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Original Article

Unveiling Diabetic Retinopathy Awareness In Future Medical Professionals: A Study Of The 2022 Class Of Universitas Kristen Krida Wacana, Jakarta

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ABSTRACT

Background: Diabetes mellitus is a metabolic syndrome with an increasing prevalence and a high mortality rate. One of the microvascular complications that can occur in diabetes mellitus is retinopathy. Diabetic retinopathy is a retinal disorder in patients with diabetes mellitus. This study aimed to determine the description of knowledge about diabetic retinopathy in students of FKIK UKRIDA class of 2022.

Methods: This is a descriptive study with a cross-sectional with a total of 99 samples. Sampling by simple random sampling with a questionnaire. The study was conducted at FKIK UKRIDA in October 2022.

Results: The study results included 99 respondents. In the univariate analysis, it was observed that 98% of respondents were in their late adolescence, with 59.6% being female and 72.7% having sufficient knowledge. Additionally, the bivariate cross-test results indicated that 70.7% of late teens had sufficient knowledge, while 45.5% of women had sufficient knowledge.

Conclusion: The knowledge level of respondents was in the sufficient category, in late adolescence, there was sufficient knowledge among. The frequency distribution based on gender revealed that women with a sufficient knowledge level amounted.

INTRODUCTION

The eyes are the senses of sight responsible for perceiving an object's shape, size, color, and position. The function of the eyes is crucial for human life, but insufficient attention to eye health can potentially lead to disorders, one of which is visual impairment. Visual acuity or visus is the eyes' ability or refractive power to see an object. Normal visual acuity is the ability or the refractive power of the eyes to distinguish two separate

points by forming a one-minute angle at a distance of six meters.[1]

Diabetes mellitus (DM) is a metabolic syndrome with increasing prevalence and high mortality rates. DM is a metabolic disease characterized by hyperglycemia or a chronic and variable increase in blood sugar levels. It may occur due to abnormalities in insulin secretion, function, or both. Moreover, the etiology of DM is complex, including unhealthy lifestyle, environment, genetics, and more. According to the latest data from WHO, Indonesia ranks fourth in the number of people with DM globally. Indonesia comes fourth after India, China, and America. People with DM worldwide, almost 150 million and 8.4 million in Indonesia. It will double by 2025 and is most prevalent in developing countries, especially in Southeast Asia. Type 2 DM is often symptomless in its early stages and remains undiagnosed for many years until complications occur. One of the microvascular complications that can arise in DM is retinopathy.[2]

In 2021, the International Diabetes Federation (IDF) recorded 537 million adults (aged 20-79 years), or 1 in 10 people living with diabetes worldwide. Diabetes is also the cause of 6.7 million deaths equivalent to 1 every 5 seconds. China ranked as the country with the largest number of adults with diabetes globally, with 140.87 million inhabitants living with the condition in 2021. Furthermore, India had 74.19 million of diabetes sufferers, Pakistan 32.96 million, and the United States 32.22 million. Indonesia came in fifth place with 19.47 million diabetes cases. With a population of 179.72 million, it implies that the prevalence of diabetes in Indonesia is 10.6%. IDF noted that 4 out of 5 people with diabetes (81%) reside in low- and middle-income countries. Thus, IDF estimates that there are still 44% of adults with diabetes who remain undiagnosed.[3]

Diabetic retinopathy (DR) is a retinal disorder in patients with DM. DR can be classified based on the clinical condition. Intraretinal vascularization changes characterize non-proliferative DR, while proliferative DR is characterized by neovascularization due to ischemia. The incidence of DR in the entire diabetic population increases with the duration of the disease and the age of the patient. DR is infrequent in children less than ten years of age, yet the risk increases after puberty. The Wisconsin Epidemiology Study of Diabetic Retinopathy (WESDR) reported that 99% of type 1 DM patients and 60% of type 2 DM patients will develop DR within 20 years. Proliferative DR occurs in 50% of type 1 DM patients within 15 years.[4] Therefore, it is evident that the condition of DM can affect retinal damage in patients, known as DR, ultimately leading to blindness. This study aimed to determine the knowledge levels regarding DR among the Faculty of Medicine and Health Sciences students at Universitas Kristen Krida Wacana (UKRIDA), class of 2022.

METHOD

The research design for this study is descriptive. The subjects include students from the Faculty of Medicine and Health Sciences at UKRIDA, class of 2022, in West Jakarta, who have sufficient knowledge and fall within the age range of 17-30 years. The research was conducted in October. The participants were required to fill out a questionnaire on Google Forms. There were 99 participants in this study who were familiar. The respondents participated voluntarily, and their anonymity was assured. The collected data was also treated with confidentiality.

