

Does the people in Bangladesh aware of “Diabetes Mellitus: the Disease of Prosperity” health care management

Abstract

Introduction: Diabetes mellitus is an increasing threat to the world, which is also considered a “disease of prosperity”. The manifests of demographic changes, cultural transition, modernization, and population aging, etc. make it a “developing countries problem”. The incidence of type 2 diabetes mellitus is increasing so rapidly and it is estimated by 2030 this number will almost double. Around 387 million people have diabetes which is equal to 8.3% people. It is projected that there will be a 42% increase in the number of individuals with diabetes, from 51 to 72 million in the developed countries and 170% increase, from 84 to 228 million, in the developing countries. Diabetes mellitus is a chronic disease once thought to be uncommon in Bangladesh, but now it has emerged as an important public health problem. About 3.6 million people are affected throughout the country. In Bangladesh around 4% adults aged 25 years or more had type 2 diabetes mellitus, and 80 lakh people in Bangladesh suffer from diabetes. It causes 6.4 percent of total deaths in the country. Awareness of diabetes is not up to the mark due to health education about diabetic, announcement, and overall lack of awareness of the disease and its effectiveness make it more complicated to management.

Objectives: This study aimed to assess the knowledge and awareness status on health care management of type 2 diabetes mellitus in Bangladesh.

Methods: This is a cross sectional study followed mixed method in design among Dhaka and Manikgonj districts. A close ended questioner was followed for quantitative data collection among 800 participants. For qualitative data collection in-depth informant interview conducted with 25 patients and 8 informal interviews was conducted with the physicians.

Results: Findings reveal that very significant relation exist with compliances and complication. That compliances influence by various factors like sex, education, occupation, treatment facilitates etc. But who follow the proper compliances faced fewer complications. Also in addition to anti diabetic’s medication and other method of compliances to herbal method which were familiar to diabetic patients. Most compliance the respondents preferred are: diet, exercise, weight control than the medication.

Conclusion: Overall a positive outcome blowing that the patients of type 2 diabetics who maintained proper compliances faced less complication than who didn’t follow them properly.

Keywords: type 2 diabetes mellitus, awareness, health care management, disease of prosperity

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Introduction

According to the American Diabetes Association, approximately 18.3% (8.6 million) of Americans age 60 and older have diabetes.¹ The number of complications in diabetes mellitus increased proportionally with the length of the disease, while the number of complications was lower in cases with better patient compliance. According to the American Diabetes Association (2020),² around 18.2 million people, or 6.3% of the population had diabetes and diabetes was the sixth leading cause of death in U.S.A. The prevalence of diabetes in adults’ globally was estimated to be 4.0% in 1995 and is projected to rise to 5.4% by the year 2025. The prevalence of diabetes is higher in developed countries 6% in 1995, 6.2% in 2000 and will 7.6% in 2025. The developing world has a lower estimated prevalence; 3.3% in 1995, 3.5% in 2000, and 4.9% in 2025. It is projected that there will be a 42% increase in the number of individuals with diabetes, from 51 to 72 million in the developed countries and 170% increase, from 84 to 228 million, in the developing countries. The majority of

the people with diabetes in developing countries are projected to be younger, aged 45 to 64 years, while those in developed countries will be aged 65 years. Diabetes will be increasing concentrated in urban areas, with the greater burden among women. The direct and indirect cost of diabetes management in the U.S.A estimated at \$132 billion. Once one gets diabetes, he has no way of turning back.

Diabetes patients had two times more days of inpatient treatment, 1.3 times more outpatient visits and 9.7 times more medications than those who don’t have diabetes.³ The study found that annual per-capita expenditure on medical care was 6.1 times higher for diabetic patients than non-diabetic ones (USD 635 vs USD 104 respectively). The National Diabetes Information Clearinghouse estimates that diabetes costs \$132 billion in the United States alone every year. In Bangladesh around 4% adults aged 25 years or more had type 2 diabetes mellitus, about 3.6 million people are affected and 6.4 percent of total deaths throughout the country.⁴ In Bangladesh, over 8 million people suffer from diabetes. Still, now people in the country are not aware of the

impact and effect of diabetic Mellitus. Unplanned urbanization in the cities where people have very limited scope for physical activities and the changing life style play double burden of the disease. Even in the rural areas people practicing less physical exercise and they take rickshaw vans or other rides to go to marketplaces, which earlier they walked all the 3-5 kilometer path. In addition, people are habituated to having fast food, soft drinks, etc. that have high levels of sugar and fat. Stressing on massive health awareness and regulations for changing people’s lifestyles. People are not aware of the diabetic Mellitus (DM) and so on the management DM, which causes an increasing number of diabetic patients.

