

## Original Research Article

# EVALUATING KNOWLEDGE OF DIABETES MELLITUS: A STUDY BEFORE AND AFTER AN EDUCATIONAL INTERVENTION

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**ABSTRACT**

**Background:** One of the chronic metabolic disorders includes diabetes mellitus (DM). Diabetes mellitus is a disease which is associated with long-standing morbidity. According to stats, approximately more than 300M people are diagnosed with diabetes. Prevalence of diabetes in Pakistan is reported to be more than 6%. According to a study from the UAE, around 31% people lacked the knowledge regarding diabetes and 72% reacted negatively towards having the disease. According to the study of Rafique G et al., less than 13.6% of people had knowledge of diabetes. Moreover, more than 50% of people didn't even know how to check their sugar levels. The objective is to see how awareness sessions and education can affect increasing knowledge about diabetes. Study design is a comparative study. Duration and place of study - this study was conducted in Muhammad Medical College (Ibn-E-Sina University) Mirpurkhas from July 2024 to July 2025

**Materials and Methods:** This research is a comparative study in which "pretest-posttest" design was used. There were a total of 200 patients involved in this research. It was performed in the OPD clinic of the hospital. All the participants of this study were diagnosed with diabetes mellitus type I and II. These were all those people who had diabetes for a minimum 2 years and were following a regular checkup routine. The criteria on which diabetes was defined was the following: fasting blood sugar > 126 mg/dl. The guides of the American Diabetes Association were used to develop the education sessions. All the data related to demographics and other study variables was collected through a self-administered questionnaire. The questionnaire was reviewed by 5 diabetes specialists and pre-tested.

**Results:** There were a total of 200 individuals involved in this research. The patients who had type I diabetes were only 7%. All the patients were aged from 21 years to more than 61 years. The mean age calculated was 51.09 years. 52% (n=104) of the total population were in their fifties. The majority of the population were females, representing 65% of the total patients.

**Conclusion:** Upper socioeconomic status people, younger people, and males had more increases in mean scores.

**Keywords:** chronic metabolic disorders, Diabetes mellitus, lifestyle, diet, self-care, and medications, diabetes mellitus type I and II.

**INTRODUCTION**

One of the chronic metabolic disorders includes diabetes mellitus (DM).<sup>[1]</sup> Diabetes mellitus is a

disease which is associated with long-standing morbidity.<sup>[2]</sup> According to stats, approximately more than 300M people are diagnosed with diabetes.<sup>[3]</sup> Prevalence of diabetes in Pakistan is reported to be

more than 6%.<sup>[4]</sup> As all systems of the body are involved in diabetes mellitus, it leads to a number of complications. The complications of DM are increasing steadily because of less awareness about the disease and lack of knowledge.<sup>[5]</sup>

According to a study from the UAE, around 31% people lacked the knowledge regarding diabetes and 72% reacted negatively towards having the disease.<sup>[6]</sup> The results showed that 10% of the sample population did not take their prescribed medicines. This is similar to our population. According to the study of Rafique G et al., less than 13.6% of people had knowledge of diabetes.<sup>[7]</sup> Moreover, more than 50% of people didn't even know how to check their sugar levels. Only a few had good knowledge about it. Factors such as poor awareness, large numbers of people in rural areas, less access to health services, and low literacy rate lead to incorrect treatment practices, poor self-care, and not following prescribed medicines.<sup>[8,9]</sup> It is all due to lack of proper knowledge.

When a person is diagnosed with diabetes, it cannot be cured.<sup>[10]</sup> However, the long-term complications of diabetes can be prevented or delayed through regular follow-ups and guiding the patients about their lifestyle, diet, self-care, and medications.<sup>[11]</sup> When proper knowledge is given to diabetic patients, it helps them understand how to take care of their feet, have a healthy diet, exercise regularly, and detect complications early. The purpose of educating diabetic patients about diabetes is to help them manage the disease on their own. It not only helps in managing and controlling the disease but also improves the individual's quality of life.<sup>[12]</sup>

To treat diabetic patients, educating them about the disease plays an essential role. However, there is very little research available on this. Therefore, this study was performed to see how awareness sessions and education can affect increasing knowledge about diabetes. Tools were used to compare the knowledge of patients before and after the sessions.

