

Knowledge of medical students regarding Diabetes mellitus at Ziauddin University, Karachi

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Abstract

Objective: To assess knowledge among medical students of Ziauddin University regarding Diabetes Mellitus.

Methods: A cross sectional survey of medical students from first year to final year at the medical college was conducted on a pretested self-administered questionnaire. Students were divided into preclinical and clinical years for analysis.

Results: A total of 366 students participated, with 145 (39.6%) from the preclinical group and 221 (60.4%) from the clinical group. Overall 89% students knew that diabetes is a metabolic disorder, 78 % knew that pancreas is the site of insulin production and 77% students correctly identified main target organ of insulin. Regarding presentation, 67% said polyphagia, 50% said weight loss while only 18% claimed pruritis vulvae to be the presenting symptom. Majority from the clinical group (95%) while 86% of preclinical group knew about risk factors for diabetes ($p=0.003$). Regarding prevention, 89% of clinical group knew that diabetes is preventable but 49% preclinical students did not have an idea of prevention ($p<0.001$). A large number from clinical group (87%) said that there is some criteria of screening for diabetes while only 30% of preclinical group knew about screening ($p<0.001$). Correct diagnostic criteria for diabetes according to WHO was identified by 55% clinical and only 6% of preclinical students ($p<0.001$). Over two-third (78%) of clinical while only 50% of preclinical students said that diabetes should not always be treated with drugs ($p<0.001$).

Conclusion: The knowledge of students about diabetes was more in the clinical group as compared to the preclinical group, whereas, overall knowledge of the students was adequate. Medical students are the future physicians, therefore the medical curriculum should lay emphasis on educating students, patient based clinically oriented approaches for dealing with this epidemiologically important disease (JPMA 59:163; 2009).

Introduction

Diabetes mellitus, a known chronic illness has become a major health problem worldwide. According to the World Health Organization, diabetes has emerged as an epidemic affecting 246 million people across the universe. Among these affected people, almost 80% burden is in developing countries, with highest rates in Eastern Mediterranean and Middle East, where 9.2 % of the adult population is affected.¹ Pakistan ranks

among the top ten countries with regards to the prevalence of diabetes.¹

National diabetes survey conducted in Pakistan also showed an over all burden of disease to be around 22-25%.² Such an alarming situation of this debilitating disease in the developing country like Pakistan demands understanding of the natural history of disease required to ensure all possible measures for its prevention at an early stage.

Health care professionals and medical students have a very important role in increasing awareness of the disease, disease prevention and health promotion. Various studies conducted among medical students unfortunately showed an inadequate knowledge about diabetes.³⁻⁵

Local studies among physicians and nurses also revealed inadequate knowledge and skills for education and treatment of diabetic patients.^{6,7} No studies regarding knowledge of medical students about diabetes has been conducted in Pakistan.

This study was conducted to assess knowledge among medical students of Ziauddin University regarding Diabetes Mellitus.

Methodology

A cross sectional survey of medical students from first year to final year at Ziauddin Medical College was conducted using a pre-tested self-administered questionnaire. The list of students was obtained from the administration and all the students were enrolled for the study. Out of total 492 students, 366 actually filled the questionnaire with a response rate of 74.3%. Students were divided into preclinical and clinical years for analysis. Questionnaire was distributed in the classroom and all the students were informed about the study.

The questionnaire included 18 questions altogether related to physiology, pathology presentation along with risk factors, prevention, screening, diagnosis, management and complications of Diabetes.

The data entry and analysis was done in SPSS version 10.0, chi-square test and test of proportion was used to compare knowledge between preclinical and clinical students, p-value <0.05 was considered significant.

Results

A total of 366 students participated with 145 (39.6%) from the preclinical group and 221 (60.4%) from the clinical group. The mean age of respondents was 21 ± 1.6 years.

Table 1 shows the variables related to physiology, pathology and presentation of diabetes. Over 91% from clinical while 83% from preclinical group knew that diabetes is a metabolic disorder ($p=0.003$). On inquiring about the site of production of insulin, most of the students from the clinical group (86%) claimed that it is produced by the pancreas. On the other hand, 68% from the preclinical group knew that pancreas is the site of production for insulin ($p<0.001$). Majority (94%) from clinical group identified liver, muscle and adipocyte as the main target organ of insulin, while 49% of preclinical students had a misconception that the target organs were stomach, liver and pancreas ($p<0.001$). When asked about the presenting symptoms of diabetes, 42% of preclinical students were not aware that polyphagia is one of the presenting symptoms of

Table 1: Physiology, Pathology and Presentation of Diabetes mellitus.

