

# Knowledge Of Diabetic Retinopathy And Its Influence On Screening Uptake Among People Living With Diabetes At A Tertiary Health Institution In Southwest, Nigeria

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## ABSTRACT

Diabetic retinopathy (DR) remains one of the most common non-communicable diseases globally and poses a major public health challenge due to its increasing prevalence, associated complications, and economic burden. Despite advances in diagnostic technology and management, disparities in screening uptake persist, particularly in low- and middle-income countries where awareness, knowledge and healthcare accessibility are limited. This gap underscores the urgent need to explore the level of knowledge of diabetes patient on diabetic Retinopathy and its underlying determinants of screening uptake among people living with diabetes in a tertiary health institution of South west Nigeria.

The study employed a descriptive cross-sectional design. The study was conducted at the Federal Medical Center (FMC) Abeokuta, a tertiary health care institution located in Abeokuta South Local Government Area, Ogun State, South west Nigeria. The target population for this study comprised of people living with diabetes mellitus (PLWD) who are receiving care at the Federal Medical Center (FMC). A systematic random sampling technique was adopted to select 232 participants determined by Cochran formular. The data collection process was carried out in three systematic phases to ensure accuracy, ethical compliance, and quality assurance. Data collected from the field was collated, coded, and analyzed using the Statistical Package for Social Sciences (SPSS) version 27.

The result showed that majority of the respondents (63.8%) demonstrated good knowledge towards diabetic retinopathy and its screening. Moreso, the uptake of diabetic retinopathy screening among respondents was relatively low few (37.9%) reported to had undergone screening, while majority (62.1%) had never undergone diabetic retinopathy. The result further presents an insignificant relationship between the level of knowledge of diabetic retinopathy and the level uptake of diabetic retinopathy screening among patients living with diabetes at the Federal Medical Center, Abeokuta ( $\chi^2(2) = 0.79, p = .674 > 0.05$ ).

The study concluded that respondents generally demonstrated good knowledge towards diabetic retinopathy, still diabetic retinopathy screening uptake remained suboptimal. Therefore, it is recommended that Health education should focus on improving perceived susceptibility, perceived severity, and the benefits of early detection rather than awareness alone.

**Key words:** Awareness, Diabetic Retinopathy, Impairment and blindness, knowledge, Screening, Uptake,

## 1. INTRODUCTION

Diabetic retinopathy (DR) is a major microvascular complication of diabetes mellitus and one of the leading causes of preventable visual impairment and blindness among adults of working age worldwide. Globally, diabetic

retinopathy is a leading cause of preventable blindness among working-age adults. The World Health Organization (WHO, 2023) defines diabetic retinopathy as a diabetes-related eye disease resulting from long-term exposure to elevated blood glucose levels, which affects the retinal blood vessels and can

lead to progressive vision loss if not detected and managed early.

International Diabetes Federation (IDF, 2023) highlights diabetes as a global epidemic, emphasizing the need for effective management strategies to prevent its devastating complications. It is estimated that one in three persons with diabetes develops some form of retinopathy, while one in ten experiences vision-threatening stages (Kropp et al., 2023). The disease remains one of the most common non-communicable diseases globally and poses a major public health challenge due to its increasing prevalence, associated complications, and economic burden. Of all these complications, Diabetic Retinopathy (DR) stands out as one of the most frequent and vision-threatening microvascular outcomes of poorly controlled diabetes. Diabetic retinopathy progresses gradually, and patients may remain asymptomatic until advanced stages. Thus, early detection through regular retinal screening is essential for preventing vision loss (WHO, 2023). In sub-Saharan Africa, the prevalence of diabetic retinopathy ranges between 30% and 35% among people living with diabetes, yet screening coverage remains alarmingly low (Ismail et al., 2025). Contributing factors include inadequate knowledge, limited availability of screening services, high cost of eye care, and poor referral systems. These barriers are more pronounced in resource-constrained settings where public awareness and health infrastructure are underdeveloped (Maduakolam et al., 2026).

