Standard Scientific Research and Essays Vol1 (6): 143-151, July 2013
http://www.standresjournals.org/journals/SSRE

Research Article

Investigating the awareness level about Diabetes Mellitus and associated factors among university students: A pilot study

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Accepted 18 July 2013

Abstract

Introduction: During the 20th century, the leading causes of death shifted from infectious to chronic diseases: Cardiovascular disease, cancer, and diabetes are now among the most prevalent, costly, and preventable of all health problems. These diseases have been strongly associated with unhealthy lifestyle habits, including inappropriate nutrition, lack of exercise, smoking, alcohol consumption, caffeine overuse, and improper sleeping habits.
Objectives: The aim of the present study is to assess the knowledge of the university students regarding Diabetes Mellitus, detect the most common inadequate areas of knowledge regarding diabetes, determine the needs of universality students regarding diabetes Mellitus. **Subject and methods**: descriptive with convenience random sampling was used which calculated 100 from education college carried out in King dom of Saudi Arabia specifically in Qassim region. One modified tool for data collection was used divided into 4 main parts related to sociodemographic characteristics, assessment of student's knowledge risk factors , clinical manifestations , treatment and complications of D.M respectively . **Results:** results of the present study revealed significance difference in many items related to general knowledge of D.M . **Conclusion**: The present study concluded that the university students had satisfactory level of knowledge in many areas related to Diabetes Mellitus. **Recommendations:** in order to generalize the present study result various further studies in different geographical areas and large study sample size should be emphasized.

Key words: students, university, awareness, diabetes Mellitus, associated factors.

INTRODUCTION

Diabetes is an “Ice berg” disease. According to recent estimates Prevalence of Diabetes Mellitus in adults was around 4% worldwide and this Means that over 143 million persons are newly affected. As a part of health care provider it is our role that plays a major role in the awareness of Diabetes Mellitus and its complications. Therefore preventions is better than cure, it is necessary as a part of community health nurse in today’s urban and rural areas to make community aware and change their life style and the behavior of eating pattern. (*Perkins, 2004*)

During the 20th century, the leading causes of death shifted from infectious to chronic diseases: Cardiovascular disease, cancer, and diabetes are now among the most prevalent, costly, and preventable of all health problems. These diseases have been strongly associated with unhealthy lifestyle habits, including inappropriate nutrition, lack of exercise, smoking, alcohol consumption, caffeine overuse, and improper sleeping habits. (*Rao et al., 2012*)

Diabetes is quickly becoming one the most serious diseases affecting the United States According to WHO in 2004, more then 150 million people worldwide Suffer from some form of diabetes in India. It has been estimated that presently 19.4 million individuals are affected by diabetes and the numbers expected to increase to 57.2 million by the year 2005 (one six of the world total) . Health team members have to be trained well in order to provide Knowledge to the community about prevention of Diabetes Mellitus. Currently there are 23.6 million people with diabetes (*ADA, 2010*) and 57 million people in the United States diagnosed with prediabetes (*NFDS, 2007*). These rates of diabetes diagnoses

demonstrate that diabetes is quickly becoming an epidemic and as the United States population grows, the need for more effective preventive strategies grows as well. In 2002 the cost of treating people with diabetes in the United States was an estimated $132 billion, including medical expenditures and lost productivity due to inability of those suffering from diabetes complications to work in their jobs (*Perkins, 2004)*

Concerning student's knowledge about health information, the present study was found that the majority of total score between both level 1 and 2 had poor to moderate knowledge of health information; this finding was congruent with (*Khataybeh and Rawashdeh, 2000*). while *Rosen 2010* who mention the importance of university and college students' knowledge, attitudes, and perceptions regarding health issues because of the influence these factors have on the constructs of health attitude and the Health Belief Model and founded there were no significant differences in the attitudes, perceptions, and experiences variables between university college .

