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EDITORIAL

History of Contraception

Saadia Sultana

According to Aristotle, "If you would understand anything, observe its beginning and its development". History can never be unwritten, but familiarity with the past can enlighten the contemporary issues. Societal/religious attitudes, often repressed the acknowledgement of complications related to fertility. Globally, people were blinded by the beliefs which were not pertinent to this crucial situation of twentieth century explosion of population. The society has faltered in searching for organizational & technical solutions to control fertility rate even in the west. Scientific ideas were not entirely exploited, identified technologies went unapplied, and recent resources that might have made prominent differences were held back. Only forthcoming history will decide whether these interruptions, will verify a crippling, or the mortal setback to cultured living.

The imbalance between diffusion of contraceptive awareness/regulations and the means to treat disease has produced a burst in global inhabitants which is hard to accommodate. It has, now, contributed to excessive discriminations in affluence and individual misery. The human fertility controlling factors/treatments are not certainly more problematic to comprehend than the cure of bacterial illnesses, i.e. IUD insertion/tubal ligation are simpler than instrumental delivery or appendicectomy. Valuable understandings into contemporary malfunctions can be achieved by observing the history of 'fertility-control' practices.

In primitive societies, perhaps, a couple had 6 to 8 children in total. Around half of these offspring perished before they might reproduce, & the population grew very sluggishly. Mothers lactated for 3–4 years, and gestations were physiologically spaced. With urban civilization, puberty started at an earlier phase of life and breastfeeding was reduced in duration or additional food introduced earlier. Hence the fertility improved. Without artificially restraining fertility, if a couple starts relationship when the female is above twenty & continues till menopause, she can expect to procreate around 10-11 children. Therefore, ultimately, all human cultures have to implement some limits on family size.

Written archives of contraceptive remedies and techniques of abortion are present in the Latin writings of Pliny Elder (23–79 AD), the Egyptian Ebers Papyrus (1550 BC),) and Dioscorides (58–64 AD), and the works of Soranus (Greek-Gynaecology, 100 AD). Throughout 10th century, while the blossoming of Arabic medical profession, a diversity of contraceptive endorsements was mentioned, predominantly in the writings of Al-Razi (Rhazes, 923 /924 AD,), Avicenna (Ibn Sina, d. 1037 AD) and Al-Abbas (The Royal Book 994 AD).

The earliest scholars refer to 3 general groups of methods:

1. Those that nowadays are recognized to be unsuccessful, appeared practical at the time e.g., wiping after vaginal intercourse (Soranus).
2. Reasonable & conceivably effective (honey, lactic acid, alum, pepper etc. used as barriers in the form of pessaries (Dioscorides, Ebers Papyrus)
3. Manufacturing vaginal pessaries from the animal's dung, e.g. crocodiles (Papyrus), mice (Pliny) or elephants (Rhazes). Jewish references of contraception were closer to few modern approaches e.g. "cohabit with a sponge."

The prevalence of a common method of 'coitus interruptus' for ancient and contemporary societies differs; both old & modern references are fairly common in Islamic, Christian & Jewish manuscripts. The only biblical reference (Genesis 38:7) about coitus interruptus is vague. Onanism (masturbation/withdrawal), abortion and additional contraceptive practices, received growing condemnation. Nonvaginal intercourse as fertility-control method is rarely conversed, nevertheless it

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seems to have frequently been used in different cultures (550–850 AD).

It was narrated by Jaabir ibn' Abdullah (Allah be pleased with him), "we used to practice 'Azl' (or coitus interruptus) at the time of Prophet Mohammed ﷺ, when the Quran was being revealed. (Sahih Muslim, Vol. 3, Book of Marriage, Hadith 3386). It was also mentioned at some places that the wife's permission is a prerequisite for its use as birth spacing method. Jaabir (Allah be pleased with him) reported: We used to practise 'azl during the lifetime of Allah's Messenger ﷺ. This (the news of this practise) reached Allah's Apostle ﷺ, and he did not forbid us(Sahih Muslim, Vol. 3, Book of Marriage, Hadith 3388).

History is bursting with 'herbal preparations' (for delayed menstruation), and same is being practiced in modern-day culture. One unique ancient method was the herb named 'Silphion' transferred from the early Greek city - Cyrene. The plant was extremely precious and worth more than silver. No one is certain if it was an oral contraceptive/abortifacient. 'Silphion' was also shown on the Cyrene coins. Huge efforts were put to cultivate it in other areas of the Mediterranean, but remained unsuccessful, & the plant was picked to extinction.

In 1959, archaeologists, while unearthing the skeleton of a 25-year-old girl from a Gallo-Roman times (first century BC to fifth century AD) in Netherlands identified a bone stylet 10.5 cm long in her pelvis. It was interpreted as a lady who died due to an attempt to induce abortion. Mechanical abortion and embyotomy (to save the woman's life in childbirth), is cited in olden Jewish literatures.

Throughout the Middle Ages, 'induced abortion' & 'coitus interruptus' were acknowledged approaches of birth spacing in married people. In west, some couples managed to postpone conception and few babies were delivered in July/August, when the crucial harvest labour took place.

'Massage abortion' is a cruel technique usually tried when the lady is 4-5 months pregnant. The method has been described in Thailand, Burma, Philippines, Malaysia, & Indonesia. Woman lies on her back, attendant tries to stabilize the uterus and at that moment presses it very hard with the hands, heel of the foot, or the wooden pestle/rice grinder.

Literature also witnessed abstinence as a means of contraception. The sentiments were expressed about 2 centuries ago in a letter by the famous Queen Victoria (born 1819). Victoria was to deliver 9 children before the premature death of Prince Consort. Like millions of common people, she would have benefited, if the '19th century history of contraception' had been different. Specifically, she never thought that she was hurrying ovulation by giving all her off-springs to a lactating nurse after birth.

It was very difficult for the medical/political systems to extend altruism/selflessness to those stressed to regulate their fertility than to those suffering from diseases. Important developments, such as Intra uterine devices (IUDs) and oral/injectable contraceptives, developed more slowly than they might otherwise have done.

Because of the unequal dissemination of 'death control' & 'birth control', global population is destined to multiply around 3 and 4 times between 1950 & 2050. Much of that increase continues to be determined by unplanned pregnancies. Around the world, the national family planning programs took enormous time to develop, and the response of developed countries in providing aid/technical assistance was irregular & delayed. It is now the vital obligation to have more focused approach of making people more knowledgeable about fertility control & to make birth spacing widely acceptable.

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ORIGINAL ARTICLE

Contraceptive Uptake among Post Abortion Clients in Local Population of Sargodha District, Pakistan

Saadia Maqbool[1], Hina Shan[2], Lubna Shaheen[3]

ABSTRACT

Objective: To determine uptake of contraceptive methods by post abortion clients along with factors influencing the uptake.

Study Design: Descriptive cross sectional study.

Place and Duration of Study: The study was conducted in three public and three private hospitals of Sargodha from February to October 2018.

Materials and Methods: The study included 160 post abortion clients using two stage sampling technique. A questionnaire was designed based upon questions used in previous studies. Part A of questionnaire was filled to record socio demographic details and part B to assess contraceptive uptake. Chi square test was applied to determine association between independent and dependent variables. Data were analyzed using SPSS version 22. P-value < 0.05 was considered significant.

Results: Mean age of participants was 28.4 ± 6.04 years. Only 38.1% clients adopted contraceptive method within one month. Short term methods were adopted by 62.2% and long acting reversible contraceptives by 26.2% clients. Male condom was the most frequently chosen method, adopted by 24.5% clients. Fifty four percent clients having ≥ 3 living children, 48.7% clients served by private sector, 61.7% clients reporting previous contraceptive use and 50.9% clients who received counseling, adopted the method. Association between these factors and contraceptive uptake was statistically significant (p value <0.05).

Conclusion: Post abortion contraceptive uptake was low. However private sector health facilities, previous contraceptive method use and counseling by health care providers were significantly affecting contraceptive uptake.

Key Words: *Contraception, Contraceptive Method, Family Planning, Post Abortion Contraception.*

Introduction

Access to comprehensive reproductive health care services enables women to pass through pregnancy and labour safely and to accomplish the best reproductive outcomes.[1] Reproductive health care is one of the core components of the 3rd Sustainable Development Goal which emphasizes on universal access to sexual and reproductive health-care services, including family planning, information and education.[2] Contraception is an essential and important part of reproductive health care. Healthy Timing and Spacing of Pregnancy (HTSP) is an intervention which enables women and couples delay or space their pregnancies, and hence ensure healthiest outcomes for mother and neonate.[3] In context to HTSP, World Health Organization recommends at least 6 month interval to next pregnancy after miscarriage or induced abortion.[4]

Due to rapid return of fertility and early resumption of sexual activity, post abortion clients are exposed to the risk of closely spaced pregnancy.[5,6] Counseling and provision of effective contraceptive method can protect post abortion client from this undesired occurence.[7]

In Pakistan, unmet need for contraception is as high as 17% and contraceptive prevalence rate is only 34%.[8] Incidence of abortions is also high and more than 2 million pregnancies end annually.[9] Strategies for effective counseling and service provision must be implemented to address the contraceptive needs of post abortion clients.

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Post abortion woman must get the opportunity for discussion about contraceptive needs and her reproductive goals. She has a right to get comprehensive information and counseling about the benefits, usage, effectiveness and side effects of a range of contraceptive methods.[10]

Gaps exist regarding awareness about post abortion contraception at client and health care provider's level. Determination of post abortion contraceptive uptake is essential to know what percentage of post abortion clients get protection from the risk of unplanned pregnancies, poor perinatal outcome or repeat abortions. Assessment of factors which affect post abortion contraceptive uptake would be helpful in addressing the high unmet need of contraception.[11] There was paucity of data regarding post abortion contraceptive uptake in Pakistan. The purpose of the study was to determine uptake of contraceptive methods by post abortion clients along with factors influencing the uptake.

Materials and Methods

After obtaining approval from the ethical review committee of Army Medical College, this study was conducted at three public and three private sector hospitals of district Sargodha from February 2018 to October 2018. Study participants were 160 post abortion client, 78 from public sector hospital and 82 from private sector hospital. Raosoft sample size calculator was used for sample size estimation. Keeping 4% margin of error, 95% confidence level, a sample size of 115 was calculated initially. After adding 30% increase to cover the lost to follow-up and rounding off, sample size of 160 was finalized. Two stage Sampling Technique was used. Firstly, list of all hospitals providing reproductive health care was obtained from District Health Officer and sampling frames were constructed for private and public sector hospital strata. Three hospitals were selected by simple random sampling technique using lottery method from each stratum. In the second stage of sampling, simple random sampling technique using computer generated random number was used to select hospital for that day to collect data. Women aged 15–49 years who reported abortion before 20 weeks gestation and gave written consent were included and women with a desire for next pregnancy within 6 months and who developed life threatening complications were excluded from the study. Clients coming to hospital were assessed for eligibility criteria and those fulfilling the criteria were enrolled in the study after taking written voluntary informed consent.

Research questionnaire was designed after extensive literature search by modifying the questions used in previous studies by Pearson et al, Abrah P, Uwera D.J and Thapa A. After review by two gynecologists and a public health specialist, questionnaire was piloted on 23 post abortion clients. Research committees of National University of Medical Sciences and Army Medical College also approved it.

Section A of questionnaire was filled on first contact with the client to record socio-demographic information and section B was filled after one month to record contraceptive uptake.

Data were entered and analyzed in SPSS Version 22. Descriptive statistics like frequency and percentage were used for categorical variables. Mean and standard deviation were calculated for continuous variables. Chi square test was applied to determine the association between categorical variables. A p-value < 0.05 was taken as statistically significant.

Results

The mean age of 160 study participants was 28.4 ± 6.04 years. Seventy eight clients (48.7%) received healthcare by public and 82 clients (51.2%) from private sector hospitals. Details are in Table I and Table II.

Table I: Socio Demographic Characteristics of the Participants (N=160) and their Contraceptive Method Uptake

Demographic Variables	Frequencies n(%)	Contraceptive Uptake n(%)	p value
Age			
Less than 24 years	37 (23.1)	10 (27)	0.28
25-30 years	70 (43.8)	29 (41.4)	
31-49 years	53 (33.1)	22 (41.5)	
Area of Residence			
Urban	102 (63.8)	38 (37.2)	0.76
Rural	58 (36.2)	23(40)	
Years of Education			
Illiterate	33 (20.6)	15 (45.4)	0.41
1-5 years	38 (23.8)	15 (39.4)	
6-10 years	64 (40)	24 (37.5)	
11-14 years	20 (12.5)	7 (35)	
More than 14 years	5 (3.1)	0	

Years of Marriage			
Less than one year	8 (5)	1 (12.5)	0.30
1-5 years	52 (32.5)	17 (32.6)	
6-10 years	58 (36.3)	23 (39.6)	
11-15 years	27 (16.9)	12 (44.4)	
More than 15 years	15 (9.4)	8 (53.3)	
No of Living Children			
0	20 (12.5)	1 (5)	**0.001***
1-2	78 (48.8)	27 (34.6)	
3 or more	62 (38.7)	33 (54)	

Table II: Obstetric Details of the Participants (N=160) and their Contraceptive Method Uptake

Variables	Frequencies n(%)	Contraceptive Uptake n(%)	p value
Type of Abortion			
Missed	60 (37.5)	24 (40)	0.28
Incomplete	75 (46.9)	24 (32)	
Complete	5 (3.1)	2 (40)	
Induced	19 (11.9)	11 (57.8)	
Recurrent	1 (0.6)	0	
Type of Abortion			
Missed	60 (37.5)	24 (40)	0.28
Incomplete	75 (46.9)	24 (32)	
Complete	5 (3.1)	2 (40)	
Induced	19 (11.9)	11 (57.8)	
Recurrent	1 (0.6)	0	
Gestational Age			
1st trimester abortion	133 (83.1)	53 (39.8)	0.31
2nd trimester abortion	27 (16.9)	8 (29.6)	
Mode of Treatment			
D&C	80 (50)	27 (38.5)	0.09
MVA	23 (14.4)	14 (61)	
MT	53 (33.1)	18 (34)	
NT	4 (2.5)	2 (50)	
Previous Contraceptive Method Use			
Yes	47 (29.4)	29 (61.7)	**<0.001***
No	113 (70.6)	32 (28.3)	
Counseling Received			
Yes	112 (70)	57(50.9)	**<0.001***
No	48 (30)	4 (8.3)	

Dilation and curettage: D&C, Manual vacuum aspiration: MVA, Medical Treatment: MT, No treatment: NT,*Statistically significant

Out of 160 clients, only 61 clients (38.1%) reported contraceptive method uptake within one month after abortion. Among method adopters, 38(62.2%) clients adopted short term method while 16(26.2%) adopted LARC. Male condom was chosen by 15 (24.5%), IUCD by 14 (22.9%) and pills by 12 (19.6%) clients.

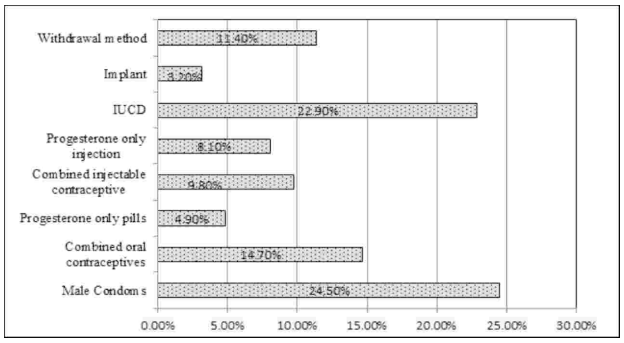

Fig 1: Uptake of various Contraceptive Methods (n=61)

Uptake of contraception was significantly higher among clients served by private sector facilities (p value = 0.004). Forty clients (48.7%) of private sector and 21 clients (26.9%) of public sector adopted the method. Significant association was observed between contraceptive uptake and having ≥3 living children (p value < 0.001) as 33(54%) clients adopted the method. Among 47 previous FP users 29 (61.7%) initiated contraceptive method while 32(28.3%) clients among 113 previous non users adopted contraception (p value < 0.001). Fifty seven clients (96.4.7%) who received counseling while only 4 (8.3%) who received no counseling reported method uptake (p value < 0.001).

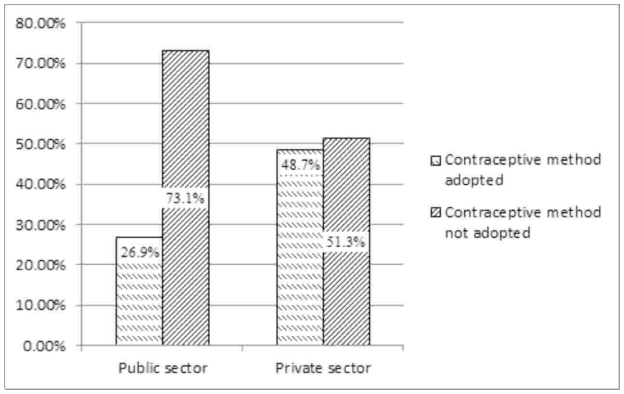

Fig 2: Contraceptive Method Uptake in both Sectors (n=160) (p value=0.004)

Discussion

Findings revealed that 38.1% clients adopted a contraceptive method which is higher than the contraceptive prevalence rate in Pakistan (34%).[12] Higher uptake could be due to increased felt need of contraception following an abortion.

Majority of contraceptive method adopters have chosen the short term method. Male condoms followed by pills were the most frequently chosen method. A Brazilian study also indicated similar

choice of contraceptive methods. Condom was the most frequently adopted method, followed by the contraceptive pills.[13]

In our study uptake of contraception was significantly higher among clients served by private sector facilities Results suggest that in private sector, clients are counseled and offered method provision more effectively. This finding is not similar with the study conducted at Ethiopia. Analysis of Ethiopian study suggested that post abortion clients served in private health facilities were 72.4% less likely to adopt contraceptive method as compared to the public facilities.[14] Different quality standards of private sector in both countries may be explain this disparity.