In Nigeria, the burden of diabetes and its ocular complications continues to rise. The National Blindness and Visual Impairment Survey (NPC & IAPB, 2020) estimated that diabetic eye diseases account for a significant proportion of avoidable blindness cases. Studies indicate that while awareness of diabetes as a disease is relatively high, knowledge of diabetic retinopathy remains poor among patients. For example, Ukwenya and Oladipo (2022) found that although 98.9% of diabetic patients knew diabetes could affect the eyes, only 10.7% had heard of diabetic retinopathy, and almost half (47.2%) had never undergone an eye

examination. This highlights a wide gap between general awareness and preventive action. In Ogun State, particularly at the Federal Medical Centre (FMC), Abeokuta, anecdotal reports and clinical observations suggest a low uptake of routine eye screening among diabetic patients. Despite advances in diagnostic technology and management, disparities in screening uptake persist, particularly in low- and middle-income countries where awareness, knowledge and healthcare accessibility are limited (Teo et al., 2021). Although several studies have examined the prevalence and clinical characteristics of diabetic retinopathy in Nigeria, but limited evidence exists on the influence of knowledge on diabetic retinopathy screening uptake in tertiary healthcare settings. This gap underscores the urgent need to explore the level of knowledge of diabetes patient on diabetic Retinopathy and its underlying determinants of screening uptake among people living with diabetes in a tertiary health institution of South west Nigeria.

### **Objectives of the study**

The study determined the level of knowledge of diabetes patient on diabetic Retinopathy and its underlying determinants of screening uptake among people living with diabetes in FMC Abeokuta Ogun State ,a tertiary health institution in South west Nigeria.

The specific objectives of this study are;

- i. to assess the level of knowledge of people living with diabetes regarding diabetic retinopathy and its screening at Federal Medical Center Abeokuta (FMC).
- ii. to determine Diabetic Retinopathy screening uptake level at Federal Medical Center Abeokuta (FMC).
- iii. to indentify the relationship between the level of knowledge of diabetic retinopathy and the uptake of diabetic retinopathy screening among patients

living with diabetes at the Federal Medical Center, Abeokuta

This study answer the following research questions:

- i. What is the level of knowledge of people living with diabetic regarding diabetic retinopathy and its screening among PLWD attending Federal Medical Center Abeokuta?
- ii. What is the Diabetic Retinopathy screening uptake level at Federal Medical Center Abeokuta (FMC)?

## Test of hypothesis

### Hypothesis one

$H_{01}$ : There is no significant relationship between the level of knowledge of diabetic retinopathy and the uptake of diabetic retinopathy screening among patients living with diabetes at the Federal Medical Center, Abeokuta.

The study specifically focused on adult patients diagnosed with type 1 or type 2 diabetes who are receiving either inpatient or outpatient care at the facility .The study benefits people living with diabetes by enhancing awareness of the importance of regular eye checks, encouraging proactive health behaviour, and empowering them to take ownership of their eye health. Increased screening uptake will ultimately reduce the incidence of avoidable visual impairment, promote better quality of life, and support sustained productivity.

## 2. REVIEW OF LITERATURE

### Conceptual Review

**Diabetes mellitus (DM)** is a chronic metabolic disorder characterized by elevated blood glucose levels resulting from defects in insulin secretion, insulin action, or both (WHO, 2023). The condition is associated with long-term damage, dysfunction, and failure of various organs, particularly the eyes, kidneys, nerves, heart, and blood vessels. According to

the American Diabetes Association (ADA, 2023), diabetes is classified into four main categories: Type 1 diabetes, Type 2 diabetes, gestational diabetes mellitus (GDM), and specific types due to other causes such as monogenic diabetes syndromes or secondary diabetes from diseases of the pancreas. Despite this high prevalence, awareness, diagnosis, and management rates remain low, with more than half of affected individuals undiagnosed (Adebayo et al., 2022).

**Diabetic retinopathy (DR)** is one of the most common and serious microvascular complications of diabetes mellitus. It occurs due to chronic hyperglycemia-induced damage to the retinal microvasculature, leading to increased vascular permeability, capillary occlusion, and retinal ischemia (Cheung et al., 2023).

**Knowledge of Diabetic Retinopathy:**The awareness and understanding people living with diabetes have regarding the causes, symptoms, consequences, and preventive strategies for diabetic retinopathy. In Nigeria, Onakpoya et al. (2020) found that only about 30% of patients attending tertiary healthcare facilities had ever undergone a retinal examination, despite guidelines recommending annual screening for all individuals living with diabetes. A similar study by Nwosu et al. (2023) corroborated these findings, showing that uptake was influenced by knowledge about diabetic retinopathy, perceived risk of vision loss, and accessibility of eye care services.

