RESEARCH ARTICLE

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE TOWARD DIABETIC PATIENTS IN RIYADH CITY, 2016.

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Abstract

Background: Diabetes mellitus (DM) is a global public health problem. The prevalence of diabetes mellitus is increasing and the number of persons with the disease will double by 2025. The management of diabetes mellitus (DM) largely depends on patients' ability to self-care in their daily lives, and therefore, patient education is always considered an essential element of DM management. Studies have consistently shown that improved glycemic control reduces the rate of complications and evidence suggests that patients, who are knowledgeable about DM self-care, have better long term glycemic control.

Objectives: To assess the level of awareness, Attitude And Practice toward diabetes in Riyadh city to identify barriers.

Methods: A cross sectional analytical questionnaire based study among the general population in Riyadh city. This study (2016) was carried out among a sample of 461 subjects. The mean age of citizens was 28.82. To assess citizens’ demographic factors and beliefs about diabetes consenting citizens completed an anonymous online questionnaire. The data was entered and analyzed using SPSS version 20.

Results: The sample is consisted of 65.8% women and 34.2% men. Among the respondents 7.7% reported suffering from diabetes and 13.6% confirmed having a history of diabetes illness in their family. The results of the study showed that 153 (34.8%) subjects had weak knowledge related to the disease, 260 (59.1%) subjects had average level of knowledge while only 27 (6.1%) subjects had good knowledge regarding diabetes. There was a statistical significant association between gender, educational level and the level of awareness about diabetes.

Conclusion: diabetes is a chronic disease that is potentially controllable but that cannot be cured. Education still be important overall the treatment of the patients.

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Background:
Diabetes mellitus (DM) is a global public health problem\(^1\), the prevalence of diabetes mellitus is increasing and the number of persons with the disease will double by 2025 \(^2\). The management of diabetes mellitus (DM) largely depends on patients' ability to self-care in their daily lives, and therefore, patient education is always considered an essential element of DM management. Studies have consistently shown that improved glycemic control reduces the rate of complications and evidence suggests that patients, who are knowledgeable about DM self-care, have better long term glycemic control \(^3-5\). Although the prevalence of DM is high among populations in the Middle East and Gulf countries, patients often lack the knowledge and skills to self-manage their condition\(^6-7-8-9\). During the past three decades, the population of Saudi Arabia has undergone tremendous changes in lifestyle, primarily leading to decreased physical activity and unhealthy eating habits. These changes have had a considerable negative impact on the health of the society. Indeed, this lifestyle transformation is thought to be responsible for the epidemic of non communicable diseases and their complications in the country\(^10-11\). Our Study Was Designed To Examine Health Beliefs And Assessment Level Of Awareness Toward Diabetic among Population In Saudi Arabia, Riyadh city And Applies The Health Belief Model To Determine Barriers.

Rationale:
Diabetes mellitus (DM) is a global public health problem\(^1\), the prevalence of diabetes mellitus is increasing and the number of persons with the disease will double by 2025 \(^2\). The management of diabetes mellitus (DM) largely depends on patients' ability to self-care in their daily lives, and therefore, patient education is always considered an essential element of DM management. Studies have consistently shown that improved glycemic control reduces the rate of complications and evidence suggests that patients, who are knowledgeable about DM self-care, have better long term glycemic control \(^3-4-5\). Although the prevalence of DM is high among populations in the Middle East and Gulf countries, patients often lack the knowledge and skills to self-manage their condition\(^6-7-8-9\).

Objectives:
General objectives:
To assess the level of awareness, Attitude And Practice toward diabetes in Riyadh city to identify barriers.

Specific objective:
The goal of this study was to examine community health beliefs regarding diabetes and their perceptions related to it and evaluate the role of demographic factors in shaping beliefs about diabetes and assess possible associations between demographic characteristics with the preventive behavior of interest.

Methods:
Study design: cross sectional study.

Setting and data collection:
This survey analysis was conducted among community population in Riyadh city. A preformed self-administered questionnaire was distributed among the community population.

Sample:
Subjects will be chosen according to geographical and sex distribution. Sample size was calculated based on website calculator \(^11\), taking the total size of Riyadh population (4,087,000) \(^13\), confidence level (95%) and margin error (5%) to be 285. additional 20% was added to cover the missing data. The total sample obtained was 360.