Higher percentage of method adoption was noted in age groups more than 24 years with highest uptake among women more than 35 year (55%). These results are comparable to another study. Benson et al. who also reported high uptake among women ≥25 years of age.[15]

In our study, uptake of contraceptive method was more among clients who had induced abortion (57.8%). Findings of a study conducted in eight countries described higher odds of contraceptive method uptake in clients who had induced abortion.[16]

Higher uptake of method was noted in women with more than 3 living children. Another study also reported higher post abortion contraceptive use among women with 3 or more children (83.8%).[17]

Contraceptive uptake was higher among clients who reported previous use of contraceptive method. Significant association was also observed between the previous use of contraceptive and uptake of post abortion contraception in a research at Ghana.[18]

Most of clients who have been counseled, reported contraceptive uptake. Very low adoption of FP method (8.3%) was seen among clients who received no counseling at all. In an Ethiopian study, respondents who received contraceptive counseling were 4 times more likely to have post abortion contraceptive method.[19]

Conclusion

Uptake of contraceptive method within one month after abortion is low although many clients express desire to limit fertility. However private sector health facilities, previous history of contraceptive method use and counseling regarding contraception are significantly affecting contraceptive uptake.

Recommendations

There is a need to strengthen post-abortion contraceptive services which can contribute in increasing the country's contraceptive prevalent rate. Strategies for post abortion contraceptive provision as a part of post abortion care must be developed and implemented. Capacity building of health care providers and availability of a range of contraceptive methods are essential to increase post abortion contraceptive uptake.

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ORIGINAL ARTICLE

Analgesic Efficacy of Ropivacaine versus Lignocaine in Perineal Tears: A Randomized Controlled Trial

Hasina Sadiq, Irum Sohail, Maria Habib

ABSTRACT

Objective: To compare the analgesic efficacy of Ropivacaine (0.75%) with Lignocaine (2%) in reducing the pain of perineal tears during suturing and postpartum.

Study Design: Randomized Controlled Trial.

Place and Duration of Study: This prospective trial was conducted in Gynecology and Obstetrics department of Kahuta Research Laboratories (KRL) hospital, Islamabad over the period of 3 months from May 2018 to August 2018.

Materials and Methods: In this study 100 patients with singleton pregnancy and vertex presentation undergoing vaginal deliveries were randomly divided into either 2% Lignocaine group or 0.75% Ropivacaine group on the basis of subcutaneous infiltration of the corresponding local anesthetic before perineal repair. Main outcomes studied between the 2 groups include mean pain scores assessed by Visual analogue scoring system (VAS) at the time of suturing and then at 30 mins, 3 hours and 6 hours post partum. The need for additional local anesthetic, on-demand analgesia and side effects were also noted. The outcomes between the two groups were compared and analyzed by SPSS version 23.

Results: A total of 100 women were randomized and equally allocated into one of the two groups. Mean pain score of Ropivacaine was compared with lignocaine and was found to be significantly reduced at the time of suturing (p=0.005), 3 hours (p=0.00) and 6 hours (p=0.001) post partum. But no statistical difference was found in pain score at 30 minutes post partum (p=0.713). The need for additional local anesthetic at suturing (p=0.004) and need for on-demand analgesia (p=0.001) was higher in Lignocaine group. No side effects were noted in both groups.

Conclusion: Ropivacaine was more effective in reducing post episiotomy perineal pain as compared to lignocaine.

Key Words: *Analgesia, Lignocaine, Ropivacaine.*

Introduction

Spontaneous vaginal birth is associated with trauma to the vagina and perineum. This trauma may be in the form of minor/major lacerations or tears occurring spontaneously during vaginal birth or are iatrogenic. The latter term, which includes episiotomy, is defined as a surgical incision or a cut given by the trained mid-wives or obstetrician into the perineum in order to enlarge the vaginal outlet to facilitate the birth of baby.[1,2] Episiotomy is one of the common surgical procedure performed worldwide during spontaneous or assisted vaginal deliveries.[3] The worldwide rates of episiotomies vary due to selective episiotomy recommendation and was found to be 27% overall in WHO report , about 54% for nullipara and 6% for multipara.[4] Some countries are having as low rates as 9.70% such as Sweden whereas others have as high as 100% like Taiwan.[5]

The common problem that affects almost 85–95 % of females includes the post-partum perineal pain for the initial 24 hours. The intensity of pain varies with the degree of the tear/injury.[6] This pain is so arduous that it has negative impact on the mother child bonding like delay in initiating breastfeeding and almost 42 % of these females are not able to carry out the basic activities like sitting, walking, micturition or sleep.[6] About 91% of those with third or fourth degree tears would complain of pain up to 7thpost-partum day.[7]

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Different modalities have been practiced under domain of obstetric analgesia to provide pain relief to laboring females such as epidural analgesia, intra dermal injections of different substances and inhalational agents. Least attention has been given to the post-delivery perineal pain explicitly. Local Anesthetic agents have been widely used to alleviate the pain while suturing the perineal tears. These agents differ on the basis of their chemical structure that in turn affects its efficacy and duration of action.[6] They share same mechanism of action and block the nerve impulse conduction by blocking the sodium channels at the distal nerve free endings and along axon.[6] Traditionally lignocaine, an intermediate acting agent has been used in either 1% or 2% concentration forms. It acts within 1 to 5 minutes after administration and analgesic effect persists for 2 hours.[8] Whereas, long acting anesthetic agents like ropivacaine, bupivacaine and levobupivacaine are now preferred.[7]

Ropivacaine is safer and less cardiotoxic among the three. It has prolonged duration of action and is effective up to 10 hours that can be attributed to its slow reabsorption.[6] Also reduces the peripheral hyperalgesia due to its anti-inflammatory effects.[8] Ropivacaine is generally used for skin infiltration in hemorrhoidectomy and inguinal hernia repair, and has better analgesic effects.[9]

The objective of this study was to compare the effectiveness of 2% lignocaine with the ropivacaine 0.75% in reducing the post episiotomy perineal pain.

Materials and Methods

This was a prospective single blinded randomized control trial conducted over a period of 3 months from May, 2018 to August, 2018. The study participants were consecutively recruited from the labor ward of KRL Hospital Islamabad. Ethical approval was taken from the ethical review committee of the hospital. The sample size was calculated on the basis of WHO sample size criteria by statistician and it came out about 38 patients in each group for statistically significant results.[6] But for better results we have included more patients in both groups.

A total of 100 patients with singleton pregnancy undergoing spontaneous vertex delivery were included on the basis of specific criteria. Women with episiotomy and perineal injury (1st, 2nd and 3rd degrees) were included. While women with fourth degree perineal tear, midline episiotomy, allergy to local anesthetic agent, local infection, and chronic analgesic use before and during pregnancy, drug dependence, major postpartum complications, epidural analgesia, chronic pain syndrome/ neuropathic pain, any comorbid i.e., Diabetes mellitus and Heart disease were excluded.

The patients were randomly allocated into one of the interventional group after explaining the procedure and taking verbal informed consent. Group A was assigned to those receiving 10 ml of 2% lignocaine and Group B to those receiving 10 ml of 0.75% ropivacaine. After negative aspiration, the local anesthetic agent was infiltrated into the vaginal and perineal skin for repairs of mediolateral episiotomy or tears. After infiltration of 5 minutes, the episiotomy or tear was stitched by post-graduate resident using a continuous suture technique for the vaginal mucosa and interrupted suture for the muscle and perineal skin. The patients were familiarized with the visual analogue scoring system. Visual analogue scoring scale is a type of numerical rating scale ranging from 1 to 10 with 1 indicating no pain and 10, the severe pain, as shown in figure 1. The pain assessment was made at the time of suturing and the need for additional local anesthetic agent was noted. In both groups, lignocaine was given as additional analgesia if needed.

All the patients were shifted to postnatal ward, and further pain assessments were made via VAS scoring at 30 minutes, 3 hours and 6 hours post-delivery by the same resident. VAS scoring less than 4 was considered efficacious. Patients with no formal education were assessed for pain by the pictorial presentation of the numerical rating scale.

The need for on-demand systemic analgesia was also noted in both groups. All the patients were observed for side effects and complications. All the data was entered in a performa.

The data was analyzed on the SPSS 23 by using Chi square test. Mean pain scores, age and weight were calculated (mean±S.D) and then independent student t-test applied to compare the two groups. The categorical data was analyzed by applying chi square test and the results were expressed as number or percentages. A p-value < 0.05 was considered statistically significant.

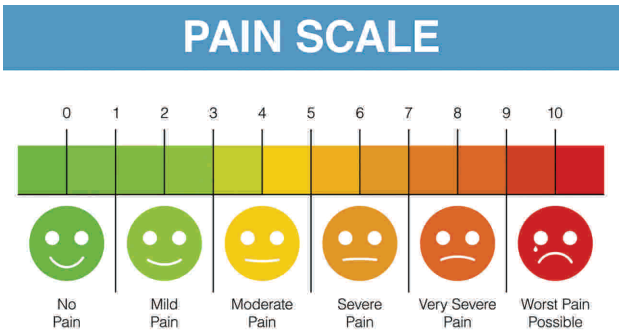

Fig 1: Visual Analogue Scale

Results

Baseline characteristics of 100 study participants are shown in Table I which shows no statistical significant difference in the age, weight, parity, types of delivery and the degree of tear among the two groups.

Based on the results shown in Table II and figure 2, mean pain scores were significantly reduced in the ropivacaine group at the time of suturing, 3 hours and 6 hours post partum. But no significant difference was found at the pain scores at 30 minutes post perineal repair.

Additional analgesic requirement at the time of suturing was greater in lignocaine groups. Most of the patients in lignocaine group complained of pain after 3 hours post delivery. They had greater VAS scores and demanded for oral analgesics as compared to ropivacaine, as shown in Table III.

No side effects were noted in any of the patients in either group. All the patients remained vitally stable post natally, were mobilized, and encouraged to void urine. As per hospital protocol, due to heavy workload the uncomplicated vaginal deliveries were discharged after 6 to 8 hours of delivery therefore, the maternal satisfaction to carry out basic activities could not be assessed.

Table I: Baseline Characteristics of Study Participants

Parameters	Lignocaine	Ropivacaine	P- Value
Age(Mean±S.D)	27.04±3.64	27.58±4.81	0.082
Weight(MEAN±S.D)	68.88±10.25	69.98±10.49	0.59
Parity N (%)			0.42
Primiparous	25(50%)	29(58%)	
Multiparous	25(50%)	21(42%)	
Type of Delivery N (%)			0.832
Spontaneous	33(66%)	34(68%)	
Vaginal Delivery Instrumental	17(34%)	16(32%)	
Type of Tear N (%)			0.539
FIRST DEGREE	9(18%)	6(12%)	
SECOND DEGREE	33(66%)	38(76%)	
THIRD DEGREE	8(16%)	6(12%)	

Table II: Mean VAS Pain Scores

Mean Vas Scores	Lignocaine (MEAN±S.D)	Ropivacaine (MEAN±S.D)	P Value
At The Time of Suturing	4.54±1.84	2.08±1.32	0.005
30 Minutes	3.32±1.03	0.76±1.07	0.713
3 Hours	6.08±1.5	0.64±0.82	<0.01
6 Hours	2.56±1.59	1.56±1.01	0.001

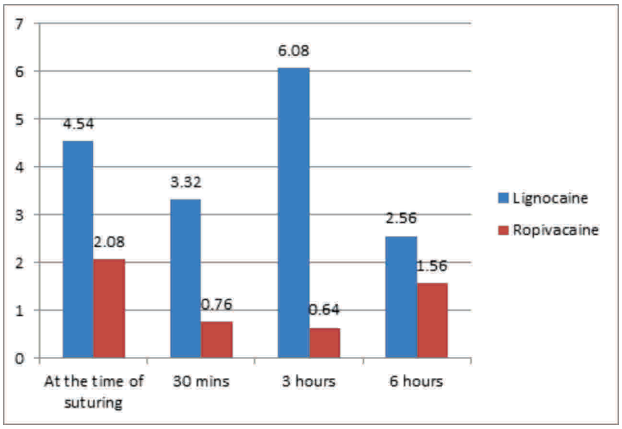

Fig 2: Comparison of VAS Scores between Two Groups

Table III: Need for Additional Local Analgesia at Suturing and on Demand Systemic Analgesia in both Groups

	Lignocaine		Ropivacaine		P-value
	n	%	n	%	
Need for additional Analgesia at the time of Suturing					0.004
Yes	17	34%	5	10%	
No	33	66%	45	90%	
Systemic Analgesics					
Given	20	40%	5	10%	0.001
Yes	30	60%	45	90%	
No					

Discussion

The pain is now considered as a fifth vital sign and it is associated with adverse effects like poor wound healing, wound infection, hypertension, deep venous thrombosis, delayed discharge from hospital and depression.[10] However, persistent perineal pain is most commonly associated with the instrumental delivery. The incidence of persistent perineal pain is documented up to 7% at 6 weeks post partum and 4% at 6 month post partum.[11] The main aim of the current study is to alleviate the post episiotomy perineal pain without further increasing use of systemic analgesics.

In our study the mean pain scores were significantly lowered at the time of suturing, 3 hours and 6 hours post-partum in the Ropivacaine group but non-significant among two groups after 30 minutes of repair. Study by Gutton et al[8] in 2013 showed effective reduction in pain scores at 2, 24 and 48 hours post episiotomy repair in Ropivacaine group and higher maternal satisfaction at 48 hours. The mean pain score was below 4 in Ropivacaine group as compared to Lignocaine group. Similarly, a study conducted by Nagraj et al[6] highlighted that analgesic efficacy of lignocaine and ropivacaine was equal till 4 hours of perineal repair that was in contrast to our study. However, pain scores were higher in lignocaine group after 4 hours that was attributed to the decreased half-life of lignocaine. It was also noted that mean VAS score was less than 1 after 4 hours in ropivacaine group and hence highlighting the greater efficacy of ropivacaine. When compared to our study the pain scores were assessed up to 6 hours, and they were significantly lowered in ropivacaine group, but maternal satisfaction could not be assessed due to early discharge.

About 40% of patients in the lignocaine group required oral analgesics after 3 hours as compared to that of ropivacaine group in our study. In a study by Nagraj et al[6] concluded that the ropivacaine group did not require oral analgesics for 24 hours but the lignocaine group requires analgesics after 4 hours. Similarly, study by Deshpande et al[12] concluded that the time for first analgesic demand was prolonged in ropivacaine group after about average 10.2 hours as compared to 2.2 hours in lignocaine group. Prolonged analgesic effect of ropivacaine for skin surgeries after skin infiltration has also been proven by Moffitt et al[13] which is about 10 hours and for lignocaine it is up to 2 hours. These were similar to our study in which the lignocaine group needed rescue analgesia after 3 hours and can be justified by the shorter half-life of Lignocaine.

In our study, about 90% of patients in Ropivacaine group and 60% in Lignocaine group did not require oral analgesia. Contrary to our results, Schinkel et al[9] in France compared ropivacaine, lignocaine and saline use for perineal infiltration for first 24 hours in patients given epidural analgesia. They concluded that the proportion of patients not demanding oral analgesia were more in lignocaine group about 53% and insignificant among three groups (p=0.09). Whereas about 35% of patients in ropivacaine group did not require analgesia as compared to 90% of patients in our study. This can be explained by the simultaneous epidural infusion and the total 24 hour period taken into account for analgesic consumption.

There were no adverse effects noted in our study participants of either group similar to the other studies by Gutton et al[8] and Nagraj et al.[6] Maternal satisfaction was not assessed in our study due to the early discharge of uncomplicated patients as per hospital protocol. The need for additional analgesia at the time of suturing was not studied in any of the previous studies but it was taken into account in this study.

In clinical use, other drugs have also been compared to lignocaine. Clonidine has been used as an adjuvant to lignocaine and when compared to lignocaine alone, the combined group was significantly lowering the pain intensity and helped the patients to carry out routine activities with ease like squatting, walking, sitting.[14] Similarly another study compared the lignocaine alone with combination of metaclopramide and lignocaine for third degree perineal repairs, and it found significant decrease in mean pain scores after episiotomy for 24 hours.[15] Hypotension and bradycardia were the main side effects noted in the metaclopromide and lignocaine combined group.

The limitation of this study is that the mean pain scores were noted only up to 6 hours due to the early discharge of uncomplicated vaginal deliveries. Blinding of professionals and medical staff was not done.

Conclusion

Ropivacaine is more effective in reducing post episiotomy perineal pain as compared to lignocaine. It can be safely used by the obstetricians as has least side effects and therefore, can replace lignocaine.

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ORIGINAL ARTICLE

Clinical Significance of Serum Adenosine Deaminase Levels in Breast Cancer Patients

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ABSTRACT

Objective: To compare serum adenosine deaminase (ADA) levels in untreated and treated cases of breast cancer patients.

Study Design: It was an Analytical, observational study.

Place and Duration of study: The study was carried out in the Department of Biochemistry, Islamic international Medical College in collaboration with Department of Surgery, Holy Family Hospital, Rawalpindi during one year period from April 2017 to March 2018.

