# Self-Care Practices in Type 2 Diabetes Mellitus Patients Regarding Diabetic Retinopathy in a Tertiary Care Hospital Lahore

**Muhammad Saifullah, Amna Shahzadi, Shazia Rafique, Asma Yousaf, Madiha Khalid, Fouzia Bashir, Saima Karam Din**

Lecturer, Lahore School of Nursing, The University of Lahore, Pakistan

Charge Nurse, Punjab Institute of Cardiology Lahore, Pakistan

Charge Nurse, Punjab Institute of Mental Health Lahore, Pakistan

Charge Nurse, Punjab Institute of Mental Health Lahore, Pakistan

Charge Nurse, Sir Gangaram Hospital Lahore, Pakistan

Principal, Shah Rukn e Alam College of Nursing Multan, Pakistan

Principal, Pak College of Nursing, Chiniot, Pakistan

**Corresponding Author:** Hina Aslam

## Abstract

**Background:** Diabetes is a significant public health issue on a global scale. According to a World Health Organization (WHO) projection, 6.9 million people in Pakistan had diabetes in 2007, and that number is projected to rise to 11.5 million by 2025. Diabetic retinal disease DR is a serious DM consequence that affects the retina's blood vessels and causes blindness. The frequency of DR among diabetes individuals is estimated to be 27.0% worldwide.

**Objectives:** To determine the self-care practices in patients with type 2 diabetes mellitus regarding diabetic retinopathy in a Tertiary Care Hospital Lahore and to evaluate the association of self-care practices with socio demographic variables in patients with type 2 diabetes mellitus regarding diabetic retinopathy.

**Methodology:** Descriptive cross sectional study design was used to carry out this study. The study was conducted at outpatient department of endocrine unit of Meyo Hospital Lahore. The calculated sample size for this study was 208 nurses. Convenient sampling method was used to collect the data. Data was analyzed through SPSS Version 24was used to analyze the data.

**Results:** The results of study showed that out of 208, 54(26%) were male and majority of participants 124 (59.6 %) were of age ranging from 40-60 years. The study showed that 28(13.5%) had good knowledge regarding diabetic retinopathy. Majority of the participants 132(63.5%) had incompetent practices and only 71(34.1%) had good practices. There is no association between practice and socio demographic characteristics of participants as p value is greater than 0.05.

**Conclusion:** Majority of participants 132(63.5%) had incompetent self-care practices and 13.1% had competent practices regarding about Diabetic Retinopathy. The study also conclude that there is no association between self-care practices and demographic characteristics of studied participants.

**Keywords:** Type 2 Diabetes Mellitus**;** Diabetic Retinopathy; Self-Care Practices; Nurses

## Introduction

Diabetes is a significant public health issue on a global scale (1). Around 451 million people have diabetes worldwide (2). According to a World Health Organization (WHO) projection, 6.9 million people in Pakistan had diabetes in 2007, and that number is projected to rise to 11.5 million by 2025 (3)**.** According to a World Health Organization (WHO) projection, 6.9 million people in Pakistan had diabetes in 2007, and that number is projected to rise to 11.5 million by 2025 (3)**.** WHO estimated that DM affected 422 million individuals worldwide. By 2035, this figure is anticipated to reach 592 million (4).

Diabetes Mellitus (DM) is a collection of chronic metabolic disease that are all defined by high blood sugar levels brought on by either an inability to make insulin, a resistance to its effect, or both. levels of blood sugar that are linked to substantial morbidity, mortality, and rising healthcare costs (5). A persistently high blood glucose level damages all of the blood vessels, which can lead to macro and micro vascular problems. Diabetes on the eye can cause diabetic retinopathy, a chronic microvascular problem (6). Diabetic retinal disease DR is a serious DM consequence that affects the retina's blood vessels and causes blindness (7). The development of new blood vessels and increased vascular permeability on the retina and the posterior surface of the vitreous accompany the progressive evolution of retinopathy (8).

Diabetic Retinopathy (DR) progresses from its earlier, milder anomalies to its later, more serious phases without early discovery and treatment (9). The frequency of DR among diabetes individuals is estimated to be 27.0% worldwide (2). In Pakistan, the prevalence of DR is 28.8% among diabetics, while the prevalence of vision-threatening DR (VTDR) is 28.2% of all DR and 8.6% of all diabetics (10).

