EVALUATION OF EDUCATIONAL INTERVENTION ON KNOWLEDGE AND AWARENESS REGARDING GLAUCOMA AMONG WORKING ADULTS IN KELANTAN, MALAYSIA

BY

DR. CHONG WEN KHANG

P-UM0244/19

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DISCLAIMER

I hereby certify that the work in this dissertation is my own except for the quotations and summaries which have been duly acknowledged. I declare that I have no financial interest in this study.

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DR CHONG WEN KHANG

P-UM0244/19

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TABLE OF CONTENTS

Table of Contents

ABSTRACT

INTRODUCTION

Glaucoma is a chronic progressive eye disease that can lead to irreversible vision loss if left untreated. Educational interventions can help increase awareness and understanding of the disease among public, leading to earlier detection and better management of the condition.

OBJECTIVE

The purpose of this study to determine the level of glaucoma awareness and good glaucoma knowledge among the working adults in Kelantan, Malaysia and their associated factors as well as evaluate the impact of educational intervention on the glaucoma knowledge.

METHODS

A quasi-experimental study was conducted involving 202 participants which were divided into intervention group and control group. A translated and validated questionnaire which comprised questions on sociodemographic information and 14 close-ended questions on glaucoma knowledge were used to assess glaucoma awareness and knowledge. Each questions was assigned one point for correct answer and zero if incorrect or unsure. Scores of seven or more were considered as good knowledge. Educational intervention on glaucoma were given to the intervention group while control group was given presentation on cataract. Post intervention assessments were completed at one month and three months post intervention. Statistical analysis were used to analyse the level of glaucoma awareness and knowledge, factors influencing the level and the differences in the proportion of good glaucoma knowledge between pre-test and post-test

for intervention and control groups.

RESULTS

A total of 202 participants enrolled for the study with 102 in intervention group and 100 in the control group. The glaucoma awareness level was 64.9% and the good glaucoma knowledge level was 49%. Educational attainment was the only factors significantly associated with good glaucoma knowledge. There was significant increase in the proportion of good glaucoma knowledge in the intervention group one month after the educational intervention ($p < 0.001$) and the effect persisted after three months ($p < 0.003$). There was also significant difference in the proportion of good post-test glaucoma knowledge between intervention and control group ($p = 0.003$).

CONCLUSION

There are significant gaps in awareness and knowledge about glaucoma in the public, educational interventions can be effective in promoting the glaucoma awareness and better understanding of glaucoma. Public health educational campaigns may be a good step in exposing and educating the public in combating glaucoma.

ABSTRAK

PENDAHULUAN

Glaukoma adalah penyakit mata kronik yang boleh menyebabkan kebutaan yang kekal sekiranya tidak dirawat. Intervensi Pendidikan boleh membantu meningkatkan kesedaran and pemahaman tentang glaukoma di kalangan orang ramai, seterusnya membawa kepada pengesanan glaukoma lebih awal dan perawatan penyakit ini yang lebih baik.

OBJEKTIF

Tujuan kajian ini untuk menentukan tahap kesedaran glaukoma dan pengetahuan glaukoma yang baik di kalangan orang dewasa yang bekerja di Kelantan, Malaysia dan faktor-faktor yang berkaitan serta menilai kesan intervensi pendidikan terhadap pengetahuan glaukoma.

METODOLOGI

Kajian kuasi eksperimen melibatkan 202 orang peserta yang dibahagikan kepada kumpulan intervensi dan kumpulan kawalan telah dijalankan. Soal selidik yang terdiri daripada soalan tentang maklumat sosiodemografi dan 14 soalan tertutup mengenai pengetahuan glaukoma telah digunakan untuk menilai kesedaran dan pengetahuan glaukoma pra-ujian. Setiap soalan diberi satu markah untuk jawapan yang betul dan sifar jika salah atau tidak pasti. Skor tujuh atau lebih dianggap sebagai pengetahuan yang baik. Intervensi pendidikan mengenai glaukoma diberikan kepada kumpulan intervensi manakala kumpulan kawalan diberi pembentangan mengenai katarak. Soalan-soalan ujian pasca dijawab pada satu bulan dan tiga bulan selepas intervensi. Analisis statistik digunakan untuk menganalisis tahap kesedaran dan pengetahuan glaukoma, faktor-faktor

yang mempengaruhi tahap dan perbezaan perkadaran pengetahuan glaukoma yang baik antara ujian pra dan ujian pasca untuk kumpulan intervensi and kumpulan kawalan.

