادہ تحقیق میں حصہ لیا۔ زیادہ تر طالب علموں نے مزید تحقیقات کرنے کی خواہش ظاہر کی اور اس میں دلچسپی دکھائی۔ نتیجہ ظاہر کرتا ہے کہ طالب علم تحقیقات کی Oral Presentation کے بارے میں زیادہ معلومات نہیں رکھتے۔

حاصل مطالعہ: اس تحقیق نے ظاہر کیا کہ طالب علموں نے علمی تحقیقات میں حصہ لیا اور مستقبل میں مزید تحقیقات میں دلچسپی رکھتے ہیں۔ وہ یہ بھی چاہتے ہیں کہ علمی تحقیقات کو Syllabus کا حصّہ بنایا جائے۔ ان تحقیقات میں استادوں کی معاونت اور سرپرستی کی جائے اور ان تحقیقات کو مجلوں میں شائع کیا جائے اور طالب علموں کو کانفرنسوں میں پیش کیا جائے۔

INTRODUCTION:

In today's fast progressing world, everyone and everything should be up-to-date and modern. To keep someone or something updated and modern, there is process: That includes continuous need of addition of knowledge, the desire to achieve this knowledge, and ways to make this knowledge applicable. That is why we see a great amount of time is spent on research and promoting the awareness of research[1,2]. The same is true for the health specialties also[3]. Along with the professional requirement, society also many expectations from health professionals aside from their biomedical training[4,5].

With so many pathologies and diseases, their prevention techniques, their treatment modalities, materials used for treatment; for new graduates it is challenging to bridge the gap between knowledge and clinical practice. That is why many organizations are recommending that research should be a part of training process for the students in medical colleges [6]. So when the student becomes a graduate he has the awareness of doing evidence based practice and knows about different options available for conducting researches. Even before these recommendation came out many dental schools were already promoting research among their students[7]

In past few years there has been a change in trend in the teaching curriculum in medical colleges. Medical schools have introduced problem-based learning, medical ethics, and community outreach programs.[8-10]. Undergraduate research in medical colleges has become an integral part in numerous countries[11]. In US a large number of medical schools have included a research component in their curricula while removing some of their topics[12]. This has influenced the performance of physicians, bringing positive results in the development of crucial skills, including critical analysis and leadership [13,14].

Present study was in continuation of a research done by Khan et al[15] which was conducted in one of the dental schools in Saudi Arabia. That study presented some facts that though research was not a compulsory part of the dental curriculum, it was still highly appreciated by the dental student and dental interns at college of dentistry at University of Dammam. Most of them were interested in doing more research in the future. The environment provided by the faculty with research assistance was also quite adequate.

Purpose of the study was to find importance of research in medical education. Responses from students were analyzed and compared with College of Dentistry, University of Dammam, students' approach towards research. We wanted to find out if the same enthusiasm persists at Medical College, University of Dammam.

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Methods

This cross sectional study was performed at College of Medicine, University of Dammam, in March 2014. All students, from second year to sixth year,participated in the study that was why sampling was not required. Second, third and fourth year students were considered as pre-clinical year students and fifth and sixth year students were grouped as clinical year. Close ended questions were used to evaluate students' behavior towards research. There were four choices for each questions (Yes, No, Do not know and Not applicable). Questions were asked in both English and Arabic languages. There were thirteen questions in the questionnaire to assess the students' research experience and outcome. Participation was voluntary and questionnaires were distributed among students at the beginning of the day and collected at the end of the day.

Statistical Package of Social Sciences (SPSS 19.0, Chicago, USA) was used for data entry and analysis. Cross tabulations were used to present data year wise, gender and also according to pre-clinical and clinical years. Chi square test was used to calculate significance between responses and gender, and responses with pre-clinical and clinical year.

Results

Total number of distributed questionnaires among students was 737 and number of responses received was 687. So, the overall response rate was 93.2%. Number of male participants was 292(42.5%) and females were 395(57.5%). Table 1 comprises of only positive response with percentages towards each question. Significantly high number of (p=0.000) medical students at University of Dammam did research during their undergraduate studies. Eighty two percent of second year students responded positively that they did research during their course work and the least number of students, who performed any research, was in fifth year. Most of the students (35%) reported that they performed research in fourth year, 23% replied during second year, 13 and 14 percent replied during third and fifth year respectively. Eleven percent reported that they performed research in sixth year.

Large number of students from each year supported the statement that the research was the part of the curriculum and very few reported that they performed research voluntarily. Year wise comparison showed that less than 50% students (except fourth year) supported the statement “Did you get support and help from your lecturers/supervisors when doing research?”

More than 90% students agreed that the research is important in their education but only around 50% of them showed their interest to do more research during their undergraduate studies. When students were asked about to do research in future, significantly high number of students agreed with p=0.016. Students' knowledge and awareness about research journals and research presentation were also evaluated by asking them about research journals and paper presentation. A large number of (79%) students had knowledge about research journals and they had read research journal or research article but fewer number of students have heard that research paper can be orally presented and it was found statistically significant with p= 0.017.

Variation in responses was compared according to gender and pre-clinical and clinical year (Table 2). In the pre-clinical year, a large number of female participants reported that they performed research during under graduation and it was found statistically significant that more females compare to males were engaged in research (p<0.0001). Same trend was observed when they were asked about research being part of curriculum and difference was statistically significant with p-value 0.00. Responses of clinical year students were also categorized according to gender. It was observed again that proportion of females was high compared to males who did research during studies and difference was significant (p=0.001). Females of clinical years were more aware about the oral presentation of research article as compare to males and the proportion was found significantly high (p=0.039).

Discussion

The medical students in the college of Medicine, University of Dammam, found engaged with research during under graduation. High proportion of students participated in the study and almost all of them accepted that the importance of research in their education. But evaluation of the responses showed that just half of the students were interested to do more research. Medical students had experience to read research paper or journal but majority of them reported that they never heard about oral presentation of a research article. Khan et al in (2014)[15] performed a study at College of Dentistry, University of Dammam, in which they evaluated students' behavior towards research projects. Fourth, fifth, sixth and interns at college of dentistry were the participants and except fourth year students a big proportion of students were enthusiastic to do more research. Most of them were aware about research journals and awareness about oral presentation of research article was poor among dental students. To prepare the students for post-graduation it is necessary to teach them about research because research is important part in post-graduation [(15)]. Inline with this context majority of students in Medical School of University of Dammam agree that research is important and they want to do future research along with post-graduation. Moreover, it had been found through recent studies that under graduate students showed improvement in their skills, communication and critical analysis. They also accepted that research helped them in selection of post-graduation program[16-18]. Due to the importance of research in medical education many medical colleges have studied their students' perception/behavior towards research. Oliveira et al reported the involvement of students in academic research was about 28 percent [19]. Steiner et al from the Norway stated 87 percent students involved in research[(20)]. Many authors stated the reasons of students' lack of interest in research. Physical infrastructure, uncooperative staff, students' lack of awareness and insufficient institutional incentives were the main reasons [21,22].

Support and help from faculty and staff is very important to motivate students for research[23]. It was found difficult for students to develop such relations with supervisors which could make them collaborative. However, European studies mentioned different results [22,24]. Medical students at University of Dammam, reported the lack of support from faculty/supervisors in their research projects. Around 45 percent stated that they got any help from supervisors.

Research grants are motivating factor for students to participant in the research activity. It helped them to support their education. Cristiano et al stated that 47 percent of the students participated in their study was getting research grant [25]. Students from poor background need such support to get relief from financial burden. Thus, financial problems are research obstacle shared by students of South Africa and other countries[26,27]. In Saudi Arabia, there are great opportunities to perform research or study up to graduation/post graduation level. Students get financial support from ministry of higher education and universities also support their students in their researches or education[28]. It had been found through this study that medical students in University of Dammam were engaged with research and they are

happy to be a part of future researches. Students were aware about the importance of research in their education. Students from clinical year were found to be less associated with research compare with pre-clinical students and this explained that students hardly found time to be involved in research. It is required to provide them faculty/supervisors' support to encourage them for research. It is required to give them exposure of scientific journals and conferences. So, they would be more aware about scientific journals and oral presentation of research article.

There are few limitations of the study; students were not asked about the completion of their research projects and also why many of them don't want to involve in future research projects.

Table 1: Responses to the questions, affirmative responses out of total responses

Questions	2nd Year	3rd Year	4th Year	5th Year	6th Year
	n(%)	n(%)	n(%)	n(%)	n(%)
Did you do any research during your undergraduate course	114(82)	94(70)	92(70)	75(53)	78(57)
Was this research part of the curriculum	104(75)	81(60)	77(58)	54(38)	54(39)
Was the research voluntary	12(9)	13(10)	13(10)	28(20)	35(25)
Did you enjoy the research	54(40)	55(41)	69(52)	52(37)	59(43)
Did you get support and help from your lecturers/supervisors when doing research	53(38)	51(38)	75(57)	62(44)	67(49)
Would you have like to have done more research	72(52)	67(50)	71(54)	79(56)	75(54)
Would you like to do post graduation	116(83)	114(85)	102(77)	110(77)	113(82)
Do you think research is important in medical education	132(95)	132(98)	122(92)	133(94)	124(90)
Do you think you will do research in the future	126(91)	121(90)	106(80)	126(89)	122(88)
Do you think research s important in medical, but it is best left to others to do	22(16)	10(7)	21(16)	20(14)	21(15)
Have you ever read a research or journal paper	115(83)	103(77)	102(77)	115(81)	108(78)
Have you ever heard a research paper orally presented	40(29)	31(23)	31(23)	45(32)	51(37)

Table 2: Pre clinical and clinical year effect on students' responses

Questions	Pre Clinical			Clinical		
	Male	Female	P-Value	Male	Female	P-Value
	n(%)	n(%)		n(%)	n(%)	
Did you do any research during your undergraduate course	93(54)	207(88)	.000	51(43)	102(63)	.001
Was this research part of the curriculum	72(42)	190(81)	.000	34(29)	74(46)	.036
Was the research voluntary	20(12)	18(8)	.000	20(17)	43(27)	.011
Did you enjoy the research	53(31)	125(53)	.000	33(28)	78(48)	.017
Did you get support and help from your lecturers/supervisors when doing research	50(29)	129(55)	.000	36(30)	93(58)	.000
Would you have like to have done more research	84(48)	126(54)	.07	65(55)	89(55)	.82
Would you like to do post graduation	127(73)	205(88)	.004	90(76)	133(83)	.117
Do you think research is important in medical education	159(92)	227(97)	.053	112(94)	145(90)	.544
Do you think you will do research in the future	141(81)	212(90)	.007	104(87)	144(89)	.328
Do you think research s important in medical, but it is best left to others to do	29(17)	24(10)	.17	15(13)	26(16)	.392
Have you ever read a research or journal paper	125(72)	195(83)	.031	98(82)	125(78)	.295
Have you ever heard a research paper orally presented	41(24)	61(26)	.65	32(27)	64(40)	.039

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Original Article

Age Estimation of Karachi Children by Erupted Permanent Teeth, Dieting Habits and Anthropometric Measurements

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ABSTRACT:

Objectives: To develop a suitable model to estimate the age of the Karachi children using total number of permanent teeth erupted, anthropometric measurements and milk intake. Methodology: Four thousand five hundred and eighty (4580) schoolchildren of 'just erupted teeth' of 102 private and public school of Karachi were included in this study. The children were examined under fluorescent light by the dentists and the height and weight were measured by the assistants. School record was used to collect the date of birth. Linear regression analysis was used to develop models with explanatory variables; number of teeth erupted, height, weight and milk intake. Explanatory variables: Model 1: number of teeth; Model 2: number of teeth, height and weight; Model 3: number of teeth, height, weight and milk intake. Results: The mean height and weight of the children were 129.09 ± 13.72 (R: 88-198) cm and 25.95 ±8.62 (R: 9-90) kg respectively. The average glass of milk consumed by the children per week was 7.02 ± 2.74 (R: 0-28). Results showed that percentage of difference of two ages (estimated and actual) fallen within ±0.5 years were 34.11, 35.93 and 36.71 for model 1, 2 and 3 respectively. Furthermore, these percentages within ±1.0 years were 60.61, 63.16 and 65.11, respectively. Conclusion: Study showed that by adding milk intake by the children in the regression equation improved the accuracy in age estimation.

Keywords

Age estimation, permanent teeth, Regression analysis, Height, Weight, Milk intake

عنوان: پکّے دانتوں کی مقدار، کھانے کے عادات، قد اور وزن کو استعمال کرتے ہوئے کراچی کے بچوں کی عمر کا تخمینہ۔

مقصد: ایک مناسب نموزج تیار کرنا جو قد، وزن اور دانتوں کی مقدار اور دودھ کا استعمال کی بنیاد پر کراچی کے بچوں کی عمروں کر تخمین کر سکے۔

طریقہ: چار ہزار پانچ سو اسّی 4580 کراچی کے 102 اسکولوں کے بچے کو جن کا کوئی نیا دانت نکلا تھا تحقیق میں شامل کئے گیا۔ دانتوں کا معائنہ بجلی کی روشنی میں ایک دندان ساز کے ذریعے کیا گیا اور وزن قد اور دوسری معلومات ڈاکٹر کی مدد گار کے ذریعہ لی گئی۔ اسکولوں کے اندراج سے بچوں کی تاریخ پیدائش لی گئی۔ خطّی انحدار کو استعمال کر کے ایک مناسب نموزج تیار کیا گیا۔

نتائج: بچوں کی اوسط قد اور وزن بالترتیب 129.09±13.72 سینٹی میٹر اور 25.95±8.62 کلوگرام پایا گیا۔ اوسط دودھ کا استعمال فی ہفتہ 7.02±2.74 گلاس تھا۔ تخمینی اور اصلی عمروں میں 0.5± سال کا فرق

63.13%, 60.61% اور 65.11% بالترتیب تینوں نموزجوں میں ہی پایا گیا۔

حاصل مطالعہ: تحقیق نے یہ ثابت کیا کہ دودھ کے استعمال کی مقدار شامل کرنے پر عمر کی تخمین بہتر ہو جاتی ہے۔

INTRODUCTION:

To estimate the age of individual becomes advantageous in many fields including orthodontics, paediatric dentistry, medico-legal system, forensic and sports. Furthermore, it becomes extremely important to determine the age of the corpses found in fire, hurricane and national disasters. In many developing countries proper birth records are not maintained, especially rural area and hence estimation of age is needed for schooling, age restricted sports and occupation.[1] Many body parts are used to estimate the age. However, teeth are frequently used for this purpose, because they resist decomposition, fire and chemicals etc.[2] Furthermore, they are not affected within few years after the death, but survive thousands of years after that.[3] Many methods have been proposed to determine the age of the child using different aspects of teeth. However, all of them can be divided into two broad categories: (1) age of tooth eruption and (2) pattern of tooth development.

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Counting of teeth and regression analysis on number of teeth present along with some other anthropometric variables have been used in many studies[4,5] in the first method. To determine the age using the second method needs radiographic images of the development of teeth. Many studies have been conducted using this technique in different nationalities. Investigators of African[6], European[7-13], Asian[14-16] and American[17] have used this technique estimate the age of the children. But, as mentioned earlier these techniques need radiographic images and that is why cannot be used in population based studies due to heavy expenses and longer time required. The first method of estimating age can acquire bigger sample due to easy population-based study and can give better result due to enhanced representation.

In this study the authors have used the first method of regression on a relatively large sample of children collected from a school-based study from all the towns of Karachi. Objective of the study is to develop a suitable model to estimate the age of the Karachi children using total number of permanent teeth erupted, anthropometric measurements and milk intake by the children.

Methodology:

Four thousand five hundred and eighty (4580) schoolchildren of 'just erupted teeth' of 102 private and public school of Karachi were included in this study. The definition of the just

Karachi were included in this study. The definition of the just erupted teeth was: a tooth deemed to have emerged if any part of it was visible in the mouth. The study is a part of country-wide funded project of Higher Education Commission for estimating the time and sequence of eruption of permanent teeth of Pakistani children. The detail methodology has been discussed in Khan[18] and Khan[19]. A team consistent of 2 dentists (1 male & 1 female) and 2 assistants (1 male & 1 female) and 2 assistants (1 male & 1 female) visited each school for clinical and demographic data. Every present student of the class was examined for general checkup. If a child had just erupted tooth that child was taken away from the class room. The children were examined under fluorescent light by the dentists and the height and weight were measured by the assistants. For better accuracy, the school record was used to collect the date of birth. The calibration and training among clinicians were conducted by sharing the clinical pictures of just erupted, unerupted or erupted teeth. Since it is very easy to distinguish these three conditions (just erupted, erupted or un-erupted), therefore, cast or subjects were not used for inter or intra-examiners calibrations. Four thousand five hundred eighty (4580) children had the complete data of all the variables of interest. The study was approved by the Institutional Review Board of Dow University of Health Sciences. Linear regression analysis was used to develop models with explanatory variables; number of erupted teeth, height, weight and milk intake. The following models were applied on the data, using SPSS (ver 16.0).

Models used for estimation:

MODEL 1: $Y = \alpha + \beta X + \varepsilon$; Where, Y=age and X=Total teeth erupted;

MODEL 2: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$; Where, Y =age and X_1=Total teeth erupted; X_2=Height; X_3=Weight

MODEL 3: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

Where, Y =age and X_1=Total teeth erupted; X_2=Height; X_3=Weight; X_4=Intake of milk

Results:

The descriptive statistics about age, number of teeth erupted, height, weight and number of glass of milk per week are given in Table 1. The mean age of the sampled children was 9.31 ± 2.27 (R: 4 - 18.5) years and the mean number of erupted teeth was 15.33 ± 8.09 (R: 1-28). The mean height and weight of the children were 129.09 ± 13.72 (R: 88-198) cm and 25.95 ±8.62 (R: 9-90) kg respectively. The average glass of milk consumed by the children per week was 7.02 ± 2.74 (R: 0-28).

The following regression equations were obtained as per our objective of the study. All the regression coefficients of the three models were statistical significant (p<0.0001). However, the constant term of the model 3 with the milk consumption was insignificant (p=0.114).

Model 1: $Y = 5.90 + 0.218\,X$;
(<0.0001) (p<0.0001)

Model 2: $Y = -0.573 + 0.143\,X_1 + 0.063\,X_2 - 0.017\,X_3$
(0.082) (p<0.0001) (p<0.0001) (p<0.0001)

Model 3: $-0.647 + 0.139X_1 + 0.066\,X_3 - 0.022\,X_3 + 0.037\,X_4$
(0.114) (p<0.0001) (p<0.0001) (p<0.0001) (p<0.0001)

Table 2 showed the errors between the estimated age and the actual reported age using the above three models. This table describes the number of cases and percentages fallen in different error intervals. Summary of these information is given in Table 3 with error percentage within ±0.5 years and ±1.0 years intervals. Results showed that percentage of difference of two ages (estimated and actual) fallen within ±0.5 years were 34.11, 35.93 and 36.71 for model 1, 2 and 3 respectively. Furthermore, these percentages within ±1.0 years were 60.61, 63.16 and 65.11, respectively.

Discussion:

This analysis based on a relative large sample of children taken from all the eighteen towns of Karachi, including private and public schools. Therefore, it quit representative of the Karachi population. Even though the Karachi is known as Mini-Pakistan, because the people from all over the Pakistan migrate to Karachi for job opportunities and education, but 84% of the children in this cohort were the children of Indian emigrants. Therefore, the results can only be generalized for Karachi children.

Demirjian methods, using four or seven teeth, have been applied by many investigators[6-9] however, some investigators showed serious reservations of using this method. Foti et al[5] had laid-down the following objections of applying this method in different population.[1] This methods does not estimate the age precisely after 16 years,[2] The method depends upon radiographic images[(3)] Since the development stage of teeth are quite subjective, therefore the appreciation of development stages is not easy to precisely determine, and It has been shown that this method does estimate the age correctly for Canadian children, but does not give a good estimate for other populations.[4] Due to these reservations and complexity of radiographic images, Nyström et al indicated that age estimating method depends upon the counting of teeth showed simple and precise[20]. Furthermore, this method does not need special instruments and set-up; and can easily be organized in cross sectional studies in community based studies. The results of this study indicate that adding of anthropometric measurements, such as height and weight increase the percentage of precision in age estimation by 1.71% within ±0.05 years and 2.55% within ±1.0 years. These percentages further increased by 0.78% and 1.95% within ±1.0 year respectively by adding the consumption of milk intake.

Gillett[21] has used the regression equation with number of permanent teeth present and its squared term on Zambian children and found few percentages better estimation than this study. In his study the sample was taken from one school and consequently it was consisted more homogenous children. Khan[1] showed the accuracy of 38.5% and 39.4% for within ±0.5 year and 63% and 70.8% for within ±1.0 year in conducting a study on Saudi female children. This study showed few percentage points lower than this study. The reasons are again

the same. The sample was more homogeneous due to same sex and strict age-related regulations in the admission of Saudi children. It should also be noted that the constant term of the regression equation with milk intake was insignificant. In age estimation the constant term should be insignificant due to natural behavior. Nevertheless, this study showed that by adding height and weight in the equation with number of permanent teeth improved the accuracy & by adding the milk intake further improved the precision in estimating the age. However, these equations should not be generalized for all the children of Pakistan, because, more than 80% of the children in the sample belonged to one community, i.e. emigrants from India.

Conclusion:

Study showed that by adding milk intake by the children in the regression equation improved the accuracy in age estimation.

Table 1: Descriptive statistics of age, number of teeth erupted, height, weight and milk intake

Variables	Minimum	Maximum	Mean	Standard deviation
Age (years)	4.0	18.5	9.31	2.27
Erupted teeth	1	28	15.33	8.09
Height (cm)	88	198	129.09	13.72
Weight (kg)	9	90	25.95	8.62
Milk (glass per week)	0	28	7.02	2.74

Table 2: Frequency and percentage of children from their actual age in error intervals in statistical models applied.

Errors	MODEL 1		MODEL 2		MODEL 3	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
<-2	249	5.7	220	5.1	119	4.1
(-2)- (-1)	649	14.9	631	14.5	410	14.1
-1- (-0.5)	652	14.9	637	14.6	463	15.9
(-0.5)-0	806	18.4	791	18.2	536	18.4
0-0.5	685	15.7	773	17.8	531	18.3
0.5-1	506	11.6	548	12.6	362	12.5
1-2	520	11.9	494	11.4	333	11.5
>2	303	6.9	258	5.9	152	5.2

Table 3: Percentage of errors from estimated to actual age within ±0.5 and ±1 year in statistical models applied

Errors	MODEL 1	MODEL 2	MODEL 3
	Percentage	Percentage	Percentage
Within ±0.5 year	34.11	35.93	36.71
Within ±1 year	60.61	63.16	65.11

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Original Article

Characterization of Piperidine against Plasmodium falciparum; A review of Successful Role for managing Widespread Public Health Disaster, Malaria by Piperidine Derivatives

Zafar Saied Saify[1*], Kiran Rafiq[2]

ABSTRACT:
The diversified pharmacological distinctiveness have positioned the piperidine moiety in almost all the therapeutic fields with excellent index including malaria. This modification led drug designing to the development of uncountable potent derivatives to inhibit this parasite that is rocking the world towards high fatality rate. The current study reveals the role of piperidine analogues for the management of malaria and that can be further worked for future proposal of new medicinal moieties. Methods: The antimalarial activity of drug molecule is measured through plasmepsin inhibition. For this purpose plasmepsin II and cathepsin D (Biodesign International, USA) assays are measured using a fluorescence resonance energy transfer (FRET) based substrate DABCYL-Glu-Arg-Nle-Phe-Leu-Ser-Phe-Pro-EDANS (malaria FRET-1; AnaSpec Inc., USA). The assay is performed with plasmepsin II/cathepsin D (1.2 nM) and substrate (malaria FRET-1; 1.0 μM) in 0.1 M Sodium acetate buffer pH 5.0, containing 10% Glycerol and 0.01% Tween 20. The assays are performed with 5.0% final concentration of DMSO. Conclusion: It is to be concluded that biological and pharmacological behaviors demonstrated by the novel derivatives, proved them more potent than their parent compounds when compared with relative standards. Consequently these active molecules are suggested for further study and to take up them as potent therapeutic agent to be used in future.