If diabetic retinopathy is not identified early on or is not well treated, it can damage the retina, a component of the eye that is sensitive to light, and lead to blindness (11). If the disease has been present for a length of time significantly longer than the threshold, the likelihood of developing DR increases (12). An individual who has had diabetes for 20 years has an 80% probability of developing DR. Furthermore, it is probable that the DR patient may not exhibit any symptoms or may only experience a minor visual issue (13).

Regularly checking for DR risk factors, encouraging lifestyle changes and pharmacological intervention when necessary to improve glycemic control, and quickly diagnosing DR once it manifests are all examples of preventative methods (14). To raise awareness of the condition, complications, and sight-threatening nature of diabetic retinopathy in Pakistan, more thorough and evidence-based DR screening protocols must be established (STDR) (15).

Diabetes retinopathy affects about 35.6% of all diabetic patients (7). Patient education is crucial for the therapy of retinopathy since it raises awareness and reduces complications (16). To raise awareness of the condition, complications, and sight-threatening nature of diabetic

retinopathy in Pakistan, more thorough and evidence-based DR screening recommendations were required (STDR).

The results of this study may be used to generate fresh, motivating approaches to improving patient quality of life. These approaches might involve educating patients about diabetes and the dangers of its sight-threatening consequences as well as accelerating identification. Reduced visual morbidity brought on by diabetic complications will result from early detection and treatment. Diabetes patients must be regarded as significant participants in this process.

**Objective**

1. To determine the self-care practices in patients with type 2 diabetes mellitus regarding diabetic retinopathy in a Tertiary Care Hospital Lahore.
2. To evaluate the association of self-care practices with socio demographic variables in patients with type 2 diabetes mellitus regarding diabetic retinopathy in a Tertiary Care Hospital Lahore.

# Methodology

Descriptive cross sectional study design was used to carry out this study. The study was conducted at endocrine unit of Meyo Hospital Lahore. Data was collected from January 1st 2022 to March 31st 2022. A sample size of 208 cases with a 95% confidence interval, a 5% margin of error, and an expected knowledge rate of 26.5% among diabetic patients are calculated. Purposive sampling method was used to select the sampling units as it is faster and easier method and produce less biased data. The patients' self-care practices were measured through an eye care checklist (17). Checklist consists of 18 items. The self-care practices was categorized as competent and incompetent. The total score of each respondent practice is categorized as Incompetent Practice = <75% (0-13), Competent Practice = ≥75 % (14-18) (18).

Data was collected in two phases as initially a list of diagnosed Type-2 diabetic patients was made by checking their clinical data. According to the inclusion and exclusion criteria, Diabetic patients, who met the eligibility criteria of the study, were enrolled after obtaining informed consent. After taking data from all participants, the number of correct responses to questions in the practice section, each patient in the study was categorized as having 'competent' or 'incompetent' practice pattern. Data was analyzed through Statistical Package for Social Sciences (SPSS) Version 24. Quantitative variables were presented in the form of frequencies and percentages. Categorical variables were presented in the form of frequency, percentages, and pie charts. In response, the required adjustments were made. Association between categorical variables was checked using Chi Square test. P value less than 0.05 was considered as significant.

# Results

Two hundred and eight patients who fulfilled the eligibility criteria were recruited into the study. Demographic characteristics including age of participants in year, gender, area of respondents, marital status, and education is presented in tables.

**Table 1 Demographic characteristic of participants**

| Variable | Group | Frequency | Percentage (%) |
|---|---|---|---|
| **Age** | 20-40 | 47 | 20.8 |
| | 40-60 | 94 | 49.6 |
| | 60 or above | 67 | 29.6 |
| **Gender** | Male | 84 | 36.0 |
| | Female | 134 | 64.0 |
| **Marital Status** | Married | 106 | 45.4 |
| | Un Married | 50 | 21.6 |
| | Widow | 22 | 15.1 |
| | Separated | 30 | 17.9 |
| **Area of respondent** | Urban | 136 | 67.7 |
| | Rural | 72 | 32.3 |
| **Education** | Intermediate | 69 | 37.2 |
| | Primary middle and matric | 67 | 33.0 |
| | Can't read and write | 41 | 14.9 |
| | University Education | 36 | 17.9 |
| **Years of DM** | 5-10 | 135 | 60.1 |
| | Above 10 | 73 | 39.9 |