Estimates of prevalence of diabetes among people under 20 years of age were provided by Dr Anders Green and were estimated from incidence data derived from published studies. Further details of the methods used are given in the Diabetes Atlas 2000 .Appropriate surveys for adults were identified by a MEDLINE search using the words diabetes mellitus, incidence, prevalence, occurrence and epidemiology and from unpublished studies known to the diabetes programme team at WHO or the International Diabetes Institute. Where more than one survey for a country was identified that met the eligibility criteria defined above, preference was given to more recent studies. For countries for which eligible data were not available, data from a proxy country believed to have similar diabetes prevalence were used. The majority of studies of diabetes prevalence do not indicate the type of diabetes and consequently the estimates refer to all diabetes International Diabetes Federation. (*The World Health Report, 2001*.)

Global estimates of people suffering from diabetes will rise from 151 million in 2000, to 221 million by 2010 and reaching 300 million by 2025 (King et al, 1998); the vast majority (93-97%) being Type II (non-insulin dependent) diabetes (King H et al, 1998). Most of the morbidity and mortality of diabetes is due to the untoward outcomes associated with the disease: blindness, kidney failure, nerve damage, and cardiovascular disease. Chronic disease management, exemplified by diabetes, is thus one of the cornerstones of healthcare systems across the globe. In Hong Kong, 2000, more than 15,000 hospital admissions and 830 deaths were attributable to diabetes mellitus and its associated complications. It was the eighth most common cause of deaths in Hong Kong, accounting for about 1.7% of all deaths in 2002. All these have a profound effect on patients' lives, and impose heavy burdens on health services and budgets. (*SUN, 2005*)

In Sudan, Knowledge of the diabetes epidemic is limited. The most recent data come from a small-scale study that was carried out in 1996. The results of the study indicated a prevalence of 3.4%. But recent estimates place the diabetes population at around one million – around 95% of whom have type 2 diabetes. Provision for basic education is severely inadequate in Sudan and illiteracy is widespread. There is an almost total lack of diabetes education. Every day, the health workers who are involved in diabetes care see people whose beliefs and practices adversely affect the management of their condition. In general, the concept of a chronic disease as an asymptomatic condition is not well understood. People with diabetes tend to cease treatment once acute symptoms such as polyuria and polydipsia are relieved, in the belief that their diabetes has been 'cured'. (*Ahmed , 2006*)

In addition to , The average age adjusted death rates for diabetes for 1998 through 2000 within the seven different regions of Florida are as follows: Panhandle 28.67, North East 27.84, North Central 22.13, Tampa Bay 21.80, South Central 21.56, Palm Beach-Broward 17.03 and Dade-Monroe 20.82. In Azerbaijan is the country with the lowest prevalence rate, reported at 2.6%. Other countries with prevalence rates below 6% include Albania (3%), Moldova (3 %), Georgia (3.3%), Ukraine (3.5%), Iceland (3.9%), Kyrgyzstan (4.9%), Uzbekistan (5%), Luxemburg (5.6%), Sweden (5.7%) and Norway (5.9%). (***Wild et al., 2000 and IDFE, 2008***)

However, the onset of type 1 diabetes is most common in children or young adults and accounts for around 10% or less of the total number of people with diabetes. Type 2 diabetes accounts for almost all of the remaining cases of diabetes as the other forms are rare. Type 2 diabetes is a condition that

Predominantly affects middle-aged and older people but prevalence is increasing among children and young adults in countries with a high prevalence of obesity. (***Wild et al., 2000*****)**

Currently, type 1 diabetes affects 1 in every 400 to 600 children, and more than 13,000 children are newly diagnosed each year. Type 1 diabetes is managed by insulin replacement and balancing of diet and exercise in order to maintain glycemic control and prevent the occurrence of complications. Glycemic control, which is linked directly to complication rates,1 is monitored by the measurement of glycosylated hemoglobin (HbA1c), which reflects the mean blood glucose level over the previous 2 to 3 months. Lowering HbA1c has been associated with a reduction of micro vascular complications of diabetes. (***Edmonton, 2008***)