Keywords
Piperidine, Malaria, Parasite, Falciparum

پائپریڈین کے مشتقات کا استعمال ملیریا پھیلانے والے جراثیم کے خلاف عوام کی صحت عامہ کے لئے پائپریڈین کے مشتقات کا کامیاب تجربہ

مختلف الانوع کی بناپر پائپریڈین کا استعمال خاص اہمیت کا حامل ہے۔خاص طور پر اسکے مختلف مشتقات نے ملیریا کے جراثیم کے خلاف قابلِ ذکر نتائج حاصل کئے ہیں اور مستقبل میں اسکی اہمیت پر مزید نئی ادویات کی تالیف ممکن ہوگی۔

طریقہ کار: ملیریا کے طفیلیے پر اثر انداز ہونے کے لئے نئی ادویات کی تاثیر Plasmepsin خامرے کی کمی کے تناسب کی بنیاد پر کی جاتی ہے۔اس مقصد کے لئے Plasmepsin پلاسمپسن خامرے اور کیتھیسن خامرے کا تاثر (Flourescenece Soursance energy) روشنی کی توانائی کی خاص تبدیلی کی بناء پر کی جاتی ہے۔ان کی خاص مقدار کا تعین کسی بھی اینٹی ملیریا کی تاثیر کا مظہر ہوتا ہے۔

حاصل مطالعہ: کسی بھی دوا کی حیاتی کیمیائی خواص کا جائزہ۔مختلف قسم کے خامروں کے ردوبدل پر منحصر ہوتا ہے۔اوران کا تجزیہ موجودہ استعمال ہونے والی ادویات کے تناظر میں کیا جاتا ہے۔اس سلسلے میں نئے تجربات نے نہ صرف موجودہ ادویات کی مضر خاصیت کو کم کیا ہے۔بلکہ ایسے طفیلیے کی بھی مدافعت کا مقابلہ کیا ہے جو پرانی ادویات کے لئے مزاحمت کرتے ہیں۔

INTRODUCTION:

Malaria remains one of the world's causes of deaths. The recorded rate of lethality is more than 650,000 yearly [1,2]. The parasite plays the death game specifically in third world countries silently, where poverty and malnutrition are equally responsible for inviting malaria parasite[3-6]. But Prevention and cure also goes along with all these disorders and nature has provided different tools and weapons to the mankind to fight with these enemies, among which the drug designing of novel and better remedial molecule like Piperidine[7,8], has been accepted as noteworthy class of drug with outstanding **pharmacological approaches**[9,10]

Background:

Malaria is a significant health risk for more than 40% of the world's population. According to an estimation 655, 000 persons died of malaria in which 86% of the victims were children under 5 years of age in 2010[11]. Severe malaria is a multifarious disorder for which four *Plasmodium* species are responsible, *P. vivax*, *P. ovale*, *P. malariae* and *P. falciparum*. Among them *P. falciparum* is specifically responsible for producing severe malaria [12] that causes life-threatening condition with a vast array of symptoms ranging from cerebral malaria, pronounced anemia and metabolic disorders of the coagulation system[13]. Research reveals that the plant's defense system consists of secondary metabolites, consequently the components having piperidine moiety play an important defensive role[14]. Recently, certain piperidine amides extracted from Piper longum showed activity against mosquito larva[15]. Depending on the fact piperidine was adopted as a lead for remodeling of compounds and hence there are more than thirty piperidine derivatives responsible for inducing action against *Aedes Aegypti* [16]. Certainly, in recent years great improvement has been made in controlling malaria, with fatality down 30% over the past decade through the piperidine analogues, a miracle drug for malaria.

Standing of Piperidine in Drug Resistance:

In a broader way antimalarial drugs are generally categorized into different groups depending on the stage of the plasmodium life cycle on which they act;

Quinoline antimalarials

Quinine and Quinidine, Cinchonidine, [17-19]

4-aminoquinoline series

Chloroquine; Amodiaquine, Isoquine, Pyronaridine [20].

Antifolate Derivatives

Chloroguanide; Proguanil, Cycloguanil[21].

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DOXP Reductoisomerase Inhibitors Fosmidomycin [22].

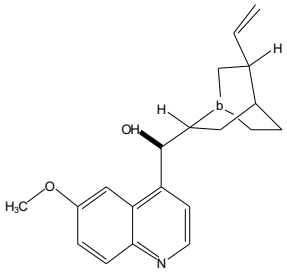


Fig.1: Quinine

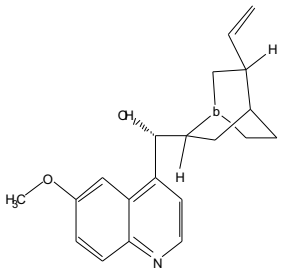


Fig.2: Quinidine

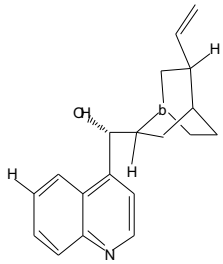


Fig.3: Cinchonine

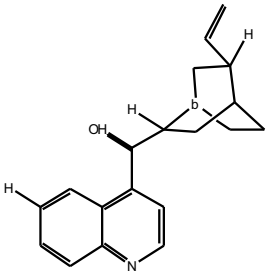


Fig.4: Cinchonidine

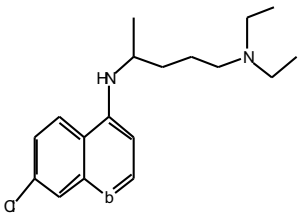


Fig.5 : Chloroquine

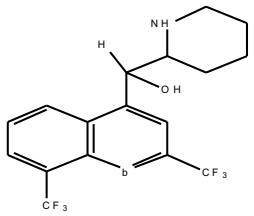


Fig.6: Mefloquine

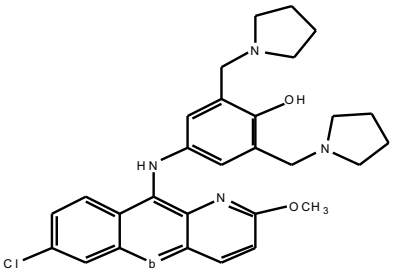


Fig.7: Pyranolidine

For many years, malaria was treated successfully using chloroquine (CQ) and antifolate derivatives. The history of antimalrial drugs like qunoline, isoquinoline, benzimidazole assures the therapeutic strength of nitrogen containing molecules against malaria[23-24]. As the Plasmodium falciparum , malaria parasite is one of the foremost causes of death specifically in pregnant women and children, that is made target in drug molecule designing for malaria along with, many factors responsible for the increase drug resistance, including drug pressure and gene mutations are also focused. High Resistance to Chloroquine, the most widely used anti-malarial, has developed significantly high Resistance to chloroquine (CQ), the most widely used and afford able antimalarial drug, has contributed to the increased in mortality and morbidity caused by P. falciparum infections in endemic areas. Resistance to levels leading to replacement with artemisinin-based combination therapy (ACT) in many malaria-endemic countries [25-27]. For this significant antimalarial approach several nitrogen containing molecules were synthesized , docked and proved potent as like derivative of benzimidazole [28] quinazoline, piperizine and piperidine [29]. Furthermore in 2011 nitrophenacyl derivatives of piperidine were evaluated and found potent plasmepsin inhibitors[30,31]. Furthermore in this regard work was also done to asses the response of synthesized piperidine derivatives. The gene pfmdr1, encoding P-glycoprotein homologue-1 (Pgh1), is linked to chloroquine resistance in parasites [32,33]. Therefore the strains of P. falciparum has developed resistance to most of the standard affordable antimalarial drugs e.g. chloroquine, mefloquine, halofantrine and quinine [34].

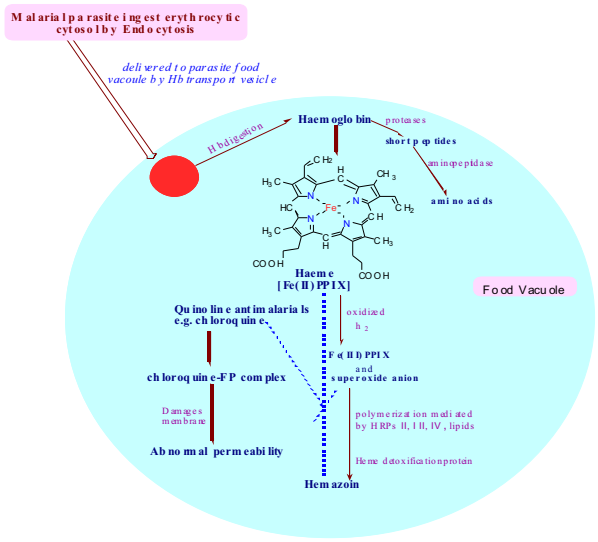
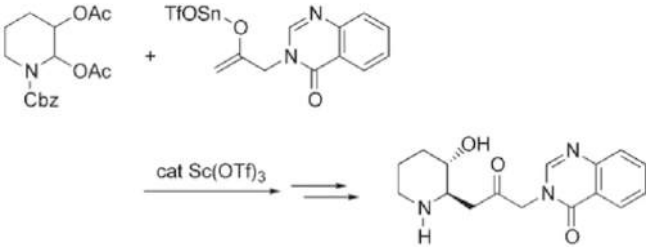


Fig.8: Mechanism of action of Chloroquine antimalarial [35, 36]

Nucleophilic substitution reactions was implemented of 2-methoxy- and 2-acyloxypiperidines , that was proved as a novel and competent methods for the preparation of the starting piperidine derivatives were developed , more prominently N-Benzyloxycarbonyl-2-methoxypiperidine (3) and 3-substituted-2-acyloxy-N-, from which Febrifugine, a potent antimalarial alkaloid, was successfully synthesized[37].



Furthermore approximately twenty seven effective antimalarial derivatives having piperidine trioxolane, were synthesized that showed IC_{50}s ranging from 0.20 to 7.0 ng/mL.

Parasite resistance to all presently used antimalarial drugs, led to the the identification of novel molecules with exclusive mechanisms. In this continuation aspartic proteases, necessary for the survival of Plasmodium , was expresses a number of aspartic proteases necessary for its survival, was excavated antimalarial drug having aspartic protease inhibition activity. This effort led to the identification of spiropiperidine hydantoins, bearing similarity to known inhibitors of the human aspartic protease β-secretase (BACE), as new leads for antimalarial drug discovery. Spiropiperidine hydantoins have a dynamic structure–activity relationship. Remarkably, these compounds do not inhibit human aspartic proteases BACE, cathepsins D and E, orPlasmodium plasmepsins II and IV despite their similarity to known BACE inhibitors. Although the current leads suffer from poor metabolic stability, they do fit into a drug-like chemical property space and provide a new class of potent antimalarial agents for further study[38].

Metholodogy:

The antimalarial activity of drug molecule is measured through plasmepsin inhibition. For this purpose plasmepsin II and cathepsin D (Biodesign International, USA) assays are measured using a fluorescence resonance energy transfer (FRET) based substrate DABCYL-Glu-Arg-Nle-Phe-Leu-Ser-Phe-Pro-EDANS (malaria FRET-1; AnaSpec Inc., USA). The assay is performed with plasmepsin II/cathepsin D (1.2 nM) and substrate (malaria FRET-1; 1.0 μM) in 0.1 M Sodium acetate buffer pH 5.0, containing 10% Glycerol and 0.01% Tween 20. The synthesized compounds are dissolved in DMSO and added in the reaction mixture before the addition of substrate. The assays are performed with 5.0% final concentration of DMSO. The enzyme inhibition experiments are performed (in triplicates) in 96 well plate format and readings were obtained on a Perkin Elmer LS55 Fluorescence spectrometer with an excitation and emission wavelengths of 336 and 490 nm, respectively [39].

By using the above technique plasmepsin inhibition activity of the synthesized 4-(4′ Bromophenyl)-4-hydroxy piperdine drrivatives compounds was evaluated, the study results showed that the compounds 1-(1″-Adamantan acyl)-4-(4′-bromophenyl)-4-hydroxy piperidinium Hydrobromide(I),1-(1″-Phenoxypropyl)-4-(4′-bromophenyl)-4-hydroxypiperidinim Hydrobromide (II) and 1-(3″-Phenylpropyl) -4-(4′-bromophenyl)-4-hydroxy piperidinium Hydrobromide (III) were active against plasmepsin for which the substitution of methyl group at the nitrogen of piperidine ring, the presence of bromine at the phenyl ring were accountable for enhancing the activity.

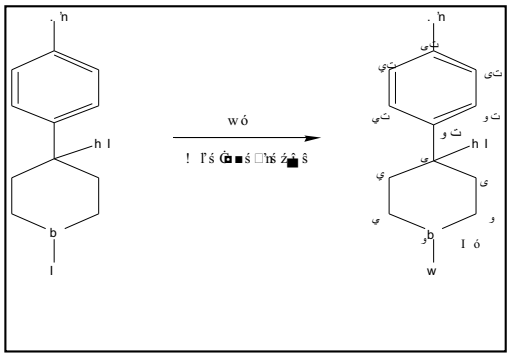


Fig.11-: Reaction Mechanis of 4-(4′-Bromophenyl)-4-hydroxy piperdin Antimalarial Derivatives

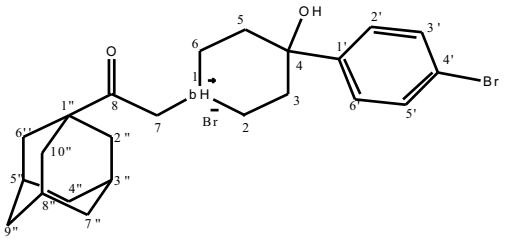


Fig.12:1-(1″-Adamantan acyl)-4-(4′-bromophenyl)-4-hydroxy piperidinium Hydrobromide (I)

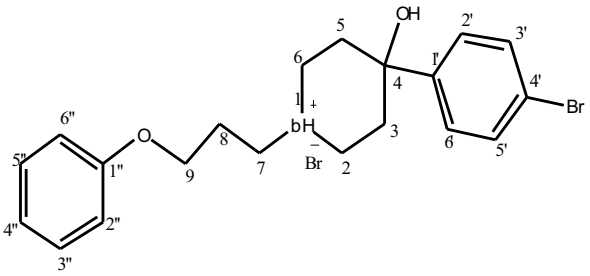


Fig.13:1-(1″-Phenoxypropyl)-4-(4′-bromophenyl)-4-hydroxypiperidinim Hydrobromide (II)

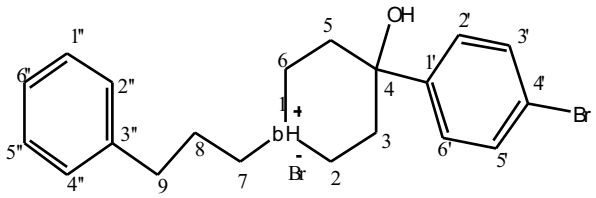


Fig.14: 1-(3″-Phenylpropyl) -4-(4′-bromophenyl)-4-hydroxy piperidinium Hydrobromide (III)

DISCUSSION

The research specifics about the role of piperidine molecule for controlling malaria give confidence to synthesize novel and exclusive piperidine containing compounds. To achieve this goal, distinctive piperidine were synthesized and evaluated for different therapeutic levels. Furthermore piperidine is a good remedy also for the symptoms of malaria, as it belongs to the class of opiate analgesic, pharmacologically resembles morphine. When the overall study results and out comes were concluded, numerous facts came in view and by thorough investigations it was realized that the synthesized compound has excellent approach

towards a variety of pharmacological actions. The overall results including biological and pharmacological behaviors demonstrated by the novel derivatives, proved them more potent than their parent compounds when compared with relative standards. Consequently these active molecules are suggested for further study and to take up them as potent therapeutic agent to be used in future. In present study it was reviewed that several nitrogen containing molecules having significant antimalarial approach were synthesized and proved potent as like derivative of benzimidazole quinazoline, piperizine and piperidine. Furthermore in this regard work was also done to analyse the response of synthesized piperidine derivatives like1-(1′′-Adamantan acyl)-4- (4′-bromophenyl)-4-hydroxy piperidinium Hydrobromide, 1-(1′′-Phenoxypropyl)-4-(4′-bromophenyl)-4-hydroxy piperidinium Hydrobromide and 1-(3′′-Phenylpropyl) 4-(4′-bromophenyl)-4-hydroxy piperidinium Hydrobromide were observed active against plasmepsin. The structural activity relationship studies showed that the substitution of methyl group responsible for desired activity, furthermore it was also observed that the presence of bromine at the phenyl ring of the compound and quartenization with bromine both enhanced the activity.

CONCLUSION

We are in a race against time to control malaria in our region before drug resistance worsens further. Malaria already kills hundreds of thousands of people a year if our drugs become unsuccessful, this number will rise severely. This all facts lead to develop more active antimalarials and hence plasmepsins that is in the genome of malarial parasite, was made a target and inhibition of Plasmepsins provided a significant way to control wide spreading malaria. These specifics gave confidence to synthesize novel and exclusive piperidine containing compounds. To achieve this goal, distinctive piperidine were synthesized and evaluated for different therapeutic levels. Furthermore piperidine is a good remedy also for the symptoms of malaria, as it belongs to the class of opiate analgesic, pharmacologically resembles morphine. When the overall study results and out comes were concluded, numerous facts came in view and by thorough investigations it was realized that the synthesized compound has excellent approach towards a variety of pharmacological actions. The overall results including biological and pharmacological behaviors demonstrated by the novel derivatives, proved them more potent than their parent compounds when compared with relative standards. Consequently these active molecules are suggested for further study and to take up them as potent therapeutic agent to be used in future.

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Review Article

Different species of Ficus

Zafar Saied Saify[1], Kiran Rafiq[2], S.M.Ghufran Saeed[1] Seema Ashraf[1] ,Sobia Siddiqi[1]

ABSTRACT:
Fruits and vegetables, as dietary items provide essential nutraceutical ingredients, which acts as a bridge between food and biologically active components.[1]Medicinal importance of the herbs and plants from thick forest of the continents cannot be ignored, as the isolation of pure natural products led to the discovery of lead molecule. On the basis of these moieties approximately 98% drugs have been synthesized for various ailments right from analgesic to immunornodulant and immunosupportive agens.

Keywords
Species, Ficus, Carica, Rerview

انجیر:

پھلوں اور سبزیوں کی غذائی اہمیت کے علاوہ ان میں پائے جانے والے حیاتی کیمیائی اجزاء۔ بیماریوں کے خلاف مدافعت میں اہم کردار ادا کرتے ہیں۔ بزات خود انجیر کا پھل اور سکھائی ہوئی انجیر کا استعمال صدیوں سے علمِ طب کے ماہرین کی ادویات کا لازمی جزع ہوتا ہے۔ دنیا کے گھنے جنگلات میں پائی جانے والی جڑی بوٹیوں کے کیمیائی اجزاء کی تحقیق نے نئی تالیفی دواؤں کی ایجاد میں اہم کردار ادا کیا ہے۔ انجیر کے بیشتر اجزاء اس وقت نئی ادوات کی تالیف میں کیمیادانوں کی توجہ کا مرکز بنے ہوئے ہیں انجیر اور چولائی کا ساگ ملا کر کھانے سے آنکھوں کے آپریشن کے بعد بینائی کے لئے ایک ٹانک کی حیثیت رکھتا ہے۔ زیرِنظر جائزے میں ان تمام ادویاتی خصوصیات کا اب تک کی جانے والی تحقیقات کا اب تک مکمل احاطہ کیا گیا ہے۔

Traditional medicine is a result of filtration of knowledge by elder herbalists which is still being used in remote places of the world, where medical aid is not available and the efforts of these persons have been appreciated by eminent scientists and physicians of the advanced countries.[2]

Farsworth[3] has appreciated the expertise of herbalist, who is being benefited by 80% of plant wealth as essential component of health care.

Some of the foods are being used as a fresh dietary items, and in ancient civilization due to scarcity of unavailable fresh fruits, herbalists preserve these fruits, as a sun-dried edible form Apart from their dietery value, these dried fruits became a rich source of providing essential ethnopharmacological substance and often used in traditional medicines and in Mediterranean zone as a daily routine food items.

It is intended to review an update account of fruit Fig (Ficus Carica) on the basis of collective work of nutraceutical and natural product chemist regarding the health importance of this fruit as an effective therapeutic food item.[4]

The biological properties can be attributed to various chemical and biochemical ingredients which exhibit antibacterial activity.[5] It is also assayed for antiviral and antioxidant agents for different isolates and extract due to the presence of essential chemical entity.[6] It is interesting to observe the fig fruit is being used to cure eye vision problem in combination with seeds of Amaranthus Viride and as laxative.[1]

Due to its efficacy as potential bioactive properties *Ficus carica* is included in various pharmacopeia (2012) has included as herbal drug (2000) mentioned *F. carica* as anticonstipative and antidysentric fruit in Chinese medicine: The latex of the plant is commonly applied locally to treat warts (2008).

The therapeutic assessment has been carried out by various scientists as

1. Antioxidative and acetyl choline inhibitors.[7]
2. Antifungal, anti-helminthic.[8]
3. Anticarcinogenic[9].
4. Anti-tumor and anti-inflammatory syndrome[9].
5. Antioxidant activity in diabetic rats[10].
6. Inhibitors of LDL oxidation in human[11]
7. Inhibitors of proliferative several cancer cell lines[12].
8. Anti-hyperglycemic agents methods[10].

Antioxidant activity is specifically mentioned due to the presence of higher content of polyphenols. The content of polyphenols is determined by Solomon[6]

Red wine contain (200-500 mg/100 gram) and black tea (150-210 mg/200 ml whereas figs provide (1090-1110 mg/ 100 gm) of polyphenols in fresh form (Vinson et al 1998) Fresh fruits skin contain high concentration of phenolic compounds (skin-anthocyanin) and pulp mainly anthocyamidins[13].