Objective

General objective

This study aimed to assess the awareness status on health care management of type 2 diabetes mellitus in Bangladesh.

Specific objectives:

- To assess the knowledge and awareness status on diabetes management
- To assess the compliances and management of diabetes mellitus
- To assess the association of patients’ compliance with disease complexity

Methodology

Study settings

This study was utilized a mixed study design both qualitative and quantitative methods to adherences the comprehensive approaches. The proposed study was conducted in two settings of urban and rural area to compare the situation comprehensively. For urban settings BIRDEM (Bangladesh Institute of Research and Rehabilitation for Diabetes, Endocrine and Metabolic Disorders) and some of its sister institution. The sample size chosen by purposive type of sampling. Participants were recruited using a stratified purposive sampling technique. For that we conducted 25 semi structured in depth interview with patients and 8 informal discussion with physicians’. For the current quantitative analyses, data were collected from urban and rural settings. Data from urban area were collected from BIRDEM and their sister institution and from rural part data were collected from Shibaloya in Manikgong by randomly selected participant from the nearest diagnosis laboratory.

Study populations will select randomly in such a way so that each district contains most of the representation using the following formula for the quantitative method.

Where

n = required sample size

Z = confidence limit set at 1.96 which corresponds to 95%

p = the estimated prevalence of relation between the maternal socioeconomic status and the outcome of the newborn

$q = 1 - p = 1 - 0.5 = 0.5$

d = degree of accuracy desired, usually set at 5% (0.05)

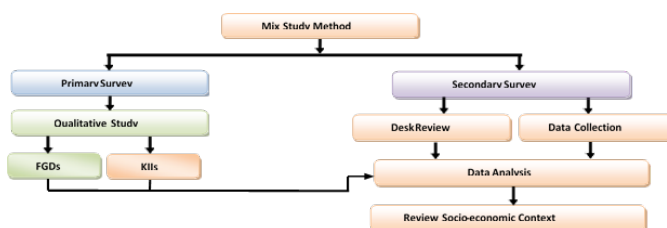
$n = Z^2 pq / d^2$

$= (1.96)^2 (0.5)(0.5) / (0.05)^2$

$= 384.16 = 384$

or, approximately 400 and total 800 (2 areas x 400 sample). A multi-stage procedure for sample size selection will apply and the approximate sample was made double to avoid precession error. Therefore, the total sample was 800.

For the quantitative part a pre-coded structured questionnaire was applied to collect information. Primary respondent were the diabetics patients among both male and female who has been suffered from at least for the last six months. During the preliminary phase of qualitative part for the study, data were collected through the following Informal Discussion. For qualitative analysis here used thematic analysis. For quantitative analysis all completed questionnaires were checked for inconsistency and errors by the supervisor before sending for computerization. Researcher prepared a coding manual and data were cleaning and analyzed using the SPSS 17.0.



All data were entered and stored on password protected computer of the researcher. Only the primary investigators had access to this information. To ensure anonymity of the participants, codes was used to identify participants and groups in all stages of this research. Participants’ names and other personal information was never be linked to their responses. Ethical clearance for this study was granted from both the American International University of Bangladesh and from BIRDEM administration. A consent (oral or written) from the participant will be ensured to get the information from them.

Results

In this chapter finding of the study are presented in different table and described briefly.

Table 1 showed that the distribution of the respondents’ according to their place of resident which was same 50% in each areas. The ratio of female was little bit higher than the male which was not purposively but randomly according to criteria and availability of the respondent’s. The percentage of female was 56% where the male ratio was 44% between both areas. Among the respondents, majority was found from the age group of 47-61 years, which was 376 (47%) and the lowest ratio was aged below 31 years 48 (6%). Also the age category for 62+ years was second lowest among both areas (11%).

