

# Life styles of patients with type ii diabetes mellitus attending at birdem affiliated diabetes hospital

## Abstract

Developing countries especially in Asia and Africa have the increase in rate of type-2 diabetes due to their life style and it was anticipated that worldwide 2.8% of the population suffer from diabetes. And it has been suspected that the figure will be double by 2030 if such standard of living persists. The study aims at examining the life style and compliances of diabetes patients that mostly the patients follow on management; to bring out problems encounter by the type 2 diabetes patients that prevent them to treatment adherence and to assess the association of patients' compliance. The study is designed both qualitative & quantitative to collect data in Dhaka city from BIRDEM affiliated diabetic Hospital. A pre-tested questionnaire was used for both methods. Quantitative data were collected by a structured questionnaire from 1200 participants of both sex and for the qualitative data a semi-structured questionnaire was designed to conduct in-depth interview from 10 nurses & 8 physicians from the hospitals. The study reveals that there were some relation exists with patient's compliances and the diseases complication, which also influenced by the patient's lifestyle. Patients with disciplined lifestyle and proper management of diabetic compliance faced few complications. Knowledge of diabetes found very sound the most of the respondents. For compliance they mostly preferred diet, exercise and then medication. Overall a positive outcome blowing that the patients of type 2 diabetes who maintained proper compliances faced less complication than the patients who didn't follow. But the most important development is that knowledge and awareness about diabetic has been significantly increased.

**Keywords:** Bangladesh, life style, complications, type 2 diabetes

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**Abbreviations:** ADA, american diabetes association; BIRDEM, bangladesh institute of research and rehabilitation for diabetes; CAMPE, campaign for popular education; CDC, centre for diseases control; DM, diabetes mellitus; FPG, fasting plasma glucose; FBG, fasting blood glucose; NHANES, national health and nutrition examination survey; NCD, non communicable diseases; PI, principle investigator; RED, research and evaluation division; SPSS, statistical packages for social science; WHO, world health organization

## Introduction

### Background

Worldwide diabetes mellitus is familiar as the common non communicable diseases (NCD). It's a chronic disease with having high blood sugar to the body, which hardly cured except in very explicit situations. Commonly diabetic mellitus known as a group of metabolic diseases caused by the body failed to produce insulin or cells do no responses for the insulin.<sup>1</sup> This high blood sugar generates the conventional symptoms of polyuria (frequent urination), polydipsia (increased thirst) and polyphagia (increased hunger). Management focuses on keeping blood sugar levels as close to normal ("euglycemia") as possible, without causing hypoglycemia. This can usually be capable with diet, exercise and medications.<sup>2-5</sup> According to the World Health Organization, at least 2.8% of the population worldwide suffer from diabetes.<sup>6</sup> Considering the increasing rate of type 2 diabetes it is understood that, by the 2030 the prevalence of diabetes mellitus will be double.<sup>7</sup> Diabetes mellitus occurs throughout the world, but is more common (especially type 2) in developed

countries. The greatest increase in prevalence is, however, expected to occur in Asia and Africa, where most patients will probably be found by 2030.<sup>8</sup> The increase in incidence of diabetes in developing countries follows the trend of urbanization and lifestyle changes, perhaps most significantly a "Western-style" diet. This has suggested an environmental (i.e. Dietary) effect but there is little understanding of the apparatus(s) there.<sup>9</sup> Bangladesh Institute of Research and Rehabilitation for Diabetes, Endocrine and Metabolic Disorders started its journey considering the need to prevent and maintenance of diabetes in the country. Dr Mohammed Ibrahim the founder of BIRDEM had a vision of the effectiveness of the matter and thought for the institution. Where a proficiently and effectively service provided to the diabetes patients to prolong and ultimately reduces its complication to lower the prevalence rate.<sup>10</sup>

### Compliance and its link to complication of diabetes

Diabetes can develop high levels of glucose in their bloodstreams. Without proper diet, exercise, regular checkups and monitoring of blood glucose levels, high glucose can lead to several complications, including some that are life-threatening. Despite this danger, health professionals find too many diabetic patients don't follow medical advice for controlling their disease.<sup>11</sup> 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. In the care for a patient with diabetes mellitus family physician should trained the patient in self-care, tending to establish partnership in long lasting treatment, which is a requirement for good compliance.<sup>12</sup> Diabetic patients do (more

than 95%) their own care where physicians create a collaborative relationship in which the responsibilities and roles of both parties are defined.<sup>13</sup> When patients, as the main decision-makers for their diabetes care, establish their own goals, they act more responsibly about controlling their diabetes.<sup>14</sup> There was two method followed by the patients like;

- a) Under the Pharmaceuticals Method the popular methods are medication by oral, Hypoglycemic agent, insulin etc.
- b) Under the Non Pharmaceuticals Method the well known methods are Discipline, life style change through diet, exercise etc.

