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PERCEPTION TOWARDS PREMARITAL MEDICAL SCREENING: A CROSS SECTIONAL ASSESSMENT AMONG YOUNG ADULTS IN QUETTA CITY, PAKISTAN

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Abstract:

Introduction: *The aim of this study was to assess the perception of young adults toward premarital medical screening in Quetta city, Pakistan.*

Methods: *A cross sectional, descriptive study design was adopted. Perception of young adults towards premarital medical screening was assessed through a pre-validated questionnaire. The questionnaire was distributed to 1266 respondents of both genders. Both descriptive and inferential statistics were used for data analysis. All analyses were performed by SPSS v. 20 and $p<0.05$ was taken as significant.*

Results: *Twelve hundred and sixty young adults participated in study with a response rate of 99.4%. Seven hundred and eighteen (57.0%) respondents were males and 924 (73.3%) belonged to age group of 18-23 years. Nine hundred and sixty four (76.5%) had no family history of heredity diseases. Although 1074 (85.2%) of the respondents had information about genetic diseases, 65% had little idea about premarital blood screening. Interestingly, while premarital screening was perceived as a good practice (996, 79.0%) and a method to save generations from genetic diseases (1152, 91.4%), 927 (73.6%) of the respondents still reported that they will not opt for premarital blood screening before their marriages. However, 828 (65.7%) were in favor of premarital screening only if a law is approved by the healthcare authorities. The Chi square test was used for cross tabulation and no significant association was reported among study questions and demographic variables ($p>0.05$).*

Conclusion: *The current study concluded that majority of the participants had little idea about premarital blood screening. Additionally, premarital screening was not perceived as an important procedure before marriages. This reflects the lack of information towards premarital screening and the need of providing health education in order to improve the perception towards premarital screening among young adults in Quetta city, Pakistan.*

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INTRODUCTION:

Premarital blood screening is conducted to detect genetic disorders and to prevent and control inherited diseases. Inherited diseases are wide spread around the globe and are highly prevalent due to consanguineous marriages [1]. Premarital blood screening and prenatal diagnosis can reduce the rate of infant birth with hereditary disorders and control the gene propagation of affected patients [2]. However, people are extremely scared about the awareness towards premarital screening, while this plays an important role to minimize the genetic disorders in new generations [3]. For example, Thalassemia is a genetic disease that is transferred from parents to children through genes [4]. Thalassemia has high mortality rate because of costly treatment as well as it affects the social and psychological status of the patient and his family. Within this context, prenatal and neonatal diagnosis has been considered cost-effective in populations with a high prevalence [5, 6]. However, neonatal blood screening has limited benefits because it prevents the patient at secondary and tertiary treatment bases while the prenatal diagnosis provides the rational prevention from thalassemia. Therefore, premarital blood screening program have great worth to reduce the genetic disorders to propagate from generations to generations [7].

In line to what is reported, public awareness, knowledge and counselling are very important in reducing fatal genetic diseases in the population. An acquaintance to premarital screening allows an individual to take necessary actions in reducing his/her risk towards genetic complications. In addition, people at higher risk of genetic disorders can be facilitated by the healthcare professionals by encouraging regular examination and premarital testing for medical condition that are dominant in the bloodline [8]. However, this knowledge towards genetic disorders and birth defects should be accustomed with the existing norms and believes of the society so that premarital screening is accepted without reservations [9]. A study conducted among three groups of Saudi participants reported lack of awareness about genetic diseases and a misinterpretation of the impact of genes on health [10]. Another study reported by Chen et al revealed that their respondents' knowledge about reproductive health and pre-marital knowledge was also limited [11]. Consequently, it can be concluded that little attention is offered on the need to educate the public in developing countries about the developments in human genetics and its relationship with in health, wellbeing and quality of life.

In relation to premarital screening and the situation in Pakistan, the condition is not different from other developing countries. The country follows a three-tiered health care delivery system that unfortunately has not been translated into optimal health care delivery due to a number of issues [12]. The country spends 0.5% of its gross domestic product on health hence the healthcare system is unable to provide therapeutic and diagnostic support to the population [12]. There is a meagre concept of community education and the transmission of health education is poor. Furthermore, medical laws and legislations do exist but the implementation is less to be seen. Therefore people are subjected to the threats of various issues including genetic diseases. Although there is limited information of premarital screening in Pakistan, such studies are reported from urban areas of the country [13-15]. Unfortunately, there is no available data from rural areas of Pakistan about premarital screening program neither about its familiarity or utilization. Therefore, the present study was aimed to explore the perception of young adults towards premarital blood screening in Quetta city, Pakistan.