A total of 208 patients took part in the study, of whom 94 (49.6%) were between the ages of 40 and 60, 67 (29.6%) were 60 or older, and only 47(20.8%) were between the ages of 20 and 40. In terms of gender 84 (36%) were men and 134 (64%) were women. Majority of participant 106(45.4%) were married, 50(21.6%) were Un-married, 22(15.1 %) were widow, and 30(17.9%) were separated. Majority of the respondents were belonging to urban areas 136(67.7%) and only 32.3% were lived in rural areas. In terms of to education of respondents, majority of participants 69(37.2%) were Intermediate, 67(33%) had middle and matric level education, 36(17.9%) had University Education, and 41(14.9%) can't read and write. In term of Diabetes Mellitus history, majority of patients 135(60.1%) had Diabetes Mellitus for 5 -10 years, and 73(39.9%) had history of DM above 10 years (Table 1).

## Test for Normality of Data

Normality assumption was checked through Shapiro-Wilk test and findings revealed that the data was not normally distributed with P-value<0.45.

In addition, practices of participants towards diabetic retinopathy is shown in Table 2.

**Table 2. Responses to practice related questions regarding diabetic retinopathy.**

| SN | Statement/Questionnaires | No | | Yes | |
|---|---|---|---|---|---|
| | | Frequency | Percentage | Frequency | Percentage |
| **1** | Do you take medicines regularly for diabetes as advised by the physician? | 40 | 19.2 | 168 | 80.7 |
| **2** | Do you follow the diet schedule as advised by the physician for the control of Diabetes? | 119 | 57.2 | 89 | 42.8 |

| | | | | | |
|---|---|---|---|---|---|
| **3** | Do you monitor your blood sugar level at home? | 126 | 60.6 | 82 | 39.4 |
| **4** | Do you follow eye screening test every six months? | 148 | 71 | 60 | 29 |
| **5** | Do you take regular exercise to control diabetes? | 113 | 54.3 | 95 | 45.6 |
| **6** | Do you go for follow-up visits (after taking prescribed treatment for diabetic retinopathy) as advised by an ophthalmologist? | 68 | 32.6 | 140 | 67.3 |
| **7** | Do you monitor and report any visual disturbances? | 49 | 23.5 | 159 | 76.4 |
| **8** | Do you receive advice on the prevention and treatment of diabetic eye complications from an ophthalmology team? | 34 | 16.3 | 174 | 83.6 |
| **9** | Do you come to the regular (annual) check-up appointment because of diabetes? | 134 | 64.4 | 74 | 35.5 |
| **10** | Do you follow standards of care to prevent the complication regarding eye disease? | 144 | 69.2 | 64 | 30.7 |
| **11** | Do you follow preventive measures to Minimize Injury/Trauma related to diabetic retinopathy? | 155 | 74.5 | 53 | 25.4 |
| **12** | Do you promote safety measures and support to himself/herself in doing ADL (Activities of daily living) Optimally? | 140 | 67.3 | 68 | 32.6 |
| **13** | Do you try to reduce glare which can help protecting the eyes? | 151 | 72.6 | 77 | 37 |
| **14** | Can you tell if diabetes is affecting your eyes? /If you notice any change in your vision. | 131 | 63 | 77 | 37 |
| **15** | Do you follow in diabetic control intensive therapy which is helpful to prevent the complication of eye disease (Retinopathy)? | 137 | 65.9 | 74 | 34.1 |
| **16** | Do you follow in diabetic control conventional therapy which reduced the risk of diabetic retinopathy? | 134 | 64.4 | 68 | 35.6 |
| **17** | Do you use any strategies which help to improve and prevention of management in diabetic retinopathy? | 140 | 67.3 | 73 | 32.7 |
| **18** | Do you have information about 'diabetes-related eye-lens-problem' is available? | 135 | 64.9 | 73 | 35.1 |

Table 2 shows the responses of participants towards practices about diabetic retinopathy. Majority of participants 168(80.7%) reported that they took medicines regularly for diabetes as

advised by the physician. 148(71%) participants reported that they did not follow eye screening test every six months. Similarly, more than half participants did not know which diabetic control intensive therapy is useful and which diabetic control conventional therapy can reduce the risk of diabetic retinopathy. Majority of participants 135(64.9%) have no information about 'diabetes-related eye-lens-problem'.

