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**Original Article**

# Knowledge and Self Care Practices in Patients with Type 2 Diabetes Mellitus Regarding Diabetic Retinopathy at Lahore General Hospital Lahore

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## ABSTRACT

Diabetes Mellitus (DM) is the collection of chronic metabolic disease that are all defined by high blood sugar levels with either an inability to make insulin, a resistance to its effect, or both. **Objective:** To determine the knowledge and self-care practices in patients with type 2 diabetes mellitus regarding diabetic retinopathy (DR) and to evaluate the association of socio demographic with knowledge and self-care practices regarding diabetic. **Methods:** A descriptive cross-sectional study was carried out at the endocrine department of Lahore General Hospital. 208 nurses made up the estimated sample size for this investigation. The data were gathered using a convenient sampling technique. Data were analyzed using SPSS version24. **Results:** The results of study showed that majority of participants 180(86.5%) had poor knowledge regarding diabetic retinopathy and only 28(13.5%) had good knowledge regarding diabetic retinopathy. There was no association between knowledge and socio demographic characteristics of participants as p-value was greater than 0.05. Majority of the participants 132(63.5%) had incompetent practices and only 71(34.1%) had good practices. There was no association between practice and socio demographic characteristics of participants as p-value was greater than 0.05. **Conclusions:** According to the study's findings, diabetic retinopathy was poorly understood by Type 2 Diabetes mellitus patients. The study's findings also show that there was no correlation between knowledge, self-care behaviors, and participant demographics.

## INTRODUCTION

The term "diabetes mellitus" refers to 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 [1]. Around 451 million people have diabetes worldwide. A persistently high blood glucose level damages all of the blood vessels, which can lead to macro and micro vascular problems. The frequency of DR among diabetes individuals is estimated to be 27.0% worldwide [2]. According to WHO estimates, DM affects 422 million individuals worldwide. By 2035, this figure is anticipated to reach 592 million [4]. 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 [4]. DR is a severe DM side effect that damages the blood vessels in the retina and results in blindness. As retinopathy progresses, new blood vessels grow and the vascular permeability of the retina and the posterior surface of the vitreous increases [5]. The main cause of blindness globally is diabetic retinopathy, which affects 34.6% of people with diabetes. Testing those who are at risk of getting the disease is crucial because the disease's early stages are asymptomatic [6]. In the early stages of the DR, the patient has no symptoms, but as it continues, it results in floaters, fuzzy vision, distortions, and a progressive loss of visual modalities. It is challenging but extremely necessary to follow the DR in the early stages

in order to avert the more disastrous impacts of later phases [7]. The retina, a part of the eye that is sensitive to light, can be harmed by diabetic retinopathy and cause blindness if it is not detected early on or is not properly treated. The risk of having DR rises if the disease has been present for a period of time noticeably longer than the threshold. A 20-year history of diabetes increases the risk of developing DR by 80%. In addition, it's likely that the DR patient won't show any symptoms or would just have a slight visual problem [8]. Treatment options for diabetic retinopathy include prompt laser therapy, steroid intraocular injections, anti-vascular endothelial growth factor medications, and intraocular surgery [9]. In industrialized countries, the epidemiology and risk factors of DR have been adequately characterized, and a few studies have been attempted in poorer countries as well [2]. 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 [5]. 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). Patient education is crucial for the therapy of retinopathy since it raises awareness and reduces complications. Therefore, DR self-care practices programs may enhance patient outcomes, and lower healthcare expenses. Objective of the study were to evaluate the knowledge and self-care practices in patients with type 2 diabetes mellitus regarding diabetic retinopathy at Lahore General Hospital Lahore and to evaluate the association of knowledge and self-care practices with socio demographic variables in patients with type 2 diabetes mellitus regarding diabetic retinopathy at Lahore General Hospital Lahore. Alternative Hypothesis (H1): H1: There is an association between knowledge and socio demographic variables in patients with type 2 diabetes mellitus regarding diabetic retinopathy at Lahore General Hospital Lahore. H1: There is an association between self-care practices and socio demographic variables in patients with type 2 diabetes mellitus regarding diabetic retinopathy at Lahore General Hospital Lahore. Null hypothesis (H0): H0: There is no association between knowledge and socio demographic variables in patients with type 2 diabetes mellitus regarding diabetic retinopathy at Lahore General Hospital Lahore. H0: There is no association between self-care practices and socio demographic variables in patients with type 2 diabetes mellitus regarding diabetic retinopathy at Lahore General Hospital Lahore