## MATERIALS AND METHODS

This research is a comparative study in which "pretest-posttest" design was used. There were a total

of 200 patients involved in this research. It was performed in the OPD clinic of the hospital. All the participants of this study were diagnosed with diabetes mellitus type I and II. These were all those people who had diabetes for a minimum 2 years and were following a regular checkup routine. The Ethical Review Committee approved this research. Every patient was informed about this study and their verbal consent was obtained.

The criteria on which diabetes was defined was the following: fasting blood sugar > 126 mg/dl. The guides of the American Diabetes Association were used to develop the education sessions.<sup>[13]</sup> Visual aids such as figures, posters, printed brochures, slide projector, and demonstration materials (cotton, syringes, alcohol, glucose monitor, needles, lances) were used to conduct the lectures. These lectures were performed to provide the patients all the information related to dietary management, prevention of DM complications, exercise, medication, and foot care. In order to collect pre-test knowledge scores, a questionnaire was distributed before implementing the education program. The same questionnaire was distributed after the implementation of the program.

All the data related to demographics and other study variables was collected through a self-administered questionnaire. The questionnaire was reviewed by 5 diabetes specialists and pre-tested. There were a total of 40 questions related to socio-demographics, foot care, clinical parameters, physical activity, diabetes as a disease, chronic complications, food and eating, hypoglycaemia, family support, and special situations. Total maximum marks were 40.

## RESULTS

There were a total of 200 individuals involved in this research. The patients who had type I diabetes were only 7%. All the patients were aged from 21 years to more than 61 years. The mean age calculated was 51.09 years. 52% (n=104) of the total population were in their fifties. The majority of the population were females, representing 65% of the total patients. Table number 1 shows the socio-demographic variables of the total population.

**Table 1**

| Variables      | N   | %  |
|----------------|-----|----|
| Gender         |     |    |
| • Male         | 70  | 35 |
| • Female       | 130 | 65 |
| Age (yrs)      |     |    |
| • 21 to 40     | 46  | 23 |
| • 41 to 60     | 104 | 52 |
| • More than 61 | 50  | 25 |
| Locality       |     |    |
| • Urban        | 126 | 63 |
| • Rural        | 74  | 37 |
| Education      |     |    |
| • Primary      | 64  | 32 |
| • Secondary    | 50  | 25 |
| • Bachelors    | 18  | 9  |
| • Masters      | 16  | 8  |

|                            |     |    |
|----------------------------|-----|----|
| • Religiously Educated     | 36  | 18 |
| • No formal education      | 16  | 8  |
| Employment status          |     |    |
| • Employed                 | 170 | 85 |
| • Unemployed               | 30  | 15 |
| Family history of diabetes |     |    |
| • Yes                      | 102 | 51 |
| • No                       | 98  | 49 |
| Duration of diabetes (yrs) |     |    |
| • Less than 5              | 52  | 26 |
| • 5 to 9                   | 42  | 21 |
| • 10 to 14                 | 56  | 28 |
| • More than 15             | 50  | 25 |

**Table 2: compares pre and post test scores of the descriptive variables**

| Test Variables             | Max Score | Mean  | SD    |
|----------------------------|-----------|-------|-------|
| Total Score (Pretest)      | 40        | 15.80 | 3.386 |
| Total Score (Posttest)     |           | 28.03 | 5.818 |
| Pre-eating                 | 7         | 2.60  | 1.278 |
| Post-eating                |           | 3.54  | 1.540 |
| Pre-physical activity      | 5         | 2.03  | 0.911 |
| Post-physical activity     |           | 3.67  | 1.178 |
| Pre-diabetes mellitus      | 8         | 2.96  | 1.671 |
| Post-diabetes mellitus     |           | 5.95  | 1.556 |
| Pre-chronic complications  | 4         | 1.76  | 1.256 |
| Post-chronic complications |           | 2.81  | 1.104 |
| Pre-family support         | 2         | 0.84  | 0.687 |
| Post-family support        |           | 1.62  | 0.618 |
| Pre-foot care              | 4         | 1.84  | 0.681 |
| Post-foot care             |           | 3.20  | 1.115 |
| Pre-special situations     | 2         | 0.82  | 0.699 |
| Post-special situations    |           | 1.75  | 0.436 |
| Pre-self monitoring        | 3         | 1.02  | 0.831 |
| Post-self monitoring       |           | 2.09  | 0.984 |
| Pre-hypoglycemia           | 5         | 1.93  | 1.382 |
| Post-hypoglycemia          |           | 3.40  | 1.220 |