METHODS:

Study design, settings and inclusion criteria

A questionnaire based, cross sectional study using a self-administered questionnaire was conducted. Quetta is the provincial capital of Baluchistan and the ninth-largest city of Pakistan [16]. The population of the city is estimated to be approximately 1,140,000 [16]. Located in north western Baluchistan near the Pakistan-Afghanistan border, Quetta is a trade and communication Centre between the two countries. For the current study, Pakistani adults aging 18-35 years were included in the study. However, immigrants and individuals with mental impairments and disorders were ruled out of the data collection.

Sampling procedure and technique

By using a triple design effect sampling approach, 1266 young adults were targeted for data collection [17]. The city of Quetta is administratively divided into two towns; therefore 633 young adults were conveniently approached for data collection.

Validity, reliability and data analysis

In the present study, Statistical Package for the Social Sciences (SPSS) for Windows 20 was used for data analysis [18]. The questionnaire was tested for face and content validity by the research team and experts in Pharmacy Practice research. The questionnaire was subjected to Confirmatory Factor Analysis (CFA) that was conducted as a reduction technique. The CFA was also used in the development of the reliability of the questionnaire. The CFA was followed by normality assessment and internal consistency ($\alpha = 0.75$). The descriptive analysis of the demographic variables and study questions was followed by the Chi square test that was used to identify possible association among study variables. Where significant association were identified, the interpretation was conducted via

Phi/Cremer V. For all analysis, p-value less than 0.05 were taken as significant.

Ethical approval

Institutional Review Board, Faculty of Pharmacy & Health Sciences, University of Balochistan, Pakistan approved the study. Additionally, written consent from the participants was also taken whereby participants were informed about their rights of participation in the study and could decline to participate during the interview.

RESULTS:

Demographic characteristics of the study respondents

Table 1 presents the demographic information of the study respondents. Twelve hundred and sixty respondents completed the survey with a response rate of 99.5%. The cohort was dominated by males (718, 57.0%) and majority of the respondents belonged to the age group of 18-23 years (924, 73.3%). Nine hundred and ninety seven (79.1%) were unmarried with no known history of heredity and family diseases (964, 76.5%) and (705, 56.9%) respectively. Seventy six percent of the respondents knew the definition of heredity diseases and 814 (64.6%) reported that premarital screening is conducted to prevent the new generation from hereditary diseases. Mixed feelings were observed towards the refusal of premarital screening as shown in Table 1.

Table 1: Demographic characteristics of the study respondents

Characteristics	Frequency (n)	Percentage (%)
Age in years (22.28±4.39)		
18-23	924	73.3
23-29	206	16.3
30-35	130	10.3
Gender		
Male	718	57.0
Female	542	43.0
Marital status		
Married	263	20.9
Unmarried	997	79.1
Type of marriage		
1st Cousin	348	27.6
2nd cousin	209	16.6
None	703	55.8
Personal history of heredity diseases		
Yes	143	11.3
No	964	76.5
Don't Know	153	12.1
Family history of heredity diseases		
Yes	368	29.2
No	705	56.0
Don't Know	187	14.8
What are inherited diseases?		
The diseases which are transferred by touching	66	5.2
The diseases which are transferred breathing	127	10.1
The diseases which are transferred by genetic materials	964	76.5
The diseases which are transferred by body fluids	103	8.2
What is the reasoning of medical screening before marriage?		
To make sure that my life partner is healthy	167	13.3
To feel fit for marriage	156	12.4
To prevent the new generation from hereditary diseases	814	64.6
To secure from the transmission of inherited diseases between husband and wife	122	9.7
What is the right time for premarital screening?		
In secondary classes	154	12.2
In collage time	112	8.9
In university time	116	9.2
Before marriage	836	66.3
After marriage	42	3.3
What are the reasons to disagree premarital screening?		
Afraid about results	296	23.5
Feel insult about such types of tests	374	29.7
After negative results it will make difficult to marry	361	28.7
It is the interference in God will	228	18.1