## METHODS

To conduct this investigation, a descriptive cross-sectional study design was employed. The study was carried out at the endocrine department of Lahore General Hospital. Lahore General Hospital, a 1600 bed public sector teaching hospital, was established in 1958. Data were gathered between April 1 and December 31, 2022. With a 5% margin of error, a 95% confidence interval, and an expected knowledge rate of 26.5% among diabetic patients, a sample size of 208 cases was calculated [6]. The sampling units were chosen using a convenient sampling approach since it is a quicker, simpler procedure that results in less biased data. Patients who were diagnosed with Type-2 diabetes less than five years ago and who were male or female and older than 20 were included in the study. Exclusion criteria for the study included patients with mental disease, type I diabetes, gestational diabetes mellitus, and other comorbidities (hypertension, renal failure, tumor, TB, mental condition). After obtaining informed consent, diabetic patients who satisfied the study's eligibility requirements were enrolled in accordance with the inclusion and exclusion criteria. The study's objective, hazards, and benefits were explained to the participants. Following the development of a rapport with the participants, informed consent was obtained. Knowledge questionnaire was adopted from previous literature [6]. It consists of 16 Multiple-choice questions. Each correct response was given a score of 1 for correct answer, and 0 for wrong answer. The total score ranged from 0–16. The total score of each respondent knowledge was graded as Poor = 0-49% (0-7 score) and Good = 50-100% (8-16 score) [10]. An eye care checklist consists of 18 items was used to gauge the patients' level of self-care (6). Done items were marked as "1" and not done or missing item as "0". The total score ranged from 0-18. The total score of each respondent practice is categorized as Incompetent Practice = <75% (0-13) and Competent Practice = ≥75 % (14-18) [10]. Statistical Package for Social Sciences (SPSS) Version 24.0 was used to analyze the data. Frequencies and percentages were used to present quantitative variables.

## RESULTS

This results section represents the analysis, interpretation and comparison of data related to demographic variables and the study variables knowledge and practice. 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 was presented as tables. Medical history of participants was also presented in the form of table. In total, 208 patients took part in the study, of whom 124 (59.6%) were

between the ages of 40 and 60, 22.6 (%) were 60 or older, and only 17.8% were between the ages of 20 and 40, according to Table 1. 54 (26%) men and 154 (74%) women were present. Majority of participant 159(76.4%) were married, 20(9.6%) were Un-married, 9.1 % were widow, and 10(4.9%) were separated. Among 208, majority of the respondents were belonging to urban areas 172(82.7%) and only 17.3% were lived in rural areas. In terms of to education of respondents, majority of participants 77(37%) were having middle and matric level education, 69(33.2%) were Intermediate, 31(14.9%) had University Education, and 31(14.9%) can't read and write. Majority of patients 125(60.1%) had Diabetes Mellitus for 5 -10 years, and only 83(39.9%) had history of DM above 10 years (Table 1).

**Table 1:** Demographic characteristic of participants

| Variable | Group | Frequency (%) |
|---|---|---|
| Age | 20-40 | 37 (17.8) |
| | 40-60 | 124 (59.6) |
| | 60 or above | 47 (22.6) |
| Gender | Male | 54 (26.0) |
| | Female | 154 (74.0) |
| Marital Status | Married | 159 (76.4) |
| | Un Married | 20 (9.6) |
| | Widow | 19 (9.1) |
| | Separated | 10 (4.9) |
| Area of respondent | Urban | 172 (82.7) |
| | Rural | 36 (17.3) |
| Education | University Education | 31 (14.9) |
| | Intermediate | 69 (33.2) |
| | Primary middle and matric | 77 (37.0) |
| | Can't read and write | 31 (14.9) |
| Years of DM | 5-10 | 125 (60.1) |
| | Above 10 | 83 (39.9) |

The Shapiro-Wilk test was used to verify the normality assumption because there were 208 participants. Data had a normal distribution with a p-value of 0.05, according to the results. Table 2 showed that 180(86.5%) participants had poor knowledge regarding diabetic retinopathy and 28(13.5%) had good knowledge regarding diabetic retinopathy.

**Table 2:** Knowledge of participants regarding diabetic retinopathy

| Level of Knowledge | Frequency (%) | Valid Percent | Cumulative Percent |
|---|---|---|---|
| Poor Knowledge | 180 (86.5) | 86.5 | 86.5 |
| Good Knowledge | 28 (13.5) | 13.5 | 100.0 |

In addition, practices of participants towards diabetic retinopathy is shown in Table 3. Majority of the participants 132(63.5%) had incompetent practices and only 71(34.1%) had good practices.