According to the American Diabetes Association, approximately 18.3% (8.6 million) of Americans with age of 60 and older have diabetes.<sup>15</sup> Diabetes mellitus prevalence increases with age and the numbers of older persons with diabetes are expected to grow as the elderly population increases in number.<sup>16</sup> Patient education, understanding, and participation are vital since the complications of diabetes are far less common and less severe in people who have well-managed blood sugar levels.<sup>17</sup> Attention is also paid to other health problems that may accelerate the deleterious effects of diabetes. These include smoking, elevated cholesterol levels, obesity, high blood pressure and lack of regular exercise.<sup>18</sup> Typically, diabetes may be directed to follow a specific kind of diet, take prescribed medication and exercise. Physicians and counselors may recommend additional lifestyle changes for the patient’s optimal health.<sup>19</sup> To improve patient loyalty, it is important to understand why non-adherence occurs. The successful management of Type 2 diabetes mellitus usually requires a combination of pharmacological and health behavior related factors like diet, exercise. A successful program requires accurate prescription by the physician and compliance by the patient. The findings of the study would lead to prepare policy documents by raising the issues towards better patients’ compliance.

**Objectives**

- a) To assess the knowledge, practices and awareness on compliances of diabetes patients that mostly the patients follow on management.
- b) To elicit problems encountered by the type 2 diabetes patients that prevent them to treatment adherence.
- c) To assess the association of patients’ life style (compliance) with disease complexity.

**Methodology**

**Study design**

This study was utilized mixed of both qualitative and quantitative to assess the wide-ranging approaches. Participants were stratified within different sex group. The proposed study will be conducted in BIRDEM - Bangladesh Institute of Research and Rehabilitation for Diabetes, Endocrine and Metabolic Disorders (Dhaka) the largest diabetes hospital in Bangladesh, started a 600-bed multidisciplinary hospital. Reason behind choose the hospital was, its services for diabetes. Also BIRDEM is the first ever hospital for diabetes care. The main hospital of BIRDEM situated in Dhaka with some of its sister agencies and rest was in all around the Bangladesh. For those reasons we choose BIRDEM hospital in Dhaka. The duration of the study was only for four months.

**Participant’s inclusion/exclusion criteria**

**For beneficiaries/patients:**

- A) Inclusion Criteria: Respondents of suffered from diabetes and ages between 25-80years.
- B) Exclusion Criteria: Participants were excluded having with mental disabilities, visibly seriously ill and uncomfortable to participate.

**For facilitators/physicians:**

- A) Inclusion Criteria: Provided services to the diabetic patients.
- B) Exclusion Criteria: Participants, who were not provided the services and uncomfortable to attend the session.

**Sample size determination**

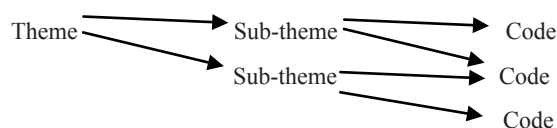
Since study times limited to four months, a total of 1200 diabetic patients were selected for collection of expect data and 18 health care personnel were selected for expert opinion, including 10 nurses and 8 doctors. For the present study a simple random sampling technique was followed.

**Data collection tools and technique**

During the preliminary phase of the study, data were collected through structured and semi-structured questionnaire. The study involves literature review to set oriented with the opinions of experts from others. For the quantitative part a pre-coded structured questionnaire was applied to collect information. The qualitative data were collected through in-depth interview. Areas to cover by In-depth interview (but not restricted to),

- i. Perceived performances of diabetes diseases
- ii. Practices in controlling the diseases and effectiveness of practices

For qualitative analysis thematic analysis were followed. After transcribed the qualitative information, it was categories’ into sub-theme under the main theme and then coded the content under each sub-theme.



For quantitative analysis all completed questionnaires were checked to weed out discrepancy by the supervisor, and then prepared a coding manual and data entry layout, and then the data were entered using the SPSS 17.0 software.