**Diabetic retinopathy screening uptake** refers to the extent to which people living with diabetes adhere to recommended eye examinations for the early detection of retinal complications. It is a behavioural outcome that reflects the utilization of preventive eye care services and is influenced by multiple factors, including individual awareness, accessibility of services, healthcare system support, and socio-economic conditions (Yau et al., 2022).

### Theoretical Framework

This study adopted Knowledge, Attitude and Practice (KAP) model originated from the fields of family planning and

population studies in the 1950s and later gained wide recognition as a useful survey framework in social and health research (Vandamme, 2009). The model is commonly applied through structured and standardized questionnaires designed to assess what a target population knows about a subject (knowledge), how they feel or perceive it (attitude), and how they act in relation to it (practice) (Andrade et al., 2020). The KAP model enables researchers to quantify and analyse gaps in knowledge, identify attitudinal barriers, and understand existing behavioural patterns related to a specific issue. The theoretical foundation of the KAP model is often attributed to the work of American scholar Everett M. Rogers in the late 1950s and early 1960s. The model conceptualizes behaviour change as a progressive process involving three interrelated stages: acquisition of knowledge, development of attitudes, and adoption of practices.

**Relevance/Application of the KAP model to the study**

Applying the KAP model to this study allows for a systematic assessment of how knowledge levels and attitudinal factors influence diabetic retinopathy screening uptake among people living with diabetes attending the Federal Medical Center, Abeokuta. The model supports the identification of gaps between awareness and behaviour, highlighting areas where health education and counselling interventions may be required. By examining knowledge components within this framework, the study provides empirical evidence to inform targeted strategies aimed at improving screening behaviour and preventing avoidable vision loss. Knowledge factors represent the informational foundation influencing screening behaviour. These include knowledge of diabetic retinopathy, awareness of its risk factors and complications, understanding of available screening procedures, and knowledge of recommended screening frequency. Adequate knowledge is expected to positively influence individuals’ perception of risk and the perceived benefits of screening, thereby increasing the likelihood of screening uptake among diabetes patient in FMC Abeokuta, a tertiary health institution in South west Nigeria.

**3. METHODOLOGY**

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The study adopted a descriptive cross-sectional design. This approach allowed for the assessment of relationships between knowledge and the uptake of diabetic retinopathy screening among people living with diabetes. The study was conducted at the Federal Medical Center (FMC) Abeokuta, a tertiary health care institution located in Abeokuta South Local Government Area, Ogun State, South west Nigeria. The target population for this study comprised of people living with diabetes mellitus (PLWD) who are receiving care at the Federal Medical Center (FMC), Abeokuta, Ogun State. The population includes both male and female adult patients who attend the Diabetes Clinic for regular follow-up, medical consultations, and management of diabetes-related complications. The sample size for this study consisted of 232 participants determined by Cochran’s formular(1977). With regards to sampling technique, A systematic random sampling technique was employed to select participants from the list of diabetic patients attending the Diabetes Clinic at the Federal Medical Centre Abeokuta, using clinic records/registers as the sampling frame. A structured questionnaire was used as the primary instrument for this study

**Table 1:Summary of Scoring Method**

Section	No. of Items	Score Range	Categories
Knowledge	14	0–14	Poor / Moderate / Good
Screening Uptake	1	0–1	No / Yes

The content and face validity of the instrument was established by presenting the draft questionnaire to a panel of experts, including specialists in Nursing Science, Ophthalmology, and Public Health. To ensure reliability, a pilot study was conducted among 24 participants who met the inclusion Their feedback was used to refine ambiguous items, but were attending a different healthcare facility (Babcock University Teaching Hospital Illisan). The overall reliability coefficients obtained was 0.774 with 15 items. This result was found greater than 0.75 which was considered acceptable for

internal consistency. The data collection process was carried out in three systematic phases to ensure accuracy, ethical compliance, and quality assurance. Data collected from the field was collated, coded, and analyzed using the Statistical Package for Social Sciences (SPSS) version 27. Prior to analysis, all completed questionnaires were thoroughly reviewed to ensure completeness, accuracy, and internal consistency. Descriptive statistics were analyzed using frequency, percentages, mean and standard deviation while

inferential statistics were analyzed using chi-square and Pearson correlation to establish the relationships among the variables.