The data collection was carried out using a survey questionnaire. The inclusion criteria in this study were the students of the Faculty of Medicine and Health Sciences at UKRIDA, class of 2022, who agreed and were willing to fill out the research questionnaire. The exclusion criteria included students from the same class who refused to participate in this study and those who did not complete the questionnaire. This research has been approved and registered with the Ethics Commission with Number 1362/SLKE-IM/UKKW/FKIK/KE/X/2022. The distributed

questionnaire comprises 20 questions, with each question offering multiple choices ranging from SA (Strongly Agree), A (Agree), N (Neutral), D (Disagree), to SD (Strongly Disagree) in response to the provided statements. On the provided questionnaire, the questions are outlined as follows on **Table 1.**

Table 1. Questionnaire Overview

No	Questionnaire Descriptions	Questionnaire Points
1	Relationship between Diabetes Mellitus (DM) and Diabetic Retinopathy (DR)	5
2	Awareness of consulting a specialist doctor	2
3	Exposure to information about DR	1
4	Management related to DR	2
5	Impact of DR on blindness	2
6	Early detection of DR	5
7	Risk factors for DR	3

RESULTS AND DISCUSSION

In this study, the reliability of the knowledge questions was assessed using Cronbach's alpha coefficient, resulting in a value of 0.913. This finding indicates a high level of reliability for the questions related to knowledge. Meanwhile, in the validity analysis of the knowledge questionnaire, the process involved comparing the (r-value) of each item with the table value of r, with 30 respondents as the validation sample. The assigned value for the r-table is 0.361. The results demonstrate that all values of r for the 20 questions are higher than 0.361, implying that all knowledge-related questions can be considered valid in **Table 2**.

Table 2. Results of Validation Test

Question Number	Explanation	R Result
1	Valid	0,647
2	Valid	0,523
3	Valid	0,432
4	Valid	0,695
5	Valid	0,713
6	Valid	0,533
7	Valid	0,571
8	Valid	0,746
9	Valid	0,831
10	Valid	0,451
11	Valid	0,619
12	Valid	0,669

According to the distribution results, it is apparent that the age group with the highest frequency is late adolescence, consisting of 99 respondents, making up 98% of the total. In contrast, the number of respondents in early adulthood is quite low, comprising only 2%. Regarding gender, the data demonstrates that there are 40 male respondents, representing 40.4% of the total, and 59 female respondents, contributing to 59.6%.

Concerning the knowledge variable, the research findings indicate that the majority of respondents have a sufficient level of knowledge, totaling 72 respondents, approximately 72.7%. Additionally, the category of insufficient knowledge includes 17 respondents, accounting for approximately 17.2% of the total. Finally, 10 respondents, constituting 10.1%, exhibit good knowledge.

The results do not align with the findings of Degiana's thesis. Based on Degiana's research, 98 respondents (85.2%) demonstrated a good level of knowledge. However, in this study, the majority of respondents exhibit a lower level of knowledge. This discrepancy in findings may be attributed to differences in the studied samples. In this research, the respondents are students, whereas Degiana's study focused on general practitioners.

However, Nursyami revealed in her study that 150 individuals (84.8%) have sufficient knowledge regarding diabetic retinopathy screening. Additionally, 16 individuals (9%) possess a good level of knowledge, and finally, 11 individuals (6.2%) have insufficient knowledge. This finding is in line with the research I conducted, albeit with different respondents—individuals diagnosed with diabetes mellitus. They already possess a sufficient level of knowledge about potential complications and understand the significance of screening.[5] can be seen in **Table 3.**

Table 3. Results of Univariate Variable Analysis

Variable	Frequency	Percentage
Age		
Late Adolescence	97	98.0
Early Adulthood	2	2.0
Gender		
Male	40	40.4
Female	59	59.6
Knowledge		
Good	10	10.1
sufficient	72	72.7
Insufficient	17	17.2

From the cross-sectional test results, it is evident that late adolescence with sufficient knowledge is the predominant group in this distribution, encompassing a total of 70 respondents (70.7%). This is followed by late adolescence with insufficient knowledge, comprising 17 respondents (17.2%). Moreover, late adolescence with good knowledge comprises 10 respondents (7.7%). On the contrary, there are only 2 respondents (2%) in early adulthood with sufficient knowledge, and there are no respondents in early adulthood with either good or insufficient knowledge.

