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Assessment of Knowledge of Diabetes Mellitus, its Complications and Management among Diabetic Patients Visiting Tertiary Care Hospital in Islamabad, Pakistan

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ABSTRACT

A descriptive cross sectional survey was done in tertiary care hospital of Islamabad. The objective of the survey was to assess patients' knowledge regarding diabetes mellitus (DM), its risk factors, complications, and of management among age range of 18 to 40 years. Our Research was done on relatively younger patients of diabetes. This study was completed on 145 patients (83 males and 63 females), by employing convenience sampling in the outpatient department of Pakistan institute of medical science hospital (PIMS). The structured questionnaire was used to complete the data collection process. Out of 145 participants, (57.2%) were males and (42.8%) were females. Average age of the participants was (34.65) with SD +4.971. Most of the patients were having income less than 10000 PKR (40.6%) per month. The majority of the participants (69%) were not aware about the type of diabetes they have. More than half of the patients identified lifestyle & diet modifications (64.8%) along with glucose level control (65.5%) as most important risk factors for developing complications. The knowledge of diabetes was significantly associated with the educational level and parental history of DM with p-value (0.002) and (0.017) respectively. The other factors gender, age, and income were not statistically associated with knowledge regarding management of diabetes. The patients in Pakistan having diabetes mellitus (DM) had satisfactory level of knowledge in some aspects of the disease. But, overall knowledge related to all aspects of diabetes mellitus (DM) was not up to the mark. The patients need education related to their disease and management.

Keywords: Diabetes mellitus (DM), Knowledge, Management, Complications, Risk factors.

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INTRODUCTION

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Internationally the prevalence of diabetes was 6.4% among young adults (aged 20-79 years) that ultimately affected the 285 million people in 2010, and this prevalence will rise to 7.7%, and 439 million people will be suffering from DM by 2030. Between the period of 2010 and 2030, there will be a significant increase of diabetic adults that will be 69% in developing countries and an increase of 20% in industrialized countries[1]. The world health organization (WHO) has projected that over the period of next 25 years globally the number of patients suffering from DM will be doubled or more developing countries will bear most of the sufferers[2]. In South Asian region it is projected that there will be highest numbers of new cases. Several researches have revealed that migrants of South Asian region and their children have greater prevalence of DM as compared to natives[3-4.] A remarkable rise in the prevalence of DM in community of those societies that have experienced intense changes in their lifestyle like the Pima Indians of Southwest USA, the Nauruan of the South Pacific Islands, Mexican Americans and the Australian Aborigines[5-8]. Lifestyle changes and universal services have resulted in lesser physical activity and augmented caloric intake due to higher caloric food consumption. These issues have formed a socio-economically underprivileged population that is a major issue of public health due to rising health differences that have caused interconnected epidemics of diabetes, obesity, kidney diseases and hypertension.

It is fact that the poor glycemic control results in amplified risk for kidney disease, heart problems, blindness and stroke[9,10] While the scientific knowledge also have clear cut fact that with better metabolic control these complications are avoidable[11]. However the diabetes control is reliant on to individual's own skills to perform self-care in their everyday lives, and patient knowledge and education is measured a vital constituent of attaining this objective[12].

Because of its complications, diabetes is very costly disease. For example, it is expected that between 2.5% and 15% of health care funds internationally are spent to diabetes. The so called "indirect costs", to entities, and broader community and families are difficult to count but are considerable[13].

In Pakistan, Increase in charges of this disease, particularly of type 2 DM is a clear threat for budget and quality of life due to poor sugar control and increase complications and diabetes related problems[14-19] Patient's suffering from DM having higher chance of developing complications. Shera AS et al, reported that 5.5% of the patients were having neuropathy, and retinopathy was found in (7.7%) of the participants[20]. Youngsters and children having diabetes have compromised quality of life with great BMI and high blood pressure[21]. Fatness is equally present and leads to insulin resistance and diabetes[22]

