Knowledge, attitude and practice regarding diabetic retinopathy among outpatient elderly persons attending eye specialist hospitals: a cross-sectional survey

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Abstract:
Objective: To determine the knowledge, attitude and practice (KAP) regarding diabetic retinopathy (DR) among outpatient elderly persons attending eye specialist hospitals in Nigeria and further report the significant correlation between knowledge of DR and socio-demographics.
Methods: The cross-sectional survey design was adopted. The study was conducted in 36 eye specialist hospitals in Nigeria from February to June, 2021. A total of 360 persons, aged 50 years and above, were purposively sampled and surveyed. A self-administered questionnaire was adopted for data collection. All the statistical analysis was completed using frequency, percentage, and odds ratio. Statistical results were deemed significant at $P \leq 0.05$.
Results: There were 326(91%) valid copies of the questionnaire out of the 360 copies that were returned. A good number of the respondents were 65 years and above 184(56%), had high qualification 199(61%), lived above 50,000 (in NGN) monthly 211(65%) and urban residents 195(60%). Overall, the respondents had adequate knowledge 201(87%), positive attitude 214(76%) and desirable practice 224(82%) of DR respectively. There was strong correlation between age (OR≥1) and knowledge of DR while weak correlation was observed among residence, gender, monthly income and educational qualification (OR≤1) and knowledge of DR. Furthermore, there was a significant difference on residence and monthly income (in NGN) (p<0.05) while none existed on age, gender and education qualification (p>0.05) respectively.
Conclusion: The respondents had adequate knowledge, positive attitude and desirable practice of DR. These outcomes would form the bases for designing a sustainable population-based-education programme on DR for outpatient elderly persons in particular.

Keywords: Diabetic retinopathy, outpatient elderly persons, KAP, demographics, eye specialist hospital.

Introduction
Diabetic retinopathy (DR) is a disorder in the micro vascular system of the retina resulting from a prolonged hyperglycemia [1]. Worldwide, approximately 95 million persons of different age cohorts and population are living with DR [2]. However, the disease is confirmed to be mostly common among diabetic patients particularly those in their advanced ages usually fifty years and above [2]. The deleterious effect of DR on human sight is disheartening and requires relentless

interventions. Evidence-based reports indicate that DR accounts for about 39 million ocular cases resulting to approximately 1.8 million persons with blindness globally [3, 4]. Specifically, in developing regions such as Nigeria, the proportion of elderly persons living with DR is reported to be higher than their counterparts in developed countries such as America [5]. The number of DR cases is expected to be tripled in developing countries due to certain notable factors including lack of reliable interventions and awareness campaign on DR, ignorance of the disease, underutilization of medical services, negative disposition and poor compliance to recommended ocular examination and medical check-ups [3, 6]. Expectedly, modified lifestyle approach, positive attitude and improved access to medical checks are effective approaches and thus would prevent blindness from DR and further improve the quality of health of victims [4, 6]. The resultant effects of DR burden are felt on the high cost of medical bills, loss productivity and poor quality of health.

Early detection, treatment and management of DR are crucial particularly in reducing the occurrences of the disease [7-9]. A sound knowledge, positive attitude and desirable practice of DR are paramount and form positive steps in designing population-based-education programme on DR for elderly persons globally. Relevant studies focusing on KAP of DR among different population groups in different parts of the globe are reported. For instance, a hospital-based knowledge and awareness regarding DR amongst diabetic patients was conducted in Kenya [7]. Also, a cross-sectional survey of KAP regarding DR was carried out among the final year medical students in Saudi Arabia [8, 9]. In Iran, a cross-sectional survey of in-patients with type-2 diabetes regarding diabetes KAP was conducted [10]. Also, in China, a study on knowledge and practices on DR among diabetic patients registered in a chronic disease management system was reported [11]. The above studies portray wider interests of researchers regarding DR. In addition, studies indicating strong or positive correlation between DR knowledge and socio-demographics such as gender [6], high education [12], age and residence [13] are variously reported. To the best knowledge of the present researchers, none of the reviewed studies had focused on the KAP regarding DR particularly among the most vulnerable groups such as the elderly in Nigeria. This existing research gap is a reflection of data inadequacy regarding KAP of DR. Therefore, this study aimed to determine the knowledge, attitude and practice (KAP) regarding diabetic retinopathy (DR) among outpatient elderly persons attending eye specialist hospitals in Nigeria and further report the significant correlation between knowledge of diabetic retinopathy and socio-demographics.