Study population:
The study population included were both male and female in Riyadh city.

Study tool:
Pre-formed Self-administered questionnaire that requires information about:
1- Socio-demographic data: age, nationality, gender, education level, income, marital status, and employment status.
2- Risk Factors Associated with diabetes—clinical manifestation of diabetes—incidence and prognosis of diabetes.
3- Beliefs about diabetes assessment including 8 questions. A score of 1 was given right answer and 0 otherwise.
   For each subject, a maximum score of 8 was calculated. A scoring system was applied to measure the
respondents’ beliefs about diabetes. The awareness level was categorized into 3 levels indicated by weak (0–2), average (3-5) and good (6-8).

4- Knowledge about prevention behavior assessment including one question “Do you believe that psychological pressure is one of the diabetes factors?”. A score of 1 was given to yes and 0 otherwise. For each subject, a maximum score of 1 was calculated. The knowledge level score was categorized into 2 levels indicated by poor knowledge (0) and good knowledge (1).

**Ethical considerations:**
An informed consent was obtained from the participants included in this research before filling the questionnaire.

**Statistical analysis:**
Data were entered into the Statistical Package for Social Sciences (SPSS, version 20) and descriptive analysis conducted.

Association of respondents’ characteristics with beliefs about diabetes and knowledge about prevention behavior of interest was evaluated using:
1- Frequencies and percentages.
2- Chi-squared test.
3- Independent Samples Test (T-test).
4- ANOVA one-way test.

Statistical significance was accepted at p < 0.05.

**Results:**
1-Examine community health beliefs regarding diabetes and their perceptions related to it:
1-Demographics of the studied subjects:
The socio-demographic characteristics are shown in table (1)

| Table 1: socio-demographic characteristics |
|-------------------------------------------|
| **Age (Years)**                           |
| Mean age: 28,82                           |
| **Gender**                                |
| Female                                    |
| 298                                       |
| 65,8                                      |
| Male                                      |
| 155                                       |
| 34,2                                      |
| **Nationality**                           |
| Saudi                                     |
| 395                                       |
| 87,6                                      |
| Non Saudi                                 |
| 56                                        |
| 12,4                                      |
| **Educational level**                     |
| Primary                                   |
| 6                                         |
| 1,3                                       |
| Middle                                    |
| 15                                        |
| 3,3                                       |
| Secondary                                 |
| 139                                       |
| 31,0                                      |
| University                                |
| 278                                       |
| 62,1                                      |
| Master                                    |
| 6                                         |
| 1,3                                       |
| PH.D.                                     |
| 4                                         |
| 0,9                                       |
| **Marital status**                        |
| Not married                               |
| 233                                       |
| 51,5                                      |
| Married                                   |
| 219                                       |
| 48,5                                      |
| **Income (RS)**                           |
| <3000                                     |
| 183                                       |
| 42,5                                      |
| 3000-5000                                 |
| 52                                        |
| 12,1                                      |
| 5000-7000                                 |
| 38                                        |
| 8,8                                       |
| 7000-1000                                 |
| 65                                        |
| 15,1                                      |
| >10 000                                   |
| 93                                        |
| 21,6                                      |
| **Employment status**                     |
| Unemployed                                |
| 277                                       |
| 61,7                                      |
| Employed                                  |
| 172                                       |
| 38,3                                      |
By looking at table (1), related to the distribution of respondents according to demographic factors:

- The mean age of population was: 28.82 years.
- With respect to gender, a majority of the subjects (298) (65.8%) were Female.
- 395 (87.6%) subjects had Saudi nationality.
- We see that (278) of the respondents have a university degree with a percentage of 62.1%.
- We see that (219) of the respondents are married with percentage of 48.5%.
- We see that (183) of the respondents have an income (<3000 RS) with percentage of 42.5%.
- We see that (277) of the respondents are unemployed with percentage of 61.7%.