Diabetes treatment cost is high. Reserve limits community; absence of healthcare insurance system and inadequate distribution of budget specified for health are obstacles to good health care. Many of the patients having DM are unable to bear charges of DM treatment.[23,24] In Pakistan according to R.Hakeem, diabetes prevalence has increased form 7.6% to 11%.[25-27] Differences are present due to gender, age, settings and development areas. Reported results of diabetes research and surveys done at national level [28,35] stated different remarks and results regarding diabetes prevalence and diabetes burden in different provinces and among females and males. In the largest city of Pakistan, Incidence of type 1 diabetes mellitus was assessed to be 1.02 per hundred thousand per annum[29] in Pakistan the diabetes in pregnant women ranges from 3.2% to 3.5%, same to mothers in western world but complications rate in the babies and mothers were reported very high may be due to poor glucose management [30-32]. Akhter j. reported prevalence of DM 13.14%[33]. According to one of the study held in Karachi regarding the knowledge of diabetes mellitus showed that the average score of right responses for the group was 40%. A significantly good score was correlated with younger age (16-30 years), educational level of the patients and regular checkups from doctors. There was no substantial change in the knowledge score between genders and on different treatments[34].

In Pakistan, data shows that DM prevalence is amassed due to variations in busy routines and elderly inhabitants. Initial findings of and controlling of diabetes is an imperious factor for preventing the disease and related complications[19]. Through good education, health education, initial diagnosis and improved health care numerous health problems and illnesses happened in the communities having DM[35]. Awareness and knowledge of DM in diabetic people is poor in all biospheres as reported by different researches done in different cities of Pakistan including Iran [36-38].

Only 30% respondents were having knowledge about foot care in DM reported in Lahore.Rural population has lesser knowledge of DM as compared to urban population[39].Since Pakistan is a developing country and as indicated by the literature it is a dire need to work for the betterment of the current situation of diabetes thus preventing the projected increase in its prevalence. In Pakistan and other developing countries, people when diagnosed, they had disease related problems and complications [40].

Diabetes related knowledge and awareness is much compromised among people. According to one of the comparison studies the results shows that mean awareness among the rural population was 13 (SD± 2) correct answers out of a possible 25 questions. Similarly, in the case of the urban diabetics the mean awareness was 18 (SD± 2) correct answers. The survey was conducted on

randomly chosen diabetics belonging to Lahore and Faisalabad, (urban areas), as well as Habibabad, Haveli Koranga and Baba Kanwal (rural areas).

Public health education is a main factor for the early diagnosis[41]. Growing the level of community knowledge of diabetes could promote to a better overall health behavior of the community and decrease the risk of developing DM[42].

MATERIALS AND METHODS

Study design

This was descriptive cross sectional study.

Study Site

Pakistan institute of medical sciences was selected as study site.

Study Duration

The study was conducted from 1st November to 20 February 2015.

Study Population

The study population was patients having age 18 to 40 years of age consulting diabetes OPD of PIMS Islamabad.

Inclusion Criteria

- All patients having diabetes mellitus type 1 and 2 of age ranging from 18 to 40 consulting OPD of PIMS.
- Residents of Islamabad.

Exclusion Criteria

- Patients having gestational Diabetes mellitus.
- Those patients having mental disability or severely ill.

Sample size

The calculated sample size was 151. Through the formula of Sample size $\boldsymbol{n = [DEFF*Np(1-p)]/ [(d^2/Z^2_{1-\alpha/2}*(N-1)+p*(1-p)]}$.

Sampling **Technique**

Convenience sampling technique was used for conducting this study.Written approval from the concerned authorities was taken. The data was collected through consent. Information was kept strictly confidential. There was no monetary compensation to study participants. There was no direct benefit to the individual study participant but in the long run there will be benefit to the community and country.

Data collection Tool

Data collection was done through structured questionnaire that was adopted from the study conducted in South Africa[19]. The questionnaire was interviewer administered and consists of all the elements that are required to perform this study. The tool was edited after pilot testing on 10% patients that were not included in the study and then finalized according to our setting.

Data Analysis

Data analysis was done by using SPSS version 20.0. The descriptive statistics followed by chi-square test was used. The p-value less than (0.05) and confidence interval of (95%) was considered significant.