So, prevention of diabetes among African American women is critical because of the high rates of diabetes-related mortality and morbidity in this population (***Rahim-Williams ,2004***). The public health challenge posed by diabetes misery considerable. Only by substantially increasing public awareness of diabetes and its complications, and through primary prevention measures, early detection and evidence-based management of the disease, will the growing

epidemic and its financial costs be minimized. (***WHO, 2006***)

Objectives

1. To assess the knowledge of the university students regarding Diabetes Mellitus.
2. To detect the most common inadequate areas of knowledge regarding diabetes
3. To determine the needs of universality students regarding diabetes Mellitus

Statement of Problem

Diabetes is a chronic illness that requires lifelong care to control blood glucose levels and prevent complications. Individuals with diabetes are at risk for developing long-term complications that include: loss of vision, kidney disease, nerve damage, peripheral circulatory disorders and other complications. Diabetics are also at risk for stroke and heart disease. Hospitalizations with diabetic complications per 1,000 with a diabetes diagnosis increased 24% from 1992 to 2000 (*Agency for Health Care Administration State Center for Health Statistics, 2002).*

Education plays a major role in the management of diabetes. Persons with diabetes mellitus need to perform several self-care actions, such as eating food on a meal plan, self-testing of blood glucose as prescribed by the physician, and getting the amount of exercise needed to manage diabetes (*Gagliardino and Graciela, 2001*). So, increasing public awareness of the seriousness of diabetes and it's complications, as well as promoting good self-management and treatment among those diagnosed with the disease is key in combating the adverse health effects and economic burden to society associated with this disease. (*AHCA, 2002*).

Research Questions

1. What is the cultural construction of diabetes mellitus among university students?
2. What are the most common areas of poor knowledge in Diabetes Mellitus among University students?
3. What are the poor areas of diabetes knowledge among university students?

Definition of Terms

Diabetes: Diabetes in a disease in which the body does not produce or properly use insulin. Insulin is a hormone that is needed to convert sugar, starches and other food into energy needed for daily life. The cause of diabetes is a mystery, although both genetics and environmental factors such as obesity and lack of exercise appear to play roles.

Knowledge: Refers to the awareness and correct responses by the subjects to the Questionnaire.

Investigate: Statistical measurement of correct response to the knowledge items listed in the tool.

SUBJECTS AND METHODS

Research design

A descriptive comparative research design will be utilized in this study; the study will be portrayed under the four main designs as follows:

1- Technical Design.
2-Operational Design.
3-Administrative design.
4- Statistical Design.

Technical Design:

The technical designs for this study included research setting, subjects, tools and methods of data collection.

A- Study Setting:

This study was carried out in Female Education College, Qassim University in Kingdom of Saudi Arabia, Qassim Region.

B- Target population:

The target populations were all female students (Level 3,5) in Education college as mentioned above

Exclusion criteria:

students refused to participate in the study
student's have diabetes Mellitus

C- Tools for Data Collection:

Data was collected using modificated all Arab for lab forum Web site, Student Dialogue questionnaire and ***Barnett, 2006***. The tool was modificated by researchers to be suitable for student's level, value and perceptions.

Tools are divided into 5 main parts as follows:

Part I- Sociodemographic data:

This part Contains information related to demographic characteristics of students as name (Optional) , age, levels and past personal and family history and general knowledge of D.M as Hereditary , common age , marriage , physical activities.

Part II: Questions regarding risk factors of Diabetes Mellitus:

It includes 7 questions clarified student's knowledge level regarding D.M Risk factors & if environmental, chemicals , infections , obesity, blood transfusions are risk factors or not .

Part III: Questions regarding clinical manifestations of D.M :

Part three contain 11 knowledgeable questions determine Student's knowledge regarding clinical manifestations of D.M as 3 P, obesity, diaphoresis, Nocturia and Hypoglycemia clinical manifestations.