**Ethical issues**

The participants’ information were entered under a specific number, this would ensured the respondent’s privacy. The respondent’s information were tailored in case studies cited in written reports and only aggregated data was disseminated. Ethical clearance for this study was granted from both the ASA University Bangladesh and from BIRDEM administration in Bangladesh. Also a consent (either oral or written) from the participants were ensured to get the information from them.

## Findings of the study

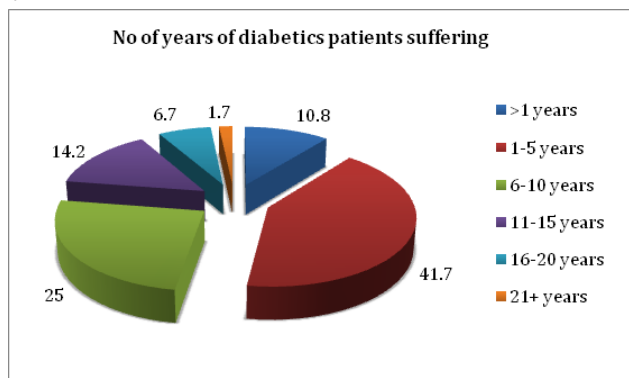
The finding of the study is described with a broad interpretation starting with the socio-demographic characteristics of the respondents.

Here Table 1 presents the socioeconomic profile of respondents'. Around half of respondents were aged within 47 to 61 years. Mean age was around 46, the ratio of aged category less than 31. About one fifth (27%) had no school education. A great majority (46%) of them were pre-primary level passed (that is class I-VI). Another higher level was graduate pass (here considerate graduate and masters both in 13%). According to Table 1—the respondents' marital status we found vast majority of them were married (82%). The percentages of widow (6%), unmarried (10%) and rest were divorced. Vast majority were Muslim (78%) and the second highest religion category was found from Hindu (14%). The rest of the respondents were from Buddhism. According to the occupational category of the patients majority were involved in services (36%) both government and non-governmental jobs, teaching, labour (sewing, domestic assistant) etc. Vast majority of female patients were housewife (25%) and the rest were involved with either services or unemployed. The next occupational category belonged to business (21%). The rest were from unemployed category due to retired from their respective job.

**Table 1** Summary of Socioeconomic profile of respondents

Study Variable	All(n=1200)	%
<b>Age</b>		
<31	121	10.1
32-46	455	37.9
47-61	526	43.8
62+	98	8.2
<b>School education</b>		
No Education	322	26.8
Pre-Primary (I-IV)	546	45.5
Primary (VI-X)	94	7.8
Secondary (XI-XII)	47	3.9
Graduate and Above	156	13
Madrasha Education	36	3
<b>Marital status</b>		
Unmarried	115	9.6
Married	980	81.7
Separated/Divorced	40	3.3
Widow/Witch	65	5.4
<b>Religion</b>		
Islam	930	77.5
Hindu	170	14.4
Buddhism	100	8.1
<b>Occupation</b>		
Services	436	36.3
Business	251	20.9
Retire	135	11.2
Housewife	296	24.7
Unemployed	82	6.9

According to the Figure 1 the study found that majority (42%) of the patients were sufferings from diabetes for last 5 years. On the other hand 25% of the patients were suffering from diabetes for last 15 years.



**Figure 1** Distribution of suffering year of Diabetic's Percent.

From the qualitative part we found that patient's numbers who were suffering diabetes for 5 years or more than the 10 years. It means that awareness on diabetes is increasing rapidly. In our country's perspective people were not aware of the disease. Some of them we found ignore about the diseases or feel ashamed and they thought that it's an old man disease, which need to pee for more and more times. The health physicians also told that,

*The numbers of patients were increasing now a day. But mostly the patients who hold the diabetes book need to come for regular check-up than the non-holder.*

Table 2 explains that most of the (45.83%) patients' had been suffering from diabetes. They were not well known about diabetic but they thought that due to the history of diabetes of their parents or grandparents they had the chances. Along with (20%) of the patients were didn't know the family history of the disease.