RESULTS AND DISCUSSION

The response rate (96%) was noted, Out of 145 participants, (57.2%) were males and (42.8%) were females. More than two third of the participant in the study were married (84.1%). Average age of the participants was (34.65%) with SD +4.971. The age distribution of the patients was as follows, (4.8%) were between 18-25 years, (29%) of the participants were between 26-33 years and majority was lying (66.2%) between 33-40 range. Most of the patients were having education till primary (35.2%); the second highest percentage was of illiterate people. Only (11%) patients were having education matric or above. Major chunk of the participants were private employee (33.1%), almost one third were unemployed (29.0%), and the government employees who participated were (24.8%).Participants were from low socioeconomic status as the income of the patients were mostly less than 10000PKR with the highest percentage of (40.6%), the (28.3%) were having income in between the 10,000 - 30,000 that was (28.3%), while only (11.7%) of the total participants were having income from all sources more than 5o thousands of above. Table 1 shows the details of demographic characteristics of the Participants.The diabetes mellitus in majority of the respondents was diagnosed by the doctors (91%), 3.4% of the patients was diagnosed by hakeem and 2.8% of the patients were declared diabetics by the nurse and homeopathic doctor each. More than two third of the respondent reported that they don't know about the types of diabetes mellitus, only (18.6%) reported that there are two main types of diabetes mellitus, 8.3% of the patients stated that they know about only one type of DM. Majority of the participants (69%) were not aware about the type of diabetes they have. Only (13.8%) stated that they have type one DM, while (17.2%) reported they have type two DM. Most of the patients (66.2%) thought that DM can be inherited, while (24.1%) of the patients said that they did not know about the hereditary transfer of DM, the rest of the patients (9.7%) said DM cannot be inherited. Most of participants identified lifestyle &

diet modifications along with glucose level control as most important risk factors for developing complications due to DM as shown in the figure 1. Visual problems (63.4%) and Diabetic retinopathy (57.9%) were most common identified complications by the participants the summary of Patient's knowledge about the complications due to DM is given in figure 2. When the patients were inquired about their last eye checkup one third of (30.3%) of the patients stated that they had their examination between 0-6 months, (22.1%) between 7-12 months, (12.4%) responded between 13-18 months. Almost one third (31%) had their last checkup more than 24 months ago.When the respondents were inquired about rating the factors involved in the DM management then more than half (64.8%) rated that taking medication regularly very important in the management of diabetes followed by routine eye examination (46.2%) and eating healthy diet (44.8%) respectively the detail is given is table 2. The Chi square was used in identifying the association of different variables i.e. gender, age, educational level, income, parenteral history of disease with the self-reported level of knowledge of DM management. When the patients were asked about the do they have sufficient knowledge of DM management, more than half of the half of the participants (59.3%) responded "Yes" and rest of the patients (40.7%) stated "N0". The level of knowledge of DM was significantly associated with educational level with the p-value (0.002) and parental history of DM p-value (0.017). The other factors gender, age, income were not significantly associated with the knowledge of DM management. We can claim that his study one of its types in capital of Pakistan. Although many studies were already done on this topic but to best of our knowledge no study had been done on this topic in the capital of Pakistan. The general concept of people regarding PIMS hospital is that this hospital is located in the capital of Pakistan and here mostly educated and elite class people from cities come here to get the treatment. So must have been having good knowledge. But the results of research showed the clear picture. Diabetes mellitus is mostly ignored and missed as a public health problem. Underlying this problem is the poor level of the knowledge about DM, and gravity of the consequences it can lead to it. When this disease is not treated properly then it can lead to severe complications that are heart attack, blindness, kidney failure and other foot related problems (WHO, 1994). Although DM creates lifelong problems for patients and families but the awareness regarding the disease is very low. People are unaware of the problems and complications until they do not face any problem. At that point in time, they had gone to complications and that complications affect the whole body systems. It is really dangerous and alarming situation that people even do not know which type of diabetes they have and how they are going to manage these problem and issues related to this disease. The previous studies related