Part IV: questions regarding treatment of D.M :

This part includes 6 knowledgeable Questions which included different questions regarding diabetic diet, drugs as Insulin or oral hypoglycemic agents.

Part IIV: questions regarding complications of D.M :

This part includes 7 knowledgeable Questions which included different questions regarding short term & long term diabetes complications.

METHODS OF DATA COLLECTION

Ethical considerations:

1. Formal approval was taken from vice dean & coordinator of female education college
2. A brief explanation of the purpose and importance of the study was given to the students and assured that the obtained information will be confidential and used only the purpose of the study. Confidentiality of the information was assured by the researcher.

(2)-Operational Design:

The operational design includes preparatory phase, content validity, reliability, pilot study and fieldwork.

A-Preparatory Phase:

It includes reviewing of literature, different studies and theoretical knowledge of various aspects of the problems using books, articles, internet, periodicals and magazines.

B- Content Validity:

Validated tool contents were used from Published sources as mentioned before in tools of data collection.

C-Content Reliability:

Was done through:

Pilot Study:

Pilot study was carried out after the development of the tools on 10% of the students to test applicability of the tools then necessary modification were done according to the results of pilot study and expertise opinions. Other wise, the ten patients were then excluded from the sample of research work to assure the stability of answers

3) Methods of data collection:

The interview sheet was filled out individualized with the students. Data was collected from the selecting settings by the researcher using the constructed tools; the data was collected within 3 months which started at March 2012 until June 2012. Each student was individually filling questionnaire; the questionnaire was collected from all the students for 2 days /week in Saturday and Sunday while they are in free time of lectures , purpose of the study was explained prior to get the questionnaire sheet, and it distributed to be answered within (20 -30 minutes) then collected.

(4) Statistical Design:

Collected data was arranged, tabulated and analyzed according to the type of each data.

Scoring system:

The scoring systems for all parts was ranged from 1-2 score which zero score for both I 'don't know and No answers and 1 for yes answer . Also scores were done after correct all sheets with model answers which write answer is namely as (satisfactory knowledge Level) and wrong answers namely as (Unsatisfactory knowledge Level)

Statistical analysis:

Data analysis:

Data was collected and entered into a database file. Statistical analysis was performed by using the SPSS 19 computer software statistical package. Data was described by summary tables and figures. For comparing the (quality of life and satisfaction) with socio-demographic characteristics, Chi – Square or Fisher Exact test was used. Statistical significance was considered at P-value <0.05.

Limitation of the study

The researcher was made a great effort to found appropriate and available time for students and ensure that no contradiction with student's schedule for lectures.

RESULTS

Table (1): shows that about(50 %) of students were in age group 20-22 years in level three classes. Also, (83%) of studies sample haven't diabetes mellitus, in addition to, (54%) of students haven't family history of diabetes mellitus.
Table (2): shows that (34%) of study sample acquired their information's from television and radio while (5%) of them acquired their information's from their studies.
Table (3): Clarifying that there was a statistically significance difference among sample study of knowledge regarding risk factors of diabetes mellitus p= (0.000)
Table (4): Clarifying that there was a statistically significance difference among sample study of knowledge regarding clinical manifestations of diabetes mellitus p= (0.000)
Table (5): shows that there was a statistically significance difference among sample study of general knowledge towards diabetes mellitus p= (0.000)

Table (6) : concentrated on discovering satisfaction level of study sample which there are a statistically significance difference among sample study of treatment towards diabetes mellitus p= (0.000)
Table (7): shows that there was a statistically significance difference among sample study of knowledge towards complications diabetes mellitus p= (0.000)

Table 1. student's sociodemographic characteristic sand history

sources	No	%
Friends \ Family	21	21
Television \Radio	34	34
Magazines	14	14
Study	5	5
Physician	8	8
Internet	18	18