Materials and methods
Ethics and consent approvals
The approval for this study was granted by the Ethical Review Committee of the University of Nigeria, Nsukka on the 18th day of January, 2021 [Ethical approval code: UNN/HKHE/021/R.062]. This was in line with the guidelines and principles for conducting studies involving humans and health-related issues as stipulated by the American Psychological Association [14] and the World Medical Association's Declaration of Helsinki [15]. Before the actual data collection, the outpatient elderly persons gave their consent by filling an informed consent form which clearly represents their willingness to participate in the study. The respondents were not paid for participating in the survey and thus, personal influences and sentiments were eliminated.

Design, setting and recruitment of participants

A cross-sectional study was carried out to determine the KAP of DR among outpatient elderly persons attending eye specialist hospitals from February to June, 2021. A total of 360 persons, aged 50 years and above, were purposively sampled from 36 selected eye specialist hospitals in Nigeria. Each hospital constituted a cluster. A total of ten respondents were selected from each of the clusters and this resulted to 360 persons used in the study. All the respondents were assessed for eligibility as follows: a) must be 50 years and above, b) must complete written informed consent form and c) must be willing to participate in the survey. Prior to the survey, the researchers gave detailed explanation of the purpose of the study and its important, the need for voluntary participation, guaranteed confidentiality and restricted use of the data for the current research purpose. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) [16] statement formed the basis for the improved quality of reporting and total compliance. A copy of the research questionnaire was administered to the respondents. The responses were returned on the spot.

Instrument for data collection

Data collection was completed using a self-administered questionnaire. The questionnaire titled "Diabetic Retinopathy Knowledge, Attitude and Practice Questionnaire (DR-KAPQ)" had high reliability index of .84, .81, and .86 for knowledge, attitude and practice scores of DR. The DR-KAPQ scores were deemed high enough and also reliable for use in the present study based on the suggestion regarding internal consistency of research tool in a cross-sectional survey of this kind [17]. The DR-KAPQ was adapted from different questionnaire tools used in similar studies [8, 18, 11, 9]. The DR-KAPQ was made up of four main parts (A to D) and was specifically designed to achieve the purpose of this study. The responses regarding the socio-demographic profile of the respondents were contained in part A. The knowledge of DR including the etiology, risk factors, clinical diagnosis, common signs and symptoms, management and adverse effects were bundled in part B. The part C assessed the attitude and adherence to medical check-ups as well as preventive measures by the respondents. The part D assessed the practice relating to hospital visitations, ocular examination, self-care, lifestyle, and dietary modifications of the respondents. The KAP of DR was established using a 2-point response options "yes", and "no". The 2-point responses were designed to reflect either correct or incorrect for KAP of DR in all items. Thus, 1 point was assigned to each correct response while zero point was assigned to each incorrect response. A 50 per cent criteria point was set and adopted for decisions as suggested by the World Health Organization's Health statistics scores [19]. This implies that, scores ranging from 50 per cent and above denotes adequate knowledge, positive attitude and desirable practice of DR while scores below 50 per cent represented inadequate knowledge, negative attitude and undesirable practice of DR respectively. The researchers assessed the respondents in the hospital arena during visitation to the eye specialist hospitals. The official approval to access the respondents was obtained from the Chief Medical Directors of the sampled facilities.

Statistical analysis

All the statistical data analysis was completed using the IBM SPSS version 22 [20]. The respondents' socio-demographic profile was computed using frequency and percentage. The data generated on DR-KAP were computed and analyzed using frequency, percentage, and odds ratio statistics. Statistical results were deemed significant at $P \leq 0.05$.