to knowledge of DM have been done internationally but at national level, these surveys are not done frequently. While for such populated country, Research is required on continuous basis, so that situation can be evaluated in different areas of Pakistan. Very less literature is on the knowledge of diabetes in Pakistan43. The results of this studied showed no statistical significance of knowledge among different genders as reported in one of the previous study conducted in Karachi at Aga khan hospital by Rafique et al but this research results are in line with the one of the study by Jabbar et al who also reported no statistical significance difference of knowledge level among different gender groups43. In this survey, most of the patients were diagnosed DM by the doctors (91%), these result are comparable with the previous study by KP Mashige etal[19]. This diagnosis ratio is very high by the doctor as compared to other health care professionals that is really a good sign in order to effectively managing the DM. In this study, the results showed that diabetic patients showed poorest knowledge related to the types of DM, they were not aware that how many types of DM are there and only a small portion of patients were aware about their DM types. This is really disturbing and alarming situation not only for the patients but also for the health care professionals. These results were a bit similar to the research done by Clarke-Farr et al. But this research indicated some encouraging facts, Most of participants identified lifestyle and influence of heredity as important risk factors for developing complications due to DM and they were also reported different complications occur due to DM and these results are same as that research that was done by KP Mashige et al. Great no of patients (63%) were aware about the complication of visual problems due to DM but this trend of knowledge decrease in specific complications due to DM and small portion of the participants knew about the complications of cataract, retinopathy, glaucoma, kidney disease and heart problems, while most of the patients 31% reported that they have eye examination after 2 years and this also indicates the poor attention of the patients towards the complications related to the DM and these finding does not present very good situation for the diabetic patients as it is very important to have regular checkup from the doctor in the presence of DM and these findings are consistent with the KP Mashige et al . Most of the participants in this study, identified most important factors involved in DM management were taking medication regularly (64.8%), routine eye examination (46.2%) and eating healthy diet (44.8%), these figures showed the encouraging stats and depict even the knowledge of disease and complications among Pakistani patients is very limited and less but now they are interested in the management of diabetes mellitus and have good knowledge in managing the disease. The knowledge regarding management can be due to different factors, one of the major factor can the health care

professionals as the (91%) of the cases are diagnosed by the doctors. The other reason can be the patient's interest in managing the disease. The knowledge of DM was statistically significant with the educational level of the participants as the education increases, it also have influence on the disease knowledge and interest in the disease management. Previous study by Jabbar A.et al also reported the same findings.