Table2. Sources of acquired information's regarding Diabetes Mellitus

Sociodemographic and history	No	%
Age		
Below 20 years	41	41
20-22 years	50	50
Above 22 year	9	9
Levels		
Level 3	67	67
Level 5	33	33
Personal history		
Have Diabetes Mellitus	17	17
Haven't Diabetes Mellitus	83	83
Family history		
Have Diabetes Mellitus	46	46
Haven't Diabetes Mellitus	54	54

Table 3. Assessment of student's knowledge regarding risk factors of D.M

Risk factors	Satisfactory		Unsatisfactory		X^2	P-value
	No	%	No	%		
Chemical substances are risk factors for D.M	74	74	26	26	83.060	0.000***
D.M caused by virus	18	18	82	82		
Obesity is a risk factors for D.M	81	81	19	19		
High calories & carbohydrates diet caused D.M	68	68	32	32		
D.M is infectious disease	87	87	13	13		
D.M can be transmitted by blood from diabetic to healthy person	72	72	28	28		

Table 4. Assessment of student's knowledge regarding clinical manifestations of D.M

Clinical Manifestations	Satisfactory		Unsatisfactory		X^2	P-value
	No	%	No	%		
Sugar in urine is assign of D.M	45	45	55	55	73.340	0.000***
Increased blood glucose level in both fasting and eating	57	57	43	43		
Polyphagia is a manifestation of D.M	75	75	25	25		
Fever is a manifestation of D.M	75	75	25	25		
nocturia is a manifestation of D.M	73	73	27	27		
insomnia is a manifestation of D.M	36	36	63	63		
Night sweating is a manifestation of D.M	64	64	36	36		
Decreased blood glucose level is assign of hypoglycemia	63	63	37	37		
Pale skin is a manifestation of D.M	38	38	62	62		
Shallow respiration is a manifestation of D.M	56	56	44	44		
Flush skin is a manifestation of D.M	51	51	49	49		

Table 5. Assessment of student's general knowledge regarding of D.M

Knowledge content	Satisfactory		Unsatisfactory		X^2	P-value
	No	%	No	%		
D.M hereditary disease	75	75	25	25	51.840	0.000***
D.M affected only adults	86	86	14	14		
D.M increased incidence with family history	36	36	64	64		
D.M increased incidence among ethnic people	14	14	86	86		

Table 6. Assessment of student's knowledge regarding treatment of D.M

Knowledge areas	Satisfactory		Unsatisfactory		X^2	P-value
	No	%	No	%		
In emergency situation drink juice increased level of blood glucose	85	85	15	15	61.340	0.000***
In emergency situation fat and calories foods increased level of blood glucose	54	54	46	46		
Rice & bread are healthy foods for diabetic patients	73	73	27	27		
D.M can be treated	85	85	15	15		
D.M can be treated by follow special diet regimen	56	56	44	44		
D. M can be treated without drugs or insulin	54	54	46	46		

Table 7. Assessment of student's knowledge regarding complications of D.M

Complications	Satisfactory		Unsatisfactory		X^2	P-value
	No	%	No	%		
D.M affect hearing	60	60	40	40	51.440	0.000***
D.M affect vision	57	57	43	43		
D.M caused blindness	45	45	53	53		
D.M affect sensation	40	40	60	60		
D.M can caused limb amputation	60	60	40	40		
Sever increased in blood glucose level caused coma	66	66	34	34		
Sever decreased in blood glucose level caused coma	66	66	34	34		

DISCUSSION

Today, health consumers are actively seeking information and using it to make health decisions. The ease of accessing information may influence their perceptions of their ability to make informed health decisions. Our study shows that to become savvy information consumers, young people may need assistance in understanding the various health media, building awareness of their own skill sets, and improving their ability to make evidence-based decisions. Individuals with less education and exposure to information-related activities are expected to have even lower health information competencies than our study participants. Health educators must continue to partner with a variety of groups that play an important role in promoting health information literacy, such as librarians and educators. *(Mehret et al., 2004 and Ivanitskay, 2006)*