**Table 2** Distribution of Genetic history of diabetic patients

Frequency of genetic history of diabetic patients		
Cases	Responses(N)	%
Parent	550	45.83%
Brother-Sister	320	26.67%
Paternal Side	30	2.50%
Maternal Side	60	5%
Do Not know	240	20%
Total	1200	100.00%

Here the Table 3 showed that after knowing diabetes 1160 patients had taken method more or less but the rest 40 didn't do so. Among the method taken; medication was well known to all and they feel better than the previous life (45%). Secondly most of the people avoid taken any sweet or dessert (sweet-food) (31%) and they feel that they can do the job as like a healthy people. Besides those some also take regular exercise (16%), tried to lose weight (10%), avoid fat and increase fiber food (28%), take foot care and followed doctor's suggestion (26%) and they felt better. Again 17% patients who take oral medication felt less sickness and all lead a healthy life. Wherever patients from the study replied that they didn't found any difference. The Table 3 also showed that the patients who didn't take any method were due to work load (23%), costly medication (40%), economic barriers (33%), etc.

**Table 3** Frequency of monitoring and care of diabetic (%)

After knowing diabetes patients taken method (n=1160)	Observe any change after take method				
	Well before health condition	Less sick	Healthy life	Can done normal work	Found no difference
Tablet	45	17	14	15	4
Insulin	10	5	6	6	3
Regular Exercise	16	8	10	11	0
Weight Less	10	7	6	7	1
Less Fatty Food & add Fibre	28	9	12	10	1
Eat more Fruits & Vegetable	16	8	7	10	1
Avoid Dessert/Sweet-Food	31	15	18	19	5
Followed Diet Chart	20	10	12	14	0
Followed Doctor's Suggestion; like Foot Care	26	6	10	12	0
Monitor Blood Sugar	9	7	5	5	0
After knowing Diabetes Patients Don't take any Method (n=40)	Reasons for not taking any method				
	Economic Barriers	Costly Medication	Non-Available of Expert Doctor	Having no Time due to Work Load	
	33%	40%	4%	23%	

From the qualitative part according to nutrition and health education specialist, physicians of BIRDEM told that, many patients don't follows any method due to economic problem, family problem, idleness, etc. For those irregular diabetes treatments, in future, these patients were suffering from various complications. Also due to expensive medication the poor patients don't go back for further treatment.

Below the Table 4 explored that, among the respondent 55% monitored their blood sugar once a month, where 22% did it twice a month. Only 5% we found that they monitored regularly in each day.

Table 5 showed that the patient's who followed diet chart (12%) feeling well than before. Most of the patient who follows doctors suggestion (27%) feeling well unless sometimes felt some unusual feeling (13%). Some of them told that they felt some unusual feeling

**Table 5** Incidence of changes due to followed diet (%)

Following diet method	Changes due to practicing diet						Total
	Headache	Vomiting	Unusual Feeling	Feeling Well	No Change	Dysentery	
Diet Chart	2.5	0	4.17	11.67	0.83	0	13.34
Diet by Doctor's Suggestion	10	0.8	12.5	26.67	2.5	0.83	40.83
According Own Willingness	27.5	12.5	42.5	4.17	1.66	0	45.83

Here Table 6 give explanations that among the 48% patients were unable to do Physical exercise due to illness and also due to not giving/getting provide extra time for that purpose.

Similar findings were found from the qualitative part. According to nutrition and health education specialist and physicians of BIRDEM told that many patients don't follows any undertake exercise due to economic problem, illness, workload, idleness, etc? For those they were irregular in doing exercise usually suffer from some complication.

that don't follow any physician's suggestion and followed their own diet plan (43%). Among them they also suffered from some health problem related like headache (28%), vomiting (13%), etc.

**Table 4** No of times checking diabetes

Frequency of checking diabetic by patients		
	Frequency(N)	Percent (%)
Once Everyday	60	5.00%
Once a Week	220	18.30%
Once a Month	660	55.00%
After Every 2month	260	21.70%
Total	1200	100.00%

**Table 6** Distribution of less physical exercise by the diabetic patients

Reasons for not undergoing physical exercise	Responses(n)	Percent (%)
Not to Getting Time	491	40.90%
Due to Work Load	136	11.40%
Due to Illness	573	47.70%
Total	1200	100.00%

Table 7 indicate that around 66% patients take regular exercise where most popular were taking regular walking (65%). Among the respondents mostly we found multiple responses regarding the exercise time and type. Around 38% participant told that they didn't

take any exercise. Yuga, cycling, swimming and other exercise were undertaken by very few people daily and a little number of them undertaken less than 3days per week.