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Table: Nutritive Values in Dried Fig[14]

S.No.	Dietary Components	Amount per 100 g Serving	Daily Value
1.	Total Calories	283	-
2.	Calories from fat	4.7	-
3.	Total Fat	0.52 g	0
4.	Saturated Fat	0.0 g	0
5.	Cholesterol	0.0 g	0
6.	Sodium	12.26 mg	0
7.	Potassium	609 g	7
8.	Calcium	133 mg	6
9.	Iron	3.07	6
10.	Total Carbohydrate	66.16 g	9
11.	Total dietary fiber	12.21 g	
12.	Insoluble	8.47 g	20
13.	Sugar	49 g	
14.	Protein	3.14 g	
15.	Vitamin A	9.7 IU	<2
16.	Vitamin C	0.68 mg	<2

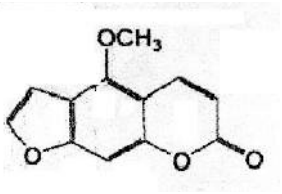
Effectiveness Of Carica With Amaranthus Leucocarpys Lectin In Preventing Opacification Of Cornea

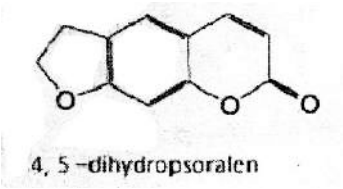
Valeria determined the role of Amaranthus leucocarpus (Urdu ame Chowlai leaves) is a lectin that distinguishes specifically Galbetal. 3 Gal NAc carbohydrate structures, in glycosylation process. Cornea is one of the specific components of eyes in understanding the process of' vision. Due to various pathological situations, such as trauma, infection or post-surgical complications, invasion of stroma may lead to abnormal vessel formation (neurovascularization) resulting in opacification of cornea.

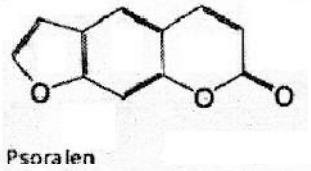
In glycosylation process saccharide residue interact with amino acid chain. This process may speed up in patients suffering from hyperglycemia. Lectins are the best agents to understand and inhibit the process of neurovascularization. Amaranthus Leucocarpus lectins played a useful role in determining the corneal neurovascularization.

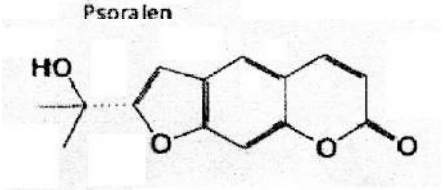
It has already been mentioned that Ficas carica (Fig) in combination with Amaranthus could be a preventive measures for patient suffering from hyperglycemia (subject to the advice by the physician accordingly). Common name of Amaranthus leucocarpus is Chouli vegetable, easily available in the market.

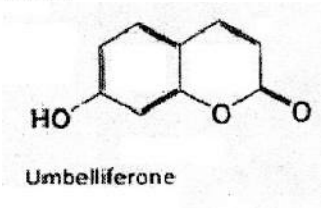
Coumarins from Roots and leaves of Ficus linn[15a]



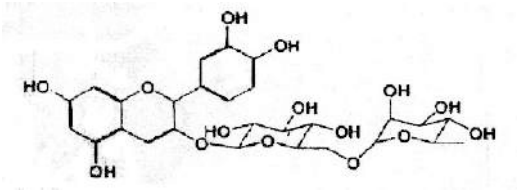


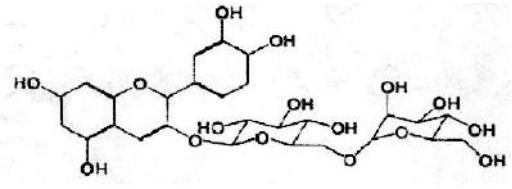


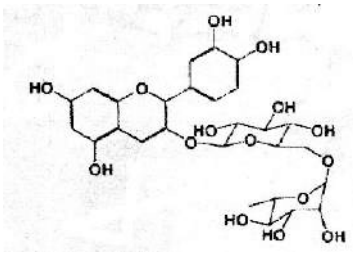


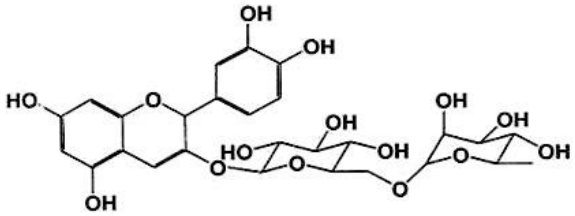


Flavonoids and anthocyanins from fruits, leave and pulp of Ficus fruits[16]

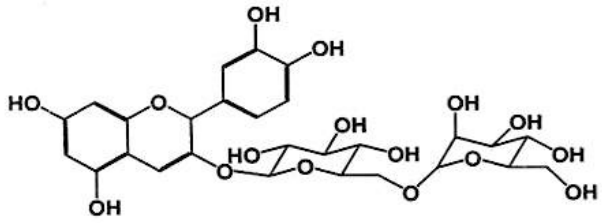




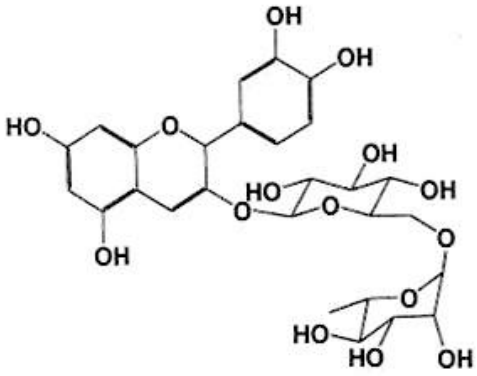




Cyanadin-3-*O*-rhamnoglucoside



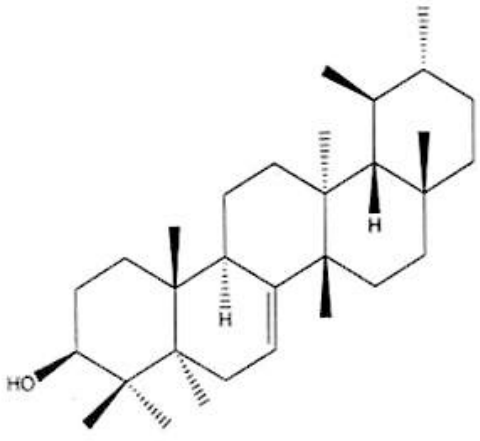
Cyanadin-3-*O*-glucoside



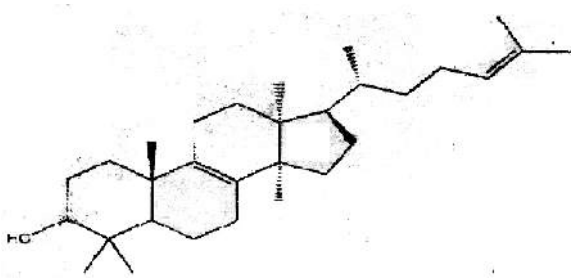
Rutin

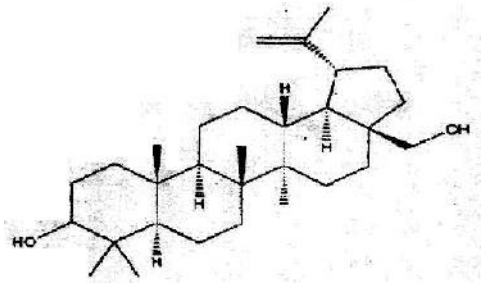
Triterpenoids, sterols and acyl steryl glucosides

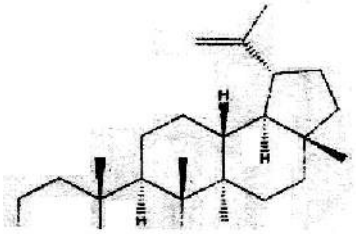
(oliviera Silva Andrade 2010)

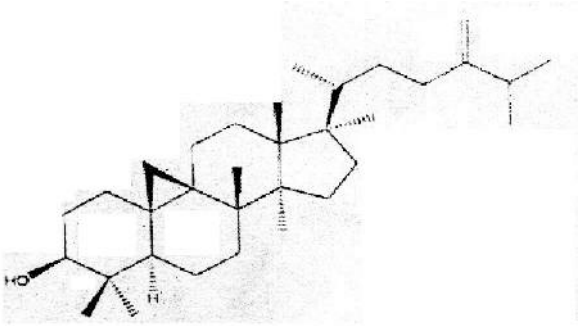


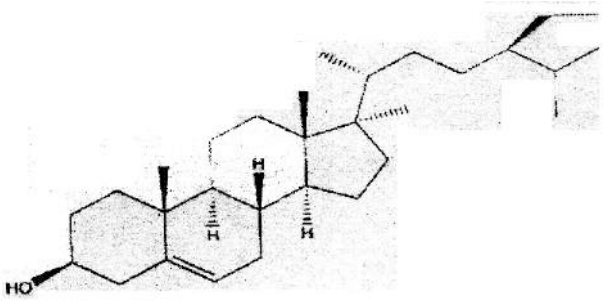
Beurenol

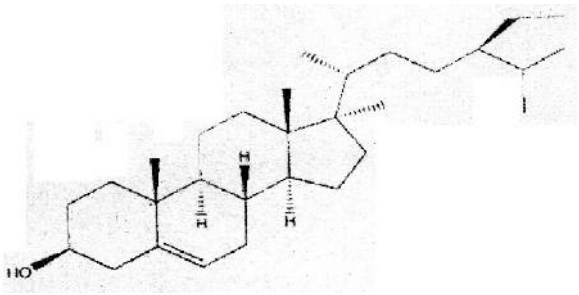


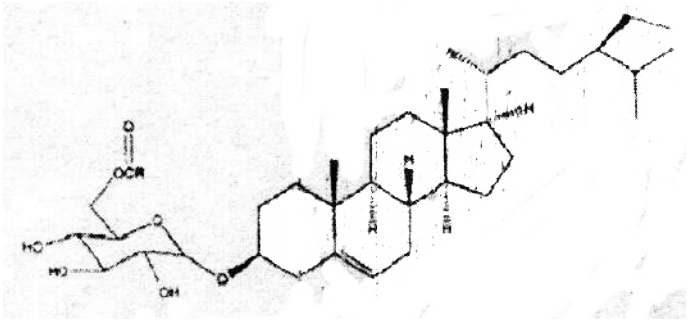


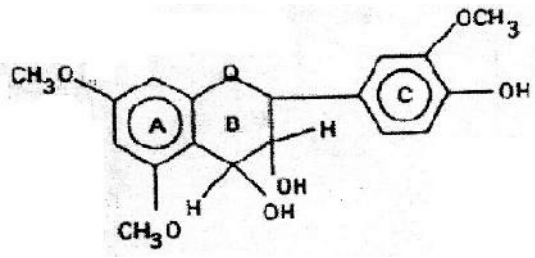


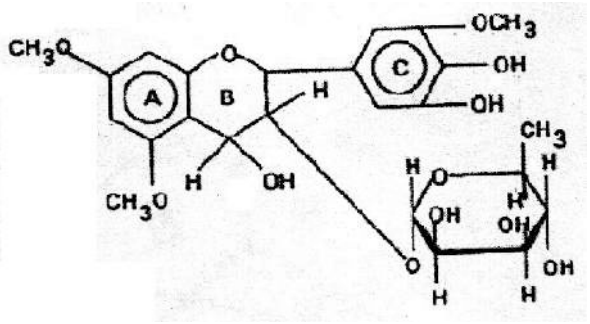


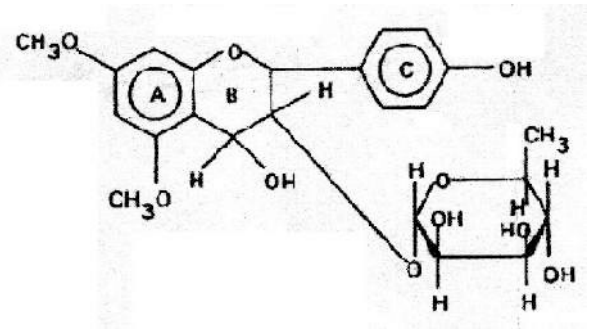




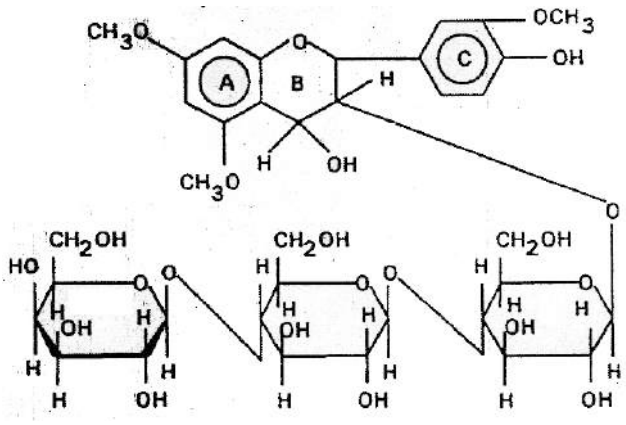








(4) Leucocyandin-3-0-B-D-glactosylcellobioside



1.1 INTRODUCTION OF FICUS LINN. AND DIFFERENT SPECIES

Belong to the family of Moraceae. Nearly thousand species of "Ficus" distributed in tropic and subtropic; specially Indo-Malaysia and Polynesia. Twenty four species of this plant found in Pakistan[17]

The following species are used medicinally, in

Europe - Ficus carica Linn.
Egypt - Ficus sycomorus.
China - Ficus carica, f. pumila, F. retusa Linn.
Tongking - F. pumila
Malaya - F. retusa linn.
Brazil - F.anthelimintica Mart
Guinea - F. rugosa G. Don, F. Sycomorus Linn

1.2. Chemical Constituents of Different Species of "Ficus" and their therapeutic uses

Following chemicals isolated from different species of Ficus reported by Kirtikar and Basu[18]

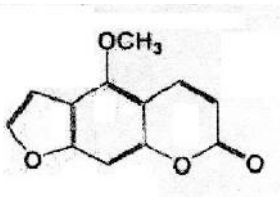
Therapeutic uses

All parts of F. bengalensis are acride, sweetish and astringent to the bowels. Useful in ulcer, vomiting and fever. The leaves of ficus plants are good for ulcer and the young leaves for leprosy. The aerial roots are useful in gonorrhoea, syphilis, dysentery inflammation of the liver. Milky juice is extremely

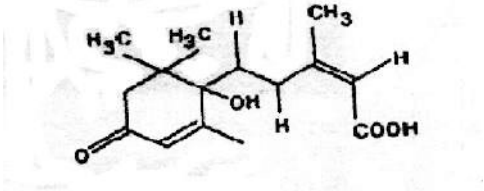
applied for pain and bruises and in rheumatism, it is also used as a remedy for toothache. The infusions of the bark have specified properties in treatment of diabetes.

1.2.2. FICUS BENJAMINA

1) Bergapten[19]

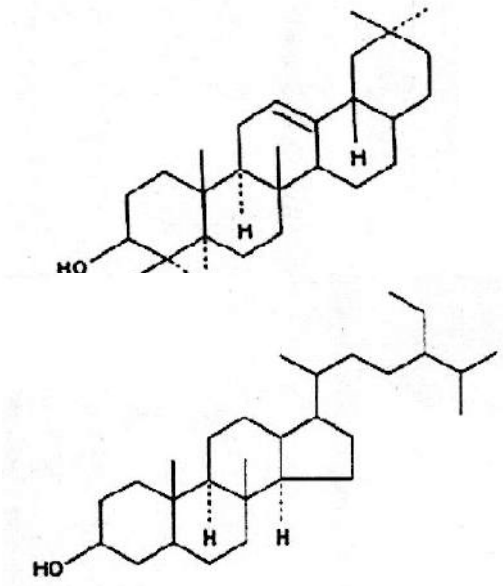


2) Abscisic Acid



Therapeutic uses as the milky juice is- used against whitening of the Cornea. Decoction of leaves is applied for ulcer.

1.2.3. FICUS ASPRIMA[20]

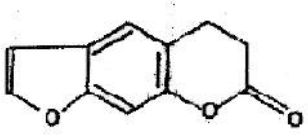


Therapeutic uses:

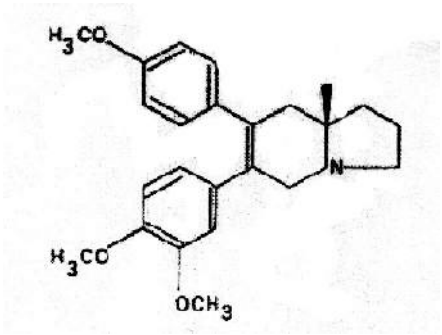
The juice and bark Is well known remedies in the treatment of glandular enlargement of abdomen, such as liver and spleen.

1.2.4. FICUS .HISIPIDIA

1. Bergapten[20]
2. β-Sitosterol[20]
3. β-Amyrin[20]
4. Psoralen



5. Hispidine[21]

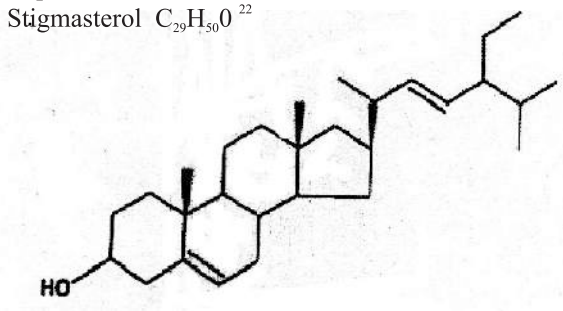


Therapeutic Uses: Useful in anemia, piles, jaundice, haemorrhage of the nose and mouth and in the disease of blood.

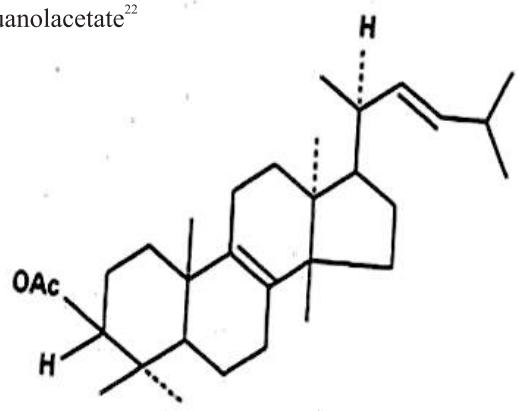
The fruit, seed and bark of F. hispida have valuable emetic properties.

1.2.5. FICUS GLOMERATA

(1) B-Sitosterol[22]
(2) B-Amyrin[22]
(3) Lupeol acetate[22]
(4) Stigmasterol $C_{29}H_{50}0$ [22]



5) Gluanolacetate[22]



Therapeutic uses: the unripe fruit of F. glomerata use in blood disease burning sensation, fatigue, leprosy, nose bleeding and intestinal worm.

The fruit is sweetish, useful in chronic bronchitis, dry cough, loss of voice, disease of kidney and spleen.

1.2.6. Ficus awkeostang

(1) Linoleic acid $CH_3(CH_2)_4CH=CHCH_20H=(CH2)7$ [23]
(2) Uronic acid[23]
(3) Linolenic acid $CH_3(CH_2\,CH=CH)3(CH2)7\text{-}COOH$[23]
(4) Palmitic acid$CH3(CH2)3\text{-}CH2\text{-}COOH$[23]
(5) Stearic acid $CH_3(CH_2)5\,CH_2\text{-}COOH$[23]
(6) Olelc acid $CH3(CH2)7CH=CH(CH2)7\text{-}COOH$[23]

1.2.7. Ficus becheyana

(1) β-Sitosterol[24]

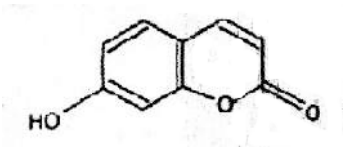
(2) Lupeot acetate[24]

1.2.8. Ficus cunnghamii

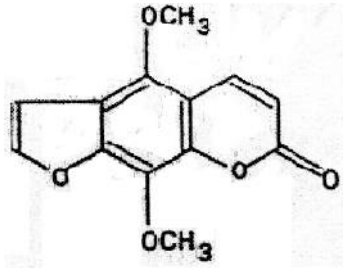
(1) β –Amyrin[23]

(2) β –Sitosterol[23]

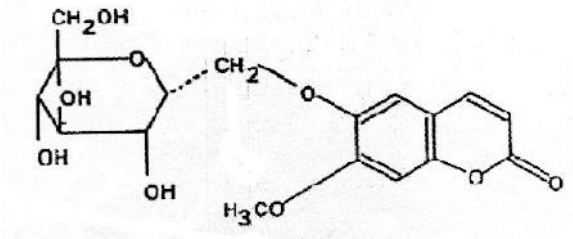
(3) Umbelliferone (7-hydroxy coumarin)[23]



4) Isopimpinellin (4.9-dimethoxy-7-oxofouro [3,2-g] chromone)[23]

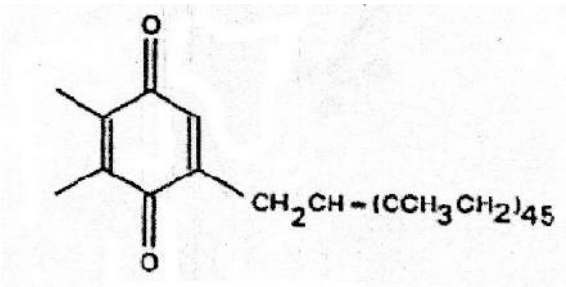


6) Herniarin



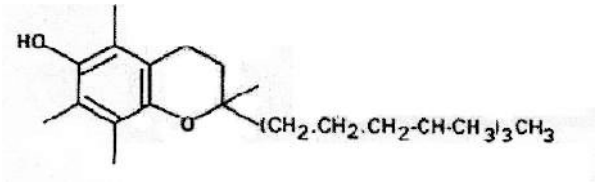
1.2.9 Ficus elastica

1) Plastoquinone-45[24]

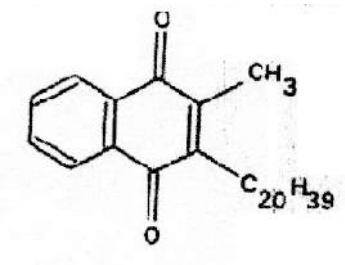


2) α-Toloquinone[24]

3) α-Tolopherol[24]



(4) Vitamin-K_1[24]

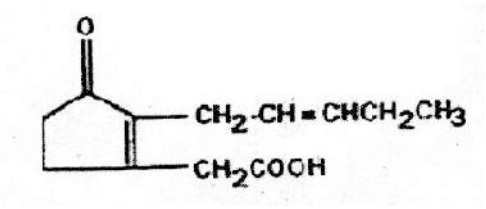


(5) Ficarprenol-II[25]

12.10. Ficus superb[24]

(1) Linolenic acid

(2) Jasmonic acid



(3) Linoleic acid

1.2.11. Ficus sycomorus

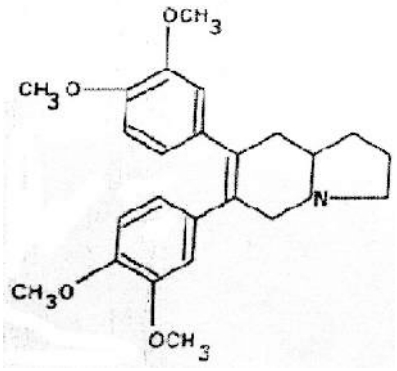
(1) Psoralen[23]

(2) Marmesin.[23]

(3) Bergapten[23]

1.2.12. Ficus septica

(1) Septicine[26]



1.2.13. Ficus pumila

(1) Herniarin[27]

(2) Bergapten[27]

1.2.14. Ficus recemosa

(1) Lupeol acetate[27]

(2) Ceryl behanate[27]

(3) B-Sitosterol[28]

(4) Gluanolacetate[28]

1.2.15. Ficus eriotryoides

(1) β-Sitostero[23]

(2) Marmesin[23]

(3) β-Amyrin[23]

(4) Bergapten[23]