**Table 3: Overall Practices of participants towards diabetic retinopathy**

| Level of Practice | Frequency | Percentage | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Incompetent | 139 | 63.5 | 63.5 | 63.5 |
| Competent | 69 | 34.1 | 34.1 | 100.0 |

Table 3 shows that majority of the participants 139(63.5%) had incompetent practices and only 69(34.1%) had good practices

**Table 4: Association of Self-Care Practices with socio demographic variables**

| Variable | Self-Care Practices | | P-Value |
|---|---|---|---|
| | Poor | Good | |
| **Age in years** | | | |
| 20-40 | 28 | 9 | 0.206 |
| 40-60 | 75 | 49 | |
| 60 or above | 32 | 15 | |
| **Gender** | | | |
| Male | 33 | 21 | |
| Female | 102 | 52 | 0.497 |
| **Marital status** | | | |
| Married | 104 | 55 | |
| Un Married | 10 | 10 | |
| Widow | 13 | 6 | 0.514 |
| Separated | 8 | 2 | |
| **Area of respondent** | | | |
| Urban | 116 | 56 | 0.094 |
| Rural | 19 | 17 | |
| **Education** | | | |

| | | | |
|---|---|---|---|
| University Education | 19 | 12 | |
| Intermediate | 47 | 22 | 0.881 |
| Primary middle and matric | 50 | 27 | |
| Can't read and write | 19 | 12 | |
| **Profession** | | | |
| Government Employee | 25 | 13 | |
| Private Employee | 22 | 9 | |
| Shopkeeper | 9 | 4 | 0.104 |
| House Wife | 67 | 40 | |
| Not Working | 4 | 7 | |
| Hand Work | 8 | 0 | |
| **Years of DM** | | | |
| 5-10 | 76 | 49 | |
| 10-20 | 54 | 23 | 0.409 |
| 20-35 | 4 | 1 | |
| 35 or Above | 1 | 0 | |
| **Blood sugar fasting** | | | |
| Controlled | 22 | 13 | 0.781 |
| Un Controlled | 113 | 60 | |

Table 4 shows that there is no association between self-care practices and socio demographic characteristics of participants as p value is greater than 0.05. Therefore, null hypothesis "there is no association self-care practices and socio demographic variables in patients with type 2 diabetes mellitus regarding diabetic retinopathy at Lahore General Hospital Lahore" is accepted.

# Discussion

Many people around the world have reported complications from diabetes mellitus, which is a silent epidemic. In third-world countries, even its frequency is anticipated to double by 2030 (19).

In this study, majority of participants suffering from diabetic retinopathy 124 (59.6 %) were of age ranging from 40-60 years who were receiving diabetic care at a local health facility. These findings are consistent with a study conducted in Pakistan where majority of participants were aged between 40- 65 years (20).

The majority of participants were housewives who didn't have health insurance thus they received their medical care from free hospitals, according to the study's findings, which showed that 54 (26%) of the patients were men and 154 (74%) were women. This result was consistent with a cross-sectional research of a wide range of diabetic retinopathy patients that found a statistically significant correlation between diabetes retinopathy and male gender (P 0.001) that appeared to be connected with a shorter axial length of the eyeball (21).

As regards the marital status, the finding of the present study showed that the 159(76.4%) participants were married, and 20(9.6%) were Unmarried. This finding was in the same line with a research conducted in Ghanaian who made clear that married people made up the large majority of the study groups with DR (22). Moreover, the current research has showed considerable numbers of patients 172(82.7%) belonging to urban areas. which is contrary to the research conducted in Jordan where majority of participants had belonged to rural areas (23).

The current investigation's findings regarding education level showed that majority of participants 77(37%) were having middle and matric level education. It can be the result of a lack of understanding of the value of education and a prior lack of interest in pursuing an education. Similar to other findings, a descriptive cross sectional study conducted in Sahiwal Pakistan showed same figure of educated patients (18).

The results of the current study showed that there are poor self-care practises generally for managing diabetes. About 63.5% patients had incompetent self-care practices. This might be attributed to patients' lack of knowledge on diabetic retinopathy self-care procedures. Positive self-care behaviours might successfully minimize diabetes-related complications and improve diabetes control among poor, elderly, and uninsured patients, according to solid evidence from a prior study (24).

# Conclusion

The study concluded that majority of study participants had answered wrong about diabetic retinopathy diagnosis, treatment, complications, and sign and symptoms. Study showed that majority of participants 132(63.5%) had incompetent self-care practices and 13.1% had competent practices regarding about Diabetic Retinopathy. The study also conclude that there is no association between self-care practices and demographic characteristics of studied participants.

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