Materials and Method: Total 150 subjects were selected for the study using convenient non probability sampling technique. Selection criteria for patients were both untreated and treated cases of breast cancer. Selection criteria for controls were healthy individual without having any malignancy and all the diseases in which adenosine deaminase is raised. Out of total 150 subjects, we took 70 controls and 80 cases. Of 80 cases, 44 were untreated and 36 were treated breast cancer patients. Serum adenosine deaminase levels of both controls and cases were measured and entered into SPSS version 21 for analysis. Descriptive data were given in the form of mean ± standard deviation (SD). "Independent *t* test" was applied and "p" values less than 0.05 were considered statistically significant.

Results: Mean of serum adenosine deaminase level was compared among controls and untreated cases. It was found that serum ADA levels were high in untreated cases as compared to controls (17.75 ± 4.17 VS 14.92 ± 3.73) with p-value 0.001. Mean of serum ADA levels were also compared among untreated and treated cases. It was found that serum ADA levels were markedly low in treated cases as compared to untreated cases (13.18 ± 4.18 VS 17.75±4.17) with p-value <0.0001.

Conclusion: It is concluded that serum adenosine deaminase levels are significantly raised in female patients of breast cancer; however these levels get lowered after treatment such as chemotherapy, radiotherapy, hormonal therapy and surgical excision.

Key Words: *Adenosine Deaminase (ADA), Breast Cancer, Malignancy, miRNA, Tumor Grades.*

Introduction

Breast cancer is malignancy in the tissues of breast.[1] It is the most common cancer among females out of all types of cancers. Worldwide approximately 1 million newly diagnosed cases are reported. It is the 2nd leading death cause in females. In women, it is the most common invasive cancer.[2] On overall ranking of deaths caused by cancers, breast cancer ranks 5th.[3] In Pakistan, breast cancer is the most frequently diagnosed cancer among females. It is reported that as compared to Iran and India, Pakistan has 2.5 times greater incidence of breast cancer. This means that almost one in nine female patients suffer from it.[4] Approximately 90,000 women suffer from breast cancer every year in Pakistan.[1] Fortunately, if cancer is diagnosed at an early stage, it can be prevented and treated.[5]

Studies from Lahore and Karachi have shown that breast cancer comprises up to 1/3rd of all malignant tumors in females.[6]

"Adenosine deaminase (ADA) is an important enzyme of the purine-inactivating chain. It helps in catalyzing the irreversible deamination of adenosine and 2'-deoxyadenosine to inosine and 2'-deoxyinosine respectively". Adenosine deaminase

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converts a component which is toxic to lymphocytes i-e deoxyadenosine, to another molecule called deoxyinosine, which is not harmful to the body.[7] Breast carcinoma includes a chain of events that are very inflammatory.[8] Adenosine is a significant molecule that plays an important role in signaling. It employs prominent anti-inflammatory effects in tumorous conditions like prevention of tumor invasion in lymphoid cells. Amplified adenosine deaminase activity diminishes the protective molecule adenosine.[9] A study has shown the diagnostic value of ADA activity in malignant and benign breast tumor patients. According to that study the serum ADA activity in benign tumors was observed to be greater than the normal (noncancerous) breast tissues and it was highest among serum of patients with malignant tumors.[10]

To the best of our knowledge there is no study at national and local level regarding the relationship of serum ADA levels in breast cancer patients. This research will help us to determine the clinical significance of serum adenosine deaminase levels estimation in breast cancer patients. A study was planned to compare serum adenosine deaminase (ADA) levels in untreated and treated cases of breast cancer patients.

Materials and Methods

It is an analytical, observational study carried out in the Department of Biochemistry, Islamic International Medical College in collaboration with Department of Surgery, Holy Family Hospital, Rawalpindi during a period of one year from April 2017 to March 2018. In this study ADA levels were measured in blood samples from patients and controls.

Approval from the ethical review committee of the institute was obtained. An informed written consent regarding participation in the study was taken from the patients. Total 150 subjects, who fulfilled the inclusion criteria, were included in the study. Convenient non probability sampling technique was adopted. Selection criteria for patients were both untreated and treated cases of breast cancer and selection criteria for controls were: healthy individual without having any malignancy and all the diseases in which serum ADA is raised i.e. tuberculosis, sarcoidosis, chronic obstructive pulmonary disease, HIV, chronic heart failure, psoriasis and rheumatoid arthritis. Out of 150 cases studied, 70 were controls and 80 were cases. Cases were further divided into two groups i.e. untreated cases which were 44 and treated cases which were 36. Treated cases included cases of breast cancer that had gone through any of these treatments: chemotherapy, radiotherapy, hormonal therapy and surgical excision.

Blood was drawn from peripheral veins, transferred to EDTA tube, gently mixed and made to stand upright. The blood samples were centrifuged at 2200 RPM for 10 minutes. The separated plasma was stored at -70°C till completion of sample collection. The invitro quantitative determination of Human ADA concentrations in serum were carried out by ELISA in accordance with the instructions given by manufacturer[11], in the research laboratory of Department of Biochemistry in Islamic international medical college. The data was entered into SPSS version 21 and analyzed. Descriptive data were given as mean ± standard deviation (SD). "Independent *t* test" was used and "p" values of less than 0.05 were considered statistically significant.

Results

Out of 150 cases studied, 70 were controls and 80 were cases. Cases were further divided into two groups i.e. untreated which were 44 and treated which were 36. Among cases 45 individuals were < 50 years of age and 35 individuals were > 50 years of age. Whereas among controls, 47 individuals were < 50 years of age and 23 were > 50 years of age. Similarly premenopausal women were more in both cases and controls. Among breast cancer cases 59 individuals had sporadic disease whereas 21 had familial.

Mean serum ADA levels were compared among controls and untreated cases. It was found that mean serum ADA levels were high in untreated cases as compared to controls. This difference of mean serum ADA was found statistically significant with "p-value" 0.001.

Mean of serum ADA levels were also compared among controls and treated cases. It was found that serum ADA levels were slightly low in treated cases than the controls. This difference of mean serum ADA was found statistically not significant with "p-value" 0.087.

Mean of serum ADA levels were also compared among untreated and treated cases. It was found that serum ADA levels were markedly low in treated case as compared to untreated cases. This difference of mean serum ADA was found statistically very significant with "p-value" <0.0001. (Table I)

Table I: Mean Adenosine Deaminase Activity (ADA) In Controls, Untreated and Treated Cases

Study Group	ADA levels (ng/ml)	p-value
Controls (n=70)	14.92±3.73	0.001
Untreated cases (n=44)	17.75±4.17	
Controls (n=70)	14.92±3.73	0.087
Treated cases (n=36)	13.18±4.18	
Untreated cases (n=44)	17.75± 4.17	<0.0001
Treated cases (n=36)	13.18± 4.18	

Discussion

In the past few years, the interest has increased regarding the utilization of hormones, enzymes and antigens for diagnosis and prognosis of different tumors (i.e both benign and malignant). In addition to this, researchers are using hormones, enzymes and antigens as assessment tools for assessing the treatment response in patients. They have conducted experiments to assess and check the effect of different enzymes on breast cancer, and correlations between some of the enzyme activities in malignant cells and the carcinogenic processes are also explored.

Total serum ADA activity has been observed in patients with different types of tumors. Some studies suggest that increased ADA activity play an active role in the salvage pathway activity of neoplastic cells and tissues.[12,13] Whereas others are of the opinion that accelerated pyrimidine and purine metabolism in necrotic cells and tissue cause an increase of adenosine concentration, which in turn increase the activity of ADA through compensatory mechanism.[14,15]

Aghaei in 2005 reported that the total ADA activity in serum of breast cancer patients was significantly higher than healthy individuals.[16] Similarly increased activity of serum total ADA had been confirmed by "Mini Walia" and Archana Choudhari in breast cancer patients.[17,18] In present study we have found that mean serum ADA is significantly raised in patients of breast cancer as compare to healthy individuals (p = 0.001). Similar results were also documented by, Borzenko BG and Aghaei M.[19,20,10]

Walia.M in her study concluded that in breast cancer patients after mastectomy, serum ADA levels were decreased significantly.[17] Similarly Borzenko bg mentioned in his study that serum ADA was significantly changed after surgery.[20] In the present study we have found that ADA levels are significantly less in treated cases as compare to untreated cases of breast cancer with p= <0.0001.

There are few limitations of the study as well, which are mainly related to shorter duration of the study. The study parameters are reduced to complete the trial in stipulated time period, otherwise the information related to other diagnostic parameters and detailed clinical presentation could have been more informative.

This study may prove helpful in further research at molecular level like considering the role of ADA in predicting the successful breast cancer treatment, circulating miRNA and RNA expression of ADA gene in local tissue.

Conclusion

Based on the current results, it is concluded that low serum ADA levels in treated cases as compare to untreated cases can be considered as a prognostic marker for breast cancer treatment and high serum ADA levels in breast cancer patients can prove a valuable marker for early detection and diagnosis of breast cancer along with other established markers. For this purpose a diagnostic accuracy study by comparing serum ADA with gold standard test for the diagnosis of carcinoma breast ie. Histopathological examination of breast tissue will be useful.

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ORIGINAL ARTICLE

Viral Load and Alanine Amino Transferase (ALT) in Hepatitis B Positive Individuals at a Tertiary Level Care Hospital

Hammad Ayaz[1], Huma Mahmood Mughal[2], Muhammad Ayaz Bhatti[3]

ABSTRACT

Objective: Objective of the study is to see the Co-relation in between ALT and viral load of HBV positive individuals in a tertiary care facility of Rawalpindi.

Study Design: This was a cross sectional study using facility based data of diagnosed and treated patients.

Place and Duration of Study: Study was conducted during the first six months of 2019 from first January to 30th June at liver center Holy family Hospital.

Materials and Methods: This was a cross sectional study carried out in a tertiary level care facility of Rawalpindi, the duration of the study was from January 2019 to June 2019. All patients with HBV positive and age above 18 years investigated admitted recorded followed up from January 2019 to June 2019 were included. Sampling method was Non-probability universal sampling. Data was collected through questionnaire mentioning all the required variables. Data was entered and analyzed by using Statistical package for social sciences version 21 for frequencies cross tabulations and co relation.

Results: Co-relation was checked in between the ALT and viral load. It was observed that apparently there is no co relation in between the ALT and the amount of viral load. Statistically there is slightly negative correlation in between the ALT and the viral load and even it can be said no co-relation.

Conclusion: ALT is not the true representative of viral load in hepatitis B. A low ALT can present with high viral load and high ALT can be found with low viral load. Therefore the treatment and prognostic models should not be only relied upon ALT as commonly done by the general practitioners.

Key Words: *Chronic Hepatitis B, Serum ALT, Viral Load.*

Introduction

Hepatitis B is a major public health problem all over the world. In the past it was known as serum hepatitis. Almost two billion people in the world have evidence of current or past HBV infection; More than 350 million are carriers of HBV infection. Carriers harbor the virus in their liver and cause about 620000 deaths. Another important fact about this infection is that HBV causes 60-80% of all liver primary cancers. South East Asia region is the main affected region and one third of the population is infected. Around 80 million carriers of HBV which is 6% of the world population are at increased risk of developing cirrhosis, hepatic decomposition, and hepatocellular carcinoma (HCC).[1] This is the 10th leading cause of death worldwide, death toll reaches to 0.5 to 1.2 million deaths average 620000 occur annually by chronic hepatitis, cirrhosis, and hepatocellular carcinoma.[2] There are 1.25 million people In the United States who are hepatitis B carriers and are positive for hepatitis B surface antigen (HBsAg) for more than 6 months.[3] The prevalence rates in Europe and North America is less than 1%. The global prevalence of HBsAg varies greatly and country to country, defined as having a high HBsAg carriers ≥ 8% , intermediate 2% to 7%, and low < 2%. The prevalence is higher among those who immigrated from high or intermediate prevalence countries.[4]

Pakistan is highly endemic with HBV, various studies has been conducted, among 4,000 volunteers, 180 (4.5%) tested positive for HBsAg and 20 (0.5%) were positive for HBs antibodies. Out of 180 HBsAg positive samples, 150 showed a single HBV D genotype infection; 29 showed co-infection of

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genotypes B and D; and 1 exhibited co-infection of genotypes C and D.[5] One of the studies given the results that nine million people are infected with HBV and the carrier rate is 3.5 to 7% which indicates prevalence with intermediate ranking.[3]

A systemic review of 26 prospective studies done by Mommeja Marin et al showed significant co-relation between viral load and various marker of disease activity like ALT and serological response. Lin et al. also correlate virological parameters of progressive disease with high and normal ALT. literature strongly proves that HBV is a progressive and potentially fatal and the problem should be addressed as soon as possible for better control.[6] Assessing the association between viral load and ALT is necessary for proper screening, identifying high risk people and their proper management. For the treatment of the individual with elevated ALT is an important factor in the decision making to initiate the treatment.[7] The objective of our study is to see the co-relation and association between ALT and viral load in HBV positive individuals. Raised ALT is a threat presenting liver cell injury.[8] In countries like Pakistan where diagnostic and treatment facilities for hepatitis B are scarce and majority of population is on mercy of general practitioners or quacks. GPs are also not familiar with the proper management of hepatitis B. This study will provide awareness to those remote area general practitioners, the general population and health care providers that raised ALT may be alarm for some serious consequence. On the other side of the spectrum hepatitis B patients with normal ALT do not mean that the person is alright and no action is warranted.[9]

Objective of the study was to see the Co-relation in between ALT and viral load of HBV positive individuals in a tertiary care facility of Rawalpindi. This will be a cross sectional study using facility based data of diagnosed and treated patients during the first six months of 2019 from 1st January to 30th June. The data utilized will consist of demography, gender, and diagnostic investigations including routine and specialized investigations like PCR and genotyping if available.

Materials and Methods

This was a cross sectional study carried out in a tertiary level care facility of Rawalpindi, the duration of the study was from January 2019 to June 2019. All patients with HBV positive and age above 18 years investigated admitted recorded followed up from January 2019 to June 2019. All other patients without HBV and age less than 18 years not investigated admitted recorded followed up before 1st January 2019 or after 30th June 2019 in the same facility or any other facility. Sampling method was Non-probability universal sampling and all patients as per inclusion and exclusion criteria from 1st January 2019 to 30th June 2019 were taken into account. Data was collected through questionnaire mentioning all the required variables. Data was entered and analyzed by using Statistical package for social sciences version 21 for frequencies cross tabulations and co relation. Approval was taken from Institutional Research Forum and Ethical Review Committee of IIMC, No harm or ethical issue is involved as the secondary data was collected. No direct involvement of patient is there.

Results

Total number of 103 was fulfilling the inclusion and exclusion criteria during the study period. Age and gender distribution can be depicted from the Table I. It's quite evident more males are infected with hepatitis B than females 77 males and 26 females. It's also seen that 18-30 is the age group mostly affected both in males and females. The infection rate decreases as the age advances.

Table I: Age and Gender Distribution of the Patients

		Age of the Patient					Total
		18-30 Years	31-40 Years	41-50 Years	51-60 Years	61-70 Years	
Gender of the Patient	Male	48	17	10	1	1	77
	Female	13	11	2	0	0	26
Total		61	28	12	1	1	103

Thirty nine percent of the patients were having ALT less than 40iu, 32% between 41 and 100iu, 15% 101-150iu, 6% between 151-200, 1% 201-250iu, 4% between 251-300, 1% between 301-350 and 2% 451-500.

Regarding the viral load the percentage of the patients was 24% were having viral load 2001 to 50000, 12% between 50001 to 100000, 31% between100001 to 1000000, 10% from 1000001to 2000000, 2% in between 2000001 to 30000000 and 22% more than 3000000.

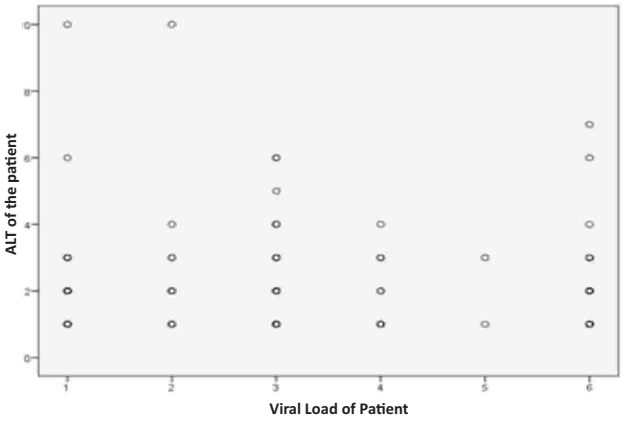
Table II: ALT and Viral Load in Patients

		Viral Load of Patient					
		< 50000	50000-100000	100001-1000000	1000001-2000000	2000001-3000000	> 3000000
ALT of the Patient	1-40 Units	9	4	14	5	1	7
	41-100 Units	10	4	8	2	0	9
	101-150 Units	4	2	4	2	1	3
	151-200 Units	0	1	3	1	0	1
	201-250 Units	0	0	1	0	0	0
	251-300 Units	1	0	2	0	0	1
	301-350 units	0	0	0	0	0	1
	451-500 units	1	1	0	0	0	0
Total		25	12	32	10	2	22

Co-relation was checked in between the ALT and viral load which depicted as shown in the following graph. It was observed that apparently there is no co relation in between the ALT and the amount of viral load. Statistically there is slightly negative correlation in between the ALT and the viral load and even it can be said no co-relation.

Table III: Correlations

		ALT of the Patient	Viral Load of Patient
ALT of the patient	Pearson Correlation	1	-.022
	Sig. (2-tailed)		.824
	N	103	103
Viral Load of Patient	Pearson Correlation	-.022	1
	Sig. (2-tailed)	.824	
	N	103	103



Graph: 1

Discussion

The study addresses the issue of detection by some easy non-invasive test relationship which exists in between the commonly used ALT and viral load in liver disease or this relationship can stratify the liver disease severity in hepatitis B patients.[10] ALT/AST and viral load both of the indices represent degrees of hepatic inflammation rather than hepatic fibrosis.[11] In literature no apparent evidence was found and if available scarcely show any relationship in between the ALT and viral load in hepatitis B. Most of the literature does not provide direct relationship in between the two entities.[12] In present study an attempt was made to see the relationship in between ALT and viral load. The study provides evidence that there is no relationship and even negative relationship in between the two. This study will sensitize the general physicians in countries like Pakistan where limited health care is available to masses and specialized care is a dream for the poor's and destitute.

