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# ATTITUDES OF DIABETES MELLITUS PATIENTS TYPE 2 IN RELATION WITH DEMOGRAPHIC VARIABLES AT PRIVATE AND GOVERNMENT HOSPITALS IN SANA'A CITY, YEMEN, 2018

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## ABSTRACT

**Background**: Diabetes is a chronic, metabolic disease characterized by elevated level of blood sugar, which leads on long run to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. Attitudes of diabetes mellitus patients type 2 in relation with demographic variables at private and government hospitals in Sana'a city the objective of present study. A hospital-based cross – sectional descriptive study conducted in Sana'a among adult patients with type 2 diabetes from both gender from October 2018 to May 2019. A prepared questionnaire was used for data collection. Data analyzed by using SPSS software, version 20 was used. Descriptive statistics were performed to describe the socio-demographic and attitudes variables. Data described by frequencies, percentages, means & SD; and presented in tables. Chi square test was used to test differences in attitudes in relation with demographic variables. Test considered to be significant p value < 0.05. The sample was formed of 200 adult diabetic patients, more than half (53.5%) were females. Ages of participant ranged between 25 years and 80 years, with a mean of 52 ± 11 years. Illiterate women represented 62% of total women, while illiterate men represented 13% of total men. Nearly half of participants had negative attitude towards diabetes. Positive attitude tends to be more in public hospital. So, we recommended to strengthen nutrition education program through different social media and encouraging change bad behavior through nutrition counseling session should be adapted to individual needs and delivered in a patient centered manner.

**KEYWORDS:** Attitudes, Diabetes Mellitus Patients Adult In Sana'a.

## INTRODUCTION

Background: Diabetes is a chronic, metabolic disease characterized by elevated level of blood sugar, which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves.[1] Diabetes mellitus is one of the most common chronic diseases in nearly all countries, and continues to increase in numbers and significance, as economic development and urbanization lead to changing lifestyles characterized by reduced physical activity, and increased obesity.[4] It is rapidly gaining a potential epidemic state all over the world.[5] The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014.[6] This figure is projected to be 592 million by 2035.[7] The global prevalence among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014.[6]

Almost half of all deaths attributable to high blood glucose occur before the age of 70 years. WHO estimates that diabetes was the seventh leading cause of death in where it was the direct cause of 2.2 million deaths in 2012[1] and 4.9 million deaths in 2014.[7]

In Yemen, WHO estimated that 327,000 were suffering from DM in the year 2000, and it is projected to 1,286,000 by the year 2030.[1] Vision on current health situation in Yemen is obscure and knowledge about epidemiology of DM is still poor. Available sources give different or conflicting results, and there is little data in the literature available on this issue. Gunaid A. and Assabri A. reported that overall crude prevalence of diabetes was 10.4% and the age-standardized rate was 6.3% among people in a semirural area.[21] According to WHO (2016), prevalence of diabetes in Yemen was 7.7%.[22] So, it is worthy to conduct different studies on many aspects of DM. It is an autoimmune disease characterized by pancreatic β cell destruction and an absolute deficiency of insulin.[2] Glucose intolerance may develop during pregnancy.[3]

Obesity, especially visceral adiposity, and physical inactivity are major risk factors for diabetes.[8]

There is increased risk of DM if person have a parent, brother, or sister with DM.[9] Foods rich in high glycemic load and high glycemic index, particularly white bread and polished rice.[10] Reduced exposure to sunlight with traditional clothing among women may be one contributor to

vitamin D deficiency, which has been linked to increased rates of obesity and T2DM among women.[11]

Health illiteracy is common in Mediterranean region, and Yemen is not an exception. People often consider obesity as a cosmetic problem and rarely view it as a disease. Patients with diabetes are rarely scheduled for routine eye or foot examinations. There is no routine annual checkup or screening DM. Patients with diabetes rarely change their eating or exercise habits after a diabetes diagnosis. They are not stick to routine daily glucose monitoring. There is no routine follow-up or HbA1C testing for patients with diabetes. Patients with diabetes visit governmental or non-governmental health care centers to get their medications for free or for a small fee, but not for regular evaluation. Most patients with T2DM think that diabetes should only be treated by oral medications, and they often resist insulin injections when indicated. These factors result in poor glycemic control, late diagnosis, and increased prevalence of diabetes complications. Unfortunately, most patients consider their disease and its complications as an inevitable fate and believe that they don't have any role or power in altering or preventing it.[10]