In Aulia's study, the age group of 50-54 years had the highest number of cases of diabetic retinopathy. This occurrence may be due to the average age of diabetes mellitus (DM) diagnosis being around 40 years, indicating that a significant number of individuals in this age group have been living with DM for 5-10 years. Moreover, being over 40 years old increases the chances of developing DM, and the longer an individual has had DM, the greater the risk of complications like diabetic retinopathy. Consequently, the prevalence of diabetic retinopathy in the diabetic population tends to rise as the disease progresses and patients get older.[6]

Unfortunately, cases of retinopathy can lead to vision impairment and blindness during an individual's productive age.[7]The longer the duration of diabetes, the more pronounced the insulin resistance in DM patients, resulting in the emergence of

microvascular complications such as diabetic retinopathy. In a separate study, it was found that within a sample of 75 patients examined at Dr. Mohammad Hoesin Palembang General Hospital, the incidence of diabetic retinopathy increased among individuals aged 45-64.[8]

According to the research conducted by Gonardy and classified by age group, the highest incidence of Type 2 Diabetes Mellitus (T2DM) patients occurred in the early elderly age group (46-55 years), totaling 69 individuals (39%). Subsequently, the late elderly age group (56-65 years) and the elderly group (>65 years) followed. Based on the data, it is apparent that the prevalence of diabetes increases once individuals reach the age of 40. This is mainly due to physiological changes in the body, particularly in the pancreas, which plays a crucial role in insulin production. Therefore, the likelihood of developing diabetes mellitus is higher in individuals who have reached this age group.

On the other hand, the study conducted by Sumarto in 2017 found no significant correlation between age and the occurrence of diabetic retinopathy.[9] Diabetic retinopathy is a prevalent cause of blindness among adults between the ages of 20 and 74.

Furthermore, research conducted by Dewi PN indicated that the majority of diabetic retinopathy patients at Dr. M Djamil Padang General Hospital fall within the age range of 45 to 65 years, with a total of 129 individuals (79.6%).[10] This issue demands a more focused approach to enhance the students' understanding at FKIK UKRIDA. By doing so, they will be better equipped to fulfill their crucial role as healthcare providers in educating and guiding patients toward diabetic retinopathy screening.

Finally, in a study conducted in Jakarta, the data revealed that only 48% of patients received education and advice to have their eyes checked by an eye doctor.[11]

Table 4. Results of Bivariate Variable Analysis

Variable	Knowledge		
	Good	**Sufficient**	**Insufficient**
Age			
Late adolescence	10 (10.1%)	70 (70.7%)	17 (17.2%)
Early adulthood	0 (0.0%)	2 (2.0%)	0 (0.0%)
Gender			
Male	3 (3.0%)	27 (27.3%)	10 (10.1%)
Female	7 (7.1%)	45 (45.5%)	7 (7.1%)

The cross-tabulation analysis between gender and knowledge level suggests that females with a sufficient level of knowledge constitute the largest proportion (45 individuals, or 45.5%). Meanwhile, the frequency in males with a sufficient level of knowledge is 27 individuals (27.3%). Moreover, some other studies show different gender distributions. For instance, research conducted by Hussain et al suggests that being male is a risk factor for diabetic retinopathy, resulting in a male-dominated gender distribution. Additionally, A study conducted by Raman showed that male tends to have higher susceptibility to diabetic retinopathy due to a higher prevalence of smoking and alcohol consumption habits.

Gonardy revealed that, concerning patient knowledge about the consequences of diabetes mellitus (DM), particularly diabetic retinopathy, females exhibit the highest level of good knowledge, with 58 individuals (32.8%), compared to males, where the percentage of respondents is 51 individuals (28.8%). Additionally, among those with adequate knowledge, women have the highest number, 40 (22.6%), while

men have the lowest number, 23 (13.0%). Furthermore, as for those with insufficient knowledge, the male group has the largest number, with 4 individuals (2.3%), while the female group has the lowest number, with 1 individual (0.6%).[12]

Students at FKIK UKRIDA should take note of this, as it is important to cultivate good habits and prioritize knowledge about diabetic retinopathy to minimize the risks of developing the disease in the future. Furthermore, they have the potential to provide education to patients in the future.

CONCLUSION

The frequency data on the knowledge of diabetic retinopathy among students of the 2022 class at FKIK UKRIDA in this study show that out of 99 respondents, the majority are in late adolescence (17-25 years old) with 97 individuals (98%), while the remaining 2 individuals (2.0%) are in early adulthood (≥26 years old). Additionally, there are 59 females (59.6%) and 40 males (40.4%). Moreover, the majority of respondents have a sufficient level of knowledge, with 72 individuals (72.7%). This is followed by 17 individuals (17.2%) in the insufficient category and 10 individuals (10.1%) in the good category.

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