Component analysis

Principal Component analysis (PCA) was used as a data reduction technique. The PCA was employed in the development and assessment of the study questionnaire. The technique was used to condense a number of variables prior to actual analysis. Table 2 describes the results of PCA. The 12 items of our study questionnaire were tested for PCA. Prior to performing PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. The Kaiser-Meyer-Olkin value was 0.757 exceeding the recommended value of 0.60 and Bartlett's Test of Sphericity reached statistical significance ($p<0.001$) supporting the factorability of the correlation matrix. Principal components analysis revealed the presence of two components with eigenvalues exceeding 1, explaining 22.2% and 10.5% of the variance respectively. An inspection of the screeplot revealed a clear break after the first component. Therefore, it was decided to remove the first component for further investigation. This was further supported by the results of Parallel Analysis, which showed only one component with eigenvalues exceeding from the standard. Therefore the stated variable was removed from the final analysis and an 11-itemed questionnaire was finalized for data analysis.

Table 2: Principal Component analysis

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1.	3.578	22.262	22.362	3.578	22.362	22.362	3.187
2.	1.690	10.562	32.924	1.690	10.562	32.924	2.011
3.	0.905	5.655	67.124				
4.	0.852	5.325	72.449				
5.	0.772	4.823	77.272				
6.	0.702	4.389	81.661				
7.	0.667	4.166	85.827				
8.	0.545	3.409	89.236				
9.	0.519	3.243	92.479				
10.	0.483	3.019	95.498				
11.	0.400	2.502	98.000				
12.	0.320	2.000	100.000				

Extraction Method: Principal Component Analysis

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance

Response to study questions

Table 3 presents the response to study questionnaire. The eleven itemed tool was used for data collection. Although 51% of the respondent knew about blood screening, 35.2% were actually had information about premarital blood screening. Regarding information towards premarital blood screening, 974 (77.3%) of the respondents perceived that premarital blood screening is important and is a good practice (996, 79.0%). Additionally, 65.7% were in favor of a law to be implemented regarding premarital screening and 75.6% were prepared to sign a contract for premarital screening. However in practice, only 10% in actually went for premarital blood screening for themselves and their life partners.

Table 3: Response to study questionnaire

Items in questionnaire	Frequency (n)	Percentage (%)
Do you know about blood screening?		
Yes	642	51.0
No	524	41.6
Don't Know	93	7.4
Are you aware of premarital blood screening?		
Yes	443	35.2
No	734	58.3
Don't Know	83	6.6
Did you have ideas about diseases related to transfused blood without screening?		
Yes	922	73.2
No	265	21.0
Do not know	73	5.8
Do you agree that inherited diseases transfer from generation to generation?		
Yes	1074	85.2
No	96	7.6
Don't Know	90	7.1
Do you think that carrying out premarital screening is important?		
Yes	974	77.3
No	146	11.6
Don't Know	140	11.1
Do you want to make an agreement to carryout premarital screening?		
Yes	953	75.6
No	167	13.3
Don't Know	140	11.1
Are you agreed for a premarital screening for you and your life partner?		
Yes	756	60.0
No	346	27.5
Don't Know	158	12.5
If you are married then did you screened your blood before marriage?		
Yes	129	10.2
No	923	73.3
Don't Know	208	16.5
Did you screen blood of your life partner before marriage?		
Yes	115	9.1
No	927	73.6
Don't Know	218	17.3
Do you agree to a law about premarital medical screening?		
Yes	828	65.7
No	268	21.3
Don't Know	164	13.0
Is premarital medical screening is good practice?		
Yes	996	79.0
No	124	9.8
Don't Know	140	11.1

Cross tabulation analysis

The Chi square test was used for cross tabulation. However, we were unable to identify any significant association among study questions and demographic variables ($p>0.05$).

DISCUSSION:

Premarital blood screening is an important step to protect new generations from inherited diseases. In developing countries, the awareness, knowledge and perception of premarital blood screening is not well documented. Quetta city in this regard is a low literate area, and to the best of our knowledge there is no information available in literature. As expected, the current study concluded that majority of the participants had little idea about premarital blood screening and held poor perception towards the very concept.