Table 1 Participants according to their place of residence

Particulars	# of the respondents	%
Area		
Urban	400	50
Rural	400	50
Sex		
Male	350	44
Female	450	56
Age		
>31	48	6
32-46	289	36
47-61	376	47
62+	87	11
Total	800	100

Here the Table 2 represent the ratio of occupational variety considering the sex among the respondents’. About 79% female who have diabetic was engaged with household chores as a housewife. Second major numbers of female were service holder (14%) and very few were work as a teacher, maid, industry labour, sewing etc. Among the male participants’ majority were service holder (47%) and then nearest occupation were business (27%).

Table 2 Occupational category according to sex

	Female N (%)	Male N (%)	Total N (%)
Sewing	9 (2%)	0	9 (1.1%)
Industry labor	4 (0.9%)	4 (1.1%)	8 (1%)
Day labor	0	9 (2.6%)	9 (1.1%)
Services	63 (14%)	166 (47%)	229 (28.6%)
Business	4 (0.9%)	96 (27%)	100 (12.5%)
Unemployed	4 (0.9%)	9 (2.6%)	13 (1.6%)
HH works	354 (79%)	4 (1.1%)	358 (44.8%)
Teacher	9 (2%)	35 (10%)	44 (2.2%)
Retire	43 (10%)	53 (15%)	96 (8.2%)
Servant	4 (0.9%)	0	4 (0.5%)
Total F (%)	450 (56.3%)	350 (43.7%)	800 (100%)

According to Table 3, the data showed that the ratio of respondents who took treatment after knowing diabetes was almost nearer in both urban (93%) and rural (91%) areas. On the other hand, some people taking treatment but did not know whether they have diabetes or not. In urban areas (3%) and rural areas (1%) they have taken some initiative like, weight loss, exercise, less food consumption, herbal medicine, etc. due to family history of diabetic mainly. Very few respondents from both areas we found were not responsive about the fact and ignored it (urban 4% and rural 7%). In addition, few respondents from both areas found that they accept the fact but simply ignore it and didn’t comply with any methods of treatments for diabetics.

Table 3 Area-wise awareness of respondents who took treatment after being informed having diabetes

Area	Knowledge about having diabetes	Taken treatment		
		Yes N (%)	No N (%)	Total N (%)
Urban	Know about having diabetes	370 (92.5)	17 (4.3)	387 (96.8)
	Don't know about having diabetes	13 (3.2)	0 (0)	13 (3.2)
Rural	Know about having diabetes	358 (91.1)	26 (6.7)	386 (95.8)
	Don't know about having diabetes	5 (1.2)	9 (3.0)	14 (4.2)

From the qualitative information, it was found that most of people were aware about diabetics but did not practice its management and did not take any measurement to control it. The main symptom of diabetic is having more urination and the main cause was parents having diabetic. Besides that they did not know any other cause and symptom. For that less knowledge, they were less aware of diabetic and its management. And if there exist any family history of diabetic especially among parents no other one. And for that while they faced other sign they simply ignored it. Over all as early as they informed about diabetics they took treatment. But here also one fifth of the people told that they were less likely to take compliances especially the female one. Because some of them felt shy at first while they heard about it. As their perception,

“I did not know about my diabetes. When I first hear that and my child asked me to follow the compliances, I felt shy. What people will say? In our society females are so neglected that they were teaching from their girlhood not to be ill. Always be fit to serve for the family. The female body is not a human body it is a machine.”

Here the Table 4 showed the after knowing about having diabetes vast majority from both areas took medicine regularly (urban 74%, rural 86%). The second majority of their emphasis on controlling diet is from both urban (46%) and rural (36%) areas. The next group of respondents took regular exercise for diabetes management (rural 28% and urban 34%).

Table 4 Very first attempt of diabetes management after informed

Particulars	Urban area		Rural area	
	N	%	N	%
After knowing diabetes taking a diet regularly	258	46.2	192	35.6
After knowing diabetes take regular exercise	192	34.4	150	27.8
After knowing diabetes taken medicine regularly	414	74.2	462	85.6
After knowing diabetes taken initiation to control weight	42	7.5	90	16.7
After knowing diabetes taken insulin to control diabetics	24	4.3	6	1.1
After knowing diabetes no method taken at all.	24	4.3	30	5

From the qualitative part, we found that, after knowing of having diabetes very first they tried to take medicine to consult with physicians. Some of them took medicine that was guided by the dispensary man. Additionally they informed that they followed some diet and take initiative to lose control means to take very less food or skip the regular meals. Especially the female respondents having the tendency to skip meals for one time in a day. They less likely to take meal at night. In addition, among the male they initially take two tome bread (Roti) and at lunch they take regular meal.