Most of the studies are based on specialized care of hepatitis B but the question is that the general population and community physicians commonly rely on the routine liver function tests and if they find them within normal range are satisfied that the disease like hepatitis B is no threat.[13] The motive of this study is that the community physicians in Pakistan should be informed motivated and guided that even if the ALT is normal in Hepatitis B patients that does not mean that the virus load is also below the required level. As the present study points out that 33% of patients with viral load more than three million were having ALT less than 40 IU and fifty percent were having ALT level below 100 but the viral load was more than three million. The viral load could be highest even with normal ALT level, and we should proceed further for steps to cure the problem in addition to the necessary preventive and curative measures to eliminate the problem.[14]

Conclusion

From the study, it can be concluded that ALT is not the true representative of viral load in hepatitis B. A low ALT can present with high viral load and high ALT can be found with low viral load. Therefore the treatment and prognostic models should not be relied upon ALT as commonly done by the general practitioners.

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ORIGINAL ARTICLE

Tension Band Wiring for Displaced and Uncomminuted Fractures of the Olecranon

Yahya Baloch, Saeed Ahmed Shaikh, Yasir Hussain

ABSTRACT

Objective: To evaluate the functional results of tension band wiring in patients with olecranon fractures.

Study Design: Prospective case series.

Place and Duration of Study: Department of trauma and orthopedics Jinnah Postgraduate Medical Centre, Karachi from December 2017 to June 2018.

Materials and Methods: We included 62 patients having closed fracture of olecranon process. Brief history regarding the fracture duration, presence of infection, smoking habits and comorbids such as hypertension and diabetes mellitus was obtained. Tension band wiring for the olecranon fracture was performed after patients met the inclusion criteria. Final results were assessed at the end of three months postoperatively using mayo elbow performance score (parameters include: pain (45 points), motion arc (20 points), stability (10 points), and daily function (25 points) with a maximum of 100 points. A score of 90-100 points was considered as excellent, good 75-89, fair 60-74 and poor score of less than 60 points. Excellent and good results were considered as satisfactory.

Results: Mean age of the patients was 35.03±7.87 years. There were less female patients (n=23, 37.1%) as compared to male (n=39, 62.9%) patients. Mean fracture duration of 2.97 $\pm$ 1.28 days was observed while mean mayo elbow performance scale (MEPS) was found to be 83.11 $\pm$ 10.02. According to Mayo Elbow Performance scale excellent and good functional results found in 51(82.26%) cases were considered as satisfactory outcome. Satisfactory outcome was significantly higher in patients belonging to ≤30 years age group in contrast to above 30 years of age patients (p=0.037). Results were not significantly related to gender, hypertension, diabetes mellitus, smoking and obese cases. Significant association was found with duration of fracture.

Conclusion: Tension band wiring is an effective way of treating olecranon fractures particularly those which are displaced and un-comminuted and provide good to excellent functional results in most cases.

Key Words:*Mayo Elbow Performance Score*,*Olecranon Fracture, Tension Band Wiring.*

Introduction

Olecranon process is an important part of the proximal ulna which gives stable configuration to the elbow joint. Fractures of the Olecranon involving adults of either sex are a frequent injury of upper extremity caused by moderate to severe trauma.[1] Olecranon fractures account for approximately 40% of all fractures in proximity to elbow joint[2] and near about 10% of all upper extremity fractures.[3,4]

Mechanism of injury of olecranon fracture involves a direct blow to the bony prominence of elbow, indirect injury from fall on outstretched hand or combination of both.[4] Combined injury results in a more comminuted and displaced fracture even leading to fracture dislocations of elbow.[5] Periosteal damage around olecranon process and fascia of the triceps combining violent triceps muscle contraction results in a more displaced fractures.[5,6] Besides low-velocity extra-articular fractures, many olecranon fractures extend into the joint of the elbow producing articular step off and lead to reduced mobility, late rehabilitation, development of osteoarthritis, and other morbidities. Therefore, absolute fracture reduction and stable fixation are key steps to avoid instability and stiffness of the joint and development of osteoarthritis.[5,6]

There is a variety of systems which classify olecranon fractures but most widely accepted mayo clinic classification is described by Morrey.[7] Type I are undisplaced, type II fractures have step off of more than 2 mm, but stable joint, while 3rd type are

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unstable and displaced. 2nd and 3rd Type are further sub classified into uncomminuted (A) or with comminution(B).

Cast splints at 45-90^0 of flexion can be applied to patients with non-displaced type I olecranon fractures.[3] Since most of these fractures are displaced, therefore these fractures need internal fixation. Various internal fixation techniques are available for olecranon fractures such as figure of 8 steel wire fixation, anatomical locking plate, intramedullary fixation using screw or rush nails and excision of fracrtured fragments in case of severe comminution, however the most frequently applied procedures are tension band wiring and more rigid method of plate and screws fixation.[6,8,9] These two fixation methods have equal and comparable results particularly in mayo type II uncomminuted variety, which are the most usual types. Plate fixation is a good alternative particularly in comminuted and unstable fractures.[10, 11] Tension Band Wiring (TBW) first described by Weber and Vasey[12] is a relatively simple and easy procedure which can be performed by even junior residents during early training.[2] It requires minimum instrumentation and implants in comparison to plate fixation.[13] Although there are chances of proximal migration and protrusion of implant (K-Wires) related to this procedure necessitating its removal[4], implant prominence is less likely since smaller amount of implant is used in TBW in contrast to plate fixation.[13,14] In addition TBW is better in terms of cost and operative time in comparison to plate fixation[14] particularly in our part of the world. Rate of infection and revision surgery is also found to be low in TBW technique than other methods like plate fixation.[14]

The local data on this topic is sparse. The present study was designed not only to generate local data but also to authenticate the previous literature. The rationale of our study was to evaluate the functional results of tension band wiring in patients with olecranon fractures.

Materials and Methods

This prospective case series was conducted at the Department of trauma and Orthopedic Surgery, Jinnah Postgraduate Medical Centre, Karachi from December 2017 to June 2018. A total of 62 participants between age ranges of 18 to 50 years of either sex with displaced and uncomminuted olecranon fractures less than one week old were recruited from emergency or outpatient department with Confidence level of 95%. Technique used to collect sample was Non-probability consecutive.

Patients with Comminuted fracture (presence of multiple bone fragments on X-rays), associated distal humerus fracture (assessed on physical examination and fracture confirmed on X-rays), open fracture (presence of wound along with the fracture), infection at the fracture site (presence of redness, hot, tender on physical examination or presence of discharge from the wound), and with neurovascular deficit (wrist drop or no sensation in hands on pin prick was taken as Neurovascular deficit) were ruled out from the study.

Permission was obtained from the institutional review board and Patients were considered for study on meeting the inclusion criteria and informed consent was taken from the patients. The purpose, procedure, risks and benefit of the study were explained to all the patients. Confidentiality of the study participants was ensured. Relevant history such as age, gender, BMI, duration of fracture, smoking status (patients smoking 5 or more cigarettes per day for more than 6 months or more), history of comorbid conditions like diabetes mellitus and hypertension (known case of hypertension for more than 2 years or more on treatment assessed through physicians prescription and patients record) was obtained.

Surgery was done by a senior resident (year two or beyond) or author himself. The procedure was performed in lateral decubitus position after the induction of general anesthesia under pneumatic tourniquet control applied at the upper arm. The incision was made posteriorly in midline curving around the olecranon tip and the fracture was explored and reduced. The fracture was fixed with two parallel k-wires inserted just distal to the olecranon tip and engaged into the opposite (anterior) border of the ulna. Anchoring in the opposite cortex of the ulna avoids migration of the implant in proximal direction. The circlage wire was passed through a bone tunnel just distal to the fracture and tightened in a figure of eight manner. Patients were discharged and followed in outpatient department on regular interval. Functional Outcome was assessed using Mayo elbow performance score[15]

at the end of three months postoperatively. This system is based on points in four categories which include: pain (45 points), motion arc (20points), stability (10 points), and daily function (25 points) with a maximum of 100 points. Excellent score is 90-100 points, good 75-89, fair 60-74 and poor score less than 60 points. Excellent and good results were considered as satisfactory.

Data was entered and analysis was done on Statistical package for social sciences (SPSS) version 21 for windows. Age of the patients and duration of fracture, height, weight, body mass index and mayo elbow performance score was presented as mean ± standard deviation. Gender, smoking status, history of diabetes mellitus and hypertension and functional outcome as excellent, good, fair and poor and satisfactory outcome was presented in terms of frequencies and percentages.

Effect modifiers/confounders like age, duration of fracture, gender, smoking status, body mass index, history of diabetes mellitus and hypertension was dealt through stratification to see the effect of these on outcomes. Post stratification chi square test was applied and significance level was set at 0.05.

Results

A total of 62 patients with closed olecranon uncomminuted fractures were included in our series. The average age of the patients was 35.03 ± 7.87 years. Patient related demographics such as Average weight, height, BMI, duration of fracture and MEPS (Mayo Elbow Performance Score) are reported in table I. There were 23(37.1%) female and 39(62.9%) male patients. Hypertension was observed in 45.16% (28/62), and diabetes mellitus in 51.61% (32/62). There were 24(38.71%) smokers and all were men.

Regarding functional outcome, 20(32.3%) cases had excellent results, 31(50%) good, 9(14.5%) fair and 2(3.2%) had poor results as shown in figure 1. Excellent and good results found in 51(82.26%) cases were considered satisfactory. Regarding complications related to this procedure, we noted proximal migration of wires in 10 patients requiring removal and infection in three patients. Poor results were related to infection and skin breakdown found in two patients.

Satisfactory outcome was significantly high in ≤ 30 years of age patients as compare to above 30 years of age patients (p=0.037) as shown in Table I. Satisfactory outcome was not statistically significant with gender, hypertension, diabetes mellitus, smoking and obesity while it was significant with duration of fracture.

Table I: Demographics of the Patients (N=62)

Variables	Mean
Age (Years)	35.03
Weight (kg)	72.26
Height (cm)	160.97
BMI (kg/m^2)	27.863
Duration of Fracture (days)	2.97
MEPS	83.11

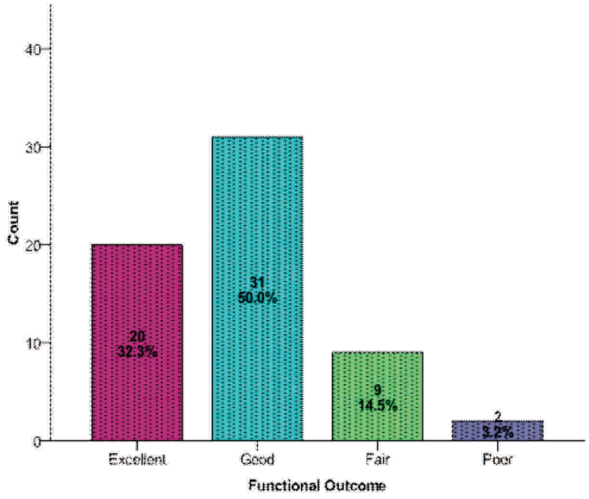

Fig 1: Functional Outcome According to MEPS

Discussion

Main purpose of surgical treatment of olecranon fractures is Anatomic restoration and stable fixation which permits immediate movement and decreased postoperative morbidities like joint stiffness.[6,8] Out of the broad range of surgical methods available for internal fixation of these fractures, the method of tension band wiring (TBW) is the unanimously established method.[16] This technique converts tensile surfaces of proximal ulna into compressive forces thereby promoting fracture healing.[2]

We found good to excellent results in more than 80% (Excellent 20, 32.3%, Good 31, 50%)of the cases with mean MEPS of 83.11 ± 10.02 which is supported by national study conducted in 2012 where combined good to excellent results were found near to 80% (Excellent 13, 44.8%. Good 10, 34.5%).[16] Similar results were also found in an international study

conducted by Chalidis BE[17] et al where good to excellent results were observed in 53 (85.5%) patients out of 62 patients. They concluded the TBW as gold standard treatment for displaced but uncomminuted fractures. Long term results are also satisfactory for olecranon fractures treated with TBW. In a prospective study over a period of 20 years, patient related outcomes were excellent in majority of patients and the technique of TBW for olecranon fractures was found to be sufficient and durable.[18]

In a cohort comparison between locking plate and tension band wiring (TBW) used for olecranon fractures, there was no statistically significant difference in functional outcomes measured according to mayo elbow performance score (MEPS).[13]Both groups had excellent to good results in all patients (10 patients in each group). This study further addressed that the cost of locking plate system was nearly double the cost of TBW used for olecranon fractures. Furthermore the operative time required to fix olecranon fractures with TBW was about half an hour less than the plate group.

Various complications reported with TBW technique include palpable implant requiring removal, proximal migration of wires, infection, implant failure, nonunion, arthrosis and radioulnar synostosis.[14,19,20] Although the overall complication rate reported is higher than plate fixation because of the more protruding and painful wires, the more serious complications such as repeat surgeries and infection are more commonly related to plate group[14]. We found prominent implant due to proximal migration in 10(6.2%) patients. In a comparative prospective trial conducted by duckworth AD et al[14], approximately 50% of the symptomatic patients required implant removal who underwent TBW for olecranon fractures. However none of the patients in TBW group developed infection. Similarly in a recent comparative series of patients with olecranon fractures nine out of 46 patients in TBW group developed prominent hardware which later required removal.[21]

In a study done by Anani A et al[22] out of 63 patients with fractures of the olecranon, six patients developed infection, in contrary to our study where we found infection in three patients which required subsequent implant removal and repeat surgeries to achieve healing. Similarly in a recent retrospective study, two patients out of 47 in intramedullary group of TBW developed infection.[23] Both patients needed repeat debridements and hardware removal.

We found better results in patients younger than 30 years, although literature is sparse in this regard. This may be related to the impaired inflammatory response and delayed fracture healing with increasing age.[24]

Conclusion

Tension band wiring is an effective way of treating olecranon fractures particularly those which are displaced and un-comminuted and provide good to excellent functional results in most cases.

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ORIGINAL ARTICLE

Psychological Problems Related to Obesity in Early Adulthood

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ABSTRACT

Objective: The study was aimed to investigate the relationship of psychological problems like depression, anxiety and low self-esteem among young adults suffering from obesity.

Study Design: Cross sectional analytical study design.

Place and Duration of Study: This study was carried out in Riphah Institute of Clinical and Professional Psychology, Riphah International University, Lahore, Pakistan and data was collected from two private and two government universities of Lahore during the year June 2017- June 2018.

Materials and Methods: Non probability purposive sample of 300 participants with age range 19 to 25 was incorporated in the present study. Depression was evaluated through the Hamilton Depression rating scale. Anxiety was measured in participants through the Hamilton anxiety rating scale and for self-esteem assessment Rosenberg self-esteem scale was applied. Urdu translated versions for all scales were used for present study. Both descriptive (frequencies, percentages bar graphs, mean and standard deviation) and inferential statistics (Pearson product moment correlation, Hierarchical regression analysis, Independent sample t test) were used for the data analyses.

Results: Descriptive analysis identified obesity of young adults with Body Mass Index *≥25 kgm* ^{2}. Results indicated that *106 (35.3 %)* young adults were suffering with very severe depression *40(13.3%)* with very severe anxiety and *166 (55.3 %)* with low self-esteem. Correlational analysis revealed significant positive relationship 0*.480 **p< 0.01* between depression and anxiety. Regression analysis revealed that depression and anxiety were not significantly predicting the self-esteem. No significant gender differences was found regarding all study variables (p>.05).

Conclusion: Majority of young adults with obesity suffer with severe depression and very low self-esteem. There is a significant relationship between depression and anxiety among obese young adults. However both depression and anxiety are not the predictors of low self-esteem in this sample. Men and women score equally on depression, anxiety and self-esteem.

Key Words: *Anxiety, depression, Early Adulthood, Obesity, Self-esteem*.

Introduction

Obesity is a condition of inequality of calories that are ingested and calories that are expended which lead to unnecessary fat deposit. Obesity has serious consequences in the form of some medical and mental problems. Men as well as women face different outcomes of obesity however; researchers showed the women percentage is more than male in obesity.[1] Obesity has become a significant expanse of health psychology as there are lots of psychological problems which took place owing to obesity.[2,3] Obesity always brings supplementary health compromising situations that can further divided in to bio-psycho social conditions. For example biological conditions like hypertension, diabetes cardiovascular disorders, psychological issues like depression, anxiety, low self-esteem, and social like social stigma or isolation. Such factors enhance the adverse effects of obesity.[4] Numerous empirical evidences revealed many psychological and behavioural costs that people with obesity have to pay in the form of depression, anxiety, suicidal thoughts and wishes, body dissatisfaction and low self-esteem.[5]

Depression is more than just sadness. Individual who experience depression may suffer absence of

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pleasure and interest in daily activities, sleeplessness or increased in sleep, lack of energy, incapability to focus, significant weight loss, and spirits of meaningless or extreme culpability or recurrent opinions of demise or suicide. Depression is the very common mental disorder as most of the statistics revealed. Luckily, depression is curable. A mixture of therapy and antidepressant medication can support certify recovery.[6]

Anxiety is a sensation of uneasiness as well as discomfort. Sensation of nervousness from time to time is usual. Anxiety fragment of the body's usual response or to pressure can even be supportive at times, making you more attentive as well as prepared for actions. Nevertheless anxiety disorder varies from ordinary sensation of worry. Once sensation of fright or uneasiness develop, problematic to regulate or influence with everyday activities, it's entitled an anxiety disorder.[7] There are many factors related to anxiety in student's life e.g annoying to suitable in, remain moral marks, strategy for upcoming, and be gone from home frequently causes anxiety for a ratio of students.[8] Neuropsychiatric disorders, counting mood as well as anxiety disorders, description for about 14% of global encumbrance of illness and disturb over 450 million persons on international level.[9]

Self-esteem is generally conceptualized as the feeling that one is good sufficient and therefore, persons with high self-esteem do not fundamentally think they are better to others.[8] Self-esteem is thought to provide two basic functions, one is that self-esteem is intricate in the handover of detail among the separate and the social setting as well as it can suggest a caring utility that defenses persons from undesirable practices.[10]

The aim of the present research was to examine the psychological impacts of obesity in early adulthood. Previous researches revealed that, obese people are usually remaining dissatisfied about their body image which in return affects their dietary habits and ultimately self-esteem. Obese people have low self-esteem and feel dissatisfaction and discomfort as compare to non-obese people, as well as level of depression and anxiety expected to be high in obese people. People who are active are much better than sedentary people. Exercise relief stress which in return helps to improve self-esteem.