Age 45 or older, high blood pressure, low level of HDL, or a high level of triglycerides, history of gestational diabetes or gave birth to a baby weighing 9 pounds or more, history of heart disease or stroke, depression, bolycystic ovary syndrome, acanthosis nigricans—dark, thick, and velvety skin around neck or armpits as the other factors contributing to diabetes.[13] The increased prevalence of T2DM can be attributed to unhealthy attitudes and practices related to T2DM. The most obvious assumption is that poor attitudes and practices stem from poor knowledge about DM and how to prevent and manage it.[14]

Knowledge directly influences the attitude and practices of patients with T2DM and is vital to decrease not just the incidence, but also the morbidity and mortality.[15] It has an influence on the likelihood of making lifestyle changes, which in turn can predict the behavior practices and outcomes of patients DM.[16] The assumption is made that patients who are knowledgeable about DM are more likely to take ownership of their condition and become involved in their treatment.[17] Surveys from developing countries revealed unsatisfactory knowledge, awareness, and practices of the diabetic patients.[19,20] Prevalence of diabetes, knowledge and attitude of rural population towards diabetes and hypoglycemic event, Sudan, 2013,the study revealed that 46.9% of nutrition habits were recognized as risk factors of diabetes by the participants.[25]

Modification of patient's behavior is essential to address the related healthy eating habits, physical exercise, regular blood glucose monitoring, and medication adherence. Adequate knowledge on behavioral modification has been identified as the most important aspect to influence patient's attitude and practices positively. It has been proven that increasing knowledge regarding diabetes and its complications has significant benefits in management and treatment.[29,30]

## MATERIAL AND METHODS

The study conducted in Sana'a city where there are public and private hospital that gave health care to adult patient with type 2 diabetes, the hospitals included are: Public hospitals: Al-Thawrah General Hospital (TGH), and Al-Gomhouri General Hospital (GGH). Private hospitals: University of Science and Technology Hospital (USTH), and Saudi-German Hospital (SGH). In addition, the study conducted from October 2018 to May 2019. All adult patients with type 2 diabetes from both gender attended to the selected hospital in Sana'a to receive health service. Cross-sectional study performed using a convenience sampling technique of all adult patients with type 2 diabetes whose came to outpatient department in selected hospitals. Data collected by face-to-face interviews using pre-designed, semi-structured questionnaires to assess attitude of adult patients type 2 diabetes mellitus in relation with demographic variables at private and government hospitals in Sana'a, all the questionnaire was developed in 2 parts. The first part included socio-demographic variables as type of hospital, gender, age, level of education, residency place, marital status, number of family members, and occupation. Part 2 included questions regarding attitude. The sample was 200 adult patients with type 2 diabetes enrolled in the study based on a convenient sample; all patients available during data collection were invited to be involved in the study. Dependent variables: attitude. Independent variables: type of hospital – gender – age - level of education - residency place - marital status - number of family members – occupation. The questionnaires were tested prior to the study among 5-10% of the total estimated sample size to assess, consistency, length, competency, clarity and the time required to carry out face to face interview smoothly. Statistical Package for the Social Sciences (SPSS) software, version 20 was used. Raw data were entered then further processing was performed which scored attitude into “positive” and “negative”. Suitable tests were chosen according to the aim and types of variables. Descriptive statistics were performed to describe demographic and attitude variables. Data described by frequencies, percentages. Chi square test was used to test differences in demographic variables and attitude of patients type 2 diabetes at private and

government hospitals in Sana'a. Test considered to be significant if (p value) < 0.05. The research protocol approval and ethical clearance was obtained from UST Faculty Medicine and Health Sciences and Clinical Nutrition Department; also, permission was obtained from the directors of the two public and two privet hospitals. The data collectors were informed the patients that their participation in the study will be voluntary and they have full right to accept or refuse to participate in the study after details explanation of the purposes of the study. The responses of the patients were unnamed to keep the confidentiality. The results of the study were useful to assess the attitude of patients towards T2D in relation to demographic variables in Sana'a city. Inclusion criteria, any patient who presented to study places during period of data collection, and diagnosed as diabetic and agreed to participate in the study. Exclusion criteria Patients under 18 years and patients of non-Yemeni origin, or who refused to participate in the study were excluded from the study.