2- Knowledge regarding the diagnosis of diabetes

Table 2: Do you suffer from diabetes?

| Do you suffer from diabetes? | Frequency | Percent (%) |
|------------------------------|-----------|-------------|
| No                           | 360       | 79.3        |
| I don’t know                 | 59        | 13.0        |
| Yes                          | 35        | 7.7         |
| Total                        | 454       | 100.0       |

Out of 454 subjects, 360 (79.3%) subjects reported not being affected with diabetes, 13% did not know if they are affected or not and 35 (7.7%) respondents reported that they suffer from diabetes, as it is shown in the figure below:

![Figure 1: Do you suffer from diabetes?](image)

3- Community health beliefs regarding diabetes and their perceptions related to it:

Table 3: Responses to questions on beliefs regarding diabetes

| Do you suffer from diabetes? | No | Yes | Don’t Know |
|------------------------------|----|-----|------------|
| Do you suffer from diabetes? | 360 (79.3%) | 35 (7.7%) | 59 (13.0%) |
| Q1: Is there a history of diabetes illness in your family? | 291 (64.0%) | 62 (13.6%) | 102 (22.4%) |
| Q2: you have or ever had any of the chronic diseases? | 246 (54.1%) | 183 (40.2%) | 26 (5.7%) |
| Q3: Do you think that diabetes could be prevented? | 59 (13.0%) | 228 (50.2%) | 167 (36.8%) |
| Q4: Do you think that heredity play a role in having diabetes? | 55 (12.1%) | 273 (60.0%) | 127 (27.9%) |
| Q5: Do you think that psychological pressure is one of the diabetes factors? | 75 (16.5%) | 217 (47.7%) | 163 (35.8%) |
| Q6: Do you think that diabetes increases the risk of heart disease? | 123 (27.1%) | 65 (14.3%) | 266 (58.6%) |
| Q7: diabetes may affect humans at any age category? | 32 (7.0%) | 250 | 172 |
Q8: If you have diabetes, do you feel socially ashamed by being affected?
161 (36.3%) (55.1%) 101 (22.8%) (37.9%) 181 (40.9%) (37.9%)

Q9: Do you think that diabetes can be cured?
47 (10.4%) 327 (72.0%) 80 (17.6%)

Q10: Do you think that diabetes can lead to death?
227 (49.9%) 88 (19.3%) 140 (30.8%)

- Most of the respondents 228 (50.2%) answered that diabetes could be prevented.
- 273 (60%) of the patients were aware that diabetes was a genetically determined disease and 217 (47.7%) thought that psychological pressure is one of diabetes factors.
- Only 65 (14.3%) subjects knew that diabetes increases the risk of heart disease.
- Most of the subjects 250 (55.1%) knew that diabetes may begin at any age.
- The majority of respondents 181 (40.9%) did not know if they will be ashamed or not, if they have diabetes.
- The majority of respondents 327 (72%) think that diabetes can be cured and only 10.4% of the subjects knew the fact that the disease is not curable.
- The results of the study suggested that 227 (49.9%) subjects were aware of the fact that diabetes cannot cause death.

![Responses to questions With "Yes"

**Figure 2:** Responses to questions With "Yes"

### II-Evaluation of the role of demographic factors in shaping beliefs about diabetes

#### Level of awareness

| Level of awareness | Frequency | Percent (%) |
|--------------------|-----------|-------------|
| 0-2 : Weak         | 153       | 34.8        |
| 3-5 : Average      | 260       | 59.1        |
| 6-8 : Good         | 27        | 6.1         |
| Total              | 440       | 100.0       |

Table 4 shows that overall level of awareness on diabetes among the study participants showed that out of 440 subjects, 153 (34.8%) subjects had weak knowledge about the disease, 260 (59.1%) subjects had average level of knowledge whereas only 27 (6.1%) subjects had a good knowledge regarding diabetes(Figure 3).
Figure 3: Level of awareness

Association of the subjects’ knowledge with socio-demographic variables

1-Age

| Descriptives          | N  | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | Minimum | Maximum |
|-----------------------|----|------|----------------|------------|---------------------------------|---------|---------|
|                       |    |      |                |            | Lower Bound                      |         |         |
|                       |    |      |                |            | Upper Bound                      |         |         |
| Age                   |    |      |                |            |                                 |         |         |
| 0-2 : Weak            | 128| 28.23| 10.243         | .905       | 26.44                           | 30.02   | 15      | 65      |
| 3-5 : Average         | 220| 28.71| 11.080         | .747       | 27.24                           | 30.18   | 8       | 71      |
| 6-8 : Good            | 24 | 28.67| 11.239         | 2.294      | 23.92                           | 33.41   | 15      | 60      |
| Total                 | 372| 28.54| 10.783         | .559       | 27.44                           | 29.64   | 8       | 71      |

