

Diabetic Retinopathy Related Health Educational Intervention - A Contextual and Evaluation Based Design

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Abstract

Introduction: In the 8th edition of the diabetic report (2018), the age-adjusted Diabetes mellitus prevalence among the Omani adult population was 12.6%. In Oman, the prevalence of DR among diabetics ranges from 14.5% to 42.2%. 10% of this population has an irreversible visual blindness. A pilot study within the population highlighted diabetic retinopathy related awareness and knowledge rift. Cost-effective DR related health promotional activities can reduce the barrier of lacking knowledge leading to the disease burden.

Aim: To design an assessment based, validated contextual model of a Diabetic Retinopathy (DR) related to health promotion.

Material and Methods: The study followed an evidence-based approach while designing the DR health promotion resource. Our initial surveys tested the DR related knowledge and perception towards current diabetic retinopathy related health promotional tools among Omani population. We used Elsevier (2015) guidelines while structuring these evidences.

Results: The duration of the designed health intervention is six minutes fifty-one seconds. The presentation included information on managerial and rehabilitative options. It provides the health education material with no cost or discrimination to the community. The video format is compatible with most of the web browsers. Users can download and view it on personal computers, mobiles or tablets.

Conclusion: This study provides a contextual and evidence-based approach for the design of a DR health promotion tool. It can be circulated with no cost or discrimination within the Omani community.

Keywords: Diabetic retinopathy eye-health education, eye-health promotion.

Introduction

Health Education has turned into an intrinsic part of the healthcare system. Proper design and implementation of the advanced health promotion source can earn effective health outcomes. Disease prevention, improving lifestyle and reducing the disease-linked financial burden on the individual, family and a society, are the principle ambitions of any health promotion measures (Elsevier, 2015). This report presents an insight into developing a Diabetic Retinopathy (DR) related health promotion mechanism. It further provides a view on later implementation strategies for such means, to produce their greater impact in cutting the burden of DR. The article follows guidelines specified by Elsevier (2015) while designing DR related health information. This developed material can likewise look at as a space for the self-learning of DR for Omani community, by minimising the chair time of the concerned health specialists.

Diabetes mellitus and diabetic retinopathy-the health challenge among omani population

The International Diabetes Federation (2018), predicted global Diabetic Mellitus (DM) prevalence to hike up to 629 million by the year 2045, from the current 425 million. Oman is one of the first ten countries with highest DM prevalence in the Middle Eastern and North African region (MENA) (Majeed et al., 2014; Al-Lawati et al., 2015). Healthcare cost of diabetics is double than the non-diabetic population. The International Diabetes Federation stated that the diabetic related health spending is greatest among MENA compared to the other territories. It adds to 15% of the comprehensive health budget and viewed as one of the major causes of health services occupancy (Al-Lawati, 2017). In the

8th edition of the diabetic report, the age-adjusted DM prevalence among the Omani adult population was 12.6% (International Diabetes Federation, 2018). With the increased demand, Oman health ministry has improvised the diagnostic- and treatment-related amenities at the primary health care centers. However, despite the learned benefits of a transformed lifestyle in reducing DM prevalence, Al-Lawati (2017), observed limited availability of related health promotions.

National level health challenge posed by diabetic retinopathy in oman

The diabetic prevalent population is at risk of developing DR (Al Rahbi, 2014). Availability of effective treatment opportunities extends the survival expectancy of diabetic individuals. But, the increased life expectancy with the condition is a cause for associated complications such as DR (Ahmed et al., 2016). DR in extreme stages causes irreversible visual blindness affecting the work and economic competence of the involved individuals (Alhawaish, 2013). Higher age groups, both genders, duration of DM, sedentary behaviors, hereditary susceptibility, obesity and uncontrolled DM are the typical direct or indirect risk elements for developing DR. In Oman, the prevalence of DR among diabetics ranges from 14.5% to 42.2%. 10% of this population has the irreversible visual blindness. Ministry equips the national health care facilities with competent diagnostic and managerial tools. However, the burden of DR screening could impact the other eye care services negatively (Khandekar & Al-Lawati, 2015).