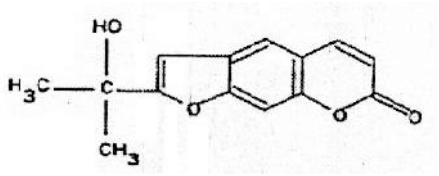
2. INTRODUCTION OF FICUS CARICA

2.1. FICUS CARICA (MORACEAE)

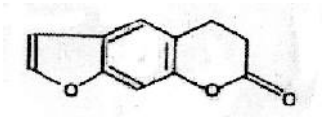
The fig plant is considered to be a native of carica in Asia minor and is grown in nearly all tropical and sub-tropical countries. It is cultivated in the Mediterranean region, from Turkey in the East to Spain and Portugal in the West, it is also grow commercially in parts of U.S.A. and Chile and to small extent, in Arabic Persia, India China and Japan29.The tree of Ficus carica is cultivated in many parts of Pakistan, it is found in Gilgit, Hazara District, Balakot, Pishin, Karachi District, Zamanabad and Korangi[17] Fresh fig is a delicious fruit with high nutritive value. It consists of 48% pulp and 16% skin. They are richer in Iron and copper than nearly all fruits and Vegetables and most other dried fruits. Both fresh and dried fig contains appreciable quantities of Vitamin "A" and "C" and smaller amounts of Vitamins of the "B" group and "0". The total sugar content of fresh fig is 13-20% and in dried fig is 42-62%. The sugar is present mostly in the form of invert Sugar and the principle acid in fresh fig are citric and acetic, small amounts of malic, boric and oxalic acids are present[29]

Fig skin contains sugars, gum and Mucilage. Fig juice contains, on an average 20.7% sugar[29]

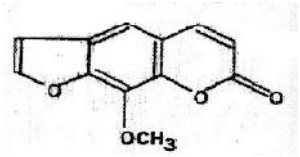
2.2 Chemical Constituents



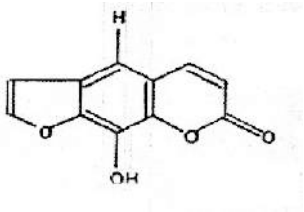
2) Psoralen[23]



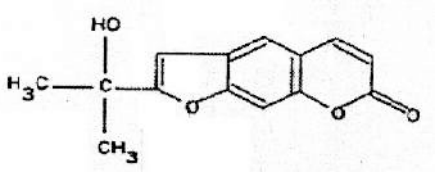
3) Xanthotoxin (8-methoxy psoralen)[23]



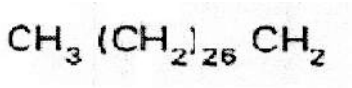
4) Xanthotoxol[23]



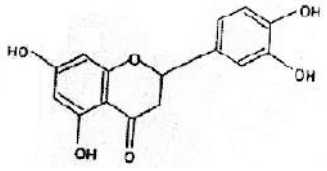
5) Marmesin[23]



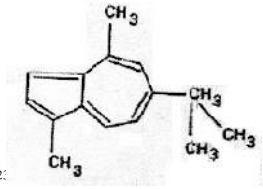
6) Octacosome[23]



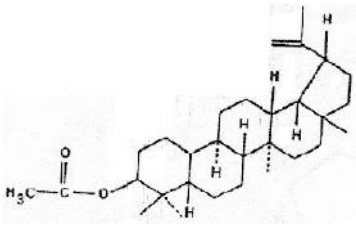
7) Rutin[23]



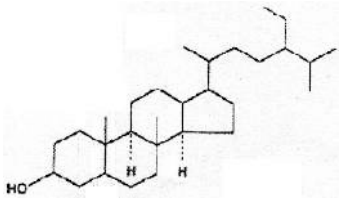
8) Guaiazulene[23]



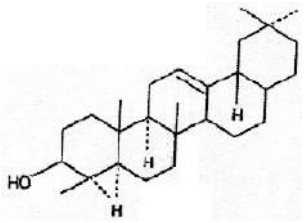
9) Lupeol acetate[23]



10) B-sitosterol[23]



11) B-amyrin[23]



12) Vitamins Sugar

.3. THERAPEUTIC ACTIVITY OF FICUS CARICA

Not only fruit of Ficus carica is used but all parts of the plant have therapeutical activity. The fruit is sweet cooling useful in "Vata" disease of the head and blood, leprosy and nose bleeding. It is also used as antipyretic, useful in inflammation, weakness paralysis, thirst, disease of liver & spleen and pain in chest.

The fig is emollient, demulcent and laxative. The fresh and dried fruits are used in constipation. The poultice of dried fig in milk is used to remove unpleasant odor from ulcer and cancers.

The fruit when used medicinally removes gravel in the Kidney or bladder and also obstruction of liver and spleen in subacute cases. They are given to cur~ piles and in 'the treatment of gout. Fresh figs form a nice tonic to people who suffer from cracks in lips, tongue and mouth. The root (tonic) is useful in leucoderma and ring worrn. The milky juice has expectorant and diuretic property but is dangerous for the eye[30]. It is applied to cure ulcer in the mouth. The leaves are slightly poisonous but are added to boiling water to steam painful or swollen piles. The leaves are also utilized in treating haemorrhoids, or sap from leaf and pet oil. Fresh and dried leaves are used in traditional medicine as a diuretic, demulcent, emollient and anthelimitic. The EtOH extract of fig leaves (Ficus carica) given orally to reduce ulcer in rates and SuOH extract reduced rat paw edema caused by carrageenin

2.4. ANTIMICROBIAL ACTIVITY

Antimicrobial substances and phytoalexins are detected in the leaves of Ficus carica. And the Me_2CO extracts of samples leaves show the growth inhibitory activities against Staphylocqccus. The Me_2CO extract of F. carica was effective against Bipolaris Ieersiae, Diaporthe nomurai, Fusarium roseum, F. lateritium f. sp. mori and F. solani f. sp. mori.

The phytoalexin which inhibited the growth of B. leesiae, when analyzed by TLC was extractable with MeOH, EtOH and Me_2CO. From the roots of Ficus carica, antifungal, antimicrobial activity of roots tested against Bipolaris Ieersiae and several other microorganisms by direct and CUP method.

2.5. PHOTOACTIVE COMPONENT

Psoralen and bergapten the only significant photoactive compounds which are present in appreciable quantities in the leaves and shoot sap, but it not detected in the fruit and its sap; These compounds are most concentrated in the leaf sap compared to the shoot sap. Lower concentration of both compounds is present in autumn compared to spring and summer.

Photoactive reaction is induced by psoralen and is expected to occur more frequently from exposure to leaf sap. The higher content of both photoactive compounds in spring and summer partly responsible for increased incidence of fig dermatitis.

Ficus carica is one of the plants implicated in the production of percutaneous photo sensitization which is a type of phytogenetic dermatosis. The other two are photosensitization and hepatogenous photosensitization. All three differ from contact with the causative plant. The reaction resulting from the development of a hypersensitivity to some chemical constituent in the plant tissues. Photosensitization is a sensitization to light resulting from the effect in the tissues of chemical constituent in an ingested plant. Hepatogenous photosensitivity found only in animals. In hepatogenous photosensitization the liver is affected in such a way by the hepatoxin in the ingested plant, that it develops a physiological inability to excrete the bile, it forms, in the normal manner and with, to excrete phylloerythrin normally present in the bile. Secondary effects are due to excess of phylloerythrin in blood.

Percutaneous photosensitization, is light dermatitis resulting from percutaneous sensitization and occur only in human beings.

The photosensitizing agents are probably fluorescent principles belonging to the group of coumarin or furo-coumarins. On contact with causative coumarins or furo-cournarln, produce a sensitivity to light which results not only in .a quantitative change, expressed by decreased erythema threshold dosis, but also a qualitative one, the change in absorption condition occurs and the coumarin, absorbs those wave lengths which the' skin, does not absorb and thus transmits the energy necessary for the reaction. Percutaneous photosensitization is characterized by the sudden onset of itching and-burning in affected area of the skin. Linear furariocoumarin or psoralens are group of naturally occurring compounds, which have marked photosensitizing activity effects on human skin and on various other biological materials. Two natural, linear O-akyl furnocoumarins, 8-methoxy psoralen (8-mop) (Xanthotoxin) and 5-Methoxy psorsalen 5-mop (Bergapten) are widely used in photo chemotherapy of psoriasis and of other skin diseases. Psoralen is the parent linear furocounmarin have high photosensitivity. Many furocoumarin (Syn. or Natural) derivative were tested but 2 trimethly psoralen show more photosensitizing activity than psoralen on human skin.

2.6. ACTIVITIES OF FIG LATEX

The latex from fig is a white mobile liquid specific gravity 1.05 with a disagreeable odour, a bitter taste and an acid reaction. The latex has pronounced proteolytic properties It contains diastase, esterase, has remarkable power .of digesting living helminths. Latex is toxic when administered parenterally to animal, but has not toxic effect when administered orally It has marked pharmacological action and inhibitor effects on the growth of transplanted benzpyrene sarcoma 616 in the rat (albino) and the growth of intraperitoneal sarcoma is markedly inhibited in the rat;

Following products had been isolated, with these studies.

1. A dialysable alkaloid-like compound which strongly inhibit the growth of sarcoma 616.
2. Globulin, and an organic substance which produce lysis of the content of the sarcoma

3. A N-free organic substance which produce lysis of the content of the sarcoma, and
4. An alcohol soluble substance which causes anemia without haemolysis.

Some frictions of the latex markedly inhibit the growth of spontaneous mammary carcinoma in the mouse, induce necrosis in spontaneous mammary turnouts. delay the "take" in transplantable adenocarcinoma, myeloid leukemia, lymphosarcoma and cause regression of sarcoma.

Latex also contain amylolytic enzyme, the activity and action of which depends on temperature and pH respectively, Three inhibitory peptides of angiotensin in converting enzyme ACE, isolated from fresh latex of the fig tree (Ficus carica).The amino acid sequences of these peptides identified by the edman procedure, These peptides synthesized and synthetic peptides were identical with the natural inhibitors in their ACE inhibitory activities.

The fruit and sap of fig tree used as a antihyperterision agent these contain oligopeptides. Oligopeptides are H.Ala-Val-Asn-Pro-, lie, Arg-OH (FLP-1) (I), H-Leu-Tyr-Pro-Val-.Lys-OH (FLP-2) (II) and H-Leu-Val-Arg-OH(FLP-3) (III) which posses angiotensin converting enzyme (ACE) inhibitory activity are isolated from sap and fruit of fig tree. These are obtained by Fractionation and useful as anti hypertensive agent, I, II and III in vitro showed Ic_{50} of 13, 14.5 and 4 µM agent ACE. I and II at 100 mg/Kg I.V reduced the blood pressure by 20 mm Hg in rates. The Ic50 value of these peptides for ACE from rabbit lung were 13, 4.5 and 14 µM respectively. These peptides have 'been synthesized by the solid phase procedure and the synthetic peptides were found to be identical with the natural inhibitor in their ACE inhibitory activities.

(Ficin) Latex from fig tree exhibit the elastolytic activity in a period of 24 hours, it decomposed elastin to extent of 44-10.2% different varieties of fig have different elastolytic activity. Maximum activity was noted down at 40-60° and pH 4.5-4.6 of several varieties of fig studies, the variety Surta demonstrated the highest activity.

The latex of Ficus carica contain a high protease activity due to the enzyme ficin. The ficin content of callus has been shown to variety with hormonal composition of the medicine using ELISA. However the bulk of the protease activity found in Callus has different characteristic than ficin.

There are different type of ficin named as A, S, C and O. These have some physico-chemical properties such as sedimentation, Extinction co-efficient, intrinsic, viscosity and isoelectric' point. These proteinase enzyme (ficin A, S, C and 0) .apparently consisted of a single polypeptide chain with N-terminal leucine. They differed in amino acid composition particularly in content of lysine, threonine, valine and leucine. Ficin Sand C contained 1 buried: SH group. Ficin A, S, C and 0, apparently have similar phvsical properties. Proteinase from the Ficus carica also contain Ficin "S" that is sugar containing ficin. The sugar content of Ficin "S" was determined to be 48% by phenol-H2S04 method. It is considered that the sugar is tightly bound to enzyme protein.

A molecular weight of 2.6x104 for Ficin "S" was obtained by Na-dodecylsulfate-polyacrylamide gel electrophoresis. The enzyme was most active at pH 8.0 at 60° and stable over a pH a range 2.0-8.0 at 40° for 20 hours and below 60° for 30 minutes. The enzyme activated by cysteine and mercaptoethanol but inhibited by $HgCI_2$ and P-chloromercuri benzoate. Ficin "S" differ only in isoelectric point and Sugar content from ficin A, B, C and D Ficin A, B, C and D show the kininase activity with brady kinin and densayl brady kinin and with synthetic substrate. These enzymes showed kininase activity but differed greatly in specific activities

The irnmunochernical properties of proteinase (Ficin A, B, C, 0 and S) also examined, each enzyme was homogeneous with immuno-electrophoresis. Ficin A and S are immunochemical identical and ficin Band C resembled each other. Ficin A and. S, Ficin B, Ficin C and Ficin 0 Possessed common antigenic determinants. It is suggested that immunocbernical similarity of enzyme to ficin A is in the order of ficin S > ficinB < Ficin C < ficin D

The several inhibitors of poly phenol oxidase were isolated from a. fig latex extract. These are closely related to other phenolic compounds. Structure activity relationship was studied by using synthetic resorcinol analogs. In vitro studies, certain of these compounds inhibit enzymic browing melanosis in food. the inhibitor are water soluble, stable, effective at low concentratlon and have potential as functional alternative to sulfite for the inhibition of melanosis.

3.1 . DIFFERENT COMPOUNDS OF FIG (Ficus carica)

3.1.1. LIPID FROM FICUS CARICA

The different lipid substances also determined from the Ficus carica fruit. The level and composition of different classes of natural lipids, glycolipid and phospholipid in ripe F. carica fruit were determined. Of 30 lipid substances identified, triglyceride free and estrified sterol mono and diglyceride cerobrosides phosphatidylglycerol and other were the most abundant, of lipid fatty acid, linolenic, oleic and palmitic acid predominated.

Some lipid soluble pigments of Ficus carica also determined such as carotenoids represented 80% of total pigments in smena, where as chlorophylls accounted for 60% of pigments in Turkish brown. The carotenoids complex In: smena had 12 constituents including Carotene and lutein (32.2, and 15.5% of total 'carotenold respectively) Turkish brown had 9 carotenoid including lutein and violaxanthin (41.8 and 14.8% respectively). Cerotenoid vitamins accounted for 59.5% of total and 25.0% in Turkish brown

3.1.2. AMINES FROM FICUS CARICA

Some biogenic amines present in fig and other fruits e.g. bananas and dates. These biogenic amines were determined by thin layer chromatography and the separation of their densyl derivative followed by UV spectrophotometry

densyl derivative followed by UV spectrophotometry measurement of eluted substance. Fig had only serotonin, which was found at 12.2 µg/g. Iraqi fig show the presence of all essential amino acid with adequate lysine and S containing amino acid, but contain relatively little tryptophan.

3.1.3. SUGAR AND CARBOHYDRATES

The different varieties for Ficus carica have different carbohydrate composition. There are four varieties of Ficus carica are analyzed for carbohydrate composition. The varietal differences in carbohydrate composition were mostly quantitative, A quantitative carbohydrate composition is characteristic of Ficus carica. Some soluble carbohydrates also present in dried fig, dried fig show the presence of fructose and glucose reducing sugar. The pectin substance (Sol pectin and proto pectin, were determined in several varieties of fig with their selected physico and chemical properties such as molecular weight, OAe and OMe content and gel strength. The dried Iraqi fig showed that fig contained glucose, fructose and sucrose, the fig also contained arbinoglactine. The cyanidin-3monoglycoside was only pigment detected in the fruit of skin of Ficus carica.

3.1.4. AFLATOXIN FROM FICUS CARICA

The occurance of Aflatoxin and ochrotoxin A in the 1988 dried fig crop. Mycotoxin content, moisture and water activity were analyzed in a total of 103 fig. Samples collected from various orchards and different stages of fig processing. Aflatoxin (B, and 82, G, and G2) were present in 29% of the samples examined of 0.5-63.0, 0.5-37.7, 0.5-78.3 and 0.5-12.5 µg/kg. Ochratoxin 'A' was detected in only 3% of the samples at 5.2-8.3 µg/kg

Aflatoxins B1, and B2 and G1 were detected in 4, 2 and 2% of sample respectively collected from field during drying and from ware house and processing unit in Turkey. The average aflatoxin level in samples were 112.3 (B,) 50.6 (B2) and 61.4 ng/g (G1). The sample collected from storage and processing unit contained no aflatoxin. The food of Syrian region were analyzed for the contamination and showed that the lowest level of contamination was that of aflatoxin M, in Khosk (0.19 µg/kg) and the highest was of B1 in dried fig (11.8 µg/kg). G1 and G2 were not detectable in any food and Aflatoxin B2 was found only in roasted shelted peanuts.

The aflatoxin distribution was studied in a naturally contaminated batch of figs. Only a very small number of figs were contaminated. The degree of contamination was estimated to be -1 in 100. Evidence is presented in details .that bright greenish yellow floursence under UV light (365 nm) is strongly correlated with the occurrence of aflatoxin. The sorting procedure is simple and fast and may easily be used to efficiently clean, long batches of dried fig on an industrial scale before retail distribution Aflatoxin degradation carried out by sulfur dioxide and in combination with heat, UV-energy and hydrogen peroxide. The treatment using 200 ppm sulfur 'dioxide gas plus 65° heat plus 0.2% hydrogen peroxide solution was

the most effective procedure by which 95% degradation was detected in total aflatoxin content.

3.1.5. MINERAL CONTENT

The Mineral composition of fig and subtropical fruits are different in different variety of fruits. The value ls given for AI, Ba, Cu, Cr, Fe, Mn, Ni, Pb,Si, Sr, Ti, V, P, Mg, Na and Ca, 0, N, Fe, Ca and P were present at 14, 145 and 150 mg/100 g dry weight respectively. Iron, Zinc, Copper, Mangenese, Chromium, nickel and cobalt were estimated spectrophotometrically. Date showed that fig contained 11.3-28.6 ppm Fe, 2.6-10.6 ppm Zn, 2.7-6.8 ppm Cu and 2.2-8.6 ppm Co. The fig is high in Ti and Cr.

3.2. STORAGE OF FIG

The experiment was carried out with 5 varieties of fig, indicated that frozen (-50 and -193°) fig may be stored for a period of a year, that storage at 0° may be extended to 8-days, whereas storage at ambient temperature may be for only 6.-18 hours depending on the variety. Freezing in liquid "N" should be accomplished with 0.5-1.5 minutes. The storage analyses of Korean fig were carried out with 7-culltivars produced at Namhae and 3-cultivars transplanted from abroad. The prolonged storage period, fig were packaged with polythvlene (PE) films of various thicknesses and stored at 20. The total sugar content, total acidity and pectin were 37-89.6, 0.57-1.00 and 4.30-7.79% respectively. After 16 days storage, the moisture was decreased 5 % in unpacked material but in the Jot packaged with polythylene films moisture content decreased slowly.

The change in hardness, fracturability during storage showed similar patterns but adhesiveness was increased. Fruit (fig) and berries grown in Armenia were best frozen at -40 to 50°. Under these conditions they could be stored for 9-10 months

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Abstract and Key Words

An abstract (requirements for length and structured format vary by journal) should follow the title page. The abstract should provide the context or background for the study and should state the study's purposes, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations.

Because abstracts are the only substantive portion of the article indexed in many electronic databases, and the only portion many readers read, authors need to be careful that abstracts reflect the content of the article accurately. Unfortunately, many abstracts disagree with the text of the article (6). The format required for structured abstracts differs from journal to journal, and some journals use more than one structure; authors should make it a point prepare their abstracts in the format specified by the journal they have chosen.

Some journals request that, following the abstract, authors provide, and identify as such, 3 to 10 key words or short phrases that capture the main topics of the article. These will assist indexers in cross-indexing the article and may be published with the abstract. Terms from the Medical Subject Headings (MeSH) list of Index Medicus should be used; if suitable MeSH terms are not yet available for recently introduced terms, present terms may be used.

Review Article

Role of Insulin Pen Therapy to Control Diabetes

Mehreen Asghar[1], Zafar Saeed Saify[2], Khwaja Zafar Ahmed[3], Seema Ashraf[2]

ABSTRACT:
Diabetes mellitus (DM) has become a serious challenge for health care organization throughout the world due to its wide-ranging occurrence and economic burden. Now a day the major health matter that cause serious long term diseases is Diabetes. Requirement to treat DM mostly entails a multidrug regimen that includes oral hypoglycemic agents and insulin. Giatrics are at greater risk of dosing errors, hypoglycemia, hyperglycemia and other insulin administration associated issues due to poor glycemic control and very high rates of complications / associated co-morbidities of diabetes such as retinopathy, dementia, neuropathies, nephropathies, poor mobility rate. Insulin pen devices have shown a safer, easier, convenient and more acceptable method of insulin delivery and proved to have more reliability, accuracy, and simplified dosing in elders. This review article will describe the functions and discuss the potential advantages of insulin pen devices over conventional method of insulin delivery through vial and syringes.

Keywords
Insulin pen device, insulin vial/syringes, Diabetes mellitus (DM)

عنوان: ذیابیطس کے کنٹرول میں نئے طریقہ علاج یعنی Pen Therapy کا استعمال۔

ذیابیطس اور اسکی پیچیدگیاں تمام دنیا کی صحت عامہ کا خیال رکھنے والی تنظیم کے لئے لمحہ ءفکریہ کی حیثیت رکھتی ہیں۔ یہ نہ صرف مریض کو دوسرے امراض میں مبتلا کرتی ہیں بلکہ محکمہ صحت کے بجٹ پر بھی اثر انداز ہوتی ہیں۔ ذیابیطس کے علاج کے لئے مختلف دوائیں استعمال کی جاتی ہیں جو خون اور پیشاب میں شکر کی موجودگی کی مقدار کی بنا پر تبدیل کی جاتی ہیں۔ اس بات کا انحصار خاص طور پر بزرگوں پر ہوتا ہے جو دواؤں کی غلط مقدار، بھولنے کی وجہ سے خون میں شکر کم ہونے والی دوائیں دوبارہ لیتے ہیں۔ ذیابیطس کے اثرات میں غمگینی، یادداشت کی کمی، آنکھوں کی بیماری، گردے میں یوریا کی زیادتی، اور دوسری پیچیدگیاں شامل ہیں۔

انسولین کے طریقہ کار کا استعمال ہر لحاظ سے انتہائی مفید ثابت ہو رہا ہے۔ موجودہ انسولین کے نئے طریقہ علاج انسولین کے تکلیف دہ انجکشن کے مقابلے میں بہتر ثابت ہوا ہے۔

Introduction

Diabetes mellitus affects a large proportion of the population. During 2007 in United States a survey showed that 8% of the US population was suffering with DM which includes 18 million diagnosed and 5.7 million un-diagnosed diabetes mellitus (DM) patients[1]. Treatment of DM mostly requires a multidrug regimen that includes oral hypoglycemic agents and insulin. Due to poor glycemic control and very high rates of complications / associated co-morbidities of diabetes such as retinopathy, dementia, neuropathies, nephropathies and poor mobility rate, Giatrics are at greater risk for dosing errors, hypoglycemia, hyperglycemia and other issues associated with insulin administration. Glycemic control is imperative in decreasing the risk of the long-term diabetes complications associated with DM. Insulin therapy is considered to be a major feature of glycemic management, it is a high alert medication and its role in treatment of DM is very important so various concerns regarding the safety and efficacy of this high-alert medication arises. Usually elder patients are unable to self-inject insulin and rely upon caregivers which ultimately limit the use of insulin in them. Insulin users usually complain about hypoglycemia and according to various studies incidence of hypoglycemia are between 21%–27% in DM patients[2]. Drawing up correct insulin dose for injection through syringe results in significant errors in such patients due to vision loss or diabetic retinopathy. As a result there is a greater need to simplify the insulin administration in such population.