KEPUTUSAN

Seramai 202 peserta telah melibatkan diri untuk kajian ini dengan 102 dalam kumpulan intervensi dan 100 dalam kumpulan kawalan. Tahap kesedaran glaukoma adalah 64.9% dan tahap pengetahuan glaukoma yang baik ialah 49%. Pencapaian pendidikan adalah satu-satunya faktor yang dikaitkan dengan pengetahuan glaukoma yang baik. Terdapat peningkatan ketara dalam bahagian peserta dengan pengetahuan glaukoma yang baik dalam kumpulan intervensi sebulan selepas intervensi pendidikan ($p < 0.001$) dan kesannya berterusan selepas tiga bulan ($p < 0.003$). Terdapat juga perbezaan yang ketara dalam bahagian pengetahuan glaukoma ujian pasca yang baik antara intervensi dan kumpulan kawalan ($p = 0.003$).

KESIMPULAN

Terdapat jurang yang ketara dalam kesedaran dan pengetahuan tentang glaukoma di kalangan orang ramai, intervensi pendidikan adalah berkesan dalam meningkatkan kesedaran glaukoma dan pemahaman yang lebih baik tentang glaukoma. Kempen pendidikan kesihatan awam merupakan langkah yang baik untuk mendedahkan dan mendidik orang ramai dalam menangani penyakit glaukoma.

CHAPTER 1

INTRODUCTION

CHAPTER 1 INTRODUCTION

1.1 GLAUCOMA

Glaucoma is an ocular disorder characterized by chronic, progressive optic neuropathy associated with structural damage to the optic nerve and corresponding visual field defects (Weinreb et al., 2014). Specific patterns of optic nerve head changes and retinal ganglion cell loss can be observed in patients suffering from glaucoma (Cantor et al., 2018). Typically, the early visual field defect in glaucoma develops at the mid periphery and progresses slowly to compromise the central field (David C Broadway, 2012).

Glaucoma generally is classified into primary, secondary, and developmental glaucoma with or without increase in intraocular pressure. In each group, it can be further divided into open angle glaucoma or closed angle glaucoma based on the gonioscopy examination. Ultimately, all causes of glaucoma will lead an eventual outcome of irreversible damage to optic nerve head and loss of visual field (Kanski *et al.,* 2019).

Glaucoma is one of the leading causes of irreversible blindness worldwide (Bourne et al., 2013). Glaucoma is estimated to afflict at least 90 million people worldwide and is projected to be on increasing trend (Pascolini and Mariotti, 2012; Wang et al., 2018). The National Eye Survey in Malaysia (NESII) conducted in 2014 estimated that 6.6% of blindness in Malaysia were caused by glaucoma after untreated cataract and diabetic retinopathy (F. L. M. Chew et al., 2018).

Glaucoma is often regarded as the thief of sight as it is usually symptomless during early course of disease, nonetheless it is relentlessly progressive to affect central vision and blindness if left untreated. Current treatment regimens including medical, LASER, and surgical procedures aim to lower intraocular pressure (IOP) in glaucoma patients (Sihota et al., 2018). The IOP is the only modifiable risk factor to be controlled in order

to slow down the progression of the disease and to preserve patients' vision throughout their lifespan (Sihota et al., 2018). To date there is no curative treatment available for glaucoma. To prevent disease progression to blindness, early detection and prompt treatment are crucial.

1.2 AWARENESS OF GLAUCOMA

Awareness is defined as knowing the existence of something and acknowledging its importance (Oxford English Dictionary, 2021). As there are no standardized screening tools for glaucoma, it's highly dependent on the awareness of the disease among the population and their early presentation for eye examination for detection of glaucoma (Prior et al., 2012; Rotchford, 2005). Blindness, which is preventable, may result from late presentation of the disease at an advanced stage and a lack of timely, appropriate therapy. The glaucoma awareness level among the general population around the world ranged from 22.9% to 71%. (Alemu et al., 2017; Y. K. Chew et al., 2004; Dağtekin et al., 2017; Kizor-Akaraiwe et al., 2017; Nujaim and Mohammed, 2018; Saw et al., 2003; Zhang et al., 2016). Glaucoma awareness levels varied greatly amongst different geographic areas of the world. The level of glaucoma awareness among the population is significantly related by the socioeconomic position and educational attainment of the population. The high level of awareness regarding glaucoma was observed in population of younger age, those with higher levels of education, positive family history of glaucoma and previous attendance to outreach programs.