Previous empirical evidences based upon foreign literature. Present study will be a value able contribution in the field of social and health psychology with indigenous results. Present study focused on to determine whether depression and anxiety predict low self-esteem. It was planned to understand that how depression and anxiety can cause low self-esteem in obese adults. Depression and anxiety has several negative effects in everyday life of obese adults. So, it will be helpful for clinicians and health psychologists to manage these negative emotions. The study was aimed to investigate the relationship of psychological problems like depression, anxiety and low self-esteem among young adults suffering from obesity.

Materials and Methods

Cross sectional analytical study design was followed. Non probability purposive sample of 300 participants were included (50% men and 50% women) from two public and two private universities of Lahore during the period of June 2017- June 2018. Undergraduate and postgraduate participants with age range of 19 to 25 *(M =21.67, SD=1.94)* were included. Only those individuals were included for study whose weight was above the normal ranges. Suffering from any diagnosed psychological disorder was an exclusion criterion for the study. After approval of Board of Studies (BOS) of Riphah Institute of Clinical and Professional Psychology, Riphah International University, Lahore, Pakistan present research was carried out. All ethical standards of APA were followed during the study. The researcher recognized the enclosure and barring standards. The researcher ensured the members about the full privacy of collected data. The subjects were free to leave the study at any time they wished without any penalty or prejudice. They were fully informed about the aim of the study. Their approval was taken before administering the scales. The participants were given Demographic Information Sheet, Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, Rosenberg self-esteem scale, individually. Total average time was 30 to 35 minutes for scale's administration. The data was normally distributed so parametric tests were chosen for the analyses. Pearson product moment correlational analysis was used for the assessment of relationship between variables as all the variables were

continuous in nature. Hierarchical regression analysis was employed for prediction and independent sample t test was used for gender difference examination. Data was analyzed through the SPSS version 21.

Results

Descriptive analysis revealed that *254*(84%) participants were living in a nuclear family system and *100%* with intact families. They were under grades *(50%)* and masters' *(50%)* students, all were unmarried (100%). Figure (1-3) show that *106 (35.3 %)* young adults with obesity were suffering from depression, *40(13.5%)* with severe depression, *65 (21.7%)* with moderate depression and *60(20%)* with mild depression, Likewise *40(13.35%)* young adults were suffering from very severe anxiety, 53(17%) with severe anxiety, *60(20%)* with moderate anxiety, 25(8.3%) with mild anxiety. In a similar manner *166 (55.3%)* young adults have low self-esteem.

All scales proved with significant internal reliability i.e BDI *(.88)*, BAI *(.88)* and RISB *(.74)*.

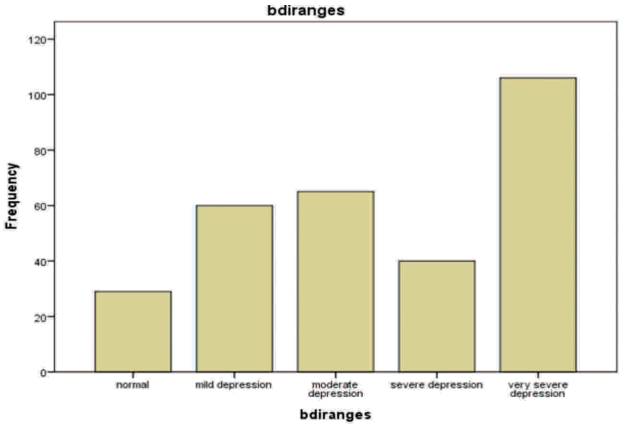

Fig 1: Level of Depression in Young Adults with Obesity (N=300).

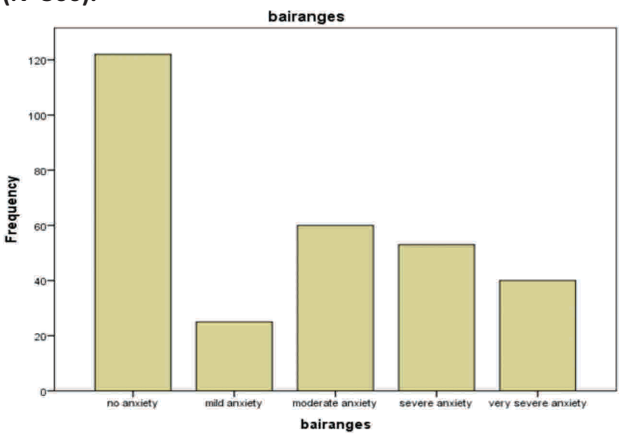

Fig 2: Level of Anxiety in Young Adults with Obesity (N=300)

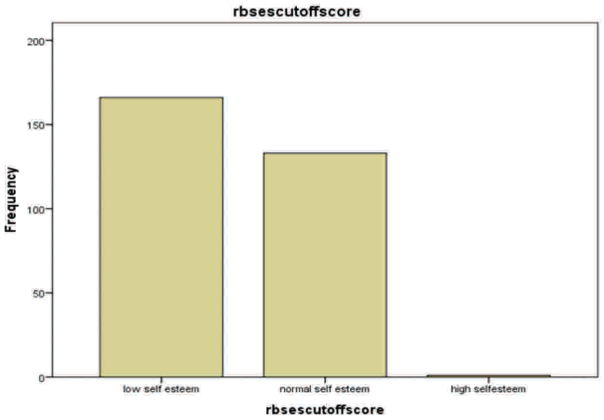

Fig 3: Level of Self-Esteem in Young Adults with Obesity

The results of correlation analysis (Table I) show that significant positive correlation *.480 **p< 0.01* between depression and anxiety.

Table I: Relationship between Depression Anxiety and Self-esteem (N=300)

Variables	Depression	Anxitey	Self -Esteem
1. Depression	-	.480**	-.060
2. Anxiety	-	-	.110
3. Self- Esteem	-	-	-

Note: HRSD= The Hamilton Rating Scale for depression, Anxiety=The Hamilton Rating Scale for Anxiety, Self-esteem= Rosenberg Self-Esteem Scale **p< 0.01.

For prediction a hierarchical regression analysis (Table II) was performed to identify predictors of self-esteem that were depression and anxiety. In the step 1 age, gender and family system non-significantly predicted self-esteem, *R2= -.001, F= (.905).* In the step II depression did not significantly predict self-esteem, *R2=.002, F= (.879).* In step III anxiety did not significantly predict self-esteem, *R2= .004, F= (1.21).*

Table II: Hierarchical Regression Analysis Predicting Self-esteem for Depression, Anxiety (N=300)

Predictors	△R2	β
Step 1	-.001	
Age		-.051
Gender		.079
Family System		-.032
Step II	-.002	
Depression		.05
Step III	.004	
Self Esteem		.105
Total R^2	.00	

Note. R2= Adjusted R Square, β= Beta., outcome variable=self esteem

Independent "sample t test" was implied to

examine gender differences and results of t test (Table III) show that there is no significant difference *P> 0.05* in depression, anxiety and self-esteem.

Table III: Gender wise Difference regarding Depression, Anxiety and Self-esteem (N=300)

Variables	Men	Women				95%	CI	
	M(SD)	M(SD)	df	t	p	LL	UL	cohen's d
Depression	18.74(9.07)	20.19(10.87)	298	-1.25	.21	-3.71	.82	-1.44
Anxiety	17.19(11.42)	18.52(11.99)	298	-.98	.32	-.3.98	1.33	-1.32
Self-esteem	14.71(3.77)	15.28(3.82)	298	-1.30	.19	-1.43	.29	-.57

Note: CI= Confidence Interval, LL=Lower Limit, UP= Upper Limit,

Discussion

The present study aimed to investigate the relationship between depression, anxiety and self-esteem in obese young adults. Prediction and gender differences were also examined for all study variables.

There is a positive relationship between depression and anxiety in obese adult. The existence of a strong relationship between anxiety and depressive symptoms in individuals with obesity has an extra significance than the association between body plump and these equal indications rewis[10]. Results from earlier studies have been assorted, through some supporting positive relations for depression and anxiety with obesity.[11] Obesity also accompany weight stigma which ultimately leads the person towards pessimistic attitude, poor psychological outcomes like depression and anxiety[5]**.** In a meta-analysis[4] more than fifteen empirical studies concluded that weight stigma was significantly related to the symptoms of clinical depression. Rosenberger, Henderson, Bell, and Grilo [12] studied that if obesity and teasing from fellows starts from early childhood then it would be more strongly related to depression in adulthood. There is an inverse but non-significant relationship found between self-esteem and depression which could be inferred like this that self-esteem might be deliberated in place of a self-justifying issue particularly in this thought-provoking period of lifecycle.[13] The young individuals through adequate self-esteem have improved control properties and are secure alongside the meanings of taxing life actions, similarly youngsters with little self-esteem are more susceptible to strain.[14] There is a high probability that people with inadequate self-esteem suffered with some psychological issues like anxiety and depression during their adult time period as compared to those with adequate self-esteem. Self-esteem deficiency also shows a significant role in increased anxiety. Further studies also established an inverse relationship between positive self-esteem and undesirable emotional consequences.[15] Meta-analysis of the studies also revealed that weight stigma is significantly associated with reduced self-esteem with teasing history during childhood.

Depression and anxiety played no role in predicting the self-esteem in present study participants. The results of the current study could fluctuate from previous studies that found low self-esteem potentially forecasts depression in adolescents and in early adulthood.[16, 17] The assumptions of the present research which is based upon the previous literature should be tested for a large population in order to get the significant results and enhance both internal and external validity.

T-test analysis revealed that there is no significant gender difference in depression, anxiety and self-esteem. Some previous studies presented that no differences in depressive signs were observed between male and female students. [18] The results also supported by the previous researches that indicated people with anxiety disorder did not show significant gender differences in the lifetime rates. [19, 20]The outcomes are convergent with the outcomes of some of the previous studies on gender differences in anxiety. [21]

The results can be inferred that men and women young adults with obesity were equally depress, anxious and with low self-esteem. Biological difference created no difference in psychological issues related to obesity. Researches also supported this idea that both men and women with obesity have low self-esteem.[22]

Conclusion

To sum up, young adults with obesity suffer with severe depression and a very low self-esteem. There is a positive relationship between depression and anxiety. Conversely depression and anxiety are not the predictors of self-esteem in this sample. No

gender differences reveal for depression, anxiety and self-esteem in young adults with obesity.

Implications

Obesity is related to many psychological problems e.g depression, anxiety and low self-esteem. Young adults should be vigilant for their caloric count, healthy life style and exercise so that they could be refrain from emotional and self-esteem problems. The results of the present study have clear implications with health psychology. As not only obesity as a medical issue should be address but its psychological impacts are even more alarming this could get in to the way of treatment plan of obese individuals. The physical and mental health go hand in hand so giving importance to one and ignore the other will not give better results on the part of the health of the community. Further researchers could explore more antecedents and consequences of obesity and enhance the already existing knowledge.

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ORIGINAL ARTICLE

Correlation of Hypovitaminosis D with Socioeconomic Status and Dental Caries in Children

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ABSTRACT

Objective: To find out the correlation of vitamin D levels with socioeconomic status and dental caries.

Study Design: Cross sectional study.

Place and Duration of Study: The study was conducted at Islamic International Medical College from September 2015 to March 2016.

Materials and Methods: Eighty children, between 2-8 years of age, were recruited after fulfilling a questionnaire from their parents or caregiver. The sample population was divided into two groups keeping in mind their dental health. Group 1 consisted of children suffering from dental caries and is comprised of 60 patients. Group 2 consisted of children with sound healthy teeth and was comprised of 20 children. Questionnaires assessing children's socioeconomic background, dietary habits were included. The data was studied using Likert scale. The diagnosis of childhood caries was based on oral health diagnostic criteria defined by WHO. Total caries score, dmft index (decayed, missed, filled teeth) was obtained. Venipuncture of participants was done for determining Vitamin D levels of the study population by using ELISA procedure. Pearson correlation and Chi-square analysis were applied to the results.

Results: Results have established that Vitamin D levels in children have positive association to their socioeconomic status. Vitamin D deficiency is seen in offspring belonging to low socioeconomic status and dental caries was also present in them. Pearson correlation and Chi-square analysis have showed that increased dmft caries score is correlated with vitamin D concentrations less than 30ng/ml and lower monthly income. This cross-sectional study showed that caries, less serum vitamin D levels and low socioeconomic status are directly related with each other.

Conclusion: Dental caries lower 25 hydroxy vitamin D levels and low socioeconomic status is closely linked. Improving children's vitamin D levels by providing vitamin D supplementation or awareness of food rich in vitamin D may be helpful in decreasing the incidence of dental caries in young children.

Key Words: *Decayed, Early Childhood Caries (ECC), Filled Teeth (dmft), Missed, 25 Hydroxy Vitamin D (25OHD).*

Introduction

Vitamin D also known as calciferol is fat soluble sterol derived vitamin. It is a prohormone. Its two forms are vitamin D_2 and vitamin D_3.[1] Vitamin D_2 or ergocalciferol is derived from plants, vitamin D_3 or cholecalciferol is synthesized in human skin from 7dehydrocholesterol,[2] on exposure to ultraviolet B irradiation with wavelength 290 to 320 nm convert 7dehydrocholesterol to D_3.[2,3] Serum vitamin D levels depend on not only on Sun exposure but also on its oral supply. Few of these dietary sources include cod liver oil, fishes like salmon, sardines, cod fish and mackerel, red meat and liver.[4] Certain foods are well fortified with vitamin D like breakfast cereals, margarine, fruit juices and dairy products.[5] Ergocalciferol or cholecalciferol are inactive till their activation by two hydroxylases in liver and then in kidney so that it becomes metabolically active. Calcium in the diet is absorbed from small intestine with help of vitamin D, which induces the formation of protein called calbindin-D9k.[6] This protein increases binding of calcium present in food. Vitamin D deficiency in humans produce defects in bone

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mineralization resulting in a disease, rickets which occurs in children and osteomalacia, occurs in adults. Vitamin D also has a definitive role in regulating acquired and Innate Immunity immune response. Calcitriol also effect the differentiation and mineralization of osteoblasts. Early Childhood Caries (ECC) is defined as carious lesions in incisors of the deciduous dentition of the children.[7] It is seen that ECC is associated with low family income[8,9] and it has also been observed that vitamin D insufficiency is mostly seen in children with low socioeconomic status. In other words it can be assumed that malnourished children have more tendencies to develop dental caries and hypovitaminosis D.[10] Dental caries is a decay of teeth by different strains of bacteria, Streptococcus mutans and Streptococcus sobrinus mostly that results in cavitated and non cavitated (white-spot) carious lesions.[11] According to various studies, the frequency of caries in school going children of Pakistan was 41%. However in the five year old children this index was found as high as 75% .[9] Risk factor of low income is because of unhealthy dietary habits.[12] A highly significant association is found between caries and family income patterns.[8] It is established that a strong association exists between early childhood caries and low socioeconomic status.[9] Chances of defective amelogenesis causing enamel hypoplasia , large pulp chambers and dentinal anomalies are enhanced when there is deficiency of vitamin D during development of tooth which is suggested as a significant risk factor for early childhood caries ECC.[7,13,14] These defects in enamel increase the chances of caries causing bacteria to develop caries.[10] Chances of having dental caries are more if the mineralization of enamel and dentin is decreased.[15] Prolonged vitamin D deficiency, decreases serum calcium levels and increases parathyroid hormone.[16] Vitamin D level is measured from plasma concentration of the circulating 25(OH)D.[3] Serum 25(OH)D levels < than 20 ng/ml shows deficiency: serum 25(OH)D levels between 20-30 ng/ml denotes insufficiency: 30-44 ng/ml as sufficiency and 50-70 ng/ml is considered as optimal level.[17] Problems arising from caries are immeasurable, there is difficulty in eating as the affected child has to face the consequences[18] expensive dental treatment and there is chance of reoccurrence.[12] Nutritional and sleep problems affect growth of children.[19]

To find out the correlation between vitamin D, childhood caries and socioeconomic background, the following study was undertaken. It means that hypovitaminosis D is present in children with low socioeconomic background and they have more chances to develop dental caries. Our study is done at small scale but it can be a significant breakthrough.