Results

Socio-demographic profile of the participants

A total of 360 respondents were surveyed. There was 100% return rate of the distributed questionnaires. Only 34(9%) copies of the questionnaire had incomplete responses and thus, were discarded. There were 326 (91%) valid copies used for statistical data analysis. Out of the 326 respondents, 184(56%) were 65 years and above, 195(60%) were urban residents, 190(58%) were females, 211(65%) had monthly income (in NGN) of 50,000 and above, and 199(61%) had high educational qualification. Also, a total of 142(44%) were 50-64 years, 131(40%) were rural dwellers, 136(42%) were males, 115(35%) had monthly income (in NGN) of below 50,000, and 127(39%) had low educational qualification. (see Table 1 for details).

Table 1: Socio-demographic profile of the respondents (n=326)

Variables	Parameter	Frequency	Percentage
Age	65 years and above	184	56
	50-64 years	142	44
Residence	Urban setting	195	60
	Rural location	131	40
Gender	Male	136	42
	Female	190	58
Monthly income (in Naira)	Below 50,000	115	35
	50,000 and above	211	65
Educational Qualification	Low Qualification (PSLC & WASSC)	127	39
	High Qualification (HND; UD)	199	61

Notes: n= sample size, PSLC=Primary School Leaving Certificate, UD=University Degree, WASSC=West African Senior School Certificate, HND=Higher National Diploma

Knowledge, attitude and practice of diabetic retinopathy

Overall, the respondents had adequate knowledge 201(87%), positive attitude 214(76%) and desirable practice 224(82%) of DR respectively. Also, only few of the respondents 125(13%), 112(24%) and 102(18%) had inadequate knowledge, negative attitude and undesirable practice of DR respectively. (see Table 2 for details).

Table 2: Presenting the status of KAP of DR by the respondents (n=326)

Parameter	Correct f(%)	Remark	Incorrect f(%)	Remark
Knowledge of DR	201(87%)	Adequate knowledge	125(13%)	Inadequate knowledge
Attitude towards DR	214(76%)	Positive attitude	112(24%)	Negative attitude
Practice of DR	224(82%)	Desirable practice	102(18%)	Undesirable Practice

Keys: DR=diabetic retinopathy, f = frequency; KAP=knowledge, attitude and practice, %=percentage; n=sample size; ()=bracket sign

Significant correlation on diabetic retinopathy knowledge and socio-demographics

The significant correlation on DR knowledge and socio-demographics were present in Table 3. The odds ratio (OR=1.489≥1) of age showed positive or strong correlation between knowledge of DR. Also, the odds ratios (OR=0.886≤1), (OR=0.659≤1), (OR=0.717≤1) and (OR=0.673≤1) of residence, gender, monthly income and educational qualification showed negative or weak correlation between knowledge of DR. The respondents aged 65 years and above (66%), rural residents (63%), female respondents (66%), those with 50,000 and above monthly income (in NGN) (64%) and those with high educational qualification (65%) possessed adequate knowledge of DR than those aged 50-64 years (56%), urban residents (61%), males (56%), those with below 50,000 monthly income (in NGN) (57%) and those with low educational qualification (56%). Statistically, there was significant difference on the knowledge of DR based on residence (p-value=0.021<0.05) and monthly income (in NGN) (p-value=0.012<0.05) while none was recorded on age (p-value=0.794>0.05), gender (p-value=0.883>0.05) and education qualification (p-value=0.187>0.05) respectively. (see Table 3 for details).

Table 3: Showing significant correlation on knowledge of diabetic retinopathy and socio-demographics (n = 326)

Demographics	Variables	n(%)	Correct f(%)	Incorrect f(%)	Odds	OR	P-V	Rmk
Age	65 years and above	184(56%)	121(66%)	63(34%)	1.921	1.489	0.794	NS
	50-64 years	142(44%)	80(56%)	62(44%)	1.290			
Residence	Urban setting	195(60%)	118(61%)	77(39%)	1.532	0.886	0.021	S
	Rural location	131(40%)	83(63%)	48(37%)	1.729			
Gender	Male	136(42%)	76(56%)	60(44%)	1.267	0.659	0.883	NS
	Female	190(58%)	125(66%)	65(34%)	1.923			
Monthly income (in Naira)	Below 50,000	115(35%)	65(57%)	50(43%)	1.300	0.717	0.012	S
	50,000 and above	211(65%)	136(64%)	75(36%)	1.813			
Educational qualification	Low Qualification (PSLC, WASSC)	127(39%)	71(56%)	56(44%)	1.268	0.673	0.187	NS
	High Qualification (HND, UD)	199(61%)	130(65%)	69(35%)	1.884			