**Table 7** Distribution of exercise time of the diabetic patients

Type of exercise	Less than 3Days/Week	More than 3Days/Week	Everyday	No exercise
Yuga	4.10%	0	9.50%	38.30%
Regular Waking	20.30%	12.20%	64.90%	
Bye-Cycling	0	0	4.10%	
Swimming	0	0	2.70%	
Others	1.40%	0	0	
Total	21.60%	12.20%	66.20%	38.30%

Table 8 showed that, among the respondents about 18% faced no problem or no disease. On the other hand some patients were suffering from High-pressure (19%) and Eye (18%) problem, kidney related problem (14%) and heart disease (13%) patients were found among the participants.

**Table 8** Types of diseases diabetes suffer from for last 6months

Suffering from Diseases	Responses(n)	Percent (%)
Kidney	170	14.20%
Asthma	80	6.70%
Eye	220	18.30%
High-Pressure	230	19.20%
Hypoglycaemia	90	7.50%
Heart Disease	150	12.50%
Uterus Problem	30	2.50%
Lung Problem	10	0.80%
Others (Stone in Gallbladder, Fever, Pain, Ulcer, Diabetes Coma, Hp-B, Dysentery, etc)	10	0.80%
No Diseases	210	17.50%
Total	1200	100%

## Discussion

Type 2diabetes is more common in individuals with a family history of the disease and in members of certain socio-demographic & racial/ethnic groups.<sup>20</sup> Regular exercise, healthy and balanced diet, weight control, stopping smoking, avoiding alcohol, and physical activities may have the win-win situation for the patients.<sup>18</sup> From our study we found that most people are not conscious about that regular physical activity could decrease or prevent on slaughter of the diabetes and the complications of diabetes. Almost 65% patients preferred exercise (mostly walking) as compliance to control diabetes. Several studies also recommend that such moderate exercise correspond to management of approximately 40% to 60% type 2 diabetes patients.<sup>18,21-24</sup> Patients who have poor diabetes control after lifestyle modifications are typically placed on oral hypoglycemic. We found that the BIRDEM hospital provided each patient have a book, where; gender, age, height and weight specific instruction for diet (Also pictorial messages for illiterate persons) are given instructing. They

also provided an open and mandatory session on nutritional diet and other compliance management for healthy life style. In that session they also showed some free hand exercise. The lifestyle measures can have a large effect on the degree of diabetic control that patients can achieve. Some of the barriers have been identified relating to non compliance of medical instructions are- knowledge and awareness regarding the diabetic, financial, transportation facilities for care, Sex, area, social status is often defined as a learned set of values, beliefs, norms, and patterns of behavior. It is exceptionally difficult to describe or comprehend the extent to which ethnocentrism and racism have been woven into the fabric of our health care system an examination of the beliefs and values inherent in the biomedical culture illuminates many barriers in caring for minority clients. Often Patients who do not practice healthy behaviors "don't care about their health". This brings us to the second set of barriers: those of the health care system. These barriers include issues of service availability, accessibility, and acceptability. In our study revealed that the patients who didn't follow the compliances the main reason was financial. Also for all participants told about access, availability of care, transportation problem, inadequate qualified doctor and health care professional and above all lack of publicity on the diabetic. Successful intercultural patient education programs extract and build on patients' health beliefs, preferred learning styles, lifestyle preferences and practices, and community context.

## Conclusion and recommendation

### Conclusion

Universal availability and adherence to varies compliances for controlling diabetes and is likely to improve patient's status on it. Need attention on healthy and disciplined lifestyle from child hood to adulthood for all the people to keep well and healthy for an individual for type 2 diabetes management. Care need from the very beginning for not only the adults' one but also the younger and children may need to be considerate. Compliances rate was sufficiently high to bring positive changes among the patents that followed the measures of compliances for controlling diabetes than who don't.

### Recommendation

Due to time and resource constraints this study couldn't answer some valid issues related to patient compliance with type-2 diabetes area wise and sex wise. Need more awareness and education on the relation with compliances and complications of diabetes and healthy life style.

## Contribution

All authors were involved from designing to reporting the paper. The PI US mostly does the work for tools develop data collection analysis and reporting with the help of USM. MK involved with supervision and editing the paper.

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## Conflict of interest

Author declares that there is no conflict of interest.

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