Materials and Methods

It was a cross-sectional observational study, held in the Biochemistry department of IIMC-T (Islamic International Medical College) Rawalpindi in collaboration with IIDC (Islamic International Dental College) Islamabad after the approval from Institutional Review Committee, and Ethics Committee of Riphah International University for a period of six months, from September 2015 till March, 2016. Sixty Children with early childhood caries (ECC) as group 1 and twenty children with sound, healthy teeth as group 2 were included in this study. Size of the sample was calculated, on the basis of prevalence and duration of study period. Simple randomized sampling technique was used for sample collection. The patient were allocated without any bias or prior notification during the entire study period. Samples were collected from different hospitals to ensure a fair degree of randomness.

For grading dental caries an index, dmft was used which was achieved by adding d (decayed), m (missed), f (filled) teeth of children. The index is internationally accepted by the dental community for recording of decayed, missed and filled teeth. For each individual the occurrence of dental caries is obtained by calculating the number of decayed teeth d (the carious teeth), Missed teeth m and the number of teeth have Fillings or Crown on tooth as f. Score 0 for dmft shows that there is no caries and those having dmft score >4 were considered having excessive caries. A questionnaire which was given to the parents of the children revealed facts about their children food intake and their socioeconomic status. Venipuncture of participants was done to determine serum vitamin D levels. Serum samples were stored in freezers of post graduate laboratory at -70°C, Biochemistry department of IIMC Rawalpindi. Serum total 25(OH) D of the study subjects were measured using enzyme linked immunosorbent assay (ELISA).

Questionnaire data was analyzed using Likert scale. To find out the relationship between serum vitamin D levels, socioeconomic back ground and childhood caries, Pearson's correlation method was applied. For data processing SPSS 21 was used. Frequencies, means and standard deviations were determined. Chi-square analysis was also applied. *P* value less than 0.05 was considered as significant.

Results

Results have established association of Vitamin D levels in Children with Early Childhood Caries. Total number of children participated in the study was 80. In them 43, 54% were male and 37, 46% were female. The mean age of the patient was 5 years and 3 months.

Table I: Frequency Distribution of Vitamin D Levels in Study Subjects

Vitamin D levels mg/ml	Frequency, percent	Group 2 Caries Free	Group 1
Vitamin D Deficiency <20	42, 52.5%	0	42
Vitamin D Insufficiency (20 -30)	13, 16.3%	1	12
Vitamin D Sufficiency (30-44)	17, 21.3%	11	6
Vitamin D Optimal (>44)	8, 10%	8	0
Total	80, 100%	20	

Table II: Economic Status Distribution of Study Subjects

Economy (More than Rs. Per month)	Frequency & Percentage	Group1	Group2 (Caries Free)
15000/- pm	22, 27.5	22	0
30000/- pm	31, 38.8	23	8
50000/- pm	16, 20	11	5
80000/- pm	11, 13.8	4	7
Total	80	60	20

Table III: Descriptive Statistics of Vitamin D Levels

Group	N	Vitamin D level ng/ml Min.	Vitamin D level ng/ml Max.	Mean	Std. Deviation ±
1	60	2.12	40.35	16.83	8.696
2	20	22.95	139.65	57.79	36.33

Table IV: Association of Vitamin D levels with socioeconomic status

Vitamin D Levels	Frequency on the basis of Socioeconomic status of the study subjects				*P* value
	Level 1	Level 2	Level 3	Level 4	
Vitamin D Deficient (1)	20	14	6	2	0.00
Vitamin D Insufficient (2)	2	6	4	1	
Vitamin D Sufficient (3)	-	9	3	5	
Vitamin D Optimal (4)	-	2	3	3	

Vitamin deficiency, insufficiency, sufficiency and optimal values are grouped as level 1, 2, 3 and 4 respectively on Likert scale. Socioeconomic status of the study subjects is also divided into four levels on Likert scale in which level 1 indicates subjects whose economy is more than Rs. 15,000 per month, level 2 indicates subjects whose economy is more than Rs. 30,000 per month, level 3 indicates subjects whose economy is more than Rs. 50,000 per month and level 4 indicates subjects whose economy is more than Rs. 80,000 per month. Chi-square analysis has showed that vitamin D levels have significant association with the socioeconomic status levels. Statistically significant difference (*p* value less than 0.01) is seen in Table no. IV when vitamin D levels of the study subjects are compared with socioeconomic status levels.

The results of our study reveal statistically significant difference (*p* value less than 0.001) in vitamin D levels of the study subjects with socioeconomic status groups. This study has showed that vitamin D deficiency, insufficiency and sufficiency is significantly related with socioeconomic status levels as shown in Table no. IV

Combined correlation of Vitamin D levels, and caries score of patients with socio economic status revealed that Vitamin D and socio economic status have positive correlation of value 0.508 whereas, socio economic status and vitamin D levels have reverse correlation with caries of values -0.51 and -0.89 respectively with p value is 0.00 and correlation is significant at the 0.01 level.

Discussion

This study was undertaken to find out the correlation between vitamin D, socioeconomic background and caries in young children. A cross-sectional study was conducted which includes physical calculations, laboratory tests and interviews of parents. There were 80 children between age 3-8 years who were visiting dental hospital. In total 80 study subjects 20 children have sound teeth without caries (group 2) and 60 children were having dental caries at different levels (group 1), which was measured by dmft score.

The current study examined the correlation of vitamin D levels with different groups of socioeconomic status of children and relates this with extent of dental caries. This study has showed that vitamin D deficiency, vitamin D insufficiency and vitamin D sufficiency is significantly related with socioeconomic status levels. Vitamin D levels and socioeconomic backgrounds are strongly correlated to extent of dental caries in childhood.

Improving the diet of children by including food rich in vitamin D may have valuable effects on overall health of the child and on dental health. There should be mass education on awareness of foods having vitamin D and calcium so that general health of our population will be improved.

A study done by Sufia et al in 2011, It is concluded that dental caries is more prevalent in preschool children living in metropolitan areas and in lower middle class.[9] Charani et al in 2011 have also found that there is a correlation between childhood caries and family social background.[8] Leghari et al in 2012 have also revealed that there is more frequency of dental caries in children of public schools than private schools.[20]

Our study has showed that vitamin D deficiency and insufficiency is related to low and middle economy levels. A study conducted in Canada by Schroth et al in 2013 has concluded that vitamin D deficiency and insufficiency is more common in children of lower socioeconomic status and also there is more ECC in them.[21] It is also suggested that this vitamin D deficiency and insufficiency plays main role in development of dental caries in children. These findings match with results of our study. In a study held in Germany by Kühnisch et al. in 2015 suggested that higher serum vitamin D levels were linked with fewer chances of having extensive dental caries in permanent dentition.[22] The results also support our study. . The mechanisms behind that how sufficient vitamin D reduce the risk of caries might be that there is improved tooth development, better amelogenesis which results in perfect enamel formation, enhanced dentinal mineralization response to caries. Vitamin D also induces cathelicidin and certain defensins which protect the teeth from caries causing bacterias.

In a study conducted by Forrest et al in 2011, it is concluded that vitamin D deficiency is a marker of low socioeconomic status.[23] A study conducted by Mehboobali et al in 2015 have analyzed that vitamin D deficiency is present in population residing outskirts of Karachi, who have low economy.[24] A cross-sectional study performed in Canadian schools in 2015 by R.J. Schroth et al, showed that hypovitaminosis D is closely related with extensive dental caries. The results of this study matches with our findings.[25]

Nowadays sugar consumption is increased a lot in the form of sweets and chocolates and children are less aware of brushing techniques and oral hygiene practices. It is also suggested by different studies that despite of all the facts described above, decreased oral hygiene, lack of education and increased consumption of sugar in diet and drinks are prominent risk factors for caries.[20,26]

In most of the cross-sectional, case control and prospective studies, vitamin D deficiency has been considered to be linked with more chances of dental caries. It is also worth mentioning that vitamin D deficiency in individuals might result from lack of sun exposure or it might be due to malnutrition or some gene polymorphism is involved.

Conclusion

Our study concludes that sufficient level of 25(OH) D in children has a significant role in decreasing dental caries and is also related to socioeconomic status of the children. This study has not only established the close relationship of vitamin D and dental caries but has also revealed the effect of socioeconomic status as a significant contributing factor in this region. It is therefore suggested that our children's vitamin D status should be improved by fortification of food at national level and there should be awareness among people about food rich in vitamin D and calcium.

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ORIGINAL ARTICLE

Correlation of Entry Test & the Future Academic Performance in A Private Medical College

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ABSTRACT

Objective: The objective of the study was to see the relationship/effect of Entry test marks and FSc marks on the future academic performance scores of first year medical students from year 2010 to 2014 (five years).

Study Design: This was a Cross-sectional Quantitative Correlational study.

Place and Duration of Study: The study was conducted and carried out at Islamic International Medical College Rawalpindi. The retrospective data of five years from 2010 -2014 was included. The study project was completed from March 2016 to August 2016.

Materials and Methods: The data was collected from the record of the college. Dependent variable were the student's academic performance scores i.e. scores of students in term of pass or fail and percentages obtained in first professional MBBS from 2010 to 2014. Independent variables were id no, gender, percentage marks obtained in FSc and entry test.

Results: Male female ratio varied from 23% male to a maximum of 33% and females from 67% to 77% during the five year with an average of 70% females and 30% male. Correlation in between entry test marks and marks obtained in first professional MBBS was found to be .828 which is a strong correlation. Weak correlation was found in between the FSc marks and marks obtained during first professional MBBS.

Conclusion: The study concludes that the students who perform well in entry test also have satisfactory performance in the first professional MBBS and their future performance can be predicted to some extent.

Key Words: *Academic Performance, Aptitude Test, Cognitive Construct, Entrance Test.*

Introduction

Medical school activity starts from the selection of the students which is an important but under resourced aspect of medical school. The intentions behind the entry test are to select the students on merit along with suitable personality and aptitude for admission in medical profession.[1] Appropriate selection of the students who have the correct attributes which is becoming the main pivot in many countries of the world. In many developed countries the governments are selected and rejected on the slogans of health care provision and the health care provision is facing the challenges of accountability and professional regulation.[2] Medical schools are facing two main shifts one is seeing the selection as first assessment and second using wider range of selection methods to select the right type of candidates though the cultural and regional differences do exist. Selecting brightest candidates on the basis of school leaving or university academic qualifications is not considered the appropriate method nowadays. Till date no method can be labeled as ideal one because course of study, nature of existing and future medical needs, services and their requirements are ever changing.[3] More objective methods can be tailored by the medical schools which can cater cognitive ability, professional attributes and behavioral e.g. non-technical skills. Nowadays a mix of application form, personal statement, interview, multiple mini interview (MMI), personality tests, and situational judgments tests (SJTs) are practiced in west.[4] Internationally and in many parts of the world it has been acknowledged the contribution of non-cognitive skills and qualities in an individual in predicting the performance of health professional education. Therefore this has lead the countries including the United Kingdom, United States of

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America and Canada, to introduce aptitude testing as part of the selection protocol for induction in medical college.[5]

Entry test is mandatory all over the world and in all countries with different formats, needs, designs and as per their requirement. UMAT is MCAT (Medical College Admissions Test) for the United State, UKCAT (UK Aptitude Test) in UK, GAMSAT (Graduate Medical Schools Admission Test) in Australia, UK and Ireland for graduate entry programs and these are conducted on a single day each year.[6]

The medical education system expanded very rapidly in Pakistan. In the recent past the number of medical colleges reached to 167 in Pakistan in the public and private sector. These two sets of medical schools public and private also differ in admission criteria. Public sector medical schools purely cater the admission which is on merit and residence based as candidate of one province cannot seek admission in another province. Whereas the private sector medical colleges cater socioeconomically privileged classes and those who cannot compete the public sector medical colleges. The attitude of our policy makers remained rigid due to which cluster of problems neither sorted nor weeded out as remedial measure and entry test is one of them.[7] Pakistan is among those countries where selection is on the basis of academic criteria alone. Pakistan needs cognitive, aptitude and personality testing to be combined in such a way to select the right candidates for admission in medical education that can contribute effectively in delivering health care. Till 1998 the students were selected only on FSc basis for admission in medical colleges.[8] There are number of Boards in different provinces whose syllabus and examinations are of different criteria. Another concern was that occasionally a reasonable number of candidates carry fake FSC, A level certificates and scores. This has created an environment that all the candidates must be subjected for their relative merit to a single examination. Therefore the exercise of entry test was introduced to satisfy the boards of secondary education, the admitting institutions, the candidates, the feeding schools, colleges and the community that they all share the benefits of best performance with the help of universal standardized test which was named entry test (MCAT) for the selection of medical students from all over the country.[9] The research question which the article addresses is "to see the relationship of entry test & FSC on the future academic performance scores of first year Medical students" in a private Medical College from year 2010 to 2014(five years).

The first entry test for the admission in medical colleges of Punjab was conducted in 1999. The Government decided that all the candidates must be subjected for their relative merit to a single examination. Entry test is carried at provincial level and the selection also is made at provincial level for public sector medical colleges and for private medical colleges test of one province is acceptable for the other and all the individual college prepare their own merit list as per the criteria laid down by the PM&DC.[10] This was the philosophy of entry test, as now twenty two years passed it's the right time to review the policy. Scientific research is required to see the correlation of FSc and entry test on the future academic performance of the students. This study will help in establishing the relationship and review the future policy and planning for the student selection.

Materials and Methods

This was a Cross-sectional Quantitative Correlational study. All the students who got admission in MBBS from 2009 to 2013 and appeared in first professional MBBS exam from 2010 to 2014 for five years were analyzed for the objectives of the study. The data was collected by specially designed data collection instrument from the record of the college and the non-response rate was zero as all the record was available. The study project was completed from March 2016 to August 2016. Dependent variable were the student's academic performance scores i.e. scores of students in term of percentages obtained in first professional MBBS 2010 to 2014 and pass or fail. Independent variables were id no, gender, percentage marks obtained in FSC, percentage marks obtained entry test.

Universal sampling as all the students from 2010 to 2014 who got admission in first year MBBS and appeared in first professional MBBS examination was used. All the students who succeeded in getting admission from the year 2009 to 2013 and appeared in exam from 2010 to 2014, completed their first professional MBBS studies, appeared in first professional MBBS examination, their result was

declared and record available in admission branch is available were included.

The students of other medical colleges, students who got admission before 2009 or after 2014 in the same medical college, students who did not completed their study of the respective year, left the college and not appeared in first professional MBBS examination or their result was not declared or record is not available or retrievable of respective years from 2010 to 2014 were excluded from the study. Data was analyzed on Statistical package for social sciences version 21 for frequencies, cross tabulation, correlation in between FSc marks, entry test marks and marks obtained in first professional MBBS (in percentages) to see the relationships. Independent t test and chi square was also used where required to eliminate the chance element and to see the effect of entry test and FSC marks on future performance. *P* value equal to or less than 0.05 was considered as statistically significant.

Results

Male ratio varied from 23% to 33% and females from 67% to 77% during five years with an average of 70% females and 30% male during five years study research period.

Table I: Percentage of Students and Marks Obtained In FSC and Entry Test

	Year 2010		Year 2011		Year 2012		Year 2013		Year 2014		Total	
% Marks	FSc	Entry Test	FSc	Entry Test	FSc	Entry Test	FSc	Entry Test	FSc	Entry Test	FSc	Entry test
<60	0	28	0	22	0	32	0	11	0	0	0	93
60-70	19	49	7	65	8	39	6	52	4	14	44	219
71-80	40	22	48	13	37	28	47	35	30	74	202	172
81-90	41	1	45	0	55	1	47	2	66	11	254	15
>90	0	0	0	0	0	0	0	0	0	1	0	1
Total	100	100	100	100	100	100	100	100	100	100	500	500

There is inconsistency among the marks obtained by the students in FSc and entry test. The students who were selected for MBBS were having marks more than 60% in FSc, no student was selected who had less than <60% marks in FSc but 93 students (18%) had less than 60% marks in entry test . There were 44(9%) students who scored 60-70% in FSc and 219 (44%) who scored the same in entry test. There were 202(40%) in FSc and 172 (34%) in entry test who scored 71-80% marks. There were 254 (51%) %) in FSc and only 15(3%) in entry test who scored 81-90%. test. There was no student in FSC who scored above 90 % and only one student who scored above 90% in entry test.

Table II: Percentage of Students and Marks Obtained in Entry Test and First Professional MBBS Exam

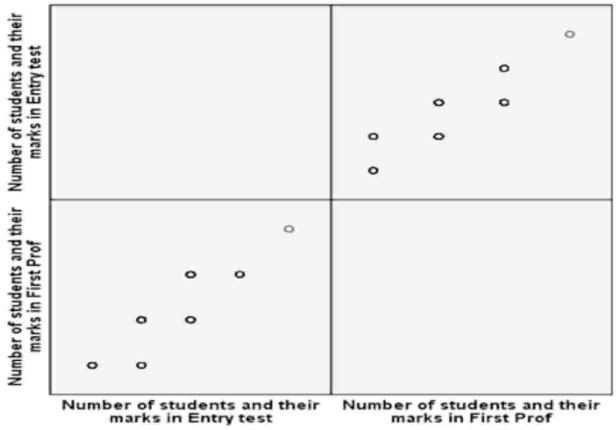
	Year 2010		Year 2011		Year 2012		Year 2013		Year 2014		Total	
% Marks	Entry Test	1st Prof MBBS	Entry Test	1st Prof MBBS	Entry Test	1st Prof MBBS	Entry Test	1st Prof MBBS	Entry Test	1st Prof MBBS		1st Prof MBBS
<60	28	13	22	20	32	20	11	18	0	27	93	98
60-70	49	56	65	56	39	72	52	71	14	68	219	323
71-80	22	30	13	24	28	8	35	11	74	5	172	78
81-90	1	1	0	0	1	0	2	0	11	0	15	1
>90	0	0	0	0	0	0	0	0	1	0	1	0
Total	100	100	100	100	100	100	100	100	100	100	500	500

Now we have to look upon performance in first prof in comparison to marks obtained in entry test and FSc. There were 19% students who got less than 60% in entry test and the same was achieved by 20% of students in first Prof MBBS. There is consistency in this group. The 60- 70 % marks were obtained by 44% of students in entry test and 65% of students in first Prof. The number of students who acquired more marks as compared to entry test in first Prof was 21%. The reverse of above was seen in group 71-80% marks which was 34% in entry test and 16% students got the same in this group. In group 81-90% and above 3% got in entry test and zero % in first Prof.