Ethical approval for this study was obtained from the Babcock University Health Research Ethics Committee (BUHREC) with approval number BUHREC/015/26. Approval was also sought from the Health Research Ethics Committee (HREC) of the Federal Medical Centre (FMC), Abeokuta, Ogun State.

#### 4. RESULT AND DISCUSSION OF FINDING

##### RESULT

**Table 2: Socio-demographic characteristics of respondents. n=232**

Variable	Category	Frequency(n)	Percentage(%)
<b>Age(years)</b> Mean age=55yrs ±0.42	<30years	10	4.3
	30–39years	21	9.1
	40–49years	45	19.4
	50–59years	85	36.6
	≥60years	71	30.6
<b>Gender</b>	Female	173	74.6
	Male	59	25.4
<b>Marital Status</b>	Married	175	75.4
	Single	24	10.3
	Widowed	33	14.2
<b>Educational Level</b>	No formal education	11	4.7
	Primary education	68	29.3
	Secondary education	13	5.6
	Tertiary education	140	60.3
<b>Occupation</b>	Civil servants	66	28.4
	Private sector employee	11	4.7
	Retired	53	22.8
	Self-employed	94	40.5
	Unemployed	8	3.4
<b>Duration of Diabetes</b>	<1year	55	23.7
	1–5years	102	44.0
	6–10years	27	11.6
	>10years	48	20.7
<b>Types of Diabetes Diagnosed</b>	Type 1	68	29.3
	Type 2	109	46.1
	Unsure	57	24.6

Source Field survey(2026)

Table 2 presents the socio demographic characteristics of respondents. The majority of respondents were aged 50 -59years (36.6%), followed by those aged 60 years and above (30.6%). Most respondents were female (74.6%), while 25.4% were male. A greater proportion were married (75.4%), while 14.2% were widowed and (10.3%) were single. In terms of educational status, most

respondents had tertiary education (60.3%), followed by primary education (29.3%). Regarding occupation, the majority were self employed (40.5%), followed by civil servants (28.4%) and retired individuals (22.8%). Most respondents had lived with diabetes for 1–5 years (44.0%), while (23.7%) had lived with diabetes for less than one year.

**Research question one:**

What is the level of knowledge of people living with diabetic regarding diabetic retinopathy and its screening?

**Table: 2a: Knowledge of Diabetic Retinopathy among respondents**

Variable	Options	Frequency	Percentage
Have you heard about diabetic retinopathy before	No	77	33.2
	Yes*	155	66.8
What part of the body does diabetic retinopathy	Eyes*	201	86.6
	Heart	8	3.4
	Kidney	8	3.4
	Nerves	15	6.5
Which of the following best describes diabetic retinopathy	A condition that only affects elderly people	12	5.2
	A temporary eye irritation that goes away on its o	17	7.3
	An infection of the eye caused by bacteria	79	34.1
	*Damage to the blood vessels in the retina due to diabetes	124	53.4
Diabetic retinopathy is an eye disease caused	No	14	6.0
	*Yes	218	94.0
What symptoms might suggest the presence of diabetic retinopathy	*Blurred vision	90	38.8
	*Sudden loss of vision	71	30.6
	*Seeing spots or floaters	37	15.9
	Eye pain	34	15.0
Diabetic retinopathy can lead to permanent blindness if not detected early	No	13	5.6
	*Yes	219	94.4
Early screening can detect diabetic retinopathy even when there are no symptoms	No	20	8.6
	*Yes	212	91.4
At what stage of diabetes do you think diabetes do you think diabetic retinopathy can occur	Only after 20years of diabetes	21	9.1
	*At any stage, even early in the disease	166	71.6
	Only in people with poorly controlled diabetes	38	16.4
	Only in people with type 1 diabetes	7	3.0
Which of the following do you think can help prevented prevent or slow down diabetic retinopathy	*Good blood sugar control	85	36.6
	Regular eyes screening	68	29.3
	Healthy diet and exercise	69	29.7
	Avoid smoking	10	4.3
If untreated, what can diabetic retinopathy lead to	*Complete Blindness	190	81.9
	Eye redness without serious	3	1.3

