African Vision and Eye Health
ISSN: (Online) 2410-1516, (Print) 2413-3183

Perceptions of diabetic retinopathy-related educational resources in a community in Oman

Authors:
Gopi S. Vankudre[1]
Sheikha Al Saadi[1]

Affiliations:
[1]Department of Optometry, College of Health Sciences, University of Buraimi, Al Buraimi, Oman

Corresponding author:
Gopi S. Vankudre,
gopi_vankudre@yahoo.co.in

Dates:
Received: 16 Apr. 2022
Accepted: 23 Aug. 2022
Published: 27 Feb. 2023

How to cite this article:
Vankudre GS, Al Saadi S. Perceptions of diabetic retinopathy-related educational resources in a community in Oman. Afr Vision Eye Health. 2023;82(1), a767. https://doi.org/10.4102/aveh.v82i1.767

Background: Diabetic retinopathy (DR) contributes 1% of the total 37 million blind individuals globally. In Oman, 12.3% of the community aged 18 years and older are affected by diabetes mellitus. Health literacy is essential in advancing an individual's disease-linked knowledge, attitudes and treatment compliance. Effective educational resources would earn positive health outcomes.

Aim: This study evaluates the Omani community's perception of educational resources related to DR.

Setting: This is a prospective, cross-sectional, questionnaire-based study.

Methods: A self-administered, online questionnaire received responses from 253 participants using a convenient snowball sampling approach. The initial section of the questionnaire gathered information on participant's demographic information. The second section collected the feedback on the perception of the availed DR material utilising a five-point Likert scale. Descriptive and inferential (chi-square test, Fisher's exact test and logistic regression analysis) statistics were used to analyse the data.

Results: Of the total 253 study participants, 51 (20.2%) were male and 202 (79.8%) were female. Only 155 (61.3%) participants received DR-related health information. Optometrists (30.3%) served as the primary source of information. There was no relationship between perception and socio-economic or educational levels ($p > 0.05$). Of the 155 participants receiving DR-related health information, 47.7% ($n = 74$) of the survey population is highly satisfied with the received DR-related health promotional resource.

Conclusion: Only 61.3% of the members received DR-related health information. Most participants had a positive perception of DR-related health educational resources.

Contribution: This study observed positive participant's perception towards diabetic retinopathy related health educational resources. The study proposes to conduct further health promotional activities using social media platforms.

Keywords: perception; health educational resources; health promotion; diabetic retinopathy; diabetes mellitus.

Introduction

Diabetic retinopathy (DR) is one of the most prevalent complications of both type 1 and type 2 diabetes mellitus (DM). It contributes 1%, out of the total 37 million blind individuals globally.[1] In Oman, 12.3% of the community aged over 18 years are affected with DM, and 10% of the affected individuals have sight-threatening DR.[2] Considering the prevalence of DM within the age group of 18 years and above within the region,[2] such individuals are at a higher risk of DR. The eye health systems along with working on diagnostic and therapeutic strategies can further serve on preventive measures with the aid of the concerned stakeholders.[3] Educating at-risk communities about the condition and preventive actions, and timely diagnosis and treatment can reduce the risk of visual impairment by approximately 90%. Hence, to reduce the burden related to this condition, the World Health Organization has categorised DR under the priority ocular issues and has recommended the involved nation members include it under the Vision 2020 WHO plan.[1]

Health education concentrates on building up the communities' or individuals' health or disease-linked knowledge and enhancing their attitudes.[4] Treatment and management of DM are vital for reducing the magnitude and impact of the condition. Patient education and awareness about the condition are directly correlated with the impact on preventive and treatment measures. The impact of treatment is lower in poorer compliance groups.[5] To deal with this challenge, an organised model of patient care may be more favourable.[6,7]

National standards for DM self-management education have set evidence-based norms for DM-related education.[5,7] Iquize et al. assessed the health educational resources utilised for DM at a national level.[7] A study by Mafwiri et al. concluded that despite providing DM education, many participants were unaware of DR and associated health management practices.[8] They emphasised the demand for carrying out strategies concentrating on DR and improving DM education. Similar evidence-based methods concerning DR-related education within the Omani population can be beneficial. Quality resources engaging the community have the potential to make constructive impacts on patient compliance and reduce the overall burden of the disease. Hence, it is imperative to find out the community perception of DR-related health education material. The identified gaps can further enhance the current DR-related health educational practices.