Need for diabetic retinopathy health education among omani population current status of omani patient compliance towards diabetes and diabetic retinopathy

Oman healthcare system has implemented the Diabetes Mellitus Control Programme nationwide, by promoting a healthy lifestyle and supplementing diagnostic and medical supports with no cost. Implementation of ocular screening of the entire diabetic population can be daunting. Glycemic control, regular ocular examination, and prompt treatments have observed to reduced or delayed the blindness because of the condition (Khandekar & Al-Lawati, 2015). Al Rahbi (2014), observed poor patient compliance towards Diabetes self-management, hence stated that involving the individuals and the family members in the disease's management can produce positive health outcomes. Noncompliance towards diabetic management is a risk factor of developing DR. To tackle sight-threatening DR, Oman has implemented 'Defaulter Retrieval System' to reinforce the follow up on the patient with the advanced stages of DR. Approximately 75% of the individuals with sight-threatening DR were non-compliant with ocular examinations and treatments. The study found a lack of awareness of the ocular complications associated with DM as one of the prominent causes of the non-compliance (Khandekar, Al Lawati, & Barakat, 2011). DR related health promotional activities can reduce the barrier of non-awareness. This promotional approach can be a cost-effective way to address the challenge. It can focus on improving the knowledge level within the at-risk Omani community of DR, its signs and symptoms associated with complications and timely treatment or management choice. This higher knowledge level can impact the community's attitude positively and can help in improving the patient's compliance.

Overall benefits of diabetic retinopathy related health education

Healthcare system integrates health organizations, health professionals and involve patients as primary stakeholders. The modern healthcare systems are patient-centered. Patient's active participation can get higher outcomes and patient satisfaction. Health education material can play a vital role in enhancing a patient's knowledge level leading to his active participation (Elsevier, 2015). Eye health professionals or the other allied health staff often offer information regarding DR to the patients. This approach consumes the valuable chair time of the professionals. A patient has to be present through the appointment booking process which involves consultation and transportation cost along with patient time. Strained working schedules on either end may delay the process of acquiring information. Moreover, with the patient's perspectives, competence in gaining and recalling the information may vary among individuals. Hence, the DR related health education material providing adequate information using a multimedia resource, access with repeatability and with the patient's time flexibility can be helpful. Higher disease knowledge level can have higher compliance with the health professional's instructions and positive attitude towards disease management.

Methods

Current Diabetic Retinopathy Related Awareness and Knowledge Among the Omani Population

We tested the DR related awareness and knowledge among the population. The study participants knew of the DR condition. Relatives and friends (51%) were the main information source followed by eye health professionals (22%). Participants did not know the detailed complications for DR. 13% had the awareness of the DM and association with retinopathy. Knowledge of preventive, follow up, treatment and rehabilitative strategies (Vankudre et al., 2018) was inadequate. This represented DR related awareness and knowledge rift.

Community Preferences for The Diabetic Retinopathy Related Health Promotion Resource

To create an evidence-based DR related health educational resource, we collected responses to test the community preference towards getting DR related health information. Ophthalmologists (24.3%), Community health centers (21.6%) and Optometrists (20.9%) are the preferred sources, followed by social media (11.5%). The results showed the social media as the most preferred source, not requiring the personal involvement of health professionals. Literature review reflected the limited availability of Arabic versions for DR health education resources in the social media platforms. Minimizing the Health Expenditure Related to Diabetic Retinopathy.

The Oman Ministry of Health annual report (2016), the ninth five-year eye health care plan, for the year 2016-2020 stated the vision to control the factors responsible for avoidable blindness. The Oman Ministry of Health (2016), categorized DR as one of the six priority eye health issues. The observed overall incident rate of DR was 9%. By enhancing the condition related diagnostic and treatment facilities, it expects to impact the eye health care budget and the insurance cost.

Preventive measures can avoid the conditions of DM (Type 2) or DR. Condition-related preventive measures help in reducing the health-related expenditures of the involved government or the individual. DR related health education can stress self-care among the diabetic population. Educating at-risk individuals regarding preventive measures related to DR may involve regular glycemic control, ocular examinations and timely treatment. This will reduce treatment-related costs. Individuals having the condition can keep their work efficacy and income level. We can distribute the DR health education material in a printed form such as a leaflet or using a multimedia platform. Of which, the multimedia platform is useful in avoiding the recurrent cost. The Oman Ministry of Health maintains a library for patient education having resources focusing on DM and healthy lifestyle (Ministry of Health, 2016).