	consequences		
	Temporary blurry vision that always improves	39	16.8
Early detection of diabetic retinopathy helps to	Not sure	8	3.4
	Cure retinopathy	52	22.4
	*Prevent or delay Vision loss	144	62.1
Have you ever received information about diabetic	Reverse Diabetes Completely	28	12.1
	No	97	41.8
	*Yes	135	58.2
If yes, Source of information	*Doctor	103	44.3
	*Nurse	50	21.5
	*Media (TV/Radio/social media)	19	8.1
	Never	60	25.8
How often should people living with diabetes undergo eyes screening for diabetic retinopathy	*Every year	173	74.6
	Once in a lifetime	13	5.6
	Only when vision problems occur	46	19.8
On a scale of 1–5, how well do you feel you understand the importance of early detection of diabetic retinopathy	1 (Not at all)	34	14.7
	2	55	23.7
	3	64	27.6
	4	29	12.5
	*5(very well)	50	21.6
Eye screening is necessary even when	Not sure	8	3.4
	*There are no vision problems	159	68.5
	There is eye pain	47	20.3
	Vision is completely lost	18	7.8

Note: the correct answers are asterisks\*\*

The level of knowledge of diabetic retinopathy among respondents was generally high. Majority of respondents (63.8%) demonstrated good knowledge, while 34.5% had moderate knowledge. Only 1.7% of respondents exhibited poor knowledge of diabetic retinopathy and its screening. This summary was confirmed in table 2b where correct answers or the asterisk options had the highest percentage. In addition, majority of the respondents (66.8%) have heard about diabetic retinopathy before and (86.6%) of the respondents understood that diabetic retinopathy belong to eyes as part of the body and more than half of the respondents acknowledge diabetic retinopathy as damage to the blood vessels in the retina due to diabetes. Many believe (94%) that diabetic retinopathy is an eye disease and most of the respondents knew that blurred vision, sudden loss of vision, and seeing spots or floaters are symptoms which suggest the presence of diabetic retinopathy. With regards to source information, most of the respondents received information about diabetic through doctors, nurses, and media. More so, majority of the respondents concurred that eye screening is necessary even when there are no vision problems. Therefore, this confirmed that majority of the respondents had good knowledge towards diabetic retinopathy

**Table: 2b: Summary of Knowledge of Diabetic Retinopathy among respondents (N=232)**

<b>Knowledge Level</b>	<b>Frequency(n)</b>	<b>Percentage (%)</b>
<b>Poor</b>	4	1.7
<b>Moderate</b>	80	34.5
<b>Good</b>	148	63.8
<b>Total</b>	232	100.0

The level of knowledge of respondents regarding diabetic retinopathy and its screening was assessed using composites scoring. The finding showed that the majority of respondent demonstrated a good level of knowledge.

**Research question two**

What Diabetic is the Retinopathy screening uptake level at Federal Medical Center Abeokuta (FMC)?

The uptake of diabetic retinopathy screening among respondents is presented below.

**Table 3: Summary of Diabetic Retinopathy Screening Uptake Level Among Respondents (N = 232)**

Screening Uptake	Frequency (n)	Percentage (%)
Screened	88	37.9
Not Screened	144	62.1
<b>Total</b>	<b>232</b>	<b>100.0</b>

The uptake of diabetic retinopathy screening among respondents was relatively low. Only 37.9% reported having undergone screening, while the majority (62.1%) had never undergone diabetic retinopathy screening.

**Test of hypothesis**

**H<sub>0</sub>:** There is no significant relationship between the level of knowledge of diabetic retinopathy and the uptake of diabetic retinopathy screening among patients living with diabetes at the Federal Medical Center, Abeokuta

**Table 4: Chi-square test showing an Association between Level of Knowledge and Level of eye Screening Uptake**

Knowledge Level	Level of Uptake of diabetic retinopathy screening			$\chi^2$ ( df)	p-value	Decision
	Screened n (%)	Not Screened n (%)	Total			
<b>Poor</b>	1 (0.43)	3 (1.2)	4 (1.63)	0.790 (2)	0.674>0.05	Insignifant
<b>Moderate</b>	33 (14)	47 (20.2)	80(34.2)			
<b>Good</b>	54 (23)	94 (40.5)	148(63.5)			
<b>Total</b>	87 (37.4)	144(61.7)	232(100)			