This research investigated the Omani community's perception of DR-related health educational resources. The outcomes can be valuable in devising evidence-based DR-related health educational resources. Moreover, the study findings may also support the development or enhancement of DR-related health programmes. Ultimately, such information can be used to create a positive impact on patient's knowledge, attitudes and practices and secure improved health-related compliance.

Methods

This is a prospective, cross-sectional and online questionnaire-based study. The survey was circulated among community members with a convenient snowball sampling technique using social media platforms. The volunteering participants were asked to further circulate the questionnaire, and adult responses from the Omani population above the age of 18 years who responded to the questionnaire using the online mode were considered for the study survey. All the Omani population matching the eligibility criteria and willing to respond to the questionnaire within the study duration of six months were included in the study. Minors (< 18 years), participants unable to respond online and disadvantaged individuals were excluded from the study.

A self-administered online questionnaire was constructed through a literature review[4,5,6,7] incorporating the items of DR-related educational resources. The survey was distributed among the community members associated and not associated with a medical field. Participants associated with a medical field except eye care as well as from non-medical fields were given equal opportunities to participate in the study. Their association with medical fields or eye care was self-declared.

Google Forms were used to develop an online survey. The same form comprised the English and Arabic versions, and participants had the choice to read and reply in their language of convenience. Five optometry subject experts, two experts having doctoral qualifications and three experts with master's level qualifications, approved the questionnaire using the content validity approach. The native Arabic language expert evaluated the Arabic version of the document. The data were collected from March 2017 till September 2018. The questionnaire contained three sections. The initial section of the questionnaire collected information on the participant's demographic information.

Sections 2 and 3 involved a total of 29 elements. The second section collected information on the source of DR-related health education. This part also collected feedback on the member's perception of the availed DR material utilising a five-point Likert scale from strongly disagree to strongly agree. The perception section also collected responses using the five-point Likert scale focusing on the factors of ease of availability, content, timing, presentation, cultural appropriateness and service delivery related to the DR health promotional tool. The third section collected responses to the participant's preferred source of information as described by the participants.

From the total 11 provinces of the Sultanate, the mean population size was calculated. Provinces having a population size below the mean were categorised with low province population size, and provinces having a population size equal to or more than the mean were categorised with high province population size. The province's mean population size was 252 134 people. Muscat, Al Batinah North, Al-Dakhiliyah and Al-Batinah South were found to have high province population sizes. Dhofar, Ash Sharqiyah South, Ash Sharqiyah North, Al Dhahirah, Al-Buraymi, Al-Wusṭa and Musandam were found to have low province population sizes.[9]

Data storage and statistical analysis

The data were saved on two different personal computers running Microsoft Excel 2013. IBM® Statistical Package for Social Sciences version 21 was employed for data analysis. Descriptive statistics were used for analysing the demographic profile of the participants. Association between perceptions and other research variables were analysed using the chi-square test, Fisher's exact test and multinomial logistic regression analysis.

Ethical considerations

The study adhered to the tenets of the Declaration of Helsinki. Because of the online nature of the questionnaire, the participant's readiness to respond to the questionnaire was considered as their consent. The Research and Ethics Committee of the College of Health Sciences of the University of Buraimi in Oman approved the study. The study used a validated questionnaire-based tool. The tool was assessed based on the content and social and cultural appropriateness. The content validity was assessed by the optometry subject experts, and social and cultural appropriateness was approved by the Research and Ethics Committee of the College of Health Sciences.

Results

Demographic summary of the study participants

The survey was circulated to 275 participants of which we received responses from 253 participants, providing a

survey response rate of 92%. The survey analysis included 253 participants of which 51 (20.2%) were male and 202 (79.8%) were female. The majority (67.2%) of the participants were from provinces with high population density. About 54.1% of the participants were associated with the medical field, and parents of only 15.8% of the total study population were associated with the medical field (Table 1).

Followed and preferred sources of information for diabetic retinopathy

Only 155 (61.3%) of the study participants received DR-related health information. Optometrists (30.3%) were the primary source of information, and sources such as radio, newspaper, leaflet and a friend (0.6% each) were the least followed sources. Approximately 24.5% of the study participants wished to obtain condition-related information from ophthalmologists, but only 7.7% of this study population could get the information from that source. Social media was the third (16.6%) most popular information source. Most printed health promotional materials such as newspapers and leaflets were unpopular sources.