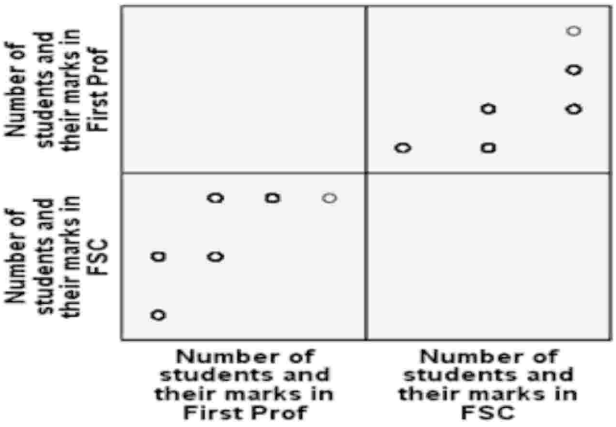
The comparison between FSc and first professional marks of the students shows that there is no consistency among the results. There was no student in FSc who acquired less than 60% in FSc but 20% students acquired less than 60% in first Prof MBBS. About 9% students got 60-70% marks in FSc and 65% students got the same result in first Professional examination.. In group 71-80% marks there were 40% students in FSc who achieved that but in the first

Table III: Co Relation Coefficient in between FSC, Entry Test and First Prof MBBS Marks

		Correlation Coefficient	Significance
1	Pearson Correlation in between FSc marks and Entry test marks	.793	.000
2	Pearson Correlation in between FSc marks and First Prof MBBS marks	.684	.000
3	Pearson Correlation in between First Prof MBBS Marks and Entry test marks	.828	.000
Correlation is significant at the 0.01 level (1-tailed).			



Graph I: Correlation Graph in between Entry test and First Prof MBBS Marks



Graph II: Correlation Graph in between FSC and First Prof MBBS Marks

Prof 16% students were able to achieve the same. In group 81-90% marks 51% of students achieved this target in FSc but only one student succeeded to achieve it in first Prof MBBS.

Discussion

Commonly it is mistaken that medical schools are selecting high meritorious students because most of the qualities which mater for the medical profession are not precisely measurable or quantifiable. Canonical traits like technical competence, human sympathy, wisdom and experience are the main traits to be considered in medical education, these are considered the most desirable attributes in the literature but the question again forms the mirror image that how they can be measured and applied in selection.[11] Selection is also vulnerable to criticism and even to legal challenges, therefore objectivity maters a lot and subjectivity cannot be given the due weightage. The study highlighted that there is large number of female candidates who succeeded in selection during 5 years of study period. The number varies from 67-78% of the total with mean of 70% which is according to the world trend but different from the Pakistani perspective. This trend changed from 1991, before that the female seats were reserved to a certain number and only few female medical colleges. This also indicates the women empowerment and healthy emblem of female literacy.[12] On the contrary, it reflects the limited access to women in the other professions like business and industry. Secondly this also arouses the serious concerns about the manpower needs of the country like Pakistan where more than 70% of the population is rural based and the cultural barriers have limitations for women to work and to work in the rural and primitive society where the taboos are still very strong. This needs attention of the policy and decision makers to revisit the situation. In the current scenario provision of health for all will remain a dream even after decades.[13]

The relationship/effect of Entry test marks on the future academic performance scores of first year medical students from year 2010 to 2014 was very interesting. These are consistent with their previous performance. It can be safely concluded that low achievers of entry test who succeed in getting admission achieve the same in future. Students who have better cognitive construct can improve or sustain their achievement in future. Literature also mentions that the entry test is the cognitive construct and also have some predictive validity also, which is reflected in this study. Pearson correlation in between entry test marks and marks obtained in first professional MBBS was found to be .828 which is a strong correlation. From this it can be concluded that the students performing good in entry test also show satisfactory performance in the first professional MBBS and their future performance can be predicted to some extent.[14]

Correlation in between FSc and First Prof score shows that there is no consistency among the results. The Pearson correlation in between the FSc and First professional scores was though positive .684 and significant at .001, but very less as compared to entry test and first professional score. Now the question arises that what characteristics, qualities, traits be given due consideration in selection.[15] The atmosphere of discussion revolves around the two distinctions one about the cognitive constructs and the other about non cognitive constructs.[16] What the patient expects from the doctor is more than knowledge and practice.[17] Patient likes to see the base of iceberg which is

personal values, opinion, imagination, expectations, beliefs, feelings, assumptions, intuitions and sixth sense, how these can be catered is question mark. This does not mean that the vital academic ability should be masked but how to select a future wise doctor.[18] The country and the medical colleges have to tailor selection methods according to their need depending upon the curriculum, the program, current and future medical needs and demands.[19]

Conclusion

From the study, it can be concluded that students who perform better in entry test also show satisfactory result in first professional MBBS and their future performance can be predicted to some extent. Good performance in FSc not necessarily mean that the student will perform good in entry test or in the future medical education but good performance in entry test can predict good academic performance in future

Recommendations

In our scenario where thousands of candidates are eager to seek admission for limited number of seats and the selection of appropriate candidate is a difficult task. Keeping in view the various models the most appropriate in our set up will be

A. Entry test for the cognitive constructs
B. For entry test eligibility, should be 60% and above FSc / A-Level
C. Those who come on the upper merit they should be subjected to multiple mini interviews (MMIs) in the ratio of 1:3 and this is manageable number for 100 seats and 300 candidates can be handled. The MMI is a method for conducting interviews for medical school built on the multiple station format of the objective structured clinical examination (OSCE).[20]

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ORIGINAL ARTICLE

Attitude of Adults towards Educating Children to Protect Themselves from Sexual Abuse in Pakistan

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ABSTRACT

Objective: This research was planned to assess attitude of adults towards educating children about sexual abuse prevention.

Study Design: Observational cross-section study.

Place and Duration of Study: The study was conducted on people living in cities of Islamabad and Rawalpindi, Pakistan during March-June 2018.

Materials and Methods: Data was collected from 228 people by non-probability convenient sampling. People of both genders with any marital status, above 18 years of age and with minimum high school education or above were considered eligible for this study. A self-designed structured questionnaire was used to collect data which was analysed using SPSS version 23. P value ≤ 0.05 was considered significant.

Results: Majority (94.7%) of the participants, irrespective of their gender (*p*-value=0.19) and marital status (*p*-value=0.08), were in favour of educating children about sexual abuse prevention. Around 42% participants tried themselves to educate children on this topic and males' participation in it was observed to be less than females (*p*-value=0.005). Optimal age to educate children was considered between 5-9 years. A positive response was shown by participants, when the extent and ways of child sexual abuse prevention education were discussed.

Conclusion: Majority of the adults are in favour of educating children to protect themselves from sexual abuse so they are able to recognize and react effectively to potentially dangerous situations.

Key Words: *Child Abuse, Educational Activities, Preventive Measures, Public Health, Sexual Abuse.*

Introduction

Worldwide, child sexual abuse (CSA) is a massive challenge for public health, human rights and social justice.[1] The World Health Organization (WHO) defines it as: "The involvement of child in a sexual activity that he or she does not fully comprehend, is unable to give informed consent to, or for which the child is not developmentally prepared “or else that violate the laws or social taboos of society”.[2]

The estimated global prevalence of CSA is 19.7% for females and 7.9% for males.[3] About 60% of the child sexual abusers are non-relative acquaintances, 30% are relatives and only 10 % are strangers.[4] The highest vulnerable age group among both genders is reported to be the children between the ages of 11 to 15 years and then 6 to 10 years.[5]

CSA has an adverse effect on child's physical, social, spiritual and mental health. Health consequences includes depression, anxiety, post-traumatic stress disorder, unwanted pregnancy, HIV acquisition, sexual disorientation, and drug addiction.[1,6]

Like other countries of the world, CSA is a serious problem in Pakistan as well and has recently gained lot of attention. According to a data collected by a non-governmental organization, Sahil, about 11 cases of CSA are reported from across the Pakistan every day.[7] Almost 17,862 cases of CSA have been reported in the country from 2013 to 2017[8] and still many remains undisclosed due to the feeling of guilt and shame, fear of perpetrator's threats, lack of trusted confidante, or to maintain the reputation of family.

Worldwide child abuse prevention programs are created to provide knowledge to children to recognize abuse, teach skills that decrease the risk for abuse, normalize the disclosure process and

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provide a pathway for children who may be experiencing abuse to report the abuse.[9] Though several attempts have been taken to develop and implement such programs in Pakistan as well but adults' view regarding its need has attracted very little attention from research point of view. Therefore, this study was planned to assess adults' attitudes towards development of such educational programs in order to protect children from sexual abuse.

Materials and Methods

A cross-sectional study was conducted in the twin cities of Pakistan, Islamabad and Rawalpindi, during March to June 2018. Data from 228 participants was collected using nonprobability convenient sampling after getting approval from ethical committee of Rawalpindi Medical University. Adults of both genders of any marital status above 18 years of age, who were residents of Islamabad or Rawalpindi, were asked to participate in this study voluntarily. Whereas, people with no or less than high school education and those who were reluctant or not comfortable with filling form were excluded.

Data was collected by means of a self-designed questionnaire which was distributed online and in-hand. It included demographic profile (i.e. gender, age, marital status, and education) and a set of questions through which adults' opinions towards CSA prevention education and their participation could be observed. Different ways and extent of protecting and educating children about CSA were suggested and the participants were asked to select the most suitable one/s.

Data was entered and analyzed using Statistical Package for Social Sciences (SPSS) version 23. Chi-square tests were applied to calculate *p* values for determining relation between adults approving educating children about CSA prevention on basis of their gender and marital status. *P* value ≤ 0.05 was considered significant. Descriptive Statistics were used to analyze rest of the data.

Results

Out of the 228 participants, 42.5% (n=97) were males and 57.5% (n=131) were females. Only 40.8% (n=93) of the participants were married (39 males and 54 females) and 59.2% (n=135) were unmarried (58 males and 77 females).

More than 50% of the participants i.e. 115 knew about a CSA case around them. About 94.7% of the participants agreed that the child must be given education about CSA prevention and among them 75.2% approved CSA awareness through public programs like television shows, school based programs, activities at public places, etc. Both males and females, irrespective of their gender, approve educating children about CSA prevention as *p*-value of 0.08 was obtained after applying Chi-square test. Similarly there is an insignificant association between marital status and approval of CSA prevention education (*p*-value of 0.19) stating that both married and unmarried participants favored it equally. Unmarried females favored educating children the most as 98.7% agreed to it. Whereas, 94.4% of married females, 93.1% of unmarried males, and 89.7% of married males were in its favour.

In order to know the age at which children should be given CSA education different age groups were made. Among them the most favored group by participants was children between the ages of 5 to 7 years (by 27% participants), followed by children between 7 to 9 years (24.9%), 9 to 11 years (16.90%), 3 to 5 years (15.60%) and above 11 years (15.50%).

Few questions were planned to assess adults' participation in trying to aware their children (or other children having close relation with them) about CSA by their own. Self-participation of 222 out of 228 participants could be assessed. Only 93 (42%) tried it and among them 77 were satisfied by their way of counseling with majority being females.

It was observed that males' participation in giving children CSA awareness was less (*p*-value= 0.005) as compared to females as only 28 male participants tried to educate children on their own.

According to 89% (n=203) participants, CSA affects both the mental and physical health of the child and only 11% (n=25) participants believed that it affects his/her mental health only.

Adults' views regarding extent of educating children are shown in Table I.

Different ways were suggested to prevent CSA and among them the most favored one reflected the importance parents' attitude towards their children which enable them to share things openly with them. The details of other ways are further mentioned in Table II

Table I: Extent of Educating Children about CSA

Options for extent of CSA education:	No. of Participants that agree with Statement	Percentage
Taught to avoid strangers.	160	70.1%
Know about private body parts and who can touch them.	150	65.7%
Know about good touch and bad touch.	164	71.9%
Report if someone shows child some inappropriate thing.	188	82.4%
Report if someone tries to take child to some room alone.	166	72.7%
Report if someone asks child to sit with them always.	135	59.1%
Inform if someone asks child to touch their private body parts.	168	73.6%

Table II: Ways of CSA Prevention

Better way/s of protecting child from CSA among following:	No. of Participants that agree with Statement	Percentage
Parents should never leave their child unattended.	110	48.2%
Only parents should give CSA education to their children.	58	25.7%
Parents should develop friendly and trustful attitude towards their children so that they can share things openly with them.	203	89.4%
Parents must be always available to listen to their child and must believe what he/she says.	173	76.1%
Workshops for parents, in which they are taught to educate their child in appropriate way.	133	58.4%
Awareness through advertisements/programs on television.	80	35.4%
Awareness through activities/programs conducted in day-care centres/schools/parks	113	49.5%
Book/ Text about CSA awareness in age appropriate way should be added in their school syllabus.	64	28.3%
Strict laws must be made and actions must be taken against abuser.	187	82.3%

The counseling about CSA prevention education can leave multiple impacts on the child's mind. According to 87.7% participants it enables the child to deal with potentially abusive situations. About 83% believed that it can lead to considerable decrease in number of cases reported and according to 76.8% CSA prevention education can lead to earlier disclosure of CSA cases by victims. Whereas, adults' concern about CSA education leading to negative impacts are mentioned in table III. This table also explains the concerns of individuals disapproving CSA education.

Table III: Concerns Regarding Impacts of CSA Prevention Education

	No. of Participants that agree with Statement	Percentage
It can develop insecurity in child's mind.	154	79.3%
It can develop a negative mind of child towards the society.	143	73.6%
It can lead to misunderstanding of people's intention by child.	131	67.4
It can lead to child learning too much about sex.	124	63.8%
CSA education in public, creates immorality/obscenity in the society.	90	46.1%

These negative impacts could become serious concern, only if the education is done in inappropriate ways. Thus, this sensitive issue of educating the child about sexual abuse must be dealt carefully as it attracts individual, religious, institutional, and societal concern.

Discussion

The results of the present study shows that majority of participants approve teaching children about CSA prevention especially during the time period when they are attending elementary school i.e. 5 to 11 years old. Their participation in giving CSA prevention education to children on their own, interest in suggesting ways and extent of educating children shows their concern towards contributing to safety of children.

A research conducted on mother's knowledge and perception about CSA in Jordan showed that 74% of mothers who were part of study, stated that educating children about CSA can prevent it.[10] Similarly another study conducted in China also showed that 89.8% of parents supported CSA prevention education for their kids.[11] A randomized controlled trail on elementary students in US

concluded that children in younger grades gains better knowledge about CSA and ability to recognize, refuse and report unsafe touches while being enrolled in a CSA prevention program.[12] This study also justifies our result in which most participants are in favour of educating children between 5 to 9 years of age.

In our study, importance of parental role in preventing CSA is also observed (refer to Table II). Rudolph J *et al*., also suggested in their study that parents can protect their children from CSA directly through the strong external barriers provided by their availability, supervision, monitoring, and involvement; and indirectly by promoting children's self-efficacy, competence, well-being, and self-esteem, which will help them become less likely targets for abuse and more able to respond appropriately and disclose abuse if it occurs.[13] A study conducted in Australia showed that the presence of a guardian can decrease the risk of CSA by 86% which also reflects the importance of parent's/guardian's role.[14] About 75.2% of our participants were in favor of educating children about CSA prevention in public including in schools and only 25.5% believed that only parents should give such education to their children (Table II). A study conducted in China also showed that 87.3% of parents were willing to let their children acquire CSA prevention knowledge in schools.[11] School based prevention programs are reported to play a crucial role in preventing CSA as it potentially reaches all children. Studies showed that such programs had proved to show an improvement in knowledge, disclosure, and protective behavior at risk situations.[12,15]

In our study about 35% participants considered media as an effective tool in preventing CSA. From past few years, media is playing an active role in CSA awareness. Many articles, advertisements, serials, talk-shows, movies, are based on this topic but it hasn't shown any effect on decreasing CSA rate. A study conducted in USA by Rheingold AA *et al*., focusing on independent effect of media in preventing CSA, concluded that media campaigns might have increased knowledge of CSA at the time of intervention but it alone had no significant effect on preventing CSA.[16]

To date, there are abundant studies that show the importance of educating children about CSA prevention. The knowledge about CSA, attitudes, self-efficacy to take action, and awareness are all key capabilities related to creating conditions of safety for our children.

Our study includes educated people as they are more open towards new change and more willing to children about new things as compared to people with little or no education. Thus there is need of further study in which opinions of people with little or no education are considered and compared with those of people who have received higher education. Also the opinions of people belonging to low socioeconomic status should also be assessed as CSA is more prevalent in such areas.

Conclusion

Majority of adults are in favor of educating children about CSA especially during the time period when children are attending elementary school. Adult's interest in suggesting ways and extent of educating children shows their concern towards contributing to safety of children by preparing them to deal with potentially harmful situations.