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Insulin Injecting Devices:

Uncontrolled blood glucose level may lead to micro vascular and macro vascular diseases. It is necessary to control the glycemic level by injecting the insulin. Syringes, pen, pumps and inhalers are various tools to administer insulin. Insulin pens and other modern devices may improve glycemic control. An important way to overwhelm the resistance to inject insulin by patient with diabetes is the selection of a device to inject insulin delivery that must be accurate, convenient, and acceptable and easy to use to the patient[3]. Syringes are conventional method to administer insulin, and the most advance form to inject insulin is insulin pens. The main purpose of this review article is to describe the effects of insulin pen devices and discuss the potential advantages of these devices over conventional method of insulin delivery through vial and syringes. Furthermore, patient safety, efficacy, preference, ease of use and satisfaction with these devices will be reviewed in this article.

Insulin Pens versus Insulin Vials and Syringes:

Insulin pen is the introduction of a new technique to inject insulin that, undoubtedly made insulin therapy very easy to

adhere, and showed more patient acceptance [4,5,6,7]. Various kinds of considerable benefits are obtained by using Pen treatment, as patient exhibit more flexible life and greater freedom to use an injectable device [8]. They are easy to use, have a carrying case, easy to administer dose, show more patient compliance and adherence. Insulin pumps show poor patient compliance because of painful procedure [9]. The use of pen devices is safer, easier, and more acceptable.

A number of studies showed patient preference for using an insulin pen device compared with a vial and syringe for a variety of reasons[10, 11, 12,13,14,15]. Patient perception regarding pen is a facilitating tool and easy to use and less painful than a vial and syringe[10, 12]. Pen devices are also more compact, portable and easy to grip, which may benefit those with impairments in manual dexterity. Finally, less painful injections and overall ease of use may contribute to the increased patient preference with the pen devices[16,17,18].

In a survey of diabetic patients with type 1 or type 2 showed a strongest social acceptability towards insulin pen as compared to a vial and syringe among both insulin users and nonusers [13]. The advantages of insulin pen in the treatment of DM can be found out by knowing the difference of pen devices over insulin syringes. The sensory and auditory feedback associated with the dial mechanism on many pens may also benefit those with visual impairments.

Patients on pen therapy lead a stress free life that differs from the conventional diabetic such as easily carrying the injectable device with them. With pen therapy improved metabolic control is obtained [19]. In the February 1989 editorial of Lancet reviewed and explained the description of the procedure, merits and demerits of the pen. Insulin Pen devices has been proved to show patient self-satisfaction. [20, 21] It's easy to use a pen device and it delivers enhanced dosage accurateness in comparison to a vial/ syringe. [8, 22] Effective insulin pen devices deliver insulin replacement endogenously that simulate normal physiology. [23, 24, 25, 26] As compared to syringes the compacted feature and appropriate use of pen devices have reduced the patients' concerns and societal discomfort [8].

Dosing errors:

Dosing errors are more common and serious issue with insulin administration [27]. To minimize events of hypo and hyperglycemia accurate dosing is necessary [28]. In elderly patients joints become immobile, visual disturbances occur that leads to inaccurate dosing and insulin pens are good option for such patients with these visual or physical abnormalities [18]. The magnifying glass in pen device shows the units digit Too much magnified level that can be easily read by patients having visual impairment [18].

Number of patients observed that these devices are more useful as they reduce the need for drawing up a dose [16]. Precise and accurate dose can be injected by this dial up facility of pen device. Low doses usually required by elders can be taken up by this way [17].In order to meet treatment requirements of most of the patient's, the choice between doses should be by steps of one unit of insulin, allowing tight adaptability of insulin dose. Most newly generated insulin devices deliver 60 U at a time for type 2 diabetic patients[29]. When insulin pens were compared with syringes using the same dosage regimen, no changes were usually observed in patients' blood glucose control [30], whereas when patients switch from conventional to multiple injections using a pen device the HbA1c medications are frequently being reported. Now a day's Pen injections have gained high popularity in various countries such as in France while 51% of insulin treated patients are using an insulin pen. These devices have improved the patient's suitability for multiple injection treatments. Various authors investigate improvements in the quality of life when using a pen through intensified treatment[29].

Puxty observed 13% variation in drawing up and expelling 20 units in giatric patients [31], while 19% errors were observed by Kesson and Bailie in their study due to visual and physical impairment[32]. A study showed significant reduction in events of hypoglycemia due to usage of insulin pen devices ($P < 0.05$), and enhance adherence to medication [33, 34]. Some pens having facility of audible clicking voice with selection of dose that help out accurate dosing and resulted improved glycemic control. In a trial evaluating safety and efficacy of the insulin pens as compared to vial and syringe administration, 82% of patients showed dose scale easy to read on the pen. Insulin pen have advantage of dose accuracy [18]. Same was observed by Ignaut et al [35]. Insulin therapy not only recovers insulin sensitivity but also converse insulin resistance. [36, 37]

Hypoglycemic Events:

In a study no hypoglycemic event was observed in insulin pen users. In contrary, Coscelli et al observed no decrease in hypoglycemic episodes in patients using insulin vial as compared to insulin pen[27]. In type 2 diabetes early initiation of insulin therapy improve blood glucose control, reduced threat of hypoglycemia, and decrease the body weight[38,39]. Diabetic patient's health can be improving by integrating self-management into their daily life [40].

Barriers:

The most important barriers to insulin therapy are injection pain, social stigma, wearisome dosing timings, needle anxiety, absence of apparent seriousness of disease, inconvenience of administration.[15, 41,42, 43] Diabetic Patients of insulin pens users and non-users showed positive perception when their features were compared with a vial and syringe that gave an increased patient confidence in initiating and adhering to diabetes treatment.[3, 45] Prefilled devices are available which has reduce error to administer correct insulin dose in the body, they limits manipulations and are suitably well option for bed time insulin treatment for type 2 diabetic patients. The risk of infection chances viasubcutaneous administration of insulin through pens is less and allows easy injection through clothing. Absorption is faster and reuse of syringe needles multiple times in a day is possible without side-effects. Through jet injector's precision of doses varies than with between conventional needle delivery and pens where pens turn out to be better than that of conventional syringes when examined in various studies. [8]

Conclusion:

Insulin pen is one of the insulin Injecting devices that have simplified injecting insulin and improved the adherence to therapy. The simple and easy to use pen device showed considerably decreased needle and hypoglycemia fear, which in results may improve overall patient satisfaction and health- related quality of life[46]. In youngsters acceptability of pen devices is very high and in aged patients self-injecting remains possible when vision is mildly impaired who report an easy and fast way of insulin injection and it is more comfortable and less painful. Insulin pens are becoming useful devices for increasing patient acceptability towards insulin therapy and improving their day-to-day quality of life. Insulin pens enable multiple injection regimen administration. Tellrothet al observed that the improvement in quality of life was seen during pen treatment [47]. Strauss described various other features of pen therapy with consequent increase in improvement in various diabetic patients' life [48]. In this study Three main aspects were highlighted related to the adherence to the pen therapy regimen which includes its ease to administer insulin, its effect to control diabetes symptoms, and its influence to improve quality of life. Jan Hornquist experienced that as compared to a conventional vial/ syringe methods, insulin pen offers provides more advantages[8].Pens were reported to be more exact and accurate than syringes at dispensing doses of insulin[14], especially even smaller doses [49], more patients wished to continue using an insulin pen when the efficacy and safety of the vial and syringe method were considerably compared with those of an insulin pen at delivering larger doses[15].This study disclosed that insulin pen therapy appeared to enhance the quality of life of the diabetic patients. This control appeared only in those patients using once or twice syringe daily before shifting to the pen.

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Abbreviations and Symbols

Use only standard abbreviations; the use of non-standard abbreviations can be extremely confusing to readers. Avoid abbreviations in the title. The full term for which an abbreviation stands should precede its first use in the text unless it is a standard unit of measurement.

Short Communication

Awareness of Hygienic Conditions among Students of Bachelor of Nursing (BSN), School of Nursing Civil Hospital Karachi

Farhat Khan[1], Sajid Atif Aleem[1], Kiran Rafiq[1]

ABSTRACT:
Objective: To determine the frequency of awareness of hygienic conditions among students of Bachelor of nursing (BSN).Methodology: This cross-sectional survey base study was conducted at civil hospital Karachi from April 2010 to March 2011. Two hundred and eighty eight (288) students of (BSN) school of nursing civil hospital Karachi were included in this study. A survey instrument in the form of self structured questionnaire which consist of eleven close ended questions.288 respondents were selected through convenient sampling. Results: Out of two hundred and eighty eight (288) respondent the adequate awareness had 257(89.23%) while 31(10.77%) had inadequate awareness about hygienic conditions. Conclusion: The healthcare workers understand the importance of hand washing but hygiene training sessions may need to be conducted more frequently for BSN students.

Keywords
Awareness, Hygienic conditions, Health care workers, Washing hand

عنوان: بیچلر نرسنگ اسکول سول اسپتال کراچی کے طالبِ علموں کے درمیان صحتمندانہ ماحول کے بارے میں آگاہی۔

مقصد: اس تحقیق کا مقصد نرسنگ بیچلر اسکول (BSN) کے طالبِ علموں کے درمیان حفظانِ صحت کے مطابق حالات کے بارے میں آگاہی کا مطالعہ کرتا ہے۔

طریقہ کار: یہ عمومی تحقیق (cross-sectional) اپریل 2010 سے مارچ 2011 کے درمیان سول ہسپتال کراچی میں کی گئی۔ نرسنگ سول ہسپتال کراچی کے 228 طالبِ علموں کو اس تحقیق میں شامل کیا گیا تھا۔ ایک تحقیقی آلہ سوالنامہ کی شکل میں ترتیب دیا گیا جو کہ گیارہ سوالات پر مشتمل تھا۔ دوسو اٹھاسی طالبِ علموں کو آسان معائنہ (Convenient sampling) کے ذریعے اس تحقیق میں شامل کیا گیا۔

نتائج: دوسو اٹھاسی میں سے دوسو ستاون 257 کو حفظانِ صحت پر پورے طور پر شعور تھا۔ جبکہ ۳۱ طلباء کو مناسب شعور نہیں تھا۔

خلاصہ: صحتِ عامہ کے طالبعلموں کے لئے ہاتھ دھونے کے اثرات اور حفظانِ صحت پر آگاہی کے حوالے سے پروگرام منعقد کیا جائے اور یہ معلوماتی پروگرام تواتر کے ساتھ انعقاد کرنے کی ضرورت ہے۔

Introduction

Hand hygiene is an important tool for fighting against the cross infection in healthcare system, but fulfillment of instructions is observed mostly deprived among healthcare technicians. The hand hygiene compliance approach and promotion of awareness do not rely on individual factors alone [1]. A seven quasi-experimental hospital-based study was done between 1977 and 1995, the results showed a sequential relation of improvement in hand-hygiene performance and reduction in infection occurrence [2-3]. In another study it was observed that hand cleansing with unmediated soap and water before patient care was found linked with considerably higher bacterial counts when compared the practices with an antiseptic agent. Use of unmediated soap may not prevent transfer of gram-negative bacilli to medical devices from a heavily contaminated source [4] Alcoholic hand rubs are the most effective measure and consequently, alcohol-treated hands may be less likely to transfer bacteria [5]. Most nosocomial infections result from the transmission of bacteria on the hands of health care workers. Hand washing is the single most important procedure in hospital infection control. Many studies reported in the medical literature have shown that disease-causing bacteria are carried on the hands of health care workers.[6,7]

Methodology:

This cross-sectional survey base study was conducted at Civil Hospital Karachi. Two hundred and eighty eight (288) students of (BSN) school of nursing civil hospital Karachi were included in this study. The study period was one year from April 2010 to March 2011.

A survey instrument in the form of self structured questionnaire which consist of eleven close ended questions distributed among students during extra classes for skill development to collect data for study purpose. Inclusion criteria for this study were students of Bachelor of nursing (BSN) from first year to fourth year, all the staff nurses working in Civil hospital Karachi, were in exclusion criteria. The sample size of 288 respondents was selected through convenient sampling. Question 3 to 11 consist of (Yes/No) option, every yes response were given as 1 score, and for question 1 and 2, >1 minute was given as score 1. If an individual scores $\geqslant 7$ then labeled as adequate awareness about hygienic conditions. Five minutes briefing was given on how to fill each question, purpose and different expect of study. Confidentiality was assured to all students; 10 minutes were given to fill the questionnaire. SPSS version 17 was used for statistical analysis. Frequencies and percentages were calculated for awareness. Awareness was stratified with respect to year of experience and placement.

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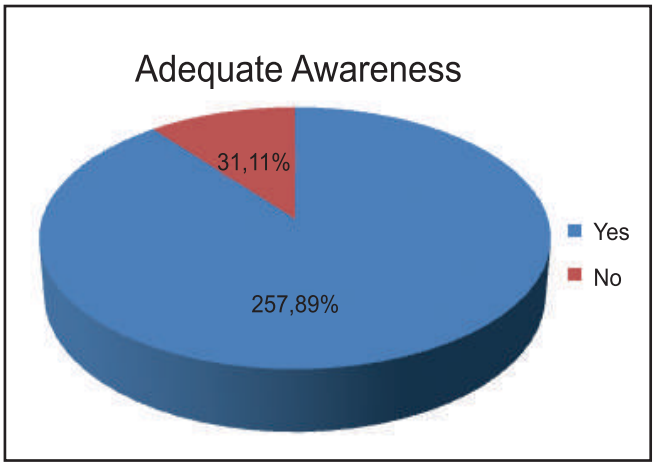
Results:

In this survey nurses and paramedical staff of public and private hospitals of Karachi were included to assess the adequate awareness about hygienic conditions. Out of 288 respondents 257(89.23%) had adequate awareness about hygienic conditions while 31(10.77%) had inadequate awareness as mention in figure 1.

In stratification of working experience between 0-1 years, out of fifty eight (58) respondents (56) had adequate awareness, similarly for working experience of 2-3 years (201) students had adequate awareness out of two hundred and thirty (230) respondents. 87.39% students who placed in public hospitals had adequate awareness regarding hygienic practices as mention in Table 1



Discussion

The present study revealed a framework that includes parameters to be considered for hand hygiene promotion. It is based on epidemiologically driven evidence and review of the current knowledge.

Our finding reveals that 257(89.23%) of our study population had adequate awareness about hygienic conditions. This finding is similar to that reported among health care staff in Lagos University Teaching Hospital (LUTH) in Nigeria (83%)[7], but higher than figures reported among HCPs in Cairo in Elgalea Government Hospital (73.1%), and Cleopatra Private Hospital (72.7%).[8,9] Strategic planning required for promotion of hand hygiene in hospitals that should include reasons for noncompliance with recommendations at individual, group, and institutional levels. Potential tools for change should address each of these elements and consider their interactivity. Physicians freely acknowledge that hand washing is an important tool in the control of nosocomial infection, but complains it's also repetitive and dull.[10,11]

The available facilities in private and public sector hospitals play an important role for the implementation of hygienic conditions through a proper hand washing among healthcare workers and the improvement in provided facilities will be responsible for developing a better health care and infection free environment.

Conclusion:

Hand hygiene training sessions may need to be conducted more frequently for BSN students with continuous monitoring and performance feedback to encourage them to follow correct hand hygiene practices.

Table 1: Frequency and Percentage with respect to working experience and Placement

		Adequate Awareness	
		Yes	No
Experience In years	0-1	56(96.55%)	2(3.45%)
	2-3	201(87.39%)	29(12.61)
Placement	Private Hospitals	56(96.55%)	2(3.45%)
	Public Hospitals	201(87.39%)	29(12.61%)

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Case Report

A rare clinical presentation of carotid body tumor: A challenge for treatment

Sameer Qureshi*[1], S.M Tariq Rafi[1], Uneeba Rehman[1], Abdur Razzaq Dogar[1]

ABSTRACT:
Carotid body tumour is most common paraganglioma occurring in head and neck region. Paraganglioma as a whole accounts for only 0.6% of all tumours of head and neck. **Conclusion:** It is unusual that a young male has presented with a huge tumour in neck compromising vital adjacent structures, which made it difficult to treat him surgically.

Keywords
Clinical presentation, carotid tumour, neck, right side

عنوان: گردن کی شریانوں کے قریب پیدا ہونے والے ٹیومر کے علاج کے طریقہ کا ایک چیلنج

گردن کے شریانوں کے قریب پیدا ہونے والے ٹیومر کا علاج آسان نہیں ہوتا ہے۔ پیرانگیوما (Paraganglioma) کا شمار تقریباً 0.6 فیصد آبادی میں ہوتا ہے۔ جسکے اثرات گردن اور سر تک جاتے ہیں۔ ایک جوان مرد میں ایسے ٹیومر کا علاج گردن کے قریبی حصوں کی اہمیت کے باعث سرجری بہت مشکل ہوتی ہے۔ اس خاص رپورٹ میں ایک مرد کے مرض کی تفصیل پیش کی گئی ہے۔

Introduction

To report a rare presentation of paraganglioma the carotid body tumor as huge mass in right side of neck in a young patient. Paraganglioma is a rare tumor and is counter part of adrenal pheochromocytoma of extra adrenal origin. Tumor grows in cells of peripheral nervous system[1]. It is also known as glomus tumor, arises from neural crest cell, located near nerves and vessels[2].Higher risk of being malignant 40-50% comparing it with pheochromocytoma [3].It has various sites of origin as Abdominal (85%), pulmonary (12%), head and neck region (3%) which is further subdivided as Carotid Body tumor (most common), glomus tympanicum, glomus jugulare, vagal paraganglioma (least common), other rare sites are larynx, nasal cavity, PNS, thyroid gland, thoracic inlet, bladder [4]. We dealt with carotid body tumor.

CASE REPORT:

An old male of age thirty six years, unmarried, resident of Tando Adam, Sindh, farmer, came via OPD in 2014. He is Smoker, with COMORBID Hepatitis C. He came with swelling on right side of neck for 5 years, mildly tender, progressively increased in size, pulsatile associated with occasional pain but there is no discharge or color change in the region. He also developed hoarseness an slurring of speech for last 1 year. Past medical history is not significant for HTN, diabetes or any other illness, non significant surgical history. He is oriented male, cooperative, stable vitally and sub-vitally. Thorough examination of Cranial Nerves 1-8 and 11 was unremarkable, while examining Cranial Nerves 9-10 showed gag reflex weakly positive, hoarseness positive, Cranial Nerve 12 slurring of speech positive, wasting of tongue right side and tongue deviated to right. Oral Cavity on inspection showed tongue wasting on right side with its right sided deviation; soft palate has no bulge; uvula, tonsillar pillars, buccal mucosa, pharyngeal region are all normal and intact and palpation of oral cavity is unremarkable. On Local examination swelling was single, extending from tip of mastoid involving parotid region up to midline, inferiorly 2cm above clavicle, posteriorly into the posterior triangle, it was globular, no discharge or color change, translumination is negative, temperature is same as that of normal skin, soft to firm, mildly tender, it is pulsatile, smooth with regular margins, non-fluctuant, Bruit is audible. On Indirect and fibre optic direct laryngoscopy right vocal cord paresis observed. Remainder of her Head and Neck and systemic examination was unremarkable. We started with normal baseline investigations preceding to specific his Urinary VMA 8.4mg/24hrs with 1050ml/24hr urinary volume. X ray neck PA and Lateral view showed huge soft tissue mass on right. Ultrasound carotid showed 9.5x8.0x7.0 mass on Right Carotid Sheath area displacing carotid artery, also encircling ICA and ECA,R I.J vein is displaced away, extensive varices along with mass having moderately increased blood flow, CCA, ECA, ICA and vertebral arteries of normal caliber, no thrombus. CT-Scan showed large self-enhancing soft tissue mass septate lesion on right of neck abutting angle of mandible anteriorly, medially extending into Para pharyngeal region, closely encircling the carotid sheath and vessels, superiorly extending through jugular foramen. FNAC was done but it was not conclusive, so incisional biopsy was done which showed findings consistent with paraganglioma. As it was a therapeutic dilemma for us that a young patient presented with a huge tumor already, caused an ambiguous approach towards treatment according to the guidelines, which would be discussed later.

DISCUSSION:

The paragangliomas appear grossly as sharply circumscribed polypoid masses and they have a firm to rubbery consistency. They are highly vascular tumors and may have a deep red color [4].Carotid body tumors (CBTs) are rare neoplasms, although they represent about 65% of head and neck paragangliomas. These tumors develop within the adventitia of the medial aspect of the carotid bifurcation [5]. Paraganglioma accounts for 0.6% of all Head and Neck Tumors [2], out of which most common is Carotid

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Body tumor occurring at bifurcation of C.C.A into E.C.A and I.C.A. It presents usually in $4^{th} – 5^{th}$ decade of life, and is painless, pulsatile mass at angle of mandible. Larger tumors may cause CN palsies (usually 10^{th} and 12^{th}). Catecholamine secreting carotid body paraganglioma is rare. Immunohistochemistry is positive for; Chromogranin, Synaptophysin, Neuron specific enolase, Serotonin, Neurofilament, Neural cell adhesion molecule,S-100 protein +/- and Histochemistry is that they are argyrophilic, periodic acid Schiff, mucicarmine and argentaffin negative [4]. A carotid body tumor can be diagnosed by ultrasound, technetium isotope scintigraphy, computed tomography, or magnetic resonance imaging. The most important invasive study for the diagnosis of chemodectomas is the selective carotid angiogram, which shows homogenous hyper intense tumor in the region of the carotid bifurcation with the characteristic saddle deformity known as lyre sign. Carotid body tumors (CBTs) are treated with either surgery or radiotherapy. When choosing treatment, consider the following factors: presence of other paragangliomas, bilateral carotid body tumors, the age and the health of the patient, and the patient's preference [6]. Treatment is surgery especially if patient is young and healthy, whereas we reserve radiotherapy for elderly patients, poor surgical candidates, patient with multiple paragangliomas and Larger tumor >5cm[7] [8]. Patient must be followed after treatment by Periodic physical examination of the head and neck,CT or MRI scan particularly if treated with radiation therapy.

CONCLUSION:

Purpose of reporting is that we have come across a therapeutic dilemma that on one hand we have a young stable patient ideal for surgical intervention, but on other hand he is having a huge sized tumor which almost twice the size proposed for the surgery, and it is closely encircling major vessels.

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Case Report

Splenic Abscess in a Child Following Perforated Appendix

Jamshed Akhtar*[1], Naima Zamir, Ramchandani Lata

ABSTRACT:

Splenic abscesses in children are infrequently reported. Splenic abscess following perforated appendix in immunocompetent child is even rarer. Herein we report a nine year old female who developed splenic abscess three weeks following appendectomy for perforated appendix. Patient underwent operation again and abscess was drained and wall was almost completely excised and spleen conserved.

Keywords

Spenic abscess, Perforated appendix, Child.