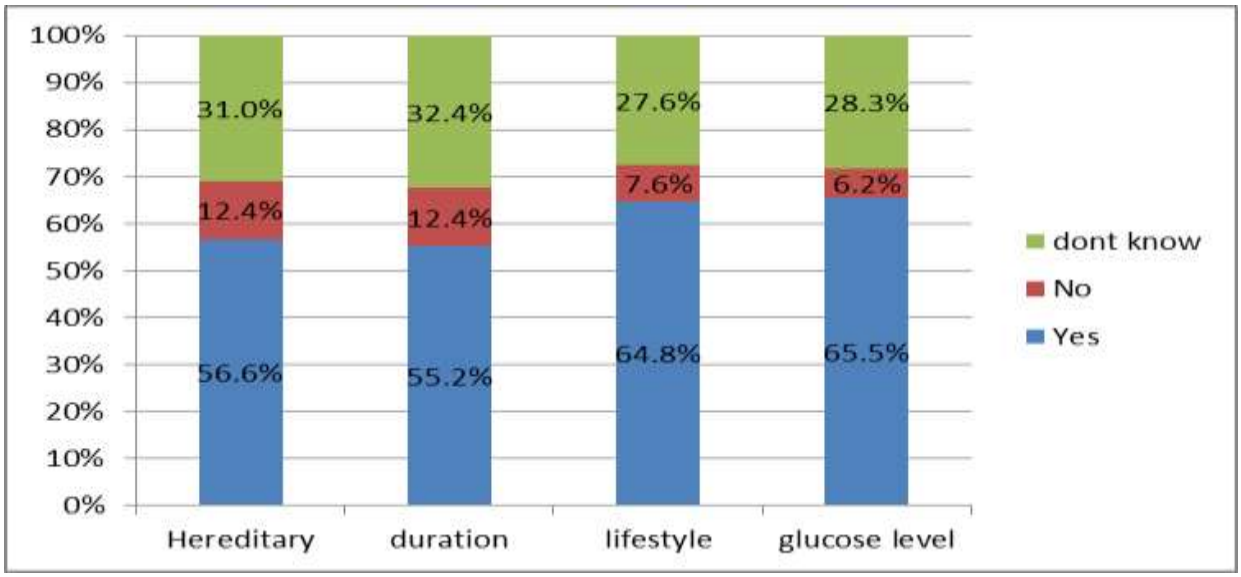

Figure 1: Risk factors for developing potential Complications

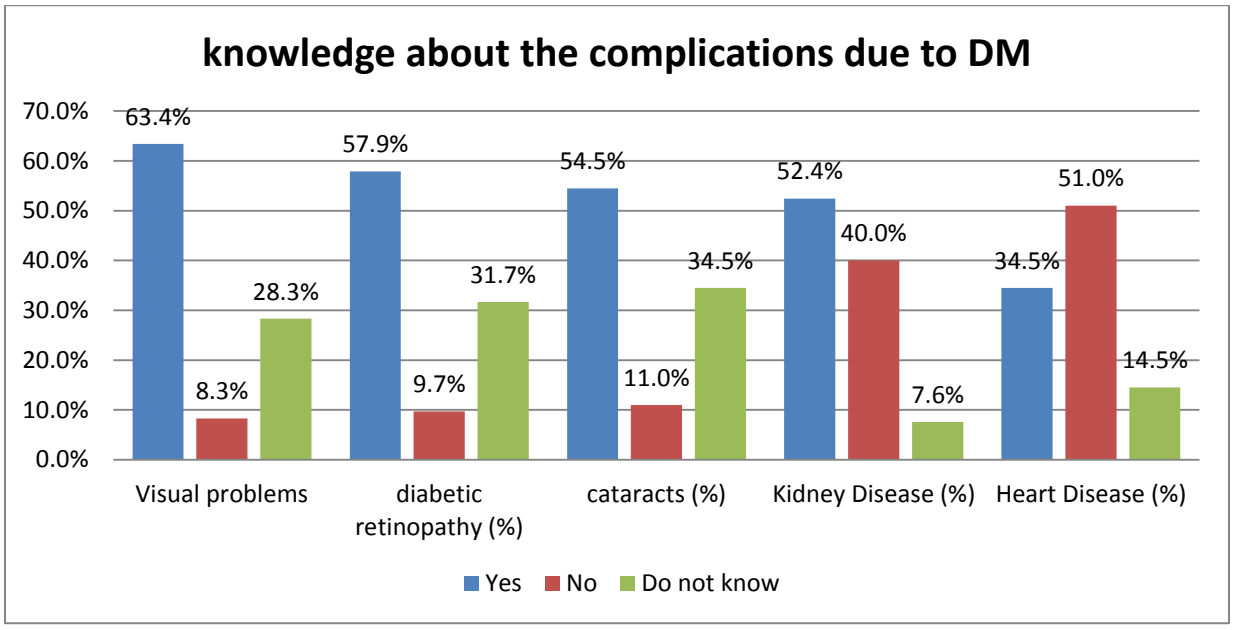

Figure 2: Summary Patient's knowledge about the complications due to DM

Table 1: Socio-demographic characteristics

Descriptive statistics of baseline characteristics of study participants (N-145)	
Characteristics	**Frequency %**
Socio-Demographic Characteristics	
Gender	

Male	83	57.2
Female	62	42.8
Marital status		
Un Married	22	15.2
Married	122	84.1
Any other	1	.7
Age in years		
18-25	7	4.8
26-33	42	29.0
34-40	96	66.2
Education status		
Illiterate	47	32.4
Primary(1-5 grade)	51	35.2
Middle(6-9 grade)	19	13.1
Matric & above	16	11.0
Informal	12	8.3
Employment Status		
Govt. Employee	36	24.8
Private Employee	48	33.1
Laborer	7	4.8
Self employed	12	8.3
Unemployed	42	29.0
House ownership		
Self	97	66.9
On rent	48	33.1
Income (PKR)		
<10000	59	40.6
10,000 - 30,000	41	28.3
30001 - 50,000	28	19.3
> 50,000	17	11.7

Table 2.Percentage ratings about different kind of factors involved in DM management

Scale	Percentage of Respondents (%)						
	Regular Exercise	Regular blood sugar check ups	Maintaining an ideal body weight	Taking medication regularly	Routine medical check ups	Routine eye examination	Eating healthy (diet)
Not important	6.9	10.3	7.6	0	10.3	9.7	5.5
Slightly important	48.3	46.2	50.3	35.1	44.8	44.1	49.7
Very important	37.9	37.2	42.1	64.8	36.5	46.2	44.8
Do not know	6.9	6.2	0	0	8.3	0	0

CONCLUSION

Diabetes is very life threatening and expensive disorder. Very appalling results were found in terms of diabetes knowledge, most of the patients were not even aware about the type of diabetes they have. If they have such condition, it can be inferred that how poorly they are managing their disease. But the good findings in this research was relatively better knowledge of patients related to complications of the disease and the risk factors that can create potential problems. Another encouraging finding of this survey was the knowledge of participants related to managing the DM although they were lacking knowledge about the DM but this area was the strongest one of all the patients. People who were having good educational background had better knowledge and can manage their disease very well as shown by the results.

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CONFLICT OF INTEREST

Authors declare no conflict of Interest

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