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

| Level of Practice | Frequency (%) |
|---|---|
| Incompetent | 132 (63.5) |
| Competent | 71 (34.1) |

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

**Table 4:** Association of knowledge with socio demographic variables

| Variable | Knowledge | | p-value |
|---|---|---|---|
| | Poor | Good | |
| **Age in years** | | | |
| 20-40 | 24 | 13 | 0.000 |
| 40-60 | 112 | 12 | |
| 60 or above | 44 | 3 | |
| **Marital status** | | | |
| Married | 139 | 20 | 0.401 |
| UnMarried | 15 | 5 | |
| Widow | 16 | 3 | |
| Separated | 10 | 0 | |
| **Area of respondent** | | | |
| Urban | 147 | 25 | 0.000 |
| Rural | 33 | 3 | |
| **Education** | | | |
| University Education | 27 | 4 | 0.004 |
| Intermediate | 55 | 14 | |
| Primary middle and matric | 72 | 5 | |
| Can't read and write | 26 | 5 | |
| **Years of DM** | | | |
| 5-10 | 105 | 20 | 0.002 |
| Above 10 | 75 | 8 | |

Table 5 shows that there was an association between self-care practices and socio demographic characteristics of participants as p-value was less 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" was rejected.

**Table 5:** 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 | |

| | | | |
|---|---|---|---|
| **Marital status** | | | |
| Married | 104 | 55 | 0.514 |
| UnMarried | 10 | 10 | |
| Widow | 13 | 6 | |
| Separated | 8 | 2 | |
| **Area of respondent** | | | |
| Urban | 116 | 56 | 0.004 |
| Rural | 19 | 17 | |
| **Education** | | | |
| University Education | 19 | 12 | 0.001 |
| Intermediate | 47 | 22 | |
| Primary middle and matric | 50 | 27 | |
| Can't read and write | 19 | 12 | |
| **Years of DM** | | | |
| 5-10 | 76 | 49 | 0.009 |
| Above 10 | 59 | 24 | |

## DISCUSSION

This chapter discusses diabetic patients' awareness of and self-care practices in relation to diabetic retinopathy. Many people around the world have reported having diabetes mellitus and its complications, which is a silent epidemic [8]. In third-world nations, even its frequency is anticipated to double by 2030 [9]. The majority of research participants with diabetic retinopathy, 124 (59.6%), were between the ages of 40 and 60 and were being treated for their diabetes at a nearby medical facility. These results are in line with research done in Pakistan, where the majority of participants were between the ages of 40 and 65 [10]. This may be explained by the fact that the majority of participants have had DM for 15 years or longer and have had poor DM control, which increases their risk of long-term consequences, including DR [11]. Regarding gender, the results of this study showed that 154 (74%) of the patients were female and 54 (26%) were male. This may be because the majority of participants were housewives who received their medical treatment from free hospitals since they lacked health insurance. This result was consistent with a cross-sectional study that was conducted across a wide range of diabetic retinopathy patients and found a statistically significant correlation between diabetic retinopathy and male gender (p 0.001) that appeared to be related to shorter axial length of the eyeball [12]. This is in line with a study, which revealed that 55.1% of those with diabetes mellitus were men. In terms of marital status, the results of this study revealed that 159 of the participants or 76.4% were married, while 20 or 9.6% were not. According to patient reports, the majority of the patients in the study were females who had a lot of domestic duties and obligations. As a result, they may have neglected to adopt healthy lifestyles, which elevated their risk for the onset and progression of diabetic retinopathy. This result was consistent with a study done in Ghana, where it was emphasized that most of the groups under study with DR were married [13]. 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 [14]. Regarding education, the results of this study revealed that the majority of participants, or 77 (37%), had middle and matric level schooling. It can be because they were previously uninterested in receiving an education or because they were unaware of the value of education. This result was consistent with a descriptive cross-sectional study that was done in Sahiwal, Pakistan, and that revealed the same number of educated patients [7]. According to the current study's findings about the patients' duration of diabetes mellitus, 125 patients (or 60.1%) had the disease for between 5 and 10 years. This outcome is consistent with research done in India (15). This result was at odds with a study, who claimed that the majority of the patients in their study had only been identified as diabetic for a short period of time—5 years or less—before developing retinopathy [16]. The results of the current study indicated that the majority of patients (86.5%) had low understanding regarding the condition known as diabetic retinopathy in terms of their overall knowledge score. The majority of the patients in the study who were housewives, married, and illiterate may help to explain this. Additionally, it might be because medical professionals don't have enough time to educate patients about DR. It can also be ascribed to the fact that people with diabetes do not receive holistic care, which primarily focuses on glucose management without screening for visual issues, nephropathy, neuropathy, or foot issues. Studies from India and Saudi Arabia, in contrast, found that diabetes patients had good understanding of DR (54.2% and 75.6%, respectively) [17, 18]. This result was consistent with another study, in which 33.1% of the participants stated that it was crucial for diabetic patients to receive routine eye exams [19]. One study found that 17% of participants had good understanding of DR [20]. The results of the current investigation showed that self-care practices overall were inadequate for managing diabetes. 63.5% of patients practiced inadequate self-care. This could be attributed to patients' lack of knowledge on diabetic retinopathy self-care procedures. Positive self-care behaviors could successfully minimize diabetes-related complications and improve diabetes control among underprivileged, elderly, and uninsured patients, according to strong evidence from a prior study [21]. In terms of association between knowledge and demographic characteristics, the findings of study revealed an association between knowledge and demographic characteristics. These results are in line with