Based on the present study about half of students were in age group 20-22 years in level three classes. Also, the majority of them haven't diabetes mellitus, in addition to, more than half of students haven't family history of diabetes mellitus. In addition to , above quadrant of study sample acquired their information's from television and radio while the minority of them acquired their information's from their studies these findings in researcher opinion clarified the satisfactory knowledge of D.M that present in the findings . These goes in the same line with *Abdel – Megied et al , 2011* who stated that Health information competencies are applied to transform health-related information into knowledge that is consistent with the most current medical practice. High competence variability is a proxy indicator of students' varying ability to make evidence-based decisions. In the past, limited access to information may have prevented health information consumers from acquiring knowledge and making informed choices. The new generation of health information consumers has, for the most part, easy access to information; yet it may not be able to take full advantage of this convenient access. Furthermore, Poor nutritional habits, such as inadequate consumption of macronutrients, represent a very important component in the etiology of chronic diseases . Despite the high level of the education of university students, they still have poor nutritional habits, more so than the general population.

Also, *Wardle et al ,2000* stated that Health literacy, a set of skills necessary to function adequately in the health care

environment, has been defined as the ‘‘capacity to obtain, process, and understand health information and services needed to make appropriate health Decisions and acquired health knowledge . In addition to, low health literacy is recognized as a serious public health problem due to its widespread prevalence and significant impact on human or patient outcomes.

In contrast, *Bureau 2002* showed that knowledge and information might not be enough in order to raise the students' awareness and to promote healthy behavior among the university students. At that age the students already had a lot of information and knowledge gained from different sources before they had started their studies at the university. They did have both correct and incorrect knowledge of diseases . The influence of the correct and incorrect knowledge was the same as the prevention against diseases especially infectious diseases. While , *Resnick et al ,2003* Prevalence of known diabetes appears to be increasing in most countries, presumably due to increasing prevalence of risk factors and improved diagnosis. A previous study giving predictions of diabetes prevalence in 2000 was based on demographic changes and urban to rural population ratios.

Moreover, Unhealthy lifestyle contributes to many of the leading causes of death worldwide, including lung cancer, coronary heart disease, stroke, liver cirrhosis and accidents.1-3 Faulty health-related behaviors such as cigarette smoking, dietary habits, substance abuse, and exercise patterns develop at the time of puberty and in adolescence. *(Al-Almaie, 2005)*

In addition to, *Herrin , 2004* In an era of easy access to information, university students who will soon enter health professions need to develop their information competencies. The Research Readiness Self Assessment (RRSA) is based on the Information Literacy Competency Standards for Higher Education, and it measures proficiency in obtaining health information, evaluating the quality of health information, and understanding plagiarism. While the majority of students think that their research skills are good or excellent, many of them are unable to conduct advanced information searches, judge the trustworthiness of health-related websites and articles, and differentiate between various information sources. Students' self-reports may not be an accurate predictor of their actual health information competencies.

Finally, *Ivanitskaya et al., 2006* stated currently worded as “to improve the health literacy of persons with inadequate or marginal literacy skills,” but which may be expanded to the entire US population instead of only to those with marginal or inadequate literacy skills.

CONCLUSION

From the present study, it can be concluded that the university students had satisfactory level of knowledge in many areas related to Diabetes Mellitus.

RECOMMENDATIONS

1- Further research studies should be undertaken on the prevention of diabetes mellitus in large sample size to generalized the result of study .

2- Further research studies should be undertaken on the prevention of diabetes mellitus in many geographical areas to investigate the confounding factors that hinder optimal health

Acknowledgment

I wish to express my deepest appreciation and sincere gratitude to everyone who has contributed to this work. In particular I would like to thank. All students in Education College who so generously offered their experiences and so willingly answered all questions. College coordinator of Education College for helping in gathering this study.

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