ANOVA

| Age                   | Sum of Squares | df | Mean Square | F       | Sig.   |
|-----------------------|----------------|----|-------------|---------|--------|
| Between Groups        | 19,250         | 2  | 9.625       | .082    | .921   |
| Within Groups         | 43117,145      | 369| 116,849     |         |        |
| Total                 | 43136,395      | 371|             |         |        |

2-Gender

Chi-Square Tests

|                       | Value         | df | Asymp. Sig. (2-sided) |
|-----------------------|---------------|----|-----------------------|
| Pearson Chi-Square    | 13,269^a      | 2  | .001                  |
| Likelihood Ratio      | 13.066        | 2  | .001                  |
| Linear-by-Linear Association | 11,568 | 1  | .001                 |
| N of Valid Cases      | .440          |    |                       |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.14.

3-Nationality

Chi-Square Tests

|                       | Value         | df | Asymp. Sig. (2-sided) |
|-----------------------|---------------|----|-----------------------|
| Pearson Chi-Square    | .873^2        | 2  | .646                  |
| Likelihood Ratio      | .977          | 2  | .614                  |
| Linear-by-Linear Association | .620 | 1  | .431                 |
| N of Valid Cases      | .438          |    |                       |

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.45.
4-Educational level

| Chi-Square Tests          | Value  | df   | Asymp. Sig. (2-sided) |
|---------------------------|--------|------|-----------------------|
| Pearson Chi-Square        | 20,279a | 10   | .027                  |
| Likelihood Ratio          | 24,811 | 10   | .006                  |
| Linear-by-Linear Association | 2,759  | 1    | .097                  |
| N of Valid Cases          | 434    |      |                       |

a. 11 cells (61.1%) have expected count less than 5. The minimum expected count is .24.

5-Marital status

| Chi-Square Tests          | Value  | df   | Asymp. Sig. (2-sided) |
|---------------------------|--------|------|-----------------------|
| Pearson Chi-Square        | 1,161a | 2    | .560                  |
| Likelihood Ratio          | 1,162  | 2    | .559                  |
| Linear-by-Linear Association | .423   | 1    | .516                  |
| N of Valid Cases          | 438    |      |                       |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.82.

6-Income

| Chi-Square Tests          | Value  | df   | Asymp. Sig. (2-sided) |
|---------------------------|--------|------|-----------------------|
| Pearson Chi-Square        | 5,251a | 8    | .730                  |
| Likelihood Ratio          | 5,752  | 8    | .675                  |
| Linear-by-Linear Association | .355   | 1    | .551                  |
| N of Valid Cases          | 419    |      |                       |

a. 3 cells (20.0%) have expected count less than 5. The minimum expected count is 2.45.

7-Employment status

| Chi-Square Tests          | Value  | df   | Asymp. Sig. (2-sided) |
|---------------------------|--------|------|-----------------------|
| Pearson Chi-Square        | .853a  | 2    | .653                  |
| Likelihood Ratio          | .881   | 2    | .644                  |
| Linear-by-Linear Association | .198   | 1    | .656                  |
| N of Valid Cases          | 435    |      |                       |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.24.

There is a statistical significant association between gender, educational level and the level of awareness about diabetes, respectively (p=0.01 < 0.05) and (p=0.027 < 0.05).

III-Assessment of possible associations between demographic characteristics with the preventive behavior of interest.

Psychological pressure is one of the diabetes factors, which is reported in the fifth question; that is why it is important to avoid stress as prevention of the disease.