Premarital blood screening is very important but its value is underestimated because many countries consider it of least importance due to the reduce mortality rate from genetic diseases [19]. Premarital blood screening is beneficial for the coming generations to secure people from inherited and congenital diseases. Within this context, congenital marriages are a common practice in the Asian region. For example, in the Arab countries it was reported that about 50% of marriages are due to the congenital unions and is backed by social and cultural aspects of the society [20]. Therefore, it is very important to introduce the concept of premarital blood screening and ensure practices of the very concept to avoid further complications in coming generations in societies where congenital unions are a common norm.

With respect to our study, one study from Saudi Arabia reported that majority of the population accepted that premarital blood screening is an effective method to safe generations from inherited diseases [21]. This is comparable to our results where 79% of our participants accepted that premarital blood screening is a good practice. In terms of premarital blood screening knowledge, Oluwole and his co-workers from South-West Nigeria reported that about 90.5% of their respondents had awareness about premarital screening [22]. While in this study only 35.2% respondents had awareness about premarital screening. Furthermore, a study by Suleiman and colleagues reported that 91% of the respondents had awareness and knowledge about the premarital tests and participants knew that genetic disability can be targeted by performing such types of tests and screening methods [23]. Our current study respondents were more or less similar in agreement whereby 60% of the individuals agreed that genetic disability can be prevented from premarital screening.

Respondents of the current study reported that premarital screening is a good practice (79% with a frequency of 996) and premarital blood screening is important. Communalities as per Principal Component Analysis showed that strong relation was with questionnaire item (*Do you want to safe your generation from inherited diseases?*). Therefore, we can recommend mandatory premarital screening but controversy abounds this suggestion as an agreement for all individuals who would decide to get married. However, the strong relationship gives a hint of proposing mandatory premarital screening. Within this context, 42% of the participants in the city of Riyadh approved the necessary implementation of premarital blood screening [20]. Similar views have been noted in other studies from Saudi Arabia and Nigeria [22-25].

Premarital blood screening is a preventive step but this practice requires more attention for further improvement. Inherited diseases mostly spread by inter family marriages. If the gene carrier of inherited disease is present in both of the partners, then the offspring must be a carrier of the genetic disease while this risk is slightly reduced if only one partner is the carrier. However, these problems can be solved with proper management in providing the knowledge, awareness and practice of premarital blood screening tests. Nevertheless, there are multiple reasons of premarital blood screening being not in progressive stages in the current study settings. Quetta city being a conservative area has its own unique environment where societal, social, cultural and traditional performances play an important role in defining certain behaviours. During marriages, it is not common for both families to ask about premarital treatments to secure their new generation from inherited diseases. Additionally, people continue the practice of congenital marriages that are the main cause to spread the genetic diseases from generations to generations. Marriages are often arranged by parents and in young age, the relevant couple don't have measureable health literacy and education about premarital blood screening. Another reason is attributed to financial status of our population, whereby majority of the population cannot afford the expenses of blood screening as the related tests are very costly and not affordable. There is no facility from the government at the district levels to introduce the knowledge and awareness for premarital blood screening. At certain level, religious boundaries also effect the practice of premarital blood screening because people carry a false ideology that premarital screening is interruption in God's will. This highlights the need of health literacy as currently, health education efforts at the primary health centers are carried out by medical and nursing staff only. There are no written policies or protocols that

are standardized in practice which would identify the role of medical team members and expected outcomes of the process. Therefore, the outcome is dependent on personal commitment of staff and their availability. It might be worthwhile to develop a standard protocol related to pre-marital screening applied by healthcare staff.

CONCLUSION:

The current study concluded that majority of the participants had little idea about premarital blood screening. Additionally, premarital screening was not perceived as an important procedure before marriages. This reflects the lack of information towards premarital screening and the need of providing health education in order to improve the perception towards premarital screening among young adults in Quetta city, Pakistan.

LIMITATIONS & RECOMMENDATIONS:

This study is not without limitations. We deliberately missed out the educational variable from data collection to see whether education has role to play in developing perception towards premarital screening. Like other cross sectional studies, generalizability is another issue. Therefore, a nationwide study is recommended to get a clear understanding of premarital screening issues and to present practical suggestion for further recommendations.

DISCLOSURE:

The authors have no conflict of interest to declare. No funding was received for this study.

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