Variables	Preclinical n=145 (%)	Clinical n =221 (%)	P value
Diabetes mellitus is a metabolic disorder	120 (83)	205 (91)	0.003
Site of production of insulin			
Liver	29 (20)	20 (9)	<0.001
Pancreas	98 (68)	189(86)	
Stomach	18 (12)	12 (5)	
Main target organ of insulin			
Liver,muscle,adipocyte	74 (51)	208 (94)	<0.001
Stomach,liver,pancreas	71 (49)	13 (6)	
Diabetes commonly presents with			
Polyuria	125 (86)	206 (93)	0.026
Polydispia	118 (81)	200 (90)	<0.01
Polyphagia	84 (58)	160 (72)	0.004
Delayed wound healing	100 (69)	156 (71)	0.741
Unexplained ill health	43 (30)	115 (52)	<0.001
Weight loss	56 (39)	127 (57)	<0.001
Big size baby	60 (41)	122 (55)	0.01
Pruritis vulvae	9 (6)	56 (25)	<0.001
Erectile dysfunction	11 (8)	29 (13)	0.097

diabetes ($p=0.004$). Regarding unexplained ill health, only 52% of clinical group identified it to be a presenting symptom while two-third from the preclinical group (70%) could not identify it as a presentation ($p<0.01$). On asking about weight loss, only 39% of preclinical group knew that it can be one of the presenting features ($p<0.001$). Over half (55%) of the clinical students were aware of big size baby as a presentation of diabetes ($p=0.01$). Regarding pruritis vulvae only 25% of clinical students knew that patient can present with this symptom while 94% of preclinical students did not know about it ($p<0.001$).

Table 2 shows that 95% of the clinical students and 86% preclinical students knew about certain risk factors for diabetes ($p=0.003$). Regarding prevention, 89% of clinical group knew that diabetes is preventable and an equal (89%) number of students thought that there is a role of exercise in prevention, while almost half of the preclinical students (49%) did not have an idea about prevention and almost equal number of students (44%) did not know the role of exercise in prevention ($p<0.001$).

Inquiring about the risk factors, 62% identified family history, obesity, hypertension, hypertriglyceridaemia and history of gestational diabetes, all as the risk factors. On the other hand 41% of preclinical students said that only family history and obesity are the risk factors, while 37% said that along with family history and obesity, gestational diabetes is also a known risk factor ($p=0.003$).

The knowledge regarding screening and management of diabetes was also assessed. A significant number (87%) of clinical group identified that there is some criteria of screening for diabetes, while only 30% of the preclinical knew about

Table 2: Risk Factors, Prevention and Management.

Variables	Preclinical n=145 (%)	Clinical n =221 (%)	P value
Is there any risk factor for diabetes	125 (86)	210 (95)	0.003
Is Diabetes preventable	74 (51)	196 (89)	<0.001
If yes, regular exercise helps in prevention	81 (56)	196 (89)	<0.001
Are there any criteria for screening of diabetes	44 (30)	193 (87)	<0.001
How frequently people without risk factor be screened			
Annually	38 (26)	42(19)	
Biannually	31 (21)	33(15)	<0.001
Three yearly*	13 (10)	135(61)	
Don't Know	63 (43)	11(5)	
How frequently people with risk factors be screened			
Annually*	42 (29)	151(68)	
Biannually	40 (28)	32(14)	<0.001
Don't Know	63 (43)	38(17)	
Do you know diagnostic criteria for diabetes according to WHO	38(26)	175(79)	<0.001
If yes then what is the correct criterion			
Symptoms,FBS126 RBS 200*	8 (6)	122(55)	
Symptoms,FBS100 RBS 160	7 (5)	38(17)	
Symptoms,FBS120 RBS 200	23 (16)	37(17)	<0.001
Don't Know	107 (74)	24(11)	
Do you think every diabetic should be treated with drugs	72(50)	48(22)	<0.001

* =Correct response.

screening for diabetes ($p < 0.001$). When inquired about the frequency of screening of people without risk factors 61% of clinical students and 10% of preclinical students knew the correct criteria ($p < 0.001$). Regarding the WHO diagnostic criteria for diabetes, 55% from the clinical group and 6% of preclinical students knew the correct criteria ($p < 0.001$).

On assessing knowledge about treatment and different treatment modalities, 78% of clinical and 50% of preclinical students said that diabetes should not always be treated with drugs ($p < 0.001$). Less than half (43%) of clinical students and 32% of preclinical students were of the opinion that diet, diet and exercise, oral hypoglycaemic drugs and insulin, all are the different treatment modalities for diabetes ($p = 0.001$).

Inquiring about the complications of diabetes, 72% of the clinical students and 51% preclinical students knew that heart disease, nephropathy, stroke, retinopathy, neuropathy, all are the complications of diabetes ($p < 0.001$).