Here the Table 5 showed that the frequency of taken other methods except medication to control diabetes which were higher among the respondents. The data showed that except for medication the most popular methods were diet, exercise, weight control, intake fruit, etc. In addition, in the rural area among the male the tendency of regular exercise was low (27%) then the urban area (49%). Conversely, among the female in both areas intake more vegetables and fruit exercise was same. In both areas respondent give less priority on weight control. Overall all the respondents from urban areas priority on intake less fat food first where in rural they prioritize on intake fruits and vegetables.

Table 5 Other method taken except medicine to control diabetes

Area	Sex	Intake less fat food	Regular exercise	Weigh-loses/control	Take fruit and vegetable more
Urban	Female	220 (49%)	150 (33%)	142 (32%)	202 (45%)
	Male	182 (52%)	172 (49%)	113 (32%)	142 (41%)
Rural	Female	180 (40%)	120 (27%)	78 (17%)	198 (44%)
	Male	114 (32%)	94 (27%)	90 (26%)	126 (36%)

From the qualitative part, it was found that, all the respondents mean to intake less fat food- *to skip the “SUGAR”*. They firstly avoid sugar but that was only for the tea but not for other food like; desserts.

After knowing of having diabetes most the people take initiatives at their own way. But the study found that they at least take one single initiatives. Some were found taken more than one initiative for diabetes management. Here the Table 6 showed that among the respondents in both areas took at a time one or more method to controlling diabetes except medication. Female from urban areas (15%) like to take one measurement then the male (7%). Which was found opposite in the rural areas, for a second time female from both urban (35%) and rural (38%) areas are more likely to take multiple methods except medication then the male. Here the multiple method indicates of; diet with less fat, fruit and vegetable intake, regular exercise and weight control, etc.

Table 6 At least taken one or more initiative to control diabetes except medicine

Area	Sex	Taken single initiative	Taken multiple initiatives
Urban	Female	66 (15%)	159 (35%)
	Male	24 (7%)	151 (43%)
Rural	Female	54 (12%)	171 (38%)
	Male	60 (17%)	115 (33%)

From the qualitative part it was found that mostly they preferred physical exercise like walking with regular diet like; intake low fat food (here fat food means Sugar), bread (roti) for two time meals, fruits and vegetables intake increased. Thus also the weight would be controlled otherwise preferred for weight control. Only 34 from total respondents responses for following single measure to control like either diet or exercise or weight control etc where regular exercise and diet got priorities.

Here Table 7 showed that except other controlling method for diabetes they preferred oral medication, as they have no time to taken exercise or having a balanced diet. Among the respondents almost 357 (45%) taken insulin to controlling diabetes. Total of 518 respondents (65%) taken oral medicine. Total 89% taken herbal medicine like; dry seed of black berry seeds.

Table 7 Frequency of taken different type of medication for controlling diabetes

Treatment	Taken oral medicine	Taken Insulin (Injection)	Taken herbal treatment
Yes	518 (65%)	357 (45%)	714 (89%)
No	272 (34%)	425 (53%)	86 (11%)
Can't remember/ don't know	10 (1%)	18 (2%)	0 (0%)

According to the Table 8 the frequency of blood test to measured diabetics was high among the respondents in case of taken measured in every month at least one time (67%). Here we can see that the frequency of taken measured once in each and every month were higher 20% among the total respondents. That represents their awareness of compliances about diabetics. Because they tried to on track of the controlling diabetes by measuring it regularly. The second majority of the respondents 30% checked four times in a year or after 3-4 months each. The third majority of the people 20% answered for once in every week for updating the blood glucose to take necessary compliances thereby.