Keys: UD=university degree, OR= odds ratio, n= sample size, HND=Higher National Diploma, OR=odds ratio, PSLC=Primary School Leaving Certificate, %= per cent, P-V=probability value, WASSC=West African Senior School Certificate, S= significant, NS= not significant, f = frequency.

Discussion

The present study is the first of its kind to determine the KAP of DR among outpatient elderly persons in Nigeria. The study revealed that the outpatient elderly persons had adequate knowledge 201(87%), positive attitude 214(76%) and desirable practice 224(82%) of DR respectively. The study outcome is quite commendable and aligns with the observed massive visits to the hospitals by the respondents. It equally reflects the fact that the patients had greater value for their health, wellbeing and survival regardless of the prevailing disease condition. These encouraging findings could be linked to advancement in global technologies, increased access to social networks, gained life experiences and personal exposure among others. The findings present obvious implication which translates the possibility of actual decline in the number of DR cases if reliable population-based intervention or programme is adopted. Our findings are in consistent with other previous findings which reported that being a female gender [6], possessing quality education [12], advanced age and being urban residence [13] strongly correlated with the knowledge of DR among different ages and population groups.

In addition, our findings are evidence-based on the influence of quality knowledge in attitude formation and modification in practice regarding health issues. In contrast to our findings, a cross-sectional study reported poor knowledge, negative attitude, and bad practices of DR in Riyadh, Saudi Arabia [9]. Similar finding was also reported among final year medical students of King Faisal University Medical College of Al Hasa region of Saudi Arabia [8]. In China, poor knowledge was equally reported among diabetic patients registered in a chronic disease management system [11]. Also, poor KAP of DR was reported among diabetic patients in a tertiary eye care Centre [18].

Our finding indicated that age had positive or strong correlation between knowledge of DR, while residence, gender, monthly income and educational qualification showed negative or weak correlation. Also, the respondents aged 65 years and above, rural residents, females, those with 50,000 and above monthly income (in NGN) and those with high educational qualification possessed higher knowledge of DR than those aged 50-64 years, urban residents, males, those with below 50,000 monthly income (in NGN) and those with low educational qualification. There was statistically significant difference on the knowledge of DR based on residence and monthly income (in NGN) (p<0.05) while none existed on age, gender and education qualification (p>0.05) respectively. From the above findings, age, gender, residence, income level and education may be considered as potential predisposing factors to DR in advanced age. These findings are in harmony with the findings of previous scholars who reported the influence of socio-demographic variables in their respective studies with similar contents [6, 8, 9, 12, 13, 18].

The adoption of appropriate research design justified the strength of the present study. The major limitation of this study lies in surveying only the outpatient elderly persons in eye specialist hospitals. So, our findings may not be complete representation of KAP of DR for all elderly persons in Nigeria. Therefore, further studies adopting broader sampling procedures are highly

recommended. Secondly, questionnaire was the only instrument used for data collection. Similar studies adopting both quantitative and qualitative approaches in data collection are needed.

Conclusion
The respondents had adequate knowledge, positive attitude and desirable practice of DR. These outcomes would form the bases for designing a sustainable population-based-education programme on DR for outpatient elderly persons in particular.

Abbreviation:
DR   =   Diabetic retinopathy
OR   =   Odds ratios
KAP   =   Knowledge, attitude and practice
IBM   =   International Business Machine
DR-KAPQ   =   Diabetic Retinopathy Knowledge, Attitude and Practice Questionnaire
UD   =   University degree
HND   =   Higher National Diploma
PSLC   =   Primary School Leaving Certificate
P-V   =   Probability value
WASSC   =   West African Senior School Certificate

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