Table 4 presents an insignificant relationship between the level of knowledge of diabetic retinopathy and the level uptake of diabetic retinopathy screening among patients living with diabetes at the Federal Medical Center, Abeokuta .chi-square test of independence showed that there was no statistically significant relationship between knowledge level and uptake of diabetic retinopathy screening,  $\chi^2(2) = 0.79$ ,  $p = .674 > 0.05$ . Therefore, the null hypothesis was not rejected by this finding

**DISCUSSION OF FINDINGS**

**Knowledge of Diabetic Retinopathy and Screening**

This study found that most respondents demonstrated good knowledge of diabetic retinopathy and its screening, while few had moderate knowledge and very few had poor knowledge. However, no statistically significant relationship was observed between knowledge level and screening uptake indicating that knowledge alone did not predict utilization of screening

services. This finding aligns with more recent studies. For instance, Alzahrani et al., 2021 and Alghamdi et al., 2022 in Saudi Arabia and Shrestha et al., 2024 in Nepal found that despite adequate awareness, many patients did not undergo screening. Alsatravi et al., 2025 also highlighted gaps between knowledge and preventive behaviour in LMICs. Also, In Nigeria, Recent evidence supports this finding. A clinic-based study in Lagos reported that awareness of diabetic

retinopathy remained suboptimal despite ongoing health education, with only 48.3% having heard of the condition and just 30.4% recognizing its link with diabetes (Udemba et al., 2026). Similarly, hospital-based research in Nigeria has highlighted persistent gaps in knowledge of ocular complications of diabetes and low screening participation despite increasing awareness (Babalola et al., 2025). These findings align with the present study, where knowledge did not significantly predict uptake.

A possible explanation is that awareness alone does not guarantee action unless accompanied by motivation and perceived risk. This supports the Knowledge–Attitude–Practice (KAP) model, which suggests that knowledge alone does not guarantee behavioural change unless accompanied by favourable attitudes and motivation. It also reflects the Andersen Behavioural Model (ABM), where utilization depends on broader determinants beyond awareness.

### **Uptake of Diabetic Retinopathy Screening**

The study revealed that only very few of respondents had undergone screening, while most had not. Among screened respondents, many of the respondents reported screening within the past year. Among non-screened respondents, the most common barrier was lack of referral, followed by lack of awareness and absence of symptoms. These findings align with recent studies by Mogre et al., 2020, and Alzahrani et al., 2021, which reported low screening uptake and identified poor referral systems as major barriers in LMICs. The low screening uptake observed in this study (37.9%) is consistent with Nigerian evidence. A recent Nigerian study reported that weak referral systems remain a major barrier to diabetic retinopathy screening (Ozioko et al., 2024). Similarly, research in Abuja found that multiple patient and system-level barriers contributed to poor screening attendance (Chukwukaodinaka et al., 2025). Nigerian clinical findings also show that many diabetic patients have never undergone ocular screening despite the high burden of diabetic retinopathy (Babalola et al., 2025). These findings align with the present study, where lack of referral (35.4%) was the most

common barrier. This further supports the ABM, which emphasizes system-level influences on healthcare utilization.

## **5. CONCLUSION AND RECOMMENDATION**

This study concludes that although respondents generally demonstrated good knowledge of diabetic retinopathy, but screening uptake remained suboptimal. The findings showed that screening utilization is largely influenced by Knowledge–Attitude–Practice model, which suggests that knowledge must translate into attitudes before influencing behaviour. Based on the findings of this study, the following recommendations are made:

- i. Health education should focus on improving perceived susceptibility, perceived severity, and the benefits of early detection rather than awareness alone.
- ii. Community-based awareness initiatives should be strengthened to encourage early screening and prevention of visual impairment

### **Contribution to Knowledge**

This study contributes to knowledge by providing empirical evidence on the behavioural and perceptual determinants of diabetic retinopathy screening uptake among people living with diabetes in a Nigerian tertiary healthcare setting. It also support Knowledge–Attitude–Practice model in explaining preventive healthcare behaviour in resource-limited settings

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