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CASE REPORT

"Endocrown" A Novel Approach for Restoration of Endodontically Treated Teeth: A Case Report

Romana Yaqoob[1], Anum Moiz[2], Sohaib Siddique[3], Huma Zahir[4], Usman Ibrahim[5]

ABSTRACT

Endocrown is a conservative restorative option for extensively damaged posterior teeth. The primary objective is to attain a bonded biomimetic reconstruction, i.e., to reconstruct a tooth without any excessive preparation for post or core. The clinical procedure is less complex for both dentist and patient as compared to conventional crowns with post and core. This article highlights case report of a mutilated molar treated by composite endocrown after an adequate endodontic treatment with a follow up of 6 months' time span.

Key Words: *Biomimetic Reconstruction, Composite, Endocrown, Endodontic Treatment, Resin Cement.*

Introduction

The propensity of a root canal treated tooth to fracture due to changes in biomechanics as a result of tissue loss is an argumentative topic for dentists. Several factors such as pathologic processes, steps of endodontic procedure and extensive restorations causes the loss of coronal and radicular structure, thus making the tooth more fragile and prone to fracture.[1] In order to prevent these deleterious effects dentists adopt a more conservative approach such as bonded overlay and endocrown instead of full coverage crowns with the aid of recent advances in adhesive techniques.[2]

Endocrown, a monoblock single piece construction, is an effective alternative for endodontically treated molars with severely broken down coronal structure.[3] It helps in maintaining the structural integrity by excluding the steps of post and core-cementation, crown lengthening and also reduces the effect of hybrid layer degradation by decreasing the number of adhesive interfaces.[4] The purpose of this article is to present clinical case of a molar restored with composite endocrown after endodontic treatment. The steps of its fabrication and cementation will be discussed to ease its use.

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Case Report

A 21 year old male patient visited operative department of Islamic International Dental Hospital, Pakistan with a chief complaint of pain in right mandibular molar since last one week. On examination, root canal was initiated 6 months back but was not completed due to unfortunate circumstances. Clinically there was an extensive loss of coronal structure, with a decreased interocclusal space between the maxillary and mandibular molar. Occlusogingival height of the remaining crown structure was 4mm.The radiographic findings revealed unobstructed canals and remnants of temporary restorative material in chamber along with periodical changes. (Fig. 1)

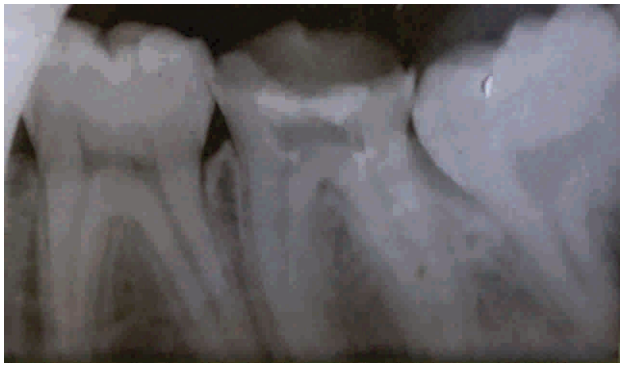

Fig 1: Pre-Operative Radiographic Image

A conservative approach of restoring the tooth with an endocrown was decided as the treatment option after explaining and taking patients consent. Root canal treatment was done by Hi Flex rotary system using 2% NaOCl as an irrigant. Triple antibiotic paste was placed as an intracanal medicament for 5 days. Obturation was done using Hi Flex gutta percha points.

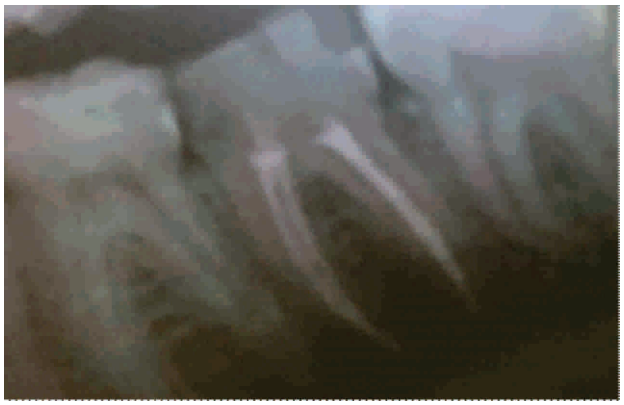

Fig 2: Post Obturation Radiograph

The tooth was prepared to achieve a butt-joint margin.The appropriate reduction of the buccal and lingual walls was done. The lateral retentions of the pulp chamber walls and the orifices were sealed with two-step adhesive and flowable resin composite. The cervical margins were leveled with a tapered diamond-coated bur. The pulp chamber was prepared with the same diamond-coated tip with an internal taper of 8 to 10 degrees. The preparation margins had a width of 1.5 mm and core exceeding the height of 3mm. (Fig.3 and Fig.4) Interocclusal space was carefully evaluated and occlusal reduction done to achieve a clearance of 2mm.

Guidelines for full occlusal coverage according to *Rocca et al:* [1]

- Palatal and lingual cusps can be simply reduced by 2 to 3 mm with a butt-joint.

On the contrary, for buccal cusps there are 3 options:

- The ultra-conservative buccal cusp coverage (1.5 mm)
- The conventional buccal cusp coverage (2–3mm)
- The full buccal cusp coverage

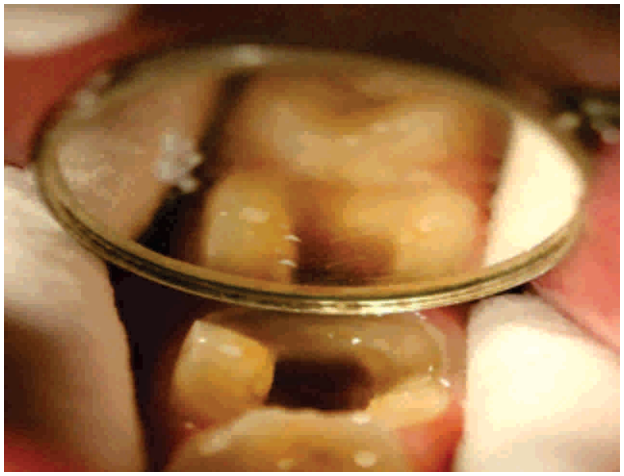

Fig 3: Pre Op Clinical Image

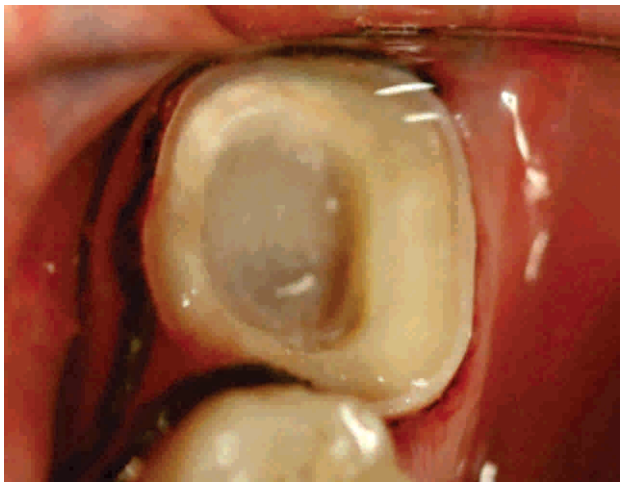

Fig 4: Clinical Image of Prepared Tooth

Appropriate shade with a shade guide was chosen. An impression was taken with a polyvinyl siloxane material and sent to the laboratory along with the shade information.

An endocrown may be produced from composite or mineral ceramic and, because of the slightly lower cost and ease of repair of any potential damage, the patient chose the composite endocrown.

On next visit cementation was done. The tooth was etched with 37% phosphoric acid for 15 seconds, with the application starting from the margins in enamel. Afterward preparation was washed and air dried. (Fig.5 and Fig.6). To embed the endocrown, a self-etch bonding system (ESPE Single Bond Universal Adhesive) was used, which was spread on the surface of preparation and then light-cured. (Fig.7). A dual cured composite resin cement (Rely X Ultimate ClickerAdhesive Resin Cement) was spread on the surface of the preparation. The endocrown was seated, and any excess cement was removed and the restoration was polymerized and finished after evaluating any occlusal interference Fig 8.

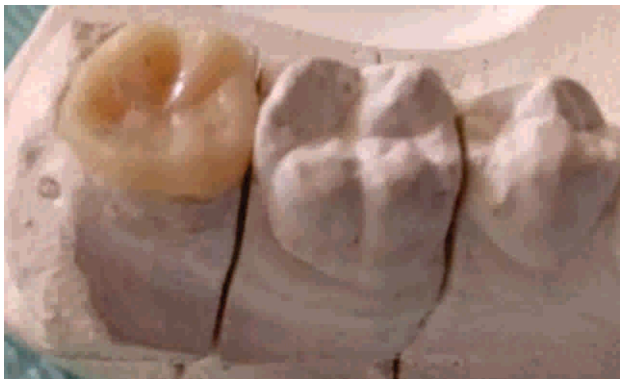

Fig 5: Composite Endocrown

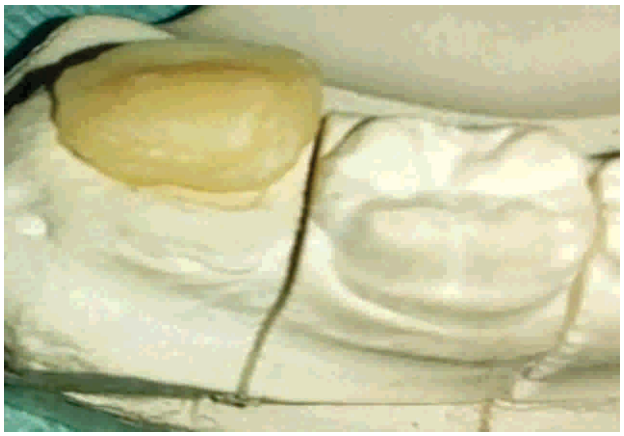

Fig 6: Intaglio surface of Endocrown

Fig 7: Luting Cement

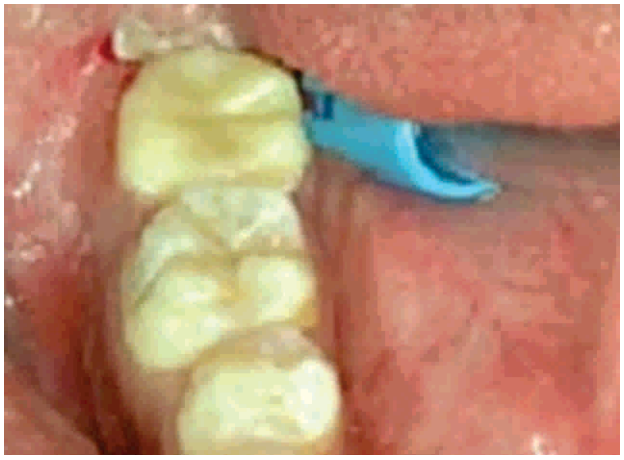

Fig 8: Cemented Endocrown

DISCUSSION

In modern era of dentistry, endocrowns are conservative, easier and effective alternative option for restoring an endodontically treated tooth.[1] It achieves retention macro mechanically through pulp chamber and micromechanically by adhesive cement.[2,3] The benefits of endocrown over other options are decreased stress concentration as a result of lesser number of adhesive restorative interfaces, conservative preparatory design maintaining biologic width and increased surface area for bonding provided through pulp chamber which is equal or even superior to post in radicular dentin.[4]

Studies have shown that albeit endocrowns are desirable option for restoration of all the teeth in the arches, but they should be restricted to the restoration of posterior teeth especially molars, because their performance in molars against the action of masticatory forces is much better as compared to premolars. Other reasons include limited bond strength of adhesive systems because of smaller pulp chamber area and adhesive surface of premolars.[5] A long lever arm may be created because of premolar crowns configuration resulting in greater endocrown height as compared to width, increasing the risk of adhesive interface fracture and displacement.[6] However when their use is limited to restoration of molar teeth, they have shown satisfactory performance in achievement of esthetic and functional recovery and bond strength.[7,8,9]

It is proven by a systematic review that survival rate and in vitro fracture strength of endocrown is equal or better than the conventional treatments, hence it is indicated for all molars especially those with loss of coronal structure, calcified or constricted canals, and is also reliable in patients with bruxism and unfavorable occlusal relationship.[10]

Endocrowns overall success rate is quite promising although there are some limitations such as depth of pulp chamber should not be less than 3 mm and the width of cervical margin be more than 2mm, adhesion is difficult to achieve or presence of only negligible tooth structure.[11] For ensuring longevity of the endocrowns case selection is a critical step. Further studies are required to assess its durability in the long term.

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The Journal of Islamic International Medical College (JIIMC) is an official journal of Islamic International Medical College (IIMC), Riphah International University, Islamabad, Pakistan. The Journal is published since 2004. This is a peer reviewed journal, published quarterly and follows the uniform requirements for manuscripts submitted to Biomedical journals, updated on www.icmje.org.

AIM AND OBJECTIVE

The primary aim and objective is promotion and dissemination of medical research. JIIMC publishes research papers contributed in the form of original articles, case reports, review articles, articles on medical education, commentaries, short communication, new technology, editorials and letters to the editor covering core medical education subjects, basic medical sciences and emerging community problems. The journal is prepared in accordance with the "Uniform requirements for submission to medical journals, after peer review locally as well as internationally.

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JIIMC is published quarterly and is also available on JIIMC Website.

FOCUS AND SCOPE

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JIIMC is a peer reviewed medical journal published by Islamic International Medical College, Riphah International University Islamabad, Pakistan. The publisher and the members of the editorial board cannot be held responsible for errors or for any consequences arising from the use of the information contained in this journal. More than five years old data is not accepted for publication. JIIMC is published on controlled circulation basis and distributed among the faculty of IIMC and all medical college of Pakistan. Limited number of complimentary copies are sent to HEC, PMDC, CPSP, universities, medical colleges, libraries and general practitioners.

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- Those claiming intellectual/idea or data theft of an article must provide documentary proof in their claim

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Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. We strongly discourage gift or ghost authorship. Mere supervision, collection of data, statistical analysis and language correction do not grant authorship rights.

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The manuscript should be typed in MS Word. Each manuscript should include a title page (containing email address, cell numbers, institution and postal address of the corresponding author), abstract, key words, text, acknowledgements (if any), references, tables (each table, complete with title and footnotes) and legends for illustrations and photo-graphs. Each component should begin on a new page. Sub-headings should not be used in any section of the script except in the abstract.

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SHORT COMMUNICATIONS should be about 1000 words, with a non-structured abstract, two tables or illustrations and 5 references.

CLINICAL CASE REPORT and brief or negative research findings may appear in this section. Clinical Case Reports should be of academic value and provide relevance of the disease being reported as rare or unusual. The word count of case report should not be more than 800 words with 3- 5 key words. The abstract should be non-structured of about 150 words (case specific) with maximum of 5 references. It should not include more than 2 figures and one table.

REVIEW ARTICLE should consist of structured overview of relatively narrow topic providing background and recent development with reference of original literature. An author can write a review article only if he/she has written minimum of three original research articles and some case reports on the same topic. Review article should be of 2500 to 3000 words with non-structured abstract of 150 words and minimum 3 key words.

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- Managing editor will collect the evidences and consult the Chief Editor to make initial decision about the investigation for an unethical behavior.
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- ✓ Publication of a formal notice detailing the misconduct.
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- ✓ Debarment of the authors(s) from further publication in the JIIMC for one year or permanent depending upon the nature of offence.

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ABSTRACT

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Write this section with references as per following instructions:

a. Give background information about the subject matter and the issues your study intends to address. Only strictly pertinent references should be cited and the subject should not be extensively reviewed.
b. Describe what is known (in the literature) and what is not clear about the subject with reference to relevant literature thus identifying the literature gap.
c. You write the rationale (justification) of your study.
d. Finally you mention the objective of your study

MATERIALS AND METHODS

Methodology is written in past tense.

Follow this sequence **without headings:**

- Study design
- Place and Duration of Study
- Sample size
- Sampling technique
- Mention about permission of ethical review board and other ethical issues addressed.
- Inclusion and Exclusion Criteria
- Data collection procedure-
- Type of data: parametric or nonparametric
- Data analysis; including Statistical Software used, and statistical test applied for the calculation of p value and to determine the statistical significance. Exact p-values and 95% confidence interval (CI) limits must be mentioned instead of only stating greater or less than level of significance. All percentages must be accompanied with actual numbers.

RESULTS

These should be presented in logical sequence in the text, tables and illustrations. All the data in the tables or illustrations should not be repeated in the text; only important observations should be emphasized or summarized. No opinion should be given in this portion of the text.

DISCUSSION

This section should include author's comment on the results. Write in present tense, active voice- except for results, which are written in past tense. It should be written in following sequence:

a. First of all very briefly summarize, Interpret and discuss main results and don't merely repeat the results.
b. Discuss key studies relevant to your study.
c. Compare your work with other`s work.
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Tables and illustrations should be merged within the text of the paper, and legends to illustrations should be typed on the same sheet. Table should be simple, and should supplement rather than duplicate information in the text; tables repeating information will be omitted. Each table should have a title and be typed in double space without horizontal and vertical lines on an 8 ½" x 11' paper. Tables should be numbered consecutively with Roman numeral in the order they are mentioned in the text. Page number should be in the upper right corner. If abbreviations are used, they should be explained in foot notes and when they first appear in text. When graphs, scattergrams, or histogram are submitted, the numerical data on which they are based should be supplied. All graphs should be made with MS Excel and be sent as a separate Excel file even if merged in the manuscript. For scanned photographs highest resolution should be used.

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System International (SI) Unit measurements should be used. All drugs must be mentioned in their generic form. The commercial name may however be mentioned within brackets, if necessary.

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- In case of multiple submissions, editors of other journals will also be informed. The author(s) will have to provide documentary proof of retraction from publication, if such a defence is pleaded.
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