عنوان: ایک بچے میں تلّی کا پھوڑا (Splenic Abscess) مع چھوٹی آنت میں سوراخ (Perforated Apendix)

مختلف وجوہات کی سوجن اکثر بچوں میں پائی جاتی ہے۔اس سوجن کی پیچیدگی چھوٹی آنت میں زخم کی بنا پر ہو جاتی ہے۔مگر اسکا اطلاق ان بچوں پر شاذ و نادر ہی ہوتا ہے۔جو امینوناتی نظام کی کمزوری کی بنا پر ہوتے ہیں۔اس تحقیق میں ایک نو سالہ بچی جو چھوٹی آنت (Appendix) میں سوراخ ہونے کی بنا پر آپریشن کے تین ہفتہ کے بعد میں سوجن ہوئی۔اس کا دوبارہ آپریشن کیا گیا۔سوجی ہوئی آنت کو نکال دیا۔جس کے نتیجے میں تلّی کو بچا لیا گیا۔

Introduction

Acute appendicitis is a common condition in pediatric surgical practice. Usually the postoperative course is benign; but at times unexpected complications may follow. Splenic abscesses are rare in children. They are reported frequently in immunocompromized children.[1] Splenic abscess in an immunocompetent child following appendectomy is a rare occurrence. We report one such case.

CASE REPORT:

A nine year old female child admitted with three day history of right lower abdominal pain, fever and vomiting. Clinical diagnosis of acute appendicitis was made and after fluid hydration and investigations patient was operated. Perforated appendix with fecolith was found and appendectomy done. Patient was discharged on fifth postoperative day. She remained well for few days but again developed abdominal pain. This time it was on left side. Fever was also documented. Symptoms did not abate and later patient developed repeated vomiting. With these complaints she was brought o ER three weeks after appendectomy and got admitted. Patient was managed symptomatically but no improvement was noted. Ultrasound was performed with suspicion of inter-loop abscesses but no such lesion was identified on ultrasound. It was also reported that splenic parenchyma has an altered echogenicity. Patient showed little improvement with conservative approach including antibiotics. Two weeks later CT scan abdomen was advised. This time a well defined hypodense area was noted in the anterior part of the spleen (Fig 1). An impression of splenic cyst was made by the radiologist. Considering the history of appendectomy a diagnosis of splenic abscess made and surgical exploration planned.

At surgery a well defined 6cm x 6cm sized lesion found in the anterior part of spleen to which omentum was adherent. Adhesions were gently separated. After applying stay sutures aspiration of abscess was done which revealed thick yellowish material. The wall of the lesion was well defined.(Fig 2,3). It was incised carefully and partially organized abscess material was drained. The revealed part of cyst wall was excised almost in its entirety. Remaining area was curetted taking care not to damage spleen. Abdomen was closed with placement of drain. Postoperative period was uneventful and patient was discharged home in stable condition. Biopsy report of the wall was consistent with nonspecific abscess. Pus did not grow any organism.

DISCUSSION:

Splenic abscesses are often reported in immuno-compromised patients. The organisms usually spread through hematogenous route. In healthy people splenic abscesses occur infrequently. Source of infection is usually in abdomen. In index case patient had perforated appendix. Splenic abscesses have been reported during the active disease phase of typhoid fever.[2] However in our patient symptoms appeared after couple of weeks following appendectomy which is quite unusual. During this time period disease process might be in progress. This impression is made on findings of ultrasound which showed altered echogenicity of the spleen. During this stage antibiotics were continued but patient did not improve.

Splenic abscess usually present with pain in left upper quadrant and fever.[3] Same were the findings later in the course of the disease in our patient. It is only when CT scan was done that lesion was identified as a well localized hypodense area. Abscess in spleen usually is treated with

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with splenectomy.[4] However recent literature on the subject reports minimally invasive approach to be equally effective. Percutaneous aspiration under ultrasound guidance with antibiotics is a preferred mode of treatment. Laparoscopy is another approach worth trying.[5]

In our patient almost complete excision of the wall of abscess was performed without damaging spleen. This appears to be a sound approach as pathology was localized to anterior part of the spleen and was almost extruded out of it. This facilitated de-roofing and excision. Learning from this case we conclude that hematogenous spread of pathogenic organisms to spleen can result in inflammation and abscess formation even weeks after primary intrabdominal pathology has been treated. This condition must be kept in differential diagnosis of postoperative complications of perforated appendicitis.

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Fig 1: CT Scan showing Hypodense area is Spleen

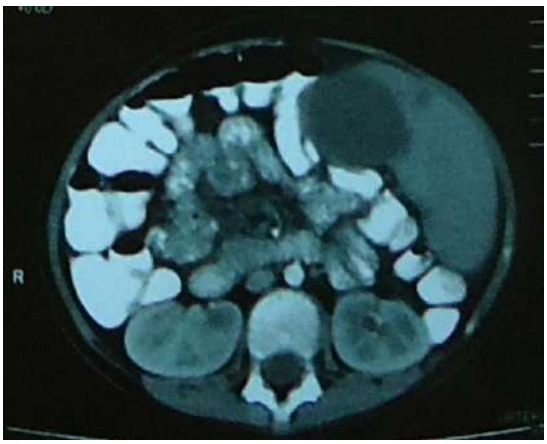

Fig 2: Cyst Protruding out of Spleen

Fig 3: Cyst laid open with stay sutures in place. Wall of the cyst appears thickened

Ramadan Leading to better life

ABSTRACTS
of

Pakistan International Biennial Conference
Ramdan and Health

(9th to 11th October 2015 ; 26th to 28th Dhul Hijjah 1436 H)

Jointly Organized by:

Jinnah Sindh Medical University

Baqai Institute of Diabetology & Endocrinology

Sir Syed Institute of Diabetes & Endocrinology

Diabetes and Ramadan; Journey from 2000-2010

Dr. Abdul Jabbar

The multi-Country retrospective observational study of the management and outcomes of patients with Diabetes during Ramadan (CREED) aimed to describe the patient characteristics and management of patients with diabetes who chose to fast during Ramadan 2010. Acknowledging differences in study design and conduct, we compare results from the subset of Type 2 diabetes (T2DM) patients in CREED with that of a study of diabetes and Ramadan in 2001.

Five hundred eight physicians in 13 countries retrospectively enrolled 3,777 patients between March and June 2011; 3,394 evaluable cases were analyzed. The T2DM subset included 3250 patients (95.8%).

Compared to the EPIDIAR patients, the CREED population was older (56.9 vs. 54.0 years), had a longer time since diagnosis (8.4 vs. 7.6 years), and had a higher BMI (28.7 vs. 27.2). Hypertension and dyslipidemia were more prevalent (62.1 vs. 48.8 and 56.6 vs. 32.5 percent, respectively). More CREED patients reported fasting 15 days during Ramadan; 94.2% vs. 78.7%. Thirty percent of T2DM patients in CREED reported fasting outside of Ramadan, with 1 in 4 patients reporting weekly fasting (not collected in EPIDIAR). Oral antidiabetic (OAD) therapy alone was the predominant baseline therapy in CREED (76.6%) and EPIDIAR (78.4%). CREED patients on OAD therapy alone were more likely to have a change in treatment (34.9%) compared to patients in EPIDIAR (25.2%). Sixty-three percent of CREED physicians reported using 1 or more recommendations for management of diabetes during Ramadan, comparable to that seen in EPIDIAR; 62%.

This study provided an important update on the characteristics and care of Muslims with diabetes who fast during Ramadan. Additional research is needed to explore perceptions, beliefs, and practices to inform the evidence-based management of diabetes during fasting.

Ramadan Fasting, Metabolic Response and Recent Evidences

Mohsen Nematy, Seyed Amir Reza Mohajeri, Peyman Rezae, Seyed Saeid Khayyatzadeh Manshadi

Each year, over a billion of Muslims fast worldwide during Ramadan. A whole month of intermittent fasting, from dawn to dusk, every year is particular only to Islam. Considering that Islam has over one billion followers worldwide, it can be assumed that few hundreds of million people observe Ramadan fasting each year. During Ramadan, the majority of Muslims have two good-sized meals, one immediately after sunset and the other just before dawn. They are allowed to eat and drink only between sunset and dawn, when they begin their day of fasting until sunset. Islamic fasting provides a unique model of intermittent fasting daily for one month. It is also distinct from regular voluntary or experimental fasting in that the faster does not drink during fasting hours. Although Islam exempts patients from fasting, many fast conceivably and their clinical condition is prone to deteriorate due to persistent gap between current expert knowledge and conclusive strong evidence regarding the pathophysiologic and metabolic alterations of fasting and the consensus that should be taken into account to implement guided managing of various patient groups during Ramadan fasting among health care professionals. In normal adults, a slight decrease in serum glucose of between 3.3 to 3.9 m mol/L (60-70 mg/dl) occurs within a few hours after fasting; the fall in serum glucose however ceases due to breakdown of glycogen, and a decrease in both glycogen synthesis and glycolysis in the liver. These changes are a result of a fall in insulin and rises in glucagon and sympathetic activity. In the first few days of Ramadan fasting serum glucose may decrease slightly, normalizing by the 20th day and showing a slight rise by the 29th day. Changes in blood lipids seem to be variable and depend probably on the quality and quantity of food consumption and the degree of weight changes. Our initial studies included the effects of Ramadan fasting on some clinical conditions consist of alterations of **body composition,** and clinically important outcomes of patients with a previous history of cardiovascular disease, **type 2 diabetes, asthma and renal colic disease. Results** have elucidated several outcomes in favor of Ramadan fasting and encourage those with mentioned diseases to consult their physicians and follow medical and scientific recommendations in an attempt to present a piece of relevant evidence, clarify future scope and provide suggestions for future investigations. Further scientific research on the medical and health-related aspects of the Ramadan fasting is needed.

2015 Malaysian Practical Guide to Diabetes Management In Ramadan

Prof. Dato' Dr. Mafauzy Mohamed

The Malaysian Practical Guide to Diabetes Management in Ramadan was launched in March this year to provide a clear and concise approach to all health care providers regarding management of diabetes during fasting, particularly in Ramadan so that diabetic patients may fast safely and do not develop acute diabetes related complications such as hypoglycemia, hyperglycemia and dehydration. Health care providers should firstly evaluate the risk of developing complications during fasting for each patient. Those with very high risk and high risk of developing complications should be advised to abstain from fasting. Very high risk and high risk patients include those with recent history of severe diabetes complications, hypoglycaemia unawareness, sustained poor glycemic control, pregnancy, advanced renal failure, living alone and treated with insulin or sulphonylureas and old age with ill health. Changes in diet and medication may need to be made during fasting. Dose and timing of anti-hypertensive medications may need to be adjusted to prevent hypotension. Diuretics should be used with caution to avoid volume depletion. Patients should be educated on the risks of fasting, blood glucose monitoring, when to stop fasting, meal planning and food choices, physical activity, medication administration and management of acute

activity, medication administration and management of acute complications. For meals, *sahur* should never be skipped and should be taken as close to *imsak* to avoid prolonged fasting and *iftar* should not be delayed. Meals should consist of balanced meal and avoid high-sugary, fried, fatty and salty foods. Excessive binging following fasting is also to be avoided. For oral anti-diabetic agents, there is a need to change the dose and timing especially for insulin secretagogues as they have a higher risk of hypoglycaemia. Insulin therapy should also be adjusted accordingly and self-monitoring of blood glucose is required to determine the appropriate insulin dose. In summary, this Practical Guide will help healthcare providers manage patients practise fasting safely

Effect of Ramadan Fasting on Diabetes Mellitus: A Global major public Health problem

Abdulbari Bener, Mohammad T. Yousaf Zai

Background: Over one billion Muslims fast worldwide during the month of Ramadan. Fasting during Ramadan is a radical change in life style for the period of a lunar month and it might affect the biochemical parameters among diabetic patients. Aim: This study aimed to investigate the effect of Ramadan fasting on the blood levels of glucose, glycated haemoglobin (HbA1c) and lipid profile among diabetic patients observing fast during the Ramadan. Subjects and methods: An observational study recruiting 1301 Muslim diabetic patients above 18 years age was conducted in diabetic outpatient clinic of Hamad General Hospital, Hamad Medical Corporation (HMC) and Primary Health Care Centre [PHC], Qatar during July 2012 to September 2013. Data on socio-demographic characteristics (age, gender, nationality, marital status, education level, and occupation) and life style habits (smoking and physical activity), blood pressures, and anthropometric measurements were obtained via a face to face interview and measurement using a structured questionnaire. Blood samples were collected for testing glucose, glycosylated haemoglobin (HbA1C), lipid profile, urea and creatinine. Results: Slightly less than half of the participants were overweight (BMI: 25-29.9). Significantly higher proportion of female participants were obese as compared to male ($p<0.001$). Among both males and females the average level of blood glucose HbA1c, total cholesterol, low and high density lipoprotein cholesterol, triglycerides, albumin, bilirubin, uric acid and systolic and diastolic blood pressures were significantly lower during the Ramadan as compared to before Ramadan ($P<0.001$ each).Conclusion: Results revealed that fasting during Ramadan is significantly associated with decrease in blood lipid profile, blood pressures, glucose and HbA1C level among diabetic patients. Muslim diabetic patients after the consultation of their primary physician can fast during the month of Ramadan and it might be beneficial for their health.

Management of Diabetes during Ramadan: Update 2015

Dr. A.Samad Shera

"O you who believe! Fasting has been prescribed to you as it was prescribed to those before you so that you attain Taqwa" (Holy Quran 2:183) (self restraint, God Awareness)

All diabetic patients should consult their doctor two months prior to Ramadan,targetting HbA1c to < 8. Specific attention should be given to the well-being of the patient, glycaemia, blood pressure and lipids. During this assessment, necessary changes in the diet or medication regimen should be made so that the patient initiates fasting while already on stable and effective programme. Patient must have the means to monitor his blood glucose before and after sehar and iftar and additionally if there are symptoms of hypoglycaemia.

Breaking the Fast: All patients must end their fast if blood glucose is < 60mg/dl at any time, < 70 mg in the first few hours after the start of the fast or if blood glucose exceeds 300 mg/dl with symptoms of hyperglycaemia.

Nutrition "Complex" carbohydrates are advisable at Sehar meal (delay in absorption) .Simple carbohydrates are more appropriate at Iftar meal .Increase liquid intake during non-fasting hours. Delay Sehar meal as much as possible.

Exercise: **Best time for walk is before Sehar meal**.
Maintain normal level of physical activity.

Treatment: According to the treatment received, diabetic patients can be divided into three groups:

Group 1: Patients in whom blood sugar is under control on diet only can fast, provided they continue with diet control.

Group 2 : Patients in whom blood sugar is under control on diet and blood glucose lowering tablets can also fast but they have to follow the following instructions:

(a) If they are taking oral tablets in single dose in the morning, then they should continue with the same dose but at the time of breaking the fast (Iftar)

(b) If they are on twice daily doses, continue the two doses but with the following modifications in the timings and quantity of drugs:

(i) The morning tablets taken on normal days should be taken at the time of Iftar. The dose will remain the same.

(ii) The second dose is taken at the time of starting fast (Sehar) but reduce this dose to half of the evening dose.

© If they are taking tablets three times a day then they should consult their doctor.

Group 3: Patients who are on Insulin Patients on insulin are not suitable candidates for fasting. If they insist on fasting then they should be willing to breakfast if hypoglycaemia develops. Shorter acting insulins and non premixed insulins rather than premixed insulins are recommended.

Key Message

- Insulin injections taken during fasting do not invalidate the fast

It is permissible to have a blood test whilst fasting. Do not use alcohol swab, as it is absorbed into the body through the skin.

Does Ramadan fasting effects fetal growth?

Nazli Hossain

Objective: to determine the effect of maternal Ramadan fasting on fetal biometry and Doppler indices. **Methods:** A total of 67 women, in second or third trimester were recruited. Group A included 39 women, who fasted during Ramadan, and Group B included 28 non-fasting women. Fetal growth parameters (bi parietal diameter BPD, head circumference HC, abdominal circumference AC, femur length FL, amniotic fluid volume AFI) and Doppler indices were done for both groups before and after the month of Ramadan. **Result:** Increase in fetal growth parameters was similar in both groups. Doppler indices between two groups also did not show any significant difference. **Conclusion:** Study shows that maternal fasting during Ramadan does not affect fetal growth.

Key words: Ramadan, fetal growth, Pakistan

Fasting and Brain Health

Mohammad Wasay

Brain and mental health are considered one of the most important aspects of human health. Brain diseases constitute 8-10% of total burden and are associated with high disability and morbidity. Fasting and brain health has been a important research topic in last decade.

Fasting slows down neurodegenerative process and promotes neurogenesis and synaptic connections which helps neurogeneration. Fasting leads to significant improvement in depression and depressive symptoms. Proposed mechanism is increase in Serotonin levels in frontal and temporal lobes. There are number of studies indicating improvement in Anxiety, Panic attacks and mood swings among Bipolar disorder patients after two to three weeks fasting. One study showed improvement in Mania and Hypomania after fasting.

Stroke is one of most disabling disease with second highest mortality in world. Stroke incidence is reduced due to fasting. Suggested mechanisms are better blood pressure, sugar and lipid level control and abstinence from tobacco use during fasting. Fasting leads to increase Cytokines and BDNF levels in brain which may have neuroprotective effects.Fasting may help better control of seizures among epilepsy patients. There are reports of positive effects of fasting in patients with Huntinton's disaes and Alzheimers disease. Most notable effect of fasting is reported in refractory Schizophrenia patients. 60% patients with refractory schizophrenia improved after two weeks of fasting.Overall fasting improves cognitive functions, self-control and discipline among healthy individuals.

To Fast or Not To Fast-A Concern for Renal Patients

Dr. Aasim Ahmed

There are many renal diseases, form renal stones, patients with different levels of GFR, those on maintenance hemodialysis and those that have received a renal transplant and those that have donated. Prolonged fasting effects them differently and more than fasting it's the 'feasting' or the change in diet rich in fruits, drinks and oil that effect these patients even more.

There will be a review of literature and two recently completed studies at The Kidney Centre Post Graduate training institute will be presented.

Is it safe to Fast during Pregnancy

Shabeen Naz Masood

Background: Ramadan fasting is obligatory for every Muslim adult and sane individual [*Al-Baqarah 2:183*]. About three quarters of pregnant Muslim women worldwide choose to fast during Ramadan despite the clear flexibility they are given by Islamic Sharia to decide not to fast. Few studies have examined the untoward effects of maternal fasting on the wellbeing of the mother and fetus. However the fasting pregnant woman has no inappropriate effect on intrauterine growth and birth-time indices and neither lead to maternal ketonemia or ketonuria. Some studies suggested that pregnant women can fast at no risk of premature birth up to the 20th week, however, it could be dangerous between the 21st and 37th week. Similarly CTG changes in fetal heart rate tracings are found to be insignificant in mothers who fast during Ramadan. **Conclusion:** The practice of fasting during Ramadan by mothers of infants and young children should not be viewed solely from the perspective of feeding and nutrition.

Safety of fasting in patients with type 1 diabetes during Ramadan: a Prospective study from Pakistan

Dr.Saif ul Haque

Aims: To observe safety of fasting in patients with type 1 diabetes during Ramadan. **Methods:** A prospective, case control study was conducted in the Out-patient department of Baqai Institute of Diabetology and Endocrinology from June to September 2013.The study was carried out in two phases; Pre-Ramadan recruitment phase (Visit A) and Post-Ramadan follow-up phase (Visit B) of the same patients. In visit A, Ramadan-specific diabetes education was delivered by health care providers in group session and educational material provided to each patient. **Results:** Sixty two patients with type 1 diabetes (42 in fasting and 20 in non-fasting group) participated in the study. No significant change ($p > 0.05$) observed in weight and HbA1c of fasting and non-fasting groups before and after Ramadan. During Ramadan, out of 1380 blood glucose readings in fasting group, there were 98 (7.1%) and 570 (41.3%) episodes of hypoglycemia and hyperglycemia respectively. None of the patients developed diabetic ketoacidosis and none required hospitalization. No significant difference ($p > 0.05$) observed in the frequency of hypoglycemia while hyperglycemia increased ($p < 0.05$) when glycemic status during Ramadan was compared with Pre-Ramadan. No significant difference ($p > 0.05$) observed in the frequency of hypoglycemia and hyperglycemia when Ramadan was compared with Post-Ramadan. **Conclusion:** We observed that majority of patients with type 1 diabetes did not have serious acute complications of diabetes during Ramadan. Safety of fasting can be ensured in patients with type 1 diabetes with Ramadan-specific diabetes education and medical supervision.

Keywords: Ramadan, type 1 diabetes, fasting

Dietary Patterns, Glycemic Control and Compliance To Dietary Advice Among Fasting Patients With Diabetes During Ramadan

Rubina Hakeem

Aims: To observe the association between different dietary patterns and glycemic control and compliance to dietary advice among fasting patients with diabetes during Ramadan. **Methodology:** This prospective study was conducted at the Outpatient department of Baqai Institute of Diabetology and Endocrinology. Two educational sessions were given to each patient, one by a doctor and the other by a dietitian on one-to-one basis. During educational session with the dietitian individual counseling was provided to the patients to encourage i) adequate intake of energy ii) consuming balanced meals and iii) spreading carbohydrate intake over various meals of the day. All subjects were advised to keep record of food intake for all the fasting days and note their blood glucose readings on a chart for at least 15 fasting days, twice a day with at least one reading in the fasting state. **Results:** A total of 1950 daily food records were available. Commensurate blood glucose records were available for 839 of these daily food records. Usable diet records were available from 57 subjects, (24 males, 33 females). Moderate energy and lower carbohydrate diet pattern was found to have statistically significant positive association with the occurrence of normoglycemia ($p = 0.014$). Rates of normoglycemia increased and hyper and hypoglycemia decreased with increasing compliance scores ($p = 0.04$). **Conclusion:** We observed that normoglycemia was not only significantly associated with certain dietary patterns but also with compliance to dietary recommendations. Findings of the study highlight the need for Ramadan related dietary advice for patients with diabetes.

Keywords: Ramadan, diet, glycemic control, compliance.

The role of Diabetes Education in the management of Diabetes during Ramadan: What evidences do we have?

Mussarat Riaz

Fasting during the holy month of Ramadan is one of the five pillars of Islam. Muslim constitute more than 1.66 billion of the world population. Globally, approximately 50 million Muslims with diabetes fast each year. A prospective study was done to observe the effects of active glucose monitoring, alteration of drug dosage and timing, dietary counseling and patient education among 110 subjects and it was observed that majority of the patients did not have any serious acute complications during Ramadan. Another retrospective study was conducted among 1050 subjects to discern Ramadan related awareness, practice and experiences of diabetic patients. The findings showed that all diabetic patients who chose to fast must at least be trained and convinced to monitor their blood glucose levels as soon as they feels hypoglycemia and should be counseled to break the fast if the blood glucose gets critically low. One more multi centered prospective study observed the outcome of implementation of Ramadan-Specific diabetes management recommendations in fasting individuals with diabetes through health care providers. The study concludes that patients with diabetes who intend to fast should undergo Pre-Ramadan assessment and receive appropriate highly individualized patient education. In another study the level of Ramadan-specific education in patients with diabetes were compared at a primary and a tertiary care centers. The findings have identified that Ramadan-specific education level of patients at tertiary was better compared to patients at primary care center. Ramadan-specific education should be discussed compressively by health care providers before Ramadan to ensure safe fasting in patients with diabetes and ideally should include alteration in drug dosage and timings, self monitoring of blood glucose, avoidance of physical activity during ramadan, Awareness of possible complications, discussion about diet and fluid intake and most importantly when to break the fast.