a study conducted in Ethiopia (2021) and Saudi Arabia (2020) [1, 3]. Similarly, the findings of current study revealed that self-care practices have significant association with demographic characteristics of respondents. These findings are consistent with a study conducted in Pakistan (2019) which also showed an association between self-care practices and demographic characteristics of respondents [16].

## CONCLUSIONS

The study found that the majority of participants, 132 (63.5%), had ineffective self-care practices for diabetic retinopathy and that nearly two-thirds of type 2 diabetes mellitus patients were screened had inadequate understanding of diabetic retinopathy. The study also found a relationship between knowledge and demographic traits, as well as self-care practices and demographic traits of study participants.

## Authors Contribution

Conceptualization: HS
Methodology: AB
Formal analysis: AB, HS
Writing-review and editing: AB, HS, AA

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.


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## REFERENCES


[1] Tuha A, Getie Faris A, Andualem A, Ahmed Mohammed S. Knowledge and practice on diabetic foot self-care and associated factors among diabetic patients at Dessie referral hospital, northeast Ethiopia: mixed method. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy. 2021 Mar; 14: 1203-14. doi: 10.2147/DMSO.S300275.

[2] Alemu Mersha G, Alimaw YA, Woredekal AT. Prevalence of diabetic retinopathy among diabetic patients in Northwest Ethiopia—A cross sectional hospital based study. Plos One. 2022 Jan; 17(1): e0262664. doi: 10.1371/journal.pone.0262664.

[3] Al-Yahya A, Alsulaiman A, Almizel A, Barri A, Al Adel F. Knowledge, attitude, and practices (KAP) of diabetics towards diabetes and diabetic retinopathy in Riyadh, Saudi Arabia: Cross-sectional study. Clinical Ophthalmology. 2020 Oct; 14: 3187-94. doi: 10.2147/OPTH.S269524.

[4] Bechange S, Roca A, Schmidt E, Gillani M, Ahmed L, Iqbal R, *et al*. Diabetic retinopathy service delivery and integration into the health system in Pakistan—Findings from a multicentre qualitative study. Plos One. 2021 Dec; 16(12): e0260936. doi: 10.1371/journal.pone.0260936.

[5] Beaser RS, Turell WA, Howson A. Strategies to improve prevention and management in diabetic retinopathy: qualitative insights from a mixed-methods study. Diabetes Spectrum. 2018 Feb; 31(1): 65-74. doi: 10.2337/ds16-0043.

[6] Almalki NR, Almalki TM, Alswat K. Diabetics retinopathy knowledge and awareness assessment among the type 2 diabetics. Open access Macedonian Journal of Medical Sciences. 2018 Mar; 6(3): 574. doi: 10.3889/oamjms.2018.121.

[7] Farooq F and Bapar SH. Knowledge, Attitude and Practices of Diabetic Retinopathy in Diagnosed Diabetic Patients: A Descriptive Study. Saudi Journal of Medical and Pharmaceutical Sciences. 2021 Jan; 7(1): 7-14. doi: 10.36348/sjmps.2021.v07i01.003.