1.3 KNOWLEDGE OF GLAUCOMA

Intraocular pressure lowering agents are the first line of treatment of glaucoma for most patients. However, they are costly, demand consistent daily administration of eye drops,

and usually patients may require numerous eyedrops. Patients' ignorance about the glaucoma disease is one of several variables linked to poor medication compliance for the condition, according to reports (Newman-Casey et al., 2013). Owing to the slow nature of progression and symptom free during the early course of the disease, patients tend to be ignorant of the importance of complying to the treatment regime. The basic knowledge of glaucoma disease process is therefore imperative for the patients to grasp the idea of the need for compliance to the treatment.

While having knowledge about glaucoma is crucial for those who are afflicted by it, it is indubitably necessary for the public to have some basic understanding of glaucoma as well. Being aware of glaucoma may not be sufficient for an individual to seek for eye screening. Having both awareness and understanding about glaucoma, particularly the risk factors, is what motivates the public to seek eye examinations, which are critical for early detection. Previous studies showed the good knowledge level of those who were aware of glaucoma among the population of different geographic areas ranged from 48.1% to 60.1% (Aghamollaei et al., 2019; Alemu et al., 2017; Kizor-Akaraiwe et al., 2017; Zhang et al., 2016). Similar to glaucoma awareness, the high level of glaucoma knowledge is associated with higher socioeconomic status and higher level of education.

1.4 IMPACT OF EDUCATIONAL INTERVENTION

With the evidence of the importance of high level of awareness and knowledge on glaucoma on the early detection as well as effective management of glaucoma, various ways have been devised to achieve this goal. Various clinical trials have studied the efficacy of educational intervention on the knowledge of glaucoma patients. The methods of educational interventions used in previous studies include video and brochures; interactive approach; waiting room videotape and nurse interaction; individually tailored

sessions; information sessions with slide presentations (Peralta et al., 2018). Studies have shown that patient-centered education about the glaucoma could help improve motivation and compliance (Newman-Casey et al., 2013; Shah, 2018). With educational interventions, the knowledge level on glaucoma was substantially increased among glaucoma patients as well as population without glaucoma (Aghamollaei et al., 2019; Blondeau et al., 2007; Johnson et al., 2016; Li et al., 2019; Mohamed et al., 2011; Oermann et al., 2001). Studies may be required to determine whether the increased awareness and knowledge of glaucoma can be translated into early glaucoma presentation and thence prevent blindness caused by glaucoma.

1.5 AWARENESS AND KNOWLEDGE QUESTIONNAIRE

Education and understanding of a disease are one the of keys in management of glaucoma for both the patients as well as the caretaker. Assessing the knowledge of the general population on glaucoma may pose a challenge as there is no standardised tool available. Many studies have developed glaucoma questionnaires and used as the tools in assessment of knowledge of patients. A study was conducted by Rosdahl and team in finding the best glaucoma questionnaire for qualitative and quantitative evaluation of glaucoma knowledge assessments in patients. Their ideal glaucoma knowledge questionnaire should be covering what patients would need to know for their care for glaucoma adequately; easily understandable in language that patients are familiar with; and the format of the questionnaire is easy with high probability for the patients to complete (Rosdahl and Muir, 2015).

Closed-ended questionnaire with true or false response is regarded as useful for assessing the baseline general glaucoma knowledge in a busy clinical settings because it

is self-administered, clear and easy to answer. Meanwhile the open-ended questions are superior in terms of identifying knowledge gaps however providing short answers seems to be less appealing to patients and of less clinical practicality in view of time constraints in busy clinics (Rosdahl and Muir, 2015).

In this study, closed-ended questions are adopted in glaucoma knowledge questionnaire with the consideration that it is self-administered, easy to understand and subjects are more willing to complete this form of questionnaire. The validated questionnaire will be translated into Malay language which suits best for Malaysian population as it is the national language and widely used in Malaysia. The use of language familiar to the population renders the study more accurate as it eliminates the confounder due to language barrier.