Table 8 Frequency of use of test to measure diabetes

Type of frequency	Urban area N (%)	Rural area N (%)	Total N (%)
Once in everyday	56 (14)	22 (6)	56 (7)
Once in every week	102 (26)	78 (20)	162 (20)
Once in every month	50 (13)	94 (24)	534 (67)
Once in every year	28 (7)	60 (15)	78 (10)
Twice in a week	48 (12)	10 (3)	18 (2)
Four time yearly around	88 (22)	22 (6)	240 (30)
Never tested	24 (6)	76 (19)	18 (2)
Couldn't memorized/ don't know	4 (1)	38 (10)	42 (5)

Discussion

However, the risk of developing type 2 diabetes increases with age, obesity, and lack of physical activity. Type 2 diabetes is more common in individuals with a family history of the disease and in members of certain socio-demographic & racial/ethnic groups. It occurs more frequently in women with prior GDM and in individuals with hypertension or dyslipidemia.⁵ (See Annex G for major risk factor of diabetics). The number of complications in diabetes mellitus increased proportionally with the length of the disease, while the number of complications was lower in cases with better patient compliance.¹ According to Journal of Diabetics UK (2020)⁶ and ADA (2010)⁷ regular exercises may had the win-win situation for the patients. And blood fat can be reduced by stopping smoking, healthy and balanced diet, weight control, avoiding alcohol, and physical activities. Which also help to reduce the risk of blood pressure and other complications.

The incidence rate of Type 2 diabetes in most of the European studies that used similar criteria for classification of glucose tolerance ranges from 7.6 to 10.8/1000 PY.⁸ In particular, in the Ely study in UK the crude incidence rate was 7.5,⁹ similar to a recent report in the Australia (7.0/1000 PY)¹⁰ which are due to in appropriate dieter, exercise and weight controlling.

Diabetes is often believed to be caused by eating excess sweets (particularly sugar), brought on by stress and worry, or a form of punishment for immoral behavior. Many Native American tribes (e.g., Ojibwa, Cree, Dakota, Navajo, Kiowa, Ute), for example, believe that diabetes is a new disease introduced by the “white man.” Typically, diabetes is believed to result from a state of imbalance caused by consuming too much sugar, consuming too much food in general, drinking alcohol, or behaving immorally. Because one should strive to follow the right path, a diagnosis of diabetes may indicate a failure to live properly and a lack of spiritual strength. As a result, a person may feel shamed by a diagnosis of diabetes and reluctant to tell family or friends.¹¹⁻¹³ A common problem with health education content is that health professionals provide too much detail regarding pathophysiology and too little regarding the daily management of illnesses.¹⁴ It is important to assess patient beliefs and current practices concerning a condition and to use that information as a foundation on which to build health education programs. If the health program is broadly implemented, important information from community members can be gleaned in focus groups before initiation of the program to address those areas of greatest concern for the target group. Cultural information can be well incorporated here as it relates to the area of health education. For example, if the intervention is nutrition counseling, inclusion of common foods, methods of

preparation, and typical units of food measurement is necessary.¹⁵ Successful intercultural patient education programs elicit and build on patients’ health beliefs, preferred learning styles, lifestyle preferences and practices, and community context. They also give particular consideration to teaching modalities, program content, and ensuring appropriateness of written materials.¹⁶

Conclusion

This study investigated the perceived differences in emergency department and urgent care services among college students residing in rural and urban communities. Findings in this study supported health disparities that exist in rural and urban areas. Rural college residents had less confidence in the ability of their hometown ED and UCCs to provide quality care compared to urban residents. The lack of confidence in medical care treatment among rural residents implied lesser use of these services in their hometowns. Thus travel time, cost, convenience, are additional burdens for those who choose to seek quality medical care services outside their medically underserved communities. Regardless of geographically location, access to quality health care should be available to all people in urban and rural communities. The need to reduce health disparities in rural communities and improve health for all cannot be overlooked. Also need a healthy life style from child hood to adulthood for all the people to keep well and healthy. Compliances rate was sufficiently high to bring positive changes among the patents who followed the measured of compliances for controlling diabetics than who didn’t. Universal availability of maintain varies compliances for controlling diabetics has potential to improve patient’s status on it.

Limitation of the study

This study was designed to perform as a partial fulfillment for the degree in Master of Public Health within a specific period of time. The sample sizes were only 183 for quantitative part and to triangulation of it 33 selected for qualitative part, which was not enough to represent the whole country. Further, due to time and resource constrains the study was finished within the time-frame as per guide line of by the University was too rush to completed comprehensively.

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Conflicts of interest

The research has no conflict of interest. The data were collected by the researcher by herself for her own MPH Thesis.

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