Incorporated components to ensure the effectiveness of the diabetic retinopathy related health promotion resource

We followed an evidence-based approach while designing the DR health promotion resource. The resource used an authentic and recent information focusing on the magnitude of the disease in Oman. We followed a video-based health promotion approach as brief video content can have higher chances of participant engagement (Brame, 2016). We accumulated the contextual information on the prevalence of DM, DR, and related visual impairment through a literature review (Khandekar & Al-Lawati, 2015). It contains associated risk factors, needs of ocular examinations, available treatments and managerial options for the severe cases of DR having an irreversible visual impairment. It has used the terminologies set by the International Classification of Diseases, 10th revision concerning DM and DR (World Health Organization, 2018). We validated Arabic scripts by the native language and the subject experts. The research and ethics committee of a private University in Oman has validated the instrument to ensure the cultural appropriateness. The higher penetration of internet services within the country has helped to link 65% of its population. The population use the internet mostly for work and leisure activities (Khan et al., 2017). The at-risk population can be engaged through networking for health promotional activities. Hence, we used a multimedia approach to circulate the health promotion online and or in the social media platforms. We used the validated animations and videos produced by the National Institute of Health (National Eye Institute 1, 2018; National Eye Institute 2, 2018; National Eye Institute 3, 2018), with their prior consent for reuse with necessary modifications. The visuals focus

on educating the community regarding DR, associated risk factors, need for ocular examination and treatment options.

Results

The duration of the video is six minutes fifty-one seconds. The presentation included information on managerial and rehabilitative options. We have acknowledged the respective organizations, authors and supporters in the video presentation. We have developed this DR health promotion tool to provide the health education material with no cost or discrimination to the community. The video format is compatible with most of the web browsers. Users can download and view it on personal computers, mobiles or tablets. The original videos are in the English version. The health education resource used the Arabic language. As the video is available online and circulated with no cost within the community, it reduces the travel burden of the community, to visit the concerned health professionals. They can avail and recite this resource at their convenient time and need. Use of animations provides a higher chance of knowledge retention. A user can circulate the resource to the other community members. Through this approach, the community not only remains the end user but also forms an active information dissemination resource. This can support the faster penetration and views of the resource, reducing the burden of the health professionals and the health care system as the only resource distribution centre.

The animated videos are visually appealing to ensure the viewers' attention. It provides the visual cues using the shortest, simplest and key points to remember. It is difficult for an individual to remember over five points at a time (Elsevier, 2015). Hence, the health promotional tool has three different components within the video. The three components provide information on the condition itself, associated risk factors, managerial and rehabilitative options. Each part focuses on the important five or less, take-home messages. The subject experts validated the sequence and content of each part. The pictures, numbers and text size used in the tool are proportionate to ensure an easier visual comprehension. Even the audio incorporated in the tool ensures the audibility. The resource has captions in the English version for individuals with low or moderate English competence. The tool does not use a fear mongering technique to emphasize the issue. However, it also does not dilute the severity of the condition. As most of the Omani population use Arabic language setting in their smartphones, we have used the message for introducing the link about this health promotion tool in the Arabic language. The message includes a request to circulate this link among their relatives and friends, details for further educational and consulting resources.

Discussion

Best suggested implementation strategies and future recommendations

This developed contextual and evidence-based tool can be helpful for diabetic retinopathy related health promotional activities. Even the ideal health education material may not yield the expected outcomes unless used optimally. Prioritizing the potential audience is the key factor in ensuring its success. Health care system can link such health educational resources with electronic medical records. Health system can set an automatic email system incorporating the message and link for the individuals already having or immediately after being diagnosed with DM. Health professionals should stress this information during the patient's visit. The information should be available in the waiting areas of the hospitals or clinics. During the patient visit, the health professionals should test the patient's understanding and seriousness towards the condition. It is important to ensure their confidence by providing trust. The healthcare professional should objectively get the patient feedback about the content, effectiveness, ease of availability or reusability. It is necessary to test the impact of this health promotion tool. Such inputs can help in improving eye health promotional resource. Though this developed material is not a substitute for the print media, it may help in reducing the material reproduction cost and speed of spreading the message. Health system can provide printed educational information only to the participants either preferring printed material or not using the visual devices and the internet.

Further incorporation of the decision support systems or self-management systems related to the condition can be helpful. Such systems can incorporate reminders for timely medication and their

follow-up visits with a general physician and eye care practitioners. Health promotion professionals should study for the community 's preferred method of getting the educational information. The eye healthcare system should continuously check the currency and relevance of the DR related health education resource for its timely update.

Conclusion

This study provides a contextual and evidence-based approach for the design of a DR health promotion tool. It can be circulated with no cost or discrimination within the Omani community. Further incorporation of the decision support systems or self-management systems related to the condition can be helpful.

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