Discussion

This study aimed to assess knowledge of medical students about diabetes mellitus. The overall knowledge of medical students found in the study was average, while the clinical year students had better knowledge as compared to the preclinical students. Similar results were observed among Pakistani nurses, although some parameters were different, related to knowledge about diabetes.⁷ The correct site of

production of insulin from pancreas was identified by more than two-thirds of the students from clinical years in this study which is similar to the German final year students but a difference in knowledge was found regarding target organs of insulin with majority of students in this study giving correct response as compared to only one third of German students.⁴

Various presenting symptoms of diabetes mellitus were also inquired from the students. More than half of the students in this study had an opinion that delayed wound healing is one of the symptoms of diabetes as has already being mentioned in another study by Khan MN.⁹ In this study, students were of the opinion that weight loss could be the presenting feature of diabetes which is comparable with a local study showing that 50% of nurses gave the similar response.⁷ Big size baby is also an important presenting feature of diabetes, associated with complications like hypoglycaemia to the child and risk of trauma to the mother during child birth.^{10,11} In this study, only half of the students were able to identify big size baby as a presenting feature, which is comparable to another study done on nurses.⁷ Pruritis vulvae as a presenting symptom was identified by only a small number of students, although a local study done in Sargodha showed 6.5% of diabetics presenting with pruritis vulvae¹² signifying the importance of its awareness. A study done among Americans showed the prevalence of erectile dysfunction among men with diabetes to be 45.8 %¹³ which is quite high but unfortunately in this study only few students were able to identify erectile dysfunction as a feature associated with diabetes.

Acknowledgment of the risk factors has pivotal role in prevention. Most of the clinical students in this study gave a satisfactory response regarding the knowledge about risk factors but the preclinical students showed an insignificant knowledge regarding hypertension and hypertriglyceridaemia as the risk factors. Another study done among health care professionals showed that only fifth of them could correctly identify the risk factors for diabetes.¹⁴ There is evidence that risk factor assessment is vital for primary and secondary prevention of the disease that could be achieved by improving awareness of risk factors on part of both patients and health care professionals.¹⁵

Prevention is always better than cure and the benefits of exercise in diabetes are substantial as is proved by the studies emphasizing the importance of exercise for the prevention of this common metabolic problem.¹⁶ Fortunately students of this study showed sufficient awareness about the importance of diabetes prevention and knew that exercise could help in prevention. On the other hand, a study done in America showed that only 31% of non diabetics were provided awareness by health care professionals about the role of exercise in prevention, suggesting an ignorance about the key role of exercise to prevent the disease.¹⁷

With the background knowledge of risk factors and

importance of prevention, early detection through screening can help to alter the natural history of diabetes.¹⁸ This study showed unsatisfactory results about student's knowledge of screening, with only one-third of preclinical students saying that there are some criteria for screening of diabetes while almost two-third of clinical students gave correct response about frequency of screening of people with or without risk factors. Another local study showed that only 29% of physicians were able to give correct frequency for screening people at risk.⁶ Research has shown that people with screen detected diabetes were able to understand its importance and planned to control it.¹⁵ It is therefore important to note that students and physicians lack knowledge about importance of screening.

WHO acknowledges the importance of diabetes and has proposed criteria for correct diagnosis, surprisingly only half of the clinical students knew the criteria. Another study showed that 40% of health care professionals lack confidences to diagnose diabetes.¹⁵ These findings suggest that continuous medical education sessions are now essential to keep students and physicians up dated.

Management of diabetes is multifactorial and prompt treatment could prevent complications. Half of the preclinical students thought that diabetes could only be treated with drugs while it is already known that treatment could be tailored through proper risk assessment and life style modifications including diet and exercise. Less than half (43%) of clinical students while almost one-third of preclinical students said that diet, diet and exercise, oral hypoglycaemic drugs and insulin, are all the different treatment modalities for diabetes. This is comparable with another study among patients showing that more than half of them were recommended for diet and exercise by health care professionals to prevent disease progression.¹⁹

Students' knowledge about complications showed better standard among clinical than preclinical students; because of direct interaction and observations with patients in hospitals. This is comparable with another study showing frequency of identifying different complications of diabetes among health care professionals.¹⁴ It was noted that only one-third of them including house officers, were able to identify different complications, suggesting that there is lack of understanding of the disease among the young graduates that require continuity of education and training.

The knowledge of students about diabetes was more in the clinical group as compared to the preclinical group, whereas, overall knowledge of the students was average. Medical students being the future physicians will be the first line of defence in dealing with common medical problems

including diabetes. These students are an important cadre of health professionals; therefore, the medical curriculum should lay emphasis on patient-based clinically oriented approaches and teaching. This could improve the standard of diabetes education amongst future doctors and equip them better for dealing with this epidemiologically important disease.

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