## RESULT

**Table 1: Summary of demographic characteristics of the sample.**

| Feature | Category | Count | Percent |
|---|---|---|---|
| Gender | Males | 93 | 46.5% |
| | Females | 107 | 53.5% |
| Age | 25 – 40 years | 34 | 17% |
| | 41 – 55 years | 100 | 50% |
| | > 55 years | 66 | 33% |
| Education | Illiterate | 78 | 39.0% |
| | Read & write | 34 | 17.0% |
| | Elementary school | 36 | 18.0% |
| | Secondary school | 27 | 13.5% |
| | University | 25 | 12.5% |
| Occupation | Professionals | 18 | 9.0% |
| | Free business | 30 | 15.0% |
| | Employees | 36 | 18.0% |
| | Laborers | 10 | 5.0% |
| | Housewives | 91 | 45.5% |
| | Others | 15 | 7.5% |
| Marital status | Married | 190 | 95.0% |
| | Single | 3 | 1.5% |
| | Divorced | 7 | 3.5% |
| Residency | Rural | 47 | 23.5% |
| | Urban | 153 | 76.5% |
| Family members | 1 - 7 persons | 146 | 73.0% |
| | 8 - 13 persons | 36 | 18.0% |
| | > 13 persons | 18 | 9.0% |
| Type of hospital | Public | 100 | 50% |
| | Private | 100 | 50% |

**Distribution of patients according to demographic characteristics**

Two hundred patients were enrolled in this study. Males represented 93 (46.5%) and females represented 107 (53.5%). Their ages ranged between 25 years and 80 years, with a mean of 52 ± 11 years. The most frequent age group (50%) was located between 41 - 55 years, followed by > 55 years' group (33%), followed by 25 – 40 years' group (17%). Most of study participants (95%) were married. Only (1.5%) were unmarried, and (3.5%) were divorced. Minority of participants (23.5%) lived in rural areas, and majority of them (76.5%) lived out of urban areas.39% of patients were illiterate, 17% read & write, 18% had primary education, 13.5% had secondary education, and 12.5% had university education. Illiterate females in this study represented 62% of total females, while illiterate males represented 13% of total males. The difference was significant (p value < 0.05). The most frequent occupation for males were employees (36.6%) and free business (30%), while the majority (85%) of females were housewives. Other occupations were less frequent. Family members ranged from 1 to 30, with a mean of 8 ± 4 members. About three fourths (73%) of patients lived with a family of 1 to 7 individuals, about one fifth (18%) of patients lived with a family of 8 to 13 individuals, and about tenth (9%) of patients lived with a family of 14 to 30 individuals. Half of the sample was taken from public hospitals, and half of it taken from private hospitals.

**Table 2: Attitudes of diabetes patients type 2.**

| Feature | Category | Count | Percent |
|---|---|---|---|
| If I did not have diabetes I think I would be quite a different person | Positive | 125 | 62.5% |
| | Negative | 75 | 37.5% |
| I dislike being referred to as "A DIABETIC" | Positive | 57 | 28.5% |
| | Negative | 143 | 71.5% |
| Diabetes is the worst thing that has ever happened to me | Positive | 120 | 60.0% |
| | Negative | 80 | 40.0% |
| Most people would find it difficult to adjust to having diabetes | Positive | 130 | 65.0% |
| | Negative | 70 | 35.0% |
| There is little hope of leading a normal life with diabetes | Positive | 94 | 47.0% |
| | Negative | 106 | 53.0% |
| The control of diabetes involves sacrifices and inconvenience | Positive | 125 | 62.5% |
| | Negative | 75 | 37.5% |
| I avoid telling people I have diabetes | Positive | 50 | 25.0% |
| | Negative | 150 | 75.0% |
| Being told you have diabetes is like being sentenced to a lifetime of illness | Positive | 102 | 51.0% |
| | Negative | 98 | 49.0% |
| My diabetic diet spoils my social life | Positive | 87 | 43.5% |
| | Negative | 113 | 56.5% |
| Nurses need to be more sympathetic diabetic people | Positive | 150 | 75.0% |
| | Negative | 50 | 25.0% |

| | | | |
|---|---|---|---|
| Having diabetes over a long period changes the personality | Positive | 142 | 71.0% |
| | Negative | 58 | 29.0% |
| I often find it difficult to decide whether I feel sick or well | Positive | 84 | 42.0% |
| | Negative | 116 | 58.0% |
| Diabetes can be controlled | Positive | 131 | 65.5% |
| | Negative | 69 | 34.5% |
| There is really nothing you can do if you have diabetes | Positive | 53 | 26.5% |
| | Negative | 147 | 73.5% |
| There is no-one I can talk to openly about my diabetes | Positive | 44 | 22.0% |
| | Negative | 156 | 78.0% |
| I believe I have adjusted well to having diabetes | Positive | 110 | 55.0% |
| | Negative | 90 | 45.0% |
| **Total attitude** | **Positive** | **83** | **41%** |
| | **Negative** | **117** | **59%** |

Attitudes of adult patients type 2 diabetes in general, the attitude of patients towards diabetes was negative. Only 41% of patients had positive attitude, whereas 59% had negative attitude. Positive attitude tends to be more in public hospital, however the difference is not significant (p value >0.05).