Perception scores for different components of the provided educational material

Of the seven assessed components related to perception towards DR-related health educational material, ease of availability had the highest mean score of 69.1%. (standard deviation [s.d.] = 22.3%). The lowest score was for the presentation of the health educational material with a mean score of 65.2% (s.d. = 21.8%) (see Table 2).

Association between the overall perception score with the other study variables

Perception scores of more than or equal to 50% are classified as having a positive perception of being availed of DR-related educational resources. Scores of less than 50% are classified as having a negative perception. Out of the total 155 members receiving DR-related health education, 78.7% (n = 122) of the study participants had a positive perception and 21.3% (n = 33) of the study participants had a negative perception of the obtained resources.

The associations of the perception scores were evaluated with other study variables using the chi-square test. There was a statistically insignificant relationship between the type of perception with the variables of gender, personal education level, self-education related to the medical field, the population size of the participant's province, medically related occupations, father's and mother's educational level and the parent's association with the medical field. The chi-square, degree of freedom, significance level and effect size for these variables are included in Table 3.

Level of satisfaction among the study participants

Percentage perception scores < 25%, ≥ 25% to < 50%, ≥ 50% to < 75% and ≥ 75% are considered highly unsatisfied, unsatisfied, satisfied and highly satisfied, respectively. Of the total respondents, nine (5.8%) and 24 (15.5%) study participants were highly unsatisfied and unsatisfied, respectively.

TABLE 1: Demographic summary of the study participants (N = 253).

Sociodemographic factors	Category	Gender				Total
		Males		Females		
		n	%	*n*	%	
Personal educational level	Illiterate	0	0.0	1	100.0	1
	Primary	1	33.3	2	66.7	3
	Secondary	22	37.3	37	62.7	59
	Graduate	16	10.7	134	89.3	150
	Postgraduate	12	30.0	28	70.0	40
Education related to medical field	Yes	17	12.3	121	87.7	138
	No	34	29.6	81	70.4	115
Province population size	High	27	15.9	143	84.1	170
	Low	24	28.9	59	71.1	83
Occupation related to medical field	Yes	15	10.9	122	89.1	137
	No	36	31.0	80	69.0	116
Father's educational level	University level	10	15.9	53	84.1	63
	High school level	20	22.0	71	78.0	91
	Elementary level	8	15.1	45	84.9	53
	Illiterate	13	28.3	33	71.7	46
Mother's educational level	University level	3	10.0	27	90.0	30
	High school level	23	28.4	58	71.6	81
	Elementary level	8	10.8	66	89.2	74
	Illiterate	17	25.0	51	75.0	68
Parents related to medical field	Yes	9	22.5	31	77.5	40
	No	42	19.7	171	80.3	213

Note: Participant's age - Mean = 24.57 years; confidence interval: 23.55–25.60 years; range = 49 years (18 to 67 years).

Association of the degree of satisfaction with study variables

The study performed a multinomial logistic regression analysis to model the relationship between the degree of satisfaction with the other study variables. As shown in Table 4, fathers' educational level was a significant contributor, while the other factors had statistically non-significant associations.

Comparison of percentage perception score with the other independent study variables

The non-parametric Mann-Whitney *U* test was employed to compare the percentage perception scores with the independent groups of the study variables of gender, medical relationship with self or parent education or occupation. All were statistically non-significant (Table 5).

Discussion

The study investigated the community's perception of DR-related health educational resources. Educational interventions help to develop condition-related managerial skills among health professionals. For instance, the quality of life of affected individuals is observed to improve communities receiving sufficient and quality DM-related education.[7] Hence, the study evaluated the DR-related informational mode received by the communities and their perception of these resources.

This study used a prospective cross-sectional questionnaire-based design to evaluate the participant's perception of DR-related health education material. A systematic review by Iquize et al. identified the improvement in self-perception of individuals with DM and skill enhancement among the involved health professionals.[7] Findings of this study provide a baseline for evaluating the community's DR health education resource-related perception.

This study included participants from the general population compared with the other studies having DM population or health professionals.[7,8] The dissimilarities of the perception related to the educational material compared with the previous studies could also be because of the variability of the educational tool and the type of study populations.

Health education can be provided in groups during the counselling sessions, telephonic or using online platforms. It may also target the at-risk population along with the affected individuals.