Table 5: Do you think that psychological pressure is one of the diabetes factors?

| Level of knowledge | Frequency | Percent (%) |
|--------------------|-----------|-------------|
| Poor knowledge     | 238       | 52.3        |
| Good knowledge     | 217       | 47.7        |
| Total              | 455       | 100.0       |

238 (52.3%) of the respondents have a poor knowledge about psychological pressure as a factor of diabetes while 47.7% of the subjects have a good knowledge.
1-Age

### Group Statistics

|                      | N       | Mean  | Std. Deviation | Std. Error Mean |
|----------------------|---------|-------|----------------|-----------------|
| Poor knowledge       | 196     | 27.47 | 10.073         | .719            |
| Good knowledge       | 187     | 30.13 | 11.679         | .854            |

### Independent Samples Test

|                      | Levene's Test for Equality of Variances | t-test for Equality of Means |
|----------------------|----------------------------------------|-----------------------------|
|                      | F          | Sig. | t         | df  | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |
|                      |           |      |           |     |                |                |                        | Lower | Upper |
| Age                  | Equal variances assumed                 | 2.32 | .128      | -   | 2.38           | .017            | -2.659                   | -     | 4.847 |
|                      | Equal variances not assumed             |     | -         | 2.38| 1              | .018            | -2.659                   | -     | 4.855 |

2-Gender

### Chi-Square Tests

|                      | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|----------------------|-------|----|----------------------|----------------------|----------------------|
| Pearson Chi-Square   | 4.128 | 1  | .042                 | .048                 | .026                 |
| Continuity Correction | 3.735 | 1  | .053                 |                      |                      |
| Likelihood Ratio     | 4.145 | 1  | .042                 |                      |                      |
| Fisher's Exact Test  | 4.119 | 1  | .042                 |                      |                      |
| Linear-by-Linear Association |      |     |                      |                      |                      |
| N of Valid Cases     | 453   |    |                      |                      |                      |

### Notes

- 0 cells (0.0%) have expected count less than 5. The minimum expected count is 74.25.
- Computed only for a 2x2 table

3-Nationality

### Chi-Square Tests

|                      | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|----------------------|-------|----|----------------------|----------------------|----------------------|
| Pearson Chi-Square   | 5.466 | 1  | .019                 |                      |                      |
| Continuity Correction | 4.818 | 1  | .028                 |                      |                      |
| Likelihood Ratio     | 5.497 | 1  | .019                 |                      |                      |
| Fisher's Exact Test  |      |    |                      | .022                 | .014                 |
| Linear-by-Linear Association |      |     |                      |                      |                      |
| N of Valid Cases     | 451   |    |                      |                      |                      |

### Notes

- 0 cells (0.0%) have expected count less than 5. The minimum expected count is 26.82.
- Computed only for a 2x2 table
There is a statistical significant association between age, gender, nationality, marital status and the level of knowledge about stress as factor of diabetes, respectively (p=0.17 < 0.05), (p=0.42 <0.05), (p=0.19 < 0.05) and (p=0.41 <0.05).

Discussion:
This study identified that:
- The majority of respondents have an average level of awareness toward diabetes.
- The majority of the studied subjects have a good knowledge about the fact that psychological stress is one of the factors of the pathology of diabetes.
Our study showed that about half of respondents were not sure or were affirmative that diabetes is contagious, respectively 30.8% and 19.3%.

Recommendations:-

- Therapeutic management is not limited to its molecular aspect by using drugs.
- Improving the health of a patient goes through many other aspects as essential as drugs: education, prevention, listening, social solidarity... This change in vision has made it possible:
  - To become aware of all the consequences of illness on the quality of life of the patient
  - To identify the handicap and the resulting social exclusion
  - To consider that psychological suffering is as important to take in charge as physical suffering, Indeed, the purpose of treatments is not only to eliminate the symptoms but, more generally, to improve the quality of life, to return to the patient all his freedom in his relations with himself and with others.

Patients with diabetes need to improve their knowledge of the disease and self-care methods to avoid exacerbation of disease.

The disease requires systematic treatment and appropriate care.

Health education is a main part of the management of diabetes.

### Budget

| Item            | Price  |
|-----------------|--------|
| Transportations | 700 SR |
| Paper work      | 800 SR |
| Software programs | 2000 SR |
| Books           | 1000 SR |
| Stationaries    | 1000 SR |

### Work plan

| Tasks in the work plan | Time period |
|------------------------|-------------|
| Literature review      | 2 Months    |
| Preparation for data collection | 1 Month    |
| Data collection        | 3 Months    |
| Statistical analysis   | 1 Month     |
| Discussion of results  | 2 months    |
| Writing an abstract    | 1 month     |

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