**Table 3: Correlation between demographic and attitude variables of diabetes patients type 2.**

| **Correlation** | | **Attitude** |
|---|---|---|
| Type of hospital (public, private) | Pearson Correlation | -.132- |
| | P value | .063 |
| | N | 200 |
| Gender (males, females) | Pearson Correlation | .012 |
| | P value | .865 |
| | N | 200 |
| Education | Pearson Correlation | -.107- |
| | P value | .131 |
| | N | 200 |

Correlation between demographic variables and attitude of patients Gender correlates positively with attitude. That means attitude tend to be better in females.

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

## DISCUSSION

This hospital-based survey was conducted on patients of DM. Two hundred patients were enrolled in this study. Half of them were taken from public hospitals (TGH, GGH) and other half from private hospitals (USTH, SGH). Females represented 107 (53.5%). Ages of

participant ranged between 25 years and 80 years, with a mean of 52 ± 11 years. The most frequent age group (50%) was located between 41 - 55 years. Similar results were found in a study done in Mukalla by Khamis Y et al., who reported that the mean age of diabetic patients was 53.2 ± 8.3 years, 50% of diabetics belonged to age group of 40 to 60 years, and females represented 55%.[23] Gunaid A. and Assabri A. conducted a study in simirural area in Sana'a and reported similar results.[21]

In present study, majority of sample (95%) were married. Almost the same rate (95.4%) reported by Khamis Y. et al.[23] This high percentage of marriage could be explained by the prevalence of DM being more in adults and elderly. Some other studies reported that marital status reached 89.4%.[5]

Literate people in our study accounted for 61%, while illiterate accounted for 39%. This result is supporting what was reported by UNESCO in which adult literacy rate reported to be 64% and illiteracy rate 36%.[31] These rates were higher than that reported in a study conducted in Mukalla in which illiterate adults represented 82.6%.[23]

Illiterate women in this study represented 62% of total women, while illiterate men represented 13% of total men and the difference was significant (p value <0.05). Some studies reported higher rates of illiteracy in which 89% of women and 50% of men were illiterate.[21]

In present study revealed that the most frequent occupation for males were employees (36.6%) and free business (30%), while the majority (85%) of females were housewives. Other occupations were less frequent.

Family members ranged from 1 to 30, with a mean of 8 ± 4 members. About three fourths (73%) of patients lived with a family of 1 to 7 individuals. These data are similar to previous demographic statistical reports on Yemen.[32] About tenth (9%) of study sample lives with big families that consists of more than 14 members, and might involve 30 members. The high number of family members is attributed to presence of compound families in which grandfather, sons, and grandsons live together in the same house. In current study, majority of participants (59%) had negative attitude towards DM. Such result was in line with a previous study done in South Africa.[24] Less portion (41%) of participants in our study had positive attitude towards DM. This finding was lower than finding in a study done in Ethiopia

(55.9%)[33] and Kenya (49%)[19] but higher than a study done in Mukalla city (7.2%)[23] and in India (17.6%).[33] Our study revealed that there was no difference regarding attitude between males and females. In a similar study in Bangladesh, females scored better in attitude.[26] In current study revealed that there was no significant difference regarding attitude and practice. In a similar study in Bangladesh[26] and another in India[39] there was better scoring for KAP in higher levels of education and the correlation was significant. In current study revealed that there is positive attitude tends to be more in public hospital, however the difference is not significant (p value >0.05). In our study, there was no significant difference between males and females in the aspects of attitude[33] and higher awareness.[40]

## CONCLUSION

Two hundred diabetic patients were enrolled in this hospital-based survey. Half of them were taken from public hospitals (TGH, GGH) and other half from private hospitals (USTH, SGH). More than half (53.5%) were females. Ages of participant ranged between 25 years and 80 years, with a mean of 52 ± 11 years. The most frequent age group (50%) was located between 41 - 55 years.

Majority of participant (95%) were married. Illiterate women represented 62% of total women, while illiterate men represented 13% of total men. The most frequent occupation for males were employees (36.6%) and free business (30%), while the majority (85%) of females were housewives. Family members ranged from 1 to 30, with a mean of 8 ± 4 members. Most of participants (73%) lived with families consisted of 1 to 7 individuals. Most of participants (93.5%) stated that regular exercise is important for people with diabetes. Nevertheless, more than half of participants (59%) had negative attitude towards DM. Regarding relation between gender there was no difference regarding attitude. As for education level there was no significant difference regarding attitude. In current study revealed that positive attitude tends to be more in public hospital. There was a need to strengthen positive attitude through health education.

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