Diabetes and Ramadan: Recent Endeavors from Pakistan

Abbas Raza

Muslims constitute 1.6 billion i.e. 23.4% of the estimated 2010 world population of 6.9 billion. All healthy adult Muslims are obligated to fast during Ramadan each year. A decade ago, population based, retrospective study, Epidemiology of Diabetes and Ramadan (EPIDIAR), conducted in 12,243 patients with diabetes in 13 Islamic countries showed that 43% and 79% of patients with type 1 and type 2 diabetes reported fasting during Ramadan (EPIDIAR).Those findings reveals that rate of normoglycemia increased and that of hyper and hypoglycemia decreased with increasing compliance scores and the difference in rates was statistically significant. Structured Ramadan-specific dietary advice should be given to every individual with diabetes who intends to observe the fast prior to Ramadan. Several Ramadan-specific studies have been conducted in Pakistan such as Comparison of Ramadan-specific education level in patients with diabetes seen at a Primary and a Tertiary care center of Karachi-Pakistan, Fasting and feasting safely during Ramadan in the diabetic patient, Glycemic trend during Ramadan in fasting diabetic subjects: A Study from Pakistan, Ramadan Prospective Diabetes Study: the role of drug dosage and timing alteration, active glucose monitoring and patient education.

On basis of those studies; some recommendations have been formulated including all patients should take at least 3 meals a day i.e. Sehri, Iftar and Dinner. Patient must have early Iftar and late Suhoor to prevent hypo during fasting. Plenty of non sugary fluids, avoid refined foods, target blood glucose levels during Ramadan fasting should be between 100 – 200 mg/dl. Our patients should understand that they must always and immediately end their fast if hypoglycemia (blood glucose of < 60mg/dl) occurs because their blood glucose may drop further if they delay treatment. Patients with diabetes having blood glucose levels > 300 mg / dl

Patients with diabetes having blood glucose levels > 300 mg / dl should consult their respective treating physicians before a decision to break the fast is made. Pakistan is also working with international bodies such as DAR International Alliance, International Diabetes Federation (IDF) and Emirates Diabetes Society (EDS) to develop Ramadan-specific international guidelines. Several awareness programs have been arranged to train the people with diabetes for Ramadan- specific self-management and numerous workshops have been delivered to trained health care professionals across the country.

Regulation of Drug Administration During Ramadan

Prof. Dr.Z.S.Saify, Seema Ashraf, Dr. S.M.Ghufran Saeed

During Ramadan, accurate distribution of drugs recommended twice a day is difficult to achieve between the break from fasting and the beginning of fasting. A patient with wo doses could take the first one at the break of fasting and the second one before the beginning of fasting, in which case the dosing time and the time span between the doses are both changed. These modifications possibly will affect the drug's plasma concentration profile and, therefore, its efficacy and tolerance. This is even more relevant for drugs with a narrow therapeutic index as the risk of toxicity is higher. A drug with a longer elimination half-life should be used. Such drugs will have a longer duration of action and can therefore be taken at longer intervals, such as once a day. This is the case with non-steroidal anti-inflammatory drugs that are used for joint disease such as arthritis: ibuprofen (half-life 2-3 hours), flurbiprofen (3-4 hours), naproxen (12-15 hours), and piroxicam (26-38 hours) are some examples. Patients who are prescribed drugs such as ibuprofen or flurbiprofen need to take doses three or four times a day to maintain a concentration of the drug in the body tissues sufficient to provide adequate pain relief. These drugs could be replaced by a single daily dose of piroxicam, which is more suitable for the fasting patient. Although fasting during Ramadan does not seem to increase hospitalizations for congestive heart failure however, patients with decompensated heart failure or those requiring large doses of diuretics are strongly advised not to fast, particularly when Ramadan falls in summer. Patients with controlled hypertension can safely fast. However, patients with resistant hypertension should be advised not to fast until their blood pressure is reasonably controlled. Patients with recent myocardial infarction, unstable angina, recent cardiac intervention or cardiac surgery should avoid fasting. Physician advice should be individualized and patients are encouraged to seek medical advice before fasting in order to adjust their medications.

Keywords: Ramadan, half-life, fasting.

Characteristics of Fasting and Ramadan-Specific Diabetes Education Trends In Patients With Diabetes (CARE); A Multinational Survey (2014)

Muhammad Yakoob Ahmedani

Aims: To observe the characteristics of fasting, trends of Ramadan-specific diabetes education and implementation of diabetes management recommendations in fasting patients with diabetes during Ramadan. **Methodology:** This observational study was conducted in 7 countries. Inclusion of patients for the study began immediately after the end of Ramadan (August) of Muslim year 1435 (i.e., 2014) until December 2014. Standardized questionnaire-based, face-to-face interview was conducted on one-to-one basis. An identical questionnaire was used in each country. Data was analyzed using Statistical Package for Social Sciences (SPSS), version 17.0.**Results:** A total of 6610 patients with diabetes (260 patients with type 1 and 6350 patients with type 2) participated in the survey. Ramadan-specific diabetes education was received by 3142 (47.5%) patients, drug dosage and timings were altered in 4371 (66.1%) and dietary advice was received by 4636 (70.1%) patients with diabetes before Ramadan. For analysis, patients were identified in two groups; Group A (Received Ramadan-specific diabetes education) and Group B (Did not receive Ramadan-specific diabetes education). Frequency of symptomatic hypoglycemia and hyperglycemia was not significantly different in the two groups ($p > 0.05$), however, the frequency of severe hypoglycemia and hyperglycemia were less ($p < 0.0001$) in Group A compared to Group B. Group A was also significantly better ($p < 0.0001$) in following Ramadan-specific diabetes management recommendations. **Conclusion:** The findings of our study suggest that patients who received Ramadan-specific diabetes education had lesser severe acute complications of diabetes during Ramadan. Ramadan-specific diabetes management recommendations are still not completely implemented.

Keywords: Ramadan, education, diabetes, fasting

Can We Achieve Better Outcome in Ramadan in The Management Of Diabetes & Role Of CGMS

Prof A.H. Aamir

Ramadan is one of the key pillars of Islam and being healthy adult Muslim this is obligatory to fast during the month of Ramadan. It is particulary challenging to fast with Diabetes because of the hours required to fast and treatment regimes required to control diabetes during fasting .One of the most important challenges is Hypoglyceamia and its avoidance if a diabetic fasts. We have previous tools like SMBG to look after this but with modern tools of CGMS it might change the outlook for our diabetes management on personal and professional level. This talk will focus on these possibilities with modern tools for our Diabetic patients who intend to fast.

Dose Adjustment in Insulin Therapy During Ramadan

Dr. Qamar Mansoor

People with diabetes have strong desire to fast, fasting in most instances have beneficial effect on health, particularly in terms of metabolic control. Most of the patients withtype 2 &selected patients with type 1 diabetes can fast if they have done necessary preparation. Important considerations in evaluation for admissibility of fasting would be willingness of the patient to break their fast if hypoglycemia occurs, hypoglycemia unawareness, patients with frequent and severe hypoglycemic episodes, patients with poorly controlled diabetes and patients with advance complications. Most patients who are on insulin can fast during Ramadan, provided proper teaching and dosage adjustments are done prior to fasting. Blood Glucose targets at different times of the day should be communicated to the patients so that if there is a major deviation from these targets than appropriate adjustments can be done to avoid hypo or hyperglycemic crises. In the current era of modern insulin with varying pharmacokinetic profiles, an individualized insulin regimen can be prescribed to most patients with diabetes. Fasting is safe for patients using insulin and insulin is a safer and most effective treatment option for patients with diabetes.

Nutritional Variations In Ramadan In Young Female Medical Students.

S. Naseem, M.Zaman Shaikh,

Ramadan, the month of fasting, is observed by Muslims all over the world. Fasting is obligatory for all healthy adult Muslims which amounts to refraining from eating and drinking from predawn to sunset. The dietary patterns therefore totally change. The traditional sugar drinks and foods rich in fat taken at iftar should be avoided. Nutritional variations may also take place in terms of more fried foods, consumption of fruits and sugary drinks. This may pose a problem in patients with preexisting diseases like dislipidemias and diabetes on one hand and on the other hand increased intake of fruits is beneficial for health.**Background:** The present study is aimed to assess the effects of Ramadan fasting on caloric intake and nutritional variations and their impact on general health. **Methods:** 100 adult educated female subjects who fasted in Ramadan for 20 days or more, were given a 2 page detailed questionnaire to document their intake and nutritional variations during Ramadan as compared to non fasting day to day diet. This questionnaire was designed to evaluate their eating patterns, intake of food during Ramadan as compared to that on normal days. Questionnaire evaluated the intake in terms of calories meal to meal and any variation in nutritional intake.Any variations in intake of tea and water were also documented in the questionnaire. **Results:** Caloric Intake during Ramadan remained the same as compared to non fasting days in (n=80) while only 20% (n=20) showed nutritional variations. Of those who showed nutritional variations 5% (n=5) reported increased consumption of fresh fruits while 15% (n=15) reported a variation in their eating pattern in terms of increased consumption of fried foods. However of these 15% who took more fried foods, their consumption of total food was decreased, so the overall caloric intake ratio did not vary from the non fasting days. 2% subjects reported as taking sugary drinks during Ramadan (n=2). Intake of water reduced in 20% subjects during Ramadan (n=20) while consumption of tea reduced in 41% (n=41) subjects. Only 8% subjects reported to have taken fast foods during normal days while 1% took fast foods during Ramadan. **Conclusions:** In a cohort of young educated female population aged 23-25, there is awareness about healthy eating and there were very few variations in their nutritional intake in terms of calories and quality of food, This is very similar to another study done Ramadan fasting leads to reduced consumption of tea and water. The intake of fast food was also lower in Ramadan. It would be interesting to undertake similar studies in other population groups and look at the comparisons.

Diabetes & Ramadan recent Endeavour's from Pakistan

Abdul Basit

Muslims constitute 1.6 billion i.e. 23.4% of the estimated 2010 world population of 6.9 billion. All healthy adult Muslims are obligated to fast during Ramadan each year. A decade ago, population based, retrospective study, Epidemiology of Diabetes and Ramadan (EPIDIAR), conducted in 12,243 patients with diabetes in 13 Islamic countries showed that 43% and 79% of patients with type 1 and type 2 diabetes reported fasting during Ramadan (EPIDIAR)

The challenges were to define healthy with diabetes and to balance fasting obligation ensuring safety concerns. Also to avoid extremes of opinions (ifraathaurtafreeth) in religion and to respect patients values with modesty and scientific evidence. We needed studies without any particular molecule but biochemical testing was a challenge as there were myths of Roza and breaking fast with SMBG / insulin etc.

Hence Ramadan Study Group was found in 2008 headed by Prof. Muhammad Yakoob Ahmedani. Diabetes education including dietary modifications were identified and a term pre ramadan counseling as they say pre-pregnancy counselling was labelled. Workshop and CMEs are conducted for educating doctors and diabetes educators. NADEP.Con and D-Net covered Ramadan comprehensively at national and international levels. Website www.ramadandiabetes.com has been developed. Educational material was developed. Major contribution was made for Conversation Map Tools (CMT) of Ramadan that was launched in Pakistan by BIDE Ramadan Study Group.

1st Diabetes Education Study Group (DESG) of the European Association for the Study of Diabetes, was held on

March 12, 2013 at the British Muslim Heritage Center "BMHC", Manchester, UK. DAR International Alliance 3rd Forum, Dubai, was held on April 17, 2015. The forum was attended by International Faculty including Sir Michael Hirst, IDF President, Dr. Shaukat Sadikot, IDF President Elect, Dr Adel El-Sayed, IDF-MENA Region Chair, Dr Evariste Bouenizabila, IDF- Africa Chair, Dr Line Kleinbreil, DESG Chair, Dr. Abdel razzq Al-Madani, President of EDS, and many other experts in the field. DAR Core Group for development of Ramadan Guidelines has been formed.

Future plans are to ensure safe fasting for millions in the community fast at primary care level. We need awareness for masses including dietary guidelines customized for local, regional, ethnic groups and religious aspects comprehensively covered including fasting in weather and time zone extremes. Translational research will eventually help in implementation of guidelines. It is important to mention that Islam is a comprehensive religion. (This day I accomplished the religion for you and perfected my blessings upon you and have chosen the religion of Islam for you). It proves that Allah has perfected the religion through **Hadrat Muhammad** and Islam has become a complete and perfect religion for all times to come. (Parah 6, Surah Maidah, Ayat 3)

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consumption of fresh fruits while 15% (n=15) reported a variation in their eating pattern in terms of increased consumption of fried foods. However of these 15% who took more fried foods, their consumption of total food was decreased, so the overall caloric intake ratio did not vary from the non fasting days. 2% subjects reported as taking sugary drinks during Ramadan (n=2). Intake of water reduced in 20% subjects during Ramadan (n=20) while consumption of tea reduced in 41% (n=41) subjects. Only 8% subjects reported to have taken fast foods during normal days while 1% took fast foods during Ramadan. **Conclusions:** In a cohort of young educated female population aged 23-25, there is awareness about healthy eating and there were very few variations in their nutritional intake in terms of calories and quality of food, This is very similar to another study done Ramadan fasting leads to reduced consumption of tea and water. The intake of fast food was also lower in Ramadan. It would be interesting to undertake similar studies in other population groups and look at the comparisons.

Frequency of Peptic Ulcer Perforation during Fasting and Without Fasting

Mariam Malik, Sughra Perveen, Mazhar Iqbal, Mohammad Iqbal Khan

Objective: To find out the frequency of peptic ulcer perforation during fasting in the month of Ramadan with non-fasting during other months. **Study design:** Descriptive case series. **Place and duration of study:** Department of Surgery Ward-3 Jinnah Postgraduate Medical Center Karachi, from January 2005 to November 2014. **Methodology:**The data of 220 patients who were operated due to peptic ulcer perforation, was analylsed. Patients were divided into 2 groups. Group I (n= 139) included patients who were operated in the months other than Ramadan, while group II (n= 81) included patients who were operated during the month of Ramadan. The patients of peptic ulcer due to malignancy were excluded.Results: Of the total there were 209 male and 11 female patients. Age range was 12 year to 65 year. Most of the patients (n=178 – 85%) were between 20 year to 50 year of age. Frequency of perforation was highest in Ramadan then in Shawal month and was less in other months of the year. On average patients with peptic ulcer in Ramadan were 8.1 and in non-fasting months 1.2.**Conclusion:**The frequency of perforation in peptic ulcer disease was higher in Ramadan month during fasting state as compared to other months of the year.

Keywords:

Perforated peptic ulcer, Ramadan, Fasting.

Effect of Ramadan Fasting on Glucose Level, Lipid Profile HbA1c and Uric Acid among Medical Students of Karachi

Nazeer Khan, Fatima Kanwal, Abdur Rashid, Hassaan Ahmed, Faiza Aslam*

Objective: To assess the effect of Ramadan fasting on blood pressure, fasting glucose, cholesterol, triglyceride, high density lipid, low density lipid, uric acid, HbA1c, weight, body mass index, body adiposity index and visceral adiposity index among fasting medical students. Methodology: Thirty five healthy medical students were invited to participate in this study. The participants were requested to visit three times: in last ten days of Shaban, Ramadan and Shawwal of 1432 H for blood pressure and anthropometric measurements and an interview for questionnaire. The inclusion criterion was at least 20 days of fasting in the forthcoming Ramadan. Blood sample (12 hours fasting) was taken in each visit to determine the level of glucose, cholesterol, triglyceride, uric acid, HDL-C, LDL-C and HbA1c.Total physical activity, weight-to-height ratio, body adiposity index and visceral adiposity index were calculated to measure the effect of weight and insulin sensitivity. Results: The changes in the anthropometric measurements; weight, body mass index, hips and waist were statistically insignificant. The active/inactive covariate variable did not show any significant difference in any of the anthropometric variables. However, waist to height ratio was decreased continuously in the three visits and the mean difference between Shaban and Shawwal was statistically significant.The changes in the systolic blood pressure, fasting blood sugar and triglyceride in the three visits were statistically insignificant. Diastolic blood pressure increased significantly from Shaban to Shawwal. Mean total cholesterol decreased significantly from Shaban to Shawwal. Mean HDL decreased significantly in Ramadan, while LDL increased significantly during this period. HbA1c and uric acid both have increased significantly in Ramadan. Body adiposity index also increased significantly in Ramdan. Conclusion: These results indicate that there are conflicting findings regarding the effects of Ramadan on young adults of university students. It is mainly due to cultural and regional conducts of daily practices of sleeping and eating habits different nationalities during the month of Ramadan.

Effect of Ramadan on the Weight of Female Students of JSMU

Farhat Khan, Sajid Atif Aleem

Background: Ramadan is the holiest month in the Islamic calendar and Muslims fast during this month Ramadan fasting is one of the five pillars of Islam, and is observed by millions of Muslims all over the world. **Objectives:** This study was conducted to Compare the weight of female medical students of JSMU in pre and post Arabic month of Ramadan. **Methods:** The sample of hundred (100) female students of age 20-26 years who was keep ⩾ 20 fast and willing to participate was included in our study. The sample size was selected through simple random sampling for this quasi experimental study. Pre weight before 1 week of Ramadan and post weight after 1 week of Eid was recorded to assess the significant difference between pre and post weight of female. Weight was measure by principle investigator herself. **Results:** Findings of this study showed that Ramadan fast significantly reduced the body weight (p=0.006).On the other hand statistically non-significant effect was observed in pre and post weight of girls who do not offer taraveh but fasting i.e. (p=0.600) in comparison with those who offer taraveh a highly significant effect was observed i.e. (p=0.007). **Conclusion:** Findings of this study revealed that effect of Ramadan fasting significantly associated with body weight and may be beneficial to health.

Key Words*:* Ramadan Fasting, Pre & post weight, Female

First Day of Ramadan Headache and Gastrointestinal Effects

H.M. Aamir, Fiza Khan, Hannah Paul, Aruba Khan, Adiya Dossal

Objective: To find the frequency of the fasting people who become sick on the first day of Ramadan after Iftar and to find any association between the sickness and any co morbidities like diabetes, cardiovascular diseases, hypertension and hemolytic anemia. **Methodology:** This cross-sectional survey based study was designed to assess the frequency of the fasting people who become sick on the first day of Ramadan and its association with co-morbidities. Three hundred and eighty five questionnaires filled by medical students and faculty members of Jinnah Sindh Medical University, Fatima Jinnah Dental College, Sir Syed College for Medical Sciences for Girls and relatives, neighborhood of investigators. The sample size was collected through simple random sampling. **Results:** Findings of this study showed that prevalence of sickness before and after iftar was (31.4%) and (17.1%) respectively. In this study we divided the respondent into two groups. Group A consist of those who had headache before Iftar and group B who had headache after Iftar and we found a significant association of sickness and first day of Ramadan before and after Iftar i.e.(P=0.0001). In group A significant association was found between fasting and dizziness and nausea. In group B significant association was found with nausea,diarrhea and drowsiness with fasting. **Conclusion:** First day of Ramadan was a significant precipitating factor for headache. The reason of headache was probably multifactorial.

Keywords:

Ramadan fasting, Headache, First day, diabetes, cardiovascular diseases

Affects Of Fasting During the Month of Ramadan and Cheif Dental Complaints in Low Socioeconomic Status People of Gadap Town, Karachi, Pakistan

Prof. Dr. S.M. Kefi Iqbal

Objective: To determine the chief complains reported in a private dental hospital of Karachi during, pre and post months of the Ramadan Materials and Methods: Patients (Age range 15-70 years) attended the OPD of Baqai Dental College are included in this study in year 2014 (Hijri 1435). The Baqai Dental College hospital OPD record of 2014 was scrutinized for chief complains by the principal investigator. Data was analyzed using SPSS version 16. Results: The percentage of complains are as follows. Pain having 58.9% in Ramadan, 53.3% in Pre-Ramadan, 55.5% in Post-Ramadan and results are insignificant with (P<0.274).Swelling having 4.7% in Ramadan, 2% in Pre-Ramadan, 3.2% in Post-Ramadan and results are insignificant with (P<0.077).Medication having 0.9% in Ramadan, 0.7% in Pre-Ramadan,0.6% in Post-Ramadan and results are insignificant with (p<0.872). Periodontal having 16.9% in Ramadan, 20.5% in Pre-Ramadan, 17.4% in Post-Ramadan and results are insignificant with (p<0.781). Hypersensitivity having 6.0% in Ramadan, 6.6% in Pre-Ramadan, 3.1% in Post-Ramadan and results are significant with (p<0.007).Dental Caries having 5.0% in Ramadan, 11% in Pre-Ramadan, 9.8% in Post-Ramadan and results are insignificant with (p<0.011). Prosthodonties having 8.8% in Ramadan, 8.1% in Pre-Ramadan, 7.4% in Post-Ramadan and results are insignificant with (p<0.712). Extraction having 8.5% in Ramadan, 11.1% in Pre-Ramadan, 7.0% in Post-Ramadan and results are insignificant with (p<0.028).Conclusion The results showed that there is a significance change reported in dental caries, hypersensitivity and extractions in the month of Ramadan and post Ramadan.

Philosophy of Fasting in Quran and Islamic Narratives and its Relationship with Human Health, Based on Scientific Notions

Maryam Hosseini Mousavi

Abstinence from eating and drinking on long hot summer days is no easy task. In fact, it is considered the greatest "Jihad" in Islamic tradition. Here, the main question is concerned with the importance of fasting, its purposes, and advantages for individuals. We need to determine if fasting plays a role in overcoming human problems. This review article, by using an analytical approach, states Quranic verses and Hadiths and reviews the philosophy of fasting in response to two questions: 1) What is the philosophy of fasting in Quran and Hadiths? and 2) What role does it play in maintaining human health? Therefore, Islamic verses and narratives, concerning the importance of fasting in maintaining health, are reviewed, using the opinions of some scientists.

Keywords: Quran; Hadith; fasting; existentialism; pragmatism; philosophy; psychology of being

Effect of Ramadan Fasting on Lipid Profile, Glucose Level, Protein and Uric Acid among Medical Students in a Karachi Public University

Nazeer Khan, S.M. Tariq Rafi, Shameem Siddiqui, Haseeb-ur-Rahman, Saba Shakeel*

Objective: To determine the change in lipid profile, glucose level, protein and uric acid due to Ramadan fasting among medical students 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 63 Muslims 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 different trend among non-Muslim. There was continuous increase in mean HDL value from Shaban to Shawwal in both Muslim and non-Muslim students. However, the differences were statistically insignificant. 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. Mean VLDL decreased significantly in Ramadan and decreased further in Shawwal, but insignificantly for both Muslim and non-Muslim students. Same trend was observed in mean triglyceride, but 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. Mean uric acid increased significantly in Ramadan and reversed in Shawwal among Muslim students, but trend was opposed among non-Muslim students. **Conclusions:** Study showed that the change of eating and physical habits in Ramadan have mixed effects in lipid profile, glucose, protein and uric acid levels, and there was no significant difference among Muslim and non-Muslim students.