[8] Mumtaz SN, Fahim MF, Arslan M, Shaikh SA, Kazi U, Memon MS. Prevalence of diabetic retinopathy in Pakistan; A systematic review. Pakistan Journal of Medical Sciences. 2018 Mar; 34(2): 493. doi: 10.12669/pjms.342.13819.

[9] Basit A, Fawwad A, Qureshi H, Shera AS. Prevalence of diabetes, pre-diabetes and associated risk factors: second National Diabetes Survey of Pakistan (NDSP), 2016–2017. BMJ Open. 2018 Aug; 8(8): e020961. doi: 10.1136/bmjopen-2017-020961.

[10] Ansari RM, Harris MF, Hosseinzadeh H, Zwar N. Experiences of Diabetes Self-Management: A Focus Group Study among the Middle-Aged Population of Rural Pakistan with Type 2 Diabetes. Diabetology. 2022 Jan; 3(1): 17-29. doi: 10.3390/diabetology 3010002.

[11] Zou W, Ni L, Lu Q, Zou C, Zhao M, Xu X, *et al*. Diabetes onset at 31–45 years of age is associated with an increased risk of diabetic retinopathy in type 2 diabetes. Scientific Reports. 2016 Nov; 6(1): 38113. doi: 10.1038/srep38113.

[12] Qian J, Haq Z, Yang D, Stewart JM. Male sex increases the risk of diabetic retinopathy in an urban safety-net hospital population without impacting the relationship between axial length and retinopathy. Scientific Reports. 2022 Jun; 12(1): 9780. doi: 10.1038/s41598-022-13593-4.

[13] Kugbey N, Oppong Asante K, Adulai K. Illness perception, diabetes knowledge and self-care practices among type-2 diabetes patients: a cross-sectional study. BMC Research Notes. 2017 Dec; 10: 1-

7. doi: 10.1186/s13104-017-2707-5.
[14] Bakkar MM, Haddad MF, Gammoh YS. Awareness of diabetic retinopathy among patients with type 2 diabetes mellitus in Jordan. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy. 2017 Oct; 10: 435-41. doi: 10.2147/DMSO.S140841.
[15] Venugopal D, Lal B, Fernandes S, Gavde D. Awareness and knowledge of diabetic retinopathy and associated factors in Goa: A hospital-based cross-sectional study. Indian Journal of Ophthalmology. 2020 Feb; 68(2): 383. doi: 10.4103/ijo.IJO_1218_19.
[16] Bukhsh A, Khan TM, Sarfraz Nawaz M, Sajjad Ahmed H, Chan KG, *et al.* Association of diabetes knowledge with glycemic control and self-care practices among Pakistani people with type 2 diabetes mellitus. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy. 2019 Aug; 12: 1409-17. doi: 10.2147/DMSO.S209711.
[17] Al Zarea BK. Knowledge, attitude and practice of diabetic retinopathy amongst the diabetic patients of AlJouf and Hail Province of Saudi Arabia. Journal of Clinical and Diagnostic Research: JCDR. 2016 May; 10(5): NC05. doi: 10.7860/JCDR/2016/19568.7862.
[18] Chattopadhyay M, Biswas A, Singh R, Sur A. Knowledge and practice of the diabetic eye diseases amongst persons with diabetes-A cross-sectional survey. Journal of Evidence Based Medical Healthcare. 2017 Mar; 4: 1564-67. doi: 10.18410/jebmh/2017/305.
[19] Konstantinidis L, Carron T, de Ancos E, Chinet L, Hagon-Traub I, Zuercher E, *et al.* Awareness and practices regarding eye diseases among patients with diabetes: a cross sectional analysis of the CoDiab-VD cohort. BMC Endocrine Disorders. 2017 Dec; 17: 1-1. doi: 10.1186/s12902-017-0206-2.
[20] Hakeem R, Awan Z, Memon S, Gillani M, Shaikh SA, Sheikh MA, *et al.* Diabetic retinopathy awareness and practices in a low-income suburban population in Karachi, Pakistan. Journal of Diabetology. 2017 May; 8(2): 49-55. doi: 10.4103/jod.jod_31_17.
[21] Sayeed KA, Qayyum A, Jamshed F, Gill U, Usama SM, Asghar K, *et al*. Impact of diabetes-related self-management on glycemic control in type II diabetes mellitus. Cureus. 2020 Apr; 12(4): e7845. doi: 10.7759/cureus.7845.