Of the total respondents, 61.3% of our study population received DR-related health education. This study observed that optometrists (30.3%) were the most common source of information about their condition. An effective knowledge source can be key in the management of DR. A study by Pereira et al. observed a higher knowledge level related to DM post-intervention among the group receiving health information compared to the non-receiver group.[10] As observed in our study, although 24.5% of the study participants

TABLE 2: Perception scores for different components of the educational material as provided.

Component of the perception	Mean score (%)	Standard deviation (%)	Interquartile range
Ease score	69.08	22.34	20
Content score	68.50	20.60	20
Timing score	66.48	21.47	25
Presentation score	65.25	21.78	30
Cultural score	69.48	23.93	20
Service score	67.23	24.75	40
Perception score	67.26	20.29	19

TABLE 4: Association of the degree of satisfaction with study variables.

Type of variable	Chi-square	*df*	Sig.
Gender	7.686	3	0.05
Your education	10.604	6	0.10
Education medical related	1.849	3	0.60
Population size	4.384	3	0.22
Occupation medical related	0.140	3	0.98
Father's education level	21.103	9	0.01
Mother's education level	10.189	9	0.33
Parents education level	4.110	3	0.25

df, degree of freedom; Sig., significance.

TABLE 5: Comparison of percentage perception scores with the other independent study variables.

Variables	Mann–Whitney *U*	*p*
Gender	1422.500	0.45
Education medical related	2310.000	0.26
Residence province population size	2732.000	0.94
Occupation medical related	2365.000	0.31
Parent medical related	1671.500	0.47

TABLE 3: Association between the overall perception score with the other study variables.

Variables	Effect size						
	χ^2	*df*	*p**	Phi		Cramer's *V*	
				V	Sig.	*V*	Sig.
Gender	0.233	1	0.62	-0.039	0.62	0.039	0.62
Self-education level	2.802	2	0.24	0.134	0.24	0.134	0.24
Education_medical_related	0.057	1	0.81	0.019	0.81	0.019	0.81
Province population size	0.492	1	0.48	-0.056	0.48	0.056	0.48
Occupation_medical_related	0.022	1	0.88	0.012	0.88	0.012	0.88
Father educational level	1.324	3	0.72	0.092	0.72	0.092	0.72
Mother_educational_level	3.288	3	0.34	0.146	0.34	0.146	0.34
Parent_medical_related	0.349	1	0.55	0.047	0.55	0.047	0.55

n = 155.

df, degree of freedom; Sig., significance.

*, *p*-values more than 0.05 indicate an insignificant association between the types of perception and the study variables.

wish to obtain condition-related information from an ophthalmologist, only 7.7% of this study population could get the information from that source. This could be because of the higher clinical burden on the tertiary health service providers within the health system. Indirect platforms such as social media can be helpful to outsource this task, reducing the chair time of the involved health professionals. Social platforms may be the most convenient in terms of economy, duration, flexibility and recitation. These study findings support this approach as a similar percentage of this study population have availed (18.7%) and preferred (16.6%) this approach.

The study observed a positive response for the cultural appropriateness perception score (mean = 69.48, s.d. = 23.93) of the health promotional tool, whereas a lower perception was observed for the presentation score (mean = 65.25, s.d. = 21.78). However, the difference between the scores related to the different components of the health promotional material was not statistically significant. The perception score could differ because of the participant's motivational level. A study by Hassan et al. observed different degrees of perception towards online health educational constructs.[11] The level of patient motivation, while attaining the health educational material, can also impact their perception towards the resource.

The study observed no statistically significant association between the type of perception with the other study variables. Most participants had a positive or very positive perception of the availed DR-related health educational material. A study by Chen et al. observed that a higher educational level and a family history of DM were associated with a higher understanding of health education or instructions.[12] However, the association of the type of perception with each type of educational resource should be further explored with larger sample sizes.

Because of the multifactorial systemic involvement, DM differentiates itself from other disease conditions. For instance, a person with DM needs follow-ups with different medical specialties including diabetologists, nutritionists, ophthalmologists and dentists.[7] Keeping a DM patient motivated to comply with the associated conditional management can be a daunting task. The burden on the individual needs to be considered. Hence, it would be beneficial to provide the services to this population in a convenient and simplified manner. The use of health management tools within these groups can be useful.