**Table 3: shows the mean values of paired differences.**

| Test Variables             | Mean difference | Upper CI | Lower CI | t-static |
|----------------------------|-----------------|----------|----------|----------|
| Total Score (Pretest)      | 12.2            |          |          |          |
| Total Score (Posttest)     |                 | 13.3     | 11.1     | 22.4     |
| Pre-eating                 | 0.9             |          |          |          |
| Post-eating                |                 | 1.2      | 0.6      | 5.8      |
| Pre-physical activity      | 1.6             |          |          |          |
| Post-physical activity     |                 | 1.8      | 1.4      | 13.7     |
| Pre-diabetes mellitus      | 2.9             |          |          |          |
| Post-diabetes mellitus     |                 | 3.3      | 2.6      | 17.5     |
| Pre-chronic complications  | 1.1             |          |          |          |
| Post-chronic complications |                 | 1.3      | 0.8      | 8.2      |
| Pre-family support         | 0.7             |          |          |          |
| Post-family support        |                 | 0.9      | 0.6      | 10.6     |
| Pre-foot care              | 1.3             |          |          |          |
| Post-foot care             |                 | 1.5      | 1.1      | 13.9     |
| Pre-special situations     | 0.9             |          |          |          |
| Post-special situations    |                 | 1.1      | 0.8      | 14.5     |
| Pre-self monitoring        | 1.1             |          |          |          |
| Post-self monitoring       |                 | 1.2      | 0.8      | 10.7     |
| Pre-hypoglycemia           | 1.4             |          |          |          |
| Post-hypoglycemia          |                 | 1.7      | 1.1      | 10.3     |

## DISCUSSION

Diabetes mellitus is in almost every 10th citizen. It is arising to be a very serious public health concern. The key to a healthy life is to focus on the management of the disease. It can only be achieved when the patients are aware about the disease and self-care. Studies suggest that patients take good care of their diabetes and prevent complications if they are educated about it.<sup>[14]</sup> However, a few factors such as limited access

to health care facilities and illiteracy can become barriers to knowledge of diabetes.<sup>[15]</sup>

This research included a total of 200 patients who attended the OPD. These patients were provided with sessions in order to improve their knowledge about the diabetes mellitus, its treatment, diet, complications handling, and self-care and monitoring. We noticed a positive response to the sessions from the participants. There was a statistical difference seen in all variables before and after the

knowledge sessions. The pre-session score was 15.8 and the post-session score was 28.03.

The results show that diabetes is more common in people aged more than 50 years but their ability to gain knowledge is less in this age group. The mean age calculated was 51.09 years. 52% of the participants were in their fifties. It was observed that the improvement score was much higher in the younger age group. According to KY et al., the younger population tends to gain more knowledge rather than the elderly.<sup>[16]</sup> Females have higher prevalence of diabetes in all the age groups. However, it was observed that males had good knowledge about the disease as compared to females. According to a study by Rafique G et al., only 13.6% people had good knowledge of diabetes and most of them were males.<sup>[7]</sup>

It is very important for diabetic patients to regularly check and record the blood glucose level during self-care.<sup>[17,18]</sup> Studies say that less than 1/4th of the diabetic patients monitor glucose level at home by themselves.<sup>[19,20]</sup> Diabetes is a major global health problem. It is arising as the leading cause of deaths and disabilities throughout the world. It is very important to provide necessary knowledge and education to the diabetic patients so that they can work on self-care and self-monitor the disease.

## CONCLUSION

Upper socioeconomic status people, younger people, and males had more increases in mean scores.

### Funding source

This study was conducted without receiving financial support from any external source.

### Conflict in the interest

The authors had no conflict related to the interest in the execution of this study.

### Permission

Prior to initiating the study, approval from the ethical committee was obtained to ensure adherence to ethical standards and guidelines.

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