Effect of Ramadan Fasting on Anthropometric Measurements, Blood Pressure And Physical Activities Among Medical Students In A Karachi

Nazeer Khan, S.M. Tariq Rafi, Shameem Siddiqui, Saba Shakeel, Haseeb-ur-Rahman,*

Objective: To determine the change in anthropometric measurements, blood pressure and physical activities due to Ramadan fasting among medical students 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 60 Muslims students with at least 20 days of fast and 11 non-Muslims who have visited all the three times. 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, but it was statistically significant. 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 significantly from Shaban to Ramadan, but trend was same for Muslim and non-Muslim students. BMI showed same results as weight of the students. Mean waist showed significant reduction from Ramadan to Shawwal. Hips measurement also showed reduction from Ramadan to Shawwal, but it was not statistically significant. Waist and Hips ratio showed significant reduction from Ramadan to Shawwal. Systolic Blood Pressure reduced significantly in Ramadan. However, 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 change of eating and physical habits in Ramadan have mixed effects in anthropometric measurements and blood pressure, however there was no significant difference among Muslim and non-Muslim students.

Effect of Fasting and Praying on Mental Health of Medical Students

*Dr. Nazeer Khan, Sara Wahab**

Objective: To examined the impact of praying and fasting on the mental health of students. **Methodology:** MBBS students from all the five years of study in Jinnah Sindh Medical University have been included in the study. This questionnaire-based study was conducted in the1st week of Ramadan and 1st week Dhul Quada 1436 H. Questionnaires has been divided in two sections: 1st section was the demographic information and the 2nd was the GHQ 12 form. GHQ 12 is validated questionnaire to determine the mental health in which each question had 4 responses. Twelve Non-Muslim and 38 Muslim students were randomly taken from the list of the students. They would be requested to fill the above mentioned questionnaire. Statistical analysis has been done by SPSS 16.0. **Results:** According to GHQ 12 score the prevalence of psychological stress among Muslim in 1st week of Ramadan was 39.1% and in Dhul Quada it was 10.5%. The average GHQ-12 of score of Muslim students in Ramadan was 2.8±2.66 and in Dhul Quada it was 1.29±2.40. There was a significant difference between two tests results in the term of general health score. ($p< 0.0001$). **Conclusion:** The obtained result showed that fasting and prying has positive effect on mental health. Thus, if fasting is practiced as described in Islam along with other Islamic teachings, it is not only beneficial for physical health but also for mental health.

Effect of Ramadan Fasting on Educational Performance of Medical Students

*Dr.Irfan Ashraf *, Sara Wahab, Dr Rabbia Kashif*

Purpose: The purpose is to guide the students how they can utilize the early parts of the day and the cooler time of night to study and manage timings during the holy month of Ramadan so the impact of change in eating habits and sleeping pattern would be beneficial rather than detrimental on their studies. **Objectives:** The aim of our study is to evaluate the affect of fasting on the academic performance of medical students of JSMU. **Methodology:** A questionnaire was filled by the two groups of students where group 1 is considered as cases and group 2 as controlled. A lecture was delivered to group 1 on time management during Ramadan. The result of the modular test of students who fasted more than 20 days in Ramadan in this group has been compared to the result of a control group (group2) who did not attend the lecture and observed the association between two groups. Statistical analyses have been performed using SPSS software to compare the results of students in Modular tests. There were 60 students in the study out of which 42 students in group 1 and 27 in group 2.**Results:**The mean marks of 42 students of group 1 was 66 with standard deviation 10.7 where mean marks of 28 students in group 2 was 55.19 with standard deviation 12.9.there is a significance difference between academic performance of two groups (p-value =0.001).**Conclusion:** There are researches, which were carried out in Europe and different parts of the world other than Pakistan, show reduced activity, less desire to study and lower capability to focus during the fasting hours in Ramadan. That is why the students who observe fasting strictly find it difficult to deal with the academic and physical stress. This study is unique in this respect that it was conducted in Pakistan for the students of JSMU as the students need to be guided regarding time management so they can fast as well as concentrate on their studies during Ramadan without having a negative impact on their academic performance while sufficient time for worship.

Effect of Ramadan fasting on blood pressure, body mass index and physical activity among hypertensive patients

Nazeer Khan, Raazia Aftab, Amna Qureshi, Summaiya Khan, Shujaat Siddiqui, Muhammad Masood Khalid*

Objective: To determine the changes in blood pressure, body mass index and physical activities among hypertensive patients among the employees of a teaching hospital of Karachi. **Methodology:** One hundred seventeen hypertensive faculty and staff members of Dow Medical College and Civil hospital Karachi were enrolled in the study. The inclusive criterion was the hypertensive patients who intended to fast at least 20 days in Ramadan. Demographic information, family history, use of hypertensive drugs, sleeping and eating habits, physical activities were collected from each participants in last days of Shaban, Ramadan and Shawwal 1434 H. Anthropometric measurements (height and weight) and systolic and diastolic blood pressures were also measured in each visit. Repeated measure design with number of days of fasting as co-variate was used to determine the significance among the three readings. **Results:** Results showed that there was significant reduction in the mean systolic blood pressure from Shaban to Ramadan, however it reversed back significantly in Shawwal. The pattern was same for diastolic blood pressure readings. Mean body mass index was also reduced significantly from Shaban to Ramadan, but did increase (insignificantly) in Shawwal.

Nutritional Variations During Ramadan And Their Implications On Health In Young Female Medical Students At Karachi, Pakistan

M.Zaman Shaikh, S. Naseem, Faryal Tariq, Ziaullah

Objective: The present study is aimed to assess the effects of Ramadan fasting on caloric intake and nutritional variations and their impact on general health. **Methods:** 100 adult educated female subjects who fasted in Ramadan for 20 days or more, were given a 2 page detailed questionnaireto document their intake and nutritional variations during Ramadan as compared to non fastingday to day diet. This questionnaire was designed to evaluate their eating patterns, intake of food during Ramadan as compared to that on normal days.Questionnaire evaluated the intake in terms of calories meal to meal and any variation in nutritional intake.Any variations in intake of tea and water were also documented in the questionnaire.**Results:** Caloric Intake during Ramadan remained the same as compared to non fasting days in (n=80) while only 20% (n=20) showed nutritional variations. Of those who showed nutritional variations 5% (n=5) reported increased consumption of fresh fruits while 15% (n=15) reported a variation in their eating pattern in terms of increased consumption of fried foods. However of these 15% who took more fried foods, their consumption of total food was decreased, so the overall caloric intake ratio did not vary from the non fasting days. 2% subjects reported as taking sugary drinks during Ramadan (n=2). Intake of water reduced in 20% subjects during Ramadan (n=20) while consumption of tea reduced in 41% (n=41) subjects. Only 8% subjects reported to have taken fast foods during normal days while 1% took fast foods during Ramadan.**Conclusions:**In a cohort of young educated female population aged 23-25, there is awareness about healthy eating and there were very few variations in their nutritional intake in terms of calories and quality of food, This is very similar to another study done byNorouzy et al2.Ramadan fasting leads to reduced consumption of tea and water. The intake of fast food was also lower in Ramadan. It would be interesting to undertake similar studies in other population groups and lok at the comparisons.

Dietary Intake of People with Type 1diabetes during Ramadan

Thamina Rashid, Yakoob Ahmedani, Faraz Alvi, Asher Fawad, Abdul Basit.

Objective: To assess the dietary intake of type1 diabetics during Ramadan their macronutrients distribution, calorie intake at different intervals and their compliance to dietary counseling. **Methodology**: This prospective study was a part of a study conducted at the outpatient department of Baqai institute of Diabetology and endocrinology. Recruitement of patients for the study commenced 15 days before Ramadan of 2013. **Data Collection**: Demographic data such as age, weight, height, body mass index (BMI), duration of diabetes and details about other complications were collected from each patient... All the subjects were asked to keep record of food intake. Dietary counseling by a dietitian, were given to each patient on one to one basis. The educational session with the dietitian usually lasted for 20minutes. The aim of the session was to counsel the subjects to encourage, 1) adequate intake of energy2) consuming balanced meal 3) spreading carbohydrate intake over 3-4 meals. **Result**: Total number of patients were 36.The average number of fasting days was 21days.The dietary records obtained from all patients were 714.Mean age of study population was 19.9 years .The mean calorie intake before Ramadan was 1654 calories and during Ramadan the mean calorie intake was 1480 ± 630.3 calories, in which the carbohydrates was 55.9 ± 9.8%, protein was13.9 ± 5.6% and fat was30.2 ± 8.4%. The mean calorie intake at sehri was 554.1 ± 248.1calories in which 32.3% were taking appropriate amount of calories and from these intakes 64. % macrodistribution were proper (64.3%,60%,60% carbohydrates, protein and fat respectively).The mean calorie intake at after was 542.2 288 in which26.8%calories intake were appropriate and from these intakes 50% macronutrient distribution were appropriate(48.6%, 48.7%carbohydrates,fat respectively). Protein from meat almost nil at after. At dinner the mean calorie intake were 596.3±351.2 in which 63.9 %were taking appropriate amount of calories in which 50% carbohydrates 50%fat and 60% protein intake were appropriate. At bedtime calories intake were 591.8 and from which 98% calories were high, only 2.6% were taking appropriate amount of calories. Four times meal consumption were 25.2% in which sehri, after, dinner and bedtime were included. Three meals a day included sehri, after, dinner 71.7%, sehri, aftar, bedtime 28.3% and two meal consumption a day sehri, after were 96%.**Conclusion:** In this study, we observed that majority of people with type1 diabetes did not adhere to dietary advice regarding calorie

intake and macronutrient distribution during Ramadan. Hence repeated counseling sessions might be needed to improve compliance to dietary advice.

Impact of 24 Hours Station Based Telephonic Helpline Service for People with Diabetes during Ramadan Fasting

Dr. Aasim

Aims: To assess the impact of 24 hours stationed based helpline support for people with diabetes during Ramadan. **Methodology:** In this prospective study all people with type 1, type 2 and gestational diabetes who wished to fast during Ramadan were recruited from the outpatient department of Baqai Institute of Diabetology and Endocrinology (BIDE), a tertiary care diabetes center of Karachi, Pakistan from May 2015 to July 2015.Ethical approval for this study was obtained from institution review board of BIDE. Pre-Ramadan medical assessment and diabetes education was provided to all participants, twenty four hours stationed based help line service was also provided for drug/insulin dose adjustment and to encounter the emergency situation during Ramadan. Trained educators adjusted insulin dose according to self-monitoring of blood glucose (SMBG) of last three days. Appropriate suggestions was provided on each telephonic calls after consulting medical history, treatment plan and lab reports. The details of each call and given suggestions were recorded on electronic health care management software (HMS) of BIDE. SPSS version 13.0 was used for data analysis. **Results:** This is a prospective study. Five hundred and one people with diabetes from both gender were included in the study. There were 241 (48.1%) males and 260 (51.9%) females. Mean body mass index (BMI) was 29.03 ± 11.36 kg/m^2. Mean duration of Diabetes was 5-10 years. The means HbA1c and Serum creatinine was 9.67 ± 2.21 and 1.11 ± 0.50 respectively. During the month of Ramadan 948 calls were received. Insulin dose was adjusted in 594 (62.7%) calls according to the respective SMBGs. Sixty one (6.4%) calls were received for severe hyperglycemia and correction dose was administrated in two third of the patients and hospital admissions were saved. Hypoglycemia was treated in 48(6.4%) calls. **Conclusion:** Twenty four hours stationed based helpline service can be a good support for people with diabetes during Ramadan fasting to achieve good glycemic control and safe fasting. Further large scale studies are needed to validate our finding.

Ramadan and Diabetes- Knowledge, Attitude And Practices Of General Practitioners; A Cross-Sectional Study

Bella Z. Hashmi, Muhammad Yakoob Ahmedani, Muhammad Saif ul- Haque*

Objective: This study aims to describe the knowledge, attitude and practices of general practitioners regarding diet and treatment modifications for people with diabetes during Ramadan across Pakistan. **Methods:** A cross-sectional descriptive study was undertaken among a sample of 274 general practitioners. This study was a part of pre-Ramadan education programme organized by Ramadan study group, Baqai institute of diabetology and endocrinology every year to educate general practitioners. Series of lectures conducted through 12 main cities of the country including Karachi, Hyderabad, Lahore, Multan, and Faisalabad. Data was collected through Pre-test assessment questionnaire that consisted of 25 questions structured according to the following heads; Ramadan specific knowledge, diet and physical activity and treatment modification related practices of GPs. **Results:** Out of the total population of GPs surveyed, 53% responded correctly to the questions while 47% responded incorrectly.2/3rd of GPs answered incorrectly to questions regarding basic concepts of diabetes and Ramadan. Most of the GPs answered correctly regarding questions on physical activity during Ramadan. Only 26 % responded correctly regarding questions on diet. 81.22% of the GPs responded that no adjustment in "drug dosage" is needed in people with diabetes during Ramadan. While more than 80% responded correctly regarding alteration in "timing" of medications. **Conclusion:** Almost half of the studied populations of general practitioners across Pakistan lack the knowledge of basic principles that are important to be employed in the management of diabetes during Ramadan. Hence there is need to promote educational programmes and CMEs to improve the knowledge of our GPs.

Key words: Diabetes, Ramadan, Fasting, general practitioners.

Food and nutrient intake in patients with diabetes during Ramadan

Sara Jaffri, Tehmina Rashid, M Yakoob Ahmedani, Rubina Hakeem, Musarrat Riaz

Objective: To observe food and nutrient intake trends among a group of middle income urban Pakistani people with diabetes during Ramadan. Methodology: This cross sectional study was conducted in the Outpatient department of Baqai Institute of Diabetology and Endocrinology in 2010. All subjects were advised to keep record of food intake for all the fasting days. SPSS version 15 was used for data analysis. Results: Out of 93 patients all of them were taking sehri, 54.7% were taking roti or slice while 43.0% were consuming paratha, 77.9% meat or egg, 27.9% pheni or khajla , 39.5% milk or yogurt.All of them were taking iftar in which 94.2% were eating fried items, 76.7% channachat 65.1% dahibara; and 90.7% fruits or fruit chat and 5.8% were taking milk. 40.7% were taking dinner and 37% were drinking milk at bedtime. Conclusion: Food choices of people with diabetes during Ramadan were not balanced. It also gives us insight towards need of multiple dietary counseling sessions for people with diabetes before Ramadan.

Key words: Diabetes, Ramadan, Fasting, Diet

Frequency of Depression Pre and Post Ramadan Among Patients With Type 2 Diabetes

Zaryab Ahmed, Muhammad Yakoob Ahmedani, Shahzaib

Objective: To compare the frequency of depression pre and post Ramadan among patients with type 2 diabetes at a tertiary care diabetes center in Karachi, Pakistan. **Material and Methods**: This observational study was conducted at Baqai Institute of Diabetes and Endocrinology (BIDE) between May 2015 to August 2015 in 247 type 2 diabetic patients, who held fast in the Ramadan of 2015. Patients were selected by non-probability convenient sampling technique. Inclusion criteria was type 2 diabetic patients of either gender of age above 35 years, on anti-hyperglycemic agents and willing to participate in the study while patients with known psychiatric problems, hepatic and renal impairment and having history of diabetic ketoacidosis were excluded. Patient's demographic data was recorded on a pre-designed performa and Patient Health Questionnaire-9 scale (PHQ-9) was used for assessment of depression four weeks before and four weeks after Ramadan. In PHQ-9, score 1-4 is minimum depression, score 5-9 is mild depression, score 10-14 is moderate depression, 15-19 is moderately severe depression and score 20-27 is severe depression. Data analysis was done on SPSS version 20.**Results:** A total of 247 patients with T2DM were recruited in the study. Among them, there were 160 (64.7%) males with the mean age 42.99 ± 6.2 years and 87 (35.3%) females with the mean age 42.06 ± 5.5 years. According to PHQ-9 scale, depression was found in 108 (43.7%) patients, four weeks prior to Ramadan. Among them, minimal depression was found in 47 (43.5%) patients, mild depression was found in 33 (30.5%) patients while moderate depression was found in 7 (6.4%) patients. Four weeks after Ramadan, improvement was found in 87 (80.5%) patients (p=0.037). In which, 47 (54%) patients were found to have no depression who were minimally depressed, 32 (36.7%) patients improved from mild to minimum depression, 4 (4.5%) patients improved from moderate to minimum, 3 (3.4%) patients improved from moderate to mild, and 1 (1.1%) patient improved from mild to no depression. 21 (19.4%) patients were those whose PHQ-9 score remained same after Ramadan. **Conclusion**: It was observed that there was a significant improvement in depression scores in patients with diabetes who held fast during Ramadan.

Key Words: Ramadan, Depression, Type 2 diabetes mellitus, Islam

Hypoglycemia during Ramadan - An Audit

Shahzaib, Muhammad Yakoob Ahmedani, Abdul Basit

Objective: To determine the frequency of hypoglycemia during the Ramadan of 2015 among patients with diabetes mellitus at a tertiary care diabetes center in Karachi, Pakistan. **Material and Methods**: The cross-sectional study was conducted in august 2015 among patients attended out-patient departments of Baqai institute of diabetes and endocrinology (bide), Karachi. Patients were selected by non-probability convenient sampling technique. All the diabetic patients of either gender, who did fast during the Ramadan of 2015, were included, irrespective of their anti-diabetic treatment and co-morbidities/complications. Those patients who did not fast, did not give consent to participate in the study or patients with known psychiatric illness were excluded. Data was gathered using a pre-designed close ended questionnaire which contains patient's demographic profile, frequency of hypoglycemia and its consequences. Data analysis was done on SPSS version 20.**Results**: During the study period, total 546 patients were recruited. among them 251 (45.9%) were males and 295 (54.1%) were females with an overall mean age of 48.6 ± 8.7 years. 519 (95%) were having type 2 diabetes mellitus. mean duration of diabetes mellitus among the study participants were 9.7 ± 3.4 years. 66 (12%) patients manage fasting of 1-10 days while full month fasting were managed by 330 (60.4%) patients. in Ramadan of 2015, 528 (96.7%) did not have any episode of hypoglycemia while only 18 (3.2%) suffered from hypoglycemia. Among those patients who had hypoglycemia during Ramadan, all 18 (100%) had this condition for one day. none of them attended any medical facility or change their anti-diabetic treatment while 3 (16.6%) patients broke their fast. Twelve (66.6%) patients who had hypoglycemia were on basal bolus insulin regimen while 6 (33.4%) were on pre-mixed insulin regimen. **Conclusion**: Majority of patients with diabetes mellitus who did fast in the month of Ramadan of 2015 did not have hypoglycemia. Hence, patients with diabetes can safely fast during Ramadan.

Key Words: hypoglycemia, diabetes mellitus, Ramadan, Islam

Conventional and Intensive Glycemic Control among People with Type 2 Diabetes (T2DM) during Ramadan

Erum Ghaffor, Muhammad Yakoob Ahmedani, Muhammad Saiful Haq

Aims: To assess safe blood glucose targets and (ii) optimal insulin ratio during fasting in Ramadan. **Method:**In this prospective study, people with T2DM who were on the treatment of free mixing insulin were recruited from the outpatient department of Baqai Institute of Diabetology and Endocrinology (BIDE), a tertiary care diabetes center of Karachi, Pakistan from June 2014 to August 2014.HbA1c test of each participant was conducted prior to the month of Ramadan. A pre- designed questionnaire was filled for baseline data. One to one education was provided regarding diet and diabetes self-management during Ramadan. A glucometer with 100 testing strips, a self-monitoring (SMBG) log book and food intake diary was provided to each participant. The blood glucose targets were given between 100-200 mg/dL. A separate 24/7 telephonic help line service was also provided for insulin dose adjustment and to encounter emergency situations. Each participant was contacted every third day. Insulin dose was adjusted

according to the respective blood glucose values and dietary intake of the last three days. Post Ramadan data was collected on the SMBG log book, last adjusted insulin dose during fasting and HbA1C test values after the month of Ramadan. SPSS version 13.0 was used for data analysis. **Results:** A total of 75 people with T2DM were included in the study. Morning dose of short acting insulin was shifted to sunset with the reduction of 8%, however at the end of Ramadan it was observed that the dose should be increased by 10% instead of reduction. Similarly morning dose of basal insulin was shifted to sunset with the reduction of 20% but at the end of Ramadan, it was observed that the dose should be reduced to 10%. The evening dose of short acting insulin was shifted to pre-dawn with reduction of 50% and at the end of Ramadan, results suggested that the change made was accurate. Likewise evening dose of basal insulin was shifted to pre-dawn with reduction of 40% but at the end of Ramadan, results showed that the dose should be reduced to 30%. Mean HbA1c was reduced to almost one percent within 60 days which was statistically significant ($p<0.05$).**Conclusion:** This study demonstrates that fasting during Ramadan is safe for people with diabetes with reinforcement of diabetes education, continuous attention to dietary intake, daily physical activity, frequent self-monitoring of blood glucose and insulin dose adjustments. Hypoglycemic events can be minimized with conventional control during fast and intensive control during non-fasting hours. Further large scale studies are needed to validate our findings.

Effect of Ramadan Specific Diabetes Education on Acute Diabetes Complications during Fast

Muhammad Yakoob Ahmedani, Shahid Ahsan, Muhammad Saiful Haq

Objective: We aimed to find out the effect of (Ramadan specific diabetes) education and modes of education on acute diabetes complications during fast. Methods: This prospective study was carried out at Baqai institute of Diabetology & Endocrinology (BIDE) in 2012. All Muslim diabetic patients attended the out- patients department and showed intention to hold fast in the coming month of Ramadan were invited to participate. Those who had no identifiable language barrier or known mental disability and willing to participate were included in the study. A pre Ramadan medical assessment of the participants was done to ensure their fitness for holding fast. Consented participants (n=102) were given Ramadan specific diabetes education (Education groups) via three different modes, namely on one to one (n=32), in group (n=25) and via printed brochures (n=45). Brochure had same information about fasting and diabetes as given to other two groups. Non-education group was constituted after Ramadan. It included patients had not visited OPD before Ramadan thus did not receive Ramadan specific diabetes education (n=76). Participants were instructed for monitoring of blood glucose and recording of all hypoglycemic and hyperglycemic events and action taken after these episodes. Data analyze by SPSS version 13.0. Results: Patients received education showed compliance in self monitoring of blood glucose (SMBG) (94.1%) and alteration of drug dosage and timing (79.4%). Hyperglycemic episodes were reported in increased frequency in non-education group (30.3% vs 26.5%) whereas hypoglycemic episodes (34.3% vs 17.1%) were reported in increased frequency in education group. Among three education groups, all patients of one to one session monitor blood glucose by SMBG (100%). Hypoglycemic symptoms were appreciated more by the patients of group session (44%) whereas hyperglycemic symptoms were reported in increased frequency in patients received written educational materials only (28.9%). In response to hyper or hypoglycemic symptoms during fast, most of the patients of group session checked their blood glucose level (80% and 54.5% respectively). Conclusion: Patients received education showed compliance to SMBG, changing of drug dosage and timing during Ramadan. Patients with education appreciated symptoms of hypos and checked blood glucose level. Irrespective of mode, education is imperative for glycemic control and reduction of acute diabetes complications.

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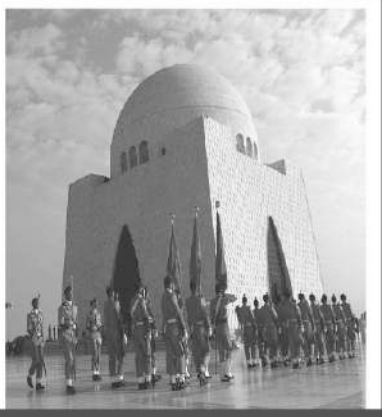

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