The study highlighted the current gaps in DR-related health educational resources. It identified the main source of information within the community and their preferred sources. The findings can help design future health educational resources related to the condition. The identified preferred platform can also be chosen for promoting health and carrying a significant positive impact.

Suggestions for future research

As this study included only the participants able to respond to an online questionnaire, the participants are assumed to be mainly from higher educational and socio-economic backgrounds. This population could be expected to have better health educational exposure compared with the population having lower educational and socio-economic status. Hence, the study observations cannot apply to the latter population. A similar study should be conducted for such a population. Even though the participant perceptions were positive towards the DR promotional resources, the study did not link the participant's perception of the condition-related knowledge, attitudes or practice levels, and these aspects should be explored separately.

Conclusion

Only 61.3% of participants received DR-related health information. Most of the participants had a positive perception of DR-related health educational resources. Optometrists are the main source for providing information. Considering the relatively insufficient circulation of health information related to DR among the community, it is necessary to conduct further health promotional activities related to the condition and social media platforms could help communicate such information.

Acknowledgements

Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

G.S.V. and S.A.S. contributed equally to this work.

Funding information

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data availability

Data sharing is not applicable to this article.

Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

References

1. World Health Organization. Blindness and vision loss in Western Pacific [homepage on the Internet]. [cited 2019 Jun 2]. Available from: https://www.who.int/westernpacific/health-topics/blindness-and-vision-loss
2. Khandekar RB, Al-Lawati JA. Epidemiology of diabetic retinopathy in Oman: Two decades of research. Oman J Ophthalmol. 2015;8(1):1–2. https://doi.org/10.4103/0974-620X.149853
3. Ting DSW, Cheung GCM, Wong TY. Diabetic retinopathy: Global prevalence, major risk factors, screening practices and public health challenges: A review. Clin Exp Ophthalmol. 2016;44(4):260–277. https://doi.org/10.1111/ceo.12696
4. World Health Organization. Health education [homepage on the Internet]. WHO. [cited 2019 Jun 2]. Available from: https://www.who.int/topics/health_education/en/

5. De Fátima Ferreira Grillo M, Neumann CR, Scain SF, Rozeno RF, Gross JL, Leitão CB. Effect of different types of self-management education in patients with diabetes. Rev Assoc Medica Bras (1992). 2013;59(4):400–405. https://doi.org/10.1016/S2255-4823(13)70494-6

6. Beck J, Greenwood DA, Blanton L, et al. National standards for diabetes self-management education and support. Diabetes Educ. 2017;43(5):449–464. https://doi.org/10.2337/dc12-1707

7. Iquize RCC, Theodoro FCET, Carvalho KA, et al. Educational practices in diabetic patient and perspective of health professional: A systematic review. Braz J Nephrol. 2017;39(2):196–204. https://doi.org/10.5935/0101-2800.20170034

8. Mafwiri MM, Mwakyusa N, Shilio B, Lutale JK. Health education and awareness about diabetic retinopathy among patients attending diabetic clinics in tertiary and regional hospitals in Tanzania. JOECSA [serial online]. 2017; 20(2). [cited 2019 Jun 2]. Available from: https://joecsa.coecsa.org/index.php/joecsa/article/download/111/64

9. MOFA. Governorates of Sultanate of Oman – وزارة الخارجية العمانية [homepage on the Internet]. [cited 2019 Jun 3]. Available from: https://fm.gov.om/about-oman/state/oman-by-region/

10. Pereira DA, Da Silva Campos Costa NM, Sousa ALL, Jardim PCBV, De Oliveira Zanini CR. The effect of educational intervention on the disease knowledge of diabetes mellitus patients. Rev Lat Am Enfermagem. 2012;20(3):478–485. https://doi.org/10.1590/S0104-11692012000300008

11. Hassan NM, Win KT, Oinas-Kukkonen H. Online patient education design features: Are there any differences in opinion based on consumer's stage of change? Online Patient Education and Stages of Change. Proceedings of the 27th Australasian Conference on Information Systems, ACIS. 2016. Wollongong: University of Wollongong, p. 1–12.

12. Chen GD, Huang CN, Yang YS, Lew-Ting CY. Patient perception of understanding health education and instructions has a moderating effect on glycemic control. BMC Public Health. 2014;14:683. https://doi.org/10.1186/1471-2458-14-683