1.6 RATIONALE

Glaucoma is one the leading causes of irreversible blindness in Malaysia. Due to the natural history of the disease, it is asymptomatic during its early phase and undergoes irreversible progression to blindness in advanced stage. To prevent blindness caused by glaucoma, early detection and timely treatment are of utmost importance. The treatment of glaucoma is life-long and required good compliance in terms of medication administration as well as clinic follow-ups.

Malaysian adults are the backbone of the society and could act as the caregivers for young children suffering from congenital glaucoma as well as elderly patients with glaucoma. Most cases of glaucoma occur among the productive age group, targeting this group of population not only to preserve individuals' vision but also helping nation's economy. Low level awareness and knowledge delay presentation of patients for eye assessment and adversely affect the effectiveness of glaucoma treatment. Poor

compliance stemming from poor knowledge on glaucoma is the main hindrance to providing optimal treatment.

Government servants are generally more educated and well revered in community; hence they are more likely to be influential in the community. Furthermore, government servants deal with public from all walks of life in their daily working environment. High level of awareness and knowledge on glaucoma among the government servants would help the community to raise their awareness regarding glaucoma, prompting them for early presentation to the eye clinic for eye assessment.

To our knowledge, there is lack of studies on the level of awareness and knowledge of glaucoma among Malaysian adult population and the assessment on effectiveness of glaucoma education intervention. Hence assessing the level awareness and general knowledge on glaucoma among the working adults helps in identifying the knowledge gaps. This study also aims to study the factors affecting the level of glaucoma awareness and knowledge gaps among the population. By knowing the associated factors that potentially influence the glaucoma awareness and knowledge gaps, targeted educational programs could be planned for specific groups of people to achieve the goal of raising glaucoma awareness and knowledge.

Education is the key to create awareness and bridge the knowledge gaps regarding glaucoma. With the development of effective education interventions, it will assist in better care for glaucoma patients. A study on the interventional module is essential, and its effectiveness in the community needs to be evaluated. We aim to assess the effectiveness of the educational intervention among the working adults in increasing the glaucoma knowledge. If there is significant effectiveness, greater efforts on educational programs should be done on larger scale in promoting public glaucoma awareness and

awareness. It may also be interesting to look into further research to explore the behavioral changes in healthcare seeking following the educational intervention.

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CHAPTER 2

OBJECTIVE

CHAPTER 2 OBJECTIVES OF THE STUDY

2.1 GENERAL OBJECTIVE

To study the impact of educational intervention on general knowledge and awareness regarding glaucoma among working adults in Kelantan.

2.2 SPECIFIC OBJECTIVE

1. To determine the proportion of good awareness and good knowledge of glaucoma pre-educational intervention among working adults in Kelantan.
2. To determine the factors associated with the level of good awareness and good knowledge of glaucoma among working adults in Kelantan.
3. To determine the effectiveness of the education module by comparing the proportion of good knowledge score before and after the intervention (1 month and 3 months) among working adults in Kelantan.

CHAPTER 3

MANUSCRIPT

CHAPTER 3 MANUSCRIPT

3.1 TITLE PAGE

Evaluation of Educational Intervention on Knowledge and Awareness regarding Glaucoma among Working Adults in Kelantan, Malaysia

Wen Khang Chong[1,2,5], Mohd Ismail Ibrahim[3], Siti-Azrin Ab Hamid[4], Abdul Salim Ismail[5], Liza-Sharmini Ahmad Tajudin[1,2], Azhany Yaakub[1,2]

[1]Department of Ophthalmology and Visual Sciences, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia.

[2]Hospital Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia.

[3]Department of Community Medicine, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia.

[4]Unit of Biostatistics and Research Methodology, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia.

[5]Department of Ophthalmology, Hospital Pulau Pinang, Jalan Residensi, 10990 Georgetown, Pulau Pinang, Malaysia.

Correspondence author:

Associate Professor Dr Azhany Yaakub,

Department of Ophthalmology and Visual Sciences, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia

Email: azhany@usm.my

3.2 ABSTRACT

Purpose

To determine the level of good awareness and knowledge on glaucoma and their associated factors as well as the effectiveness of the glaucoma educational intervention among the working adults in Kelantan, Malaysia.

Study Design

A quasi-experimental study.

Methods

Participants from the governmental departments were recruited and divided into intervention group and control group according to departments. A translated and validated questionnaire adapted from previous study which comprised items on sociodemographic information and 14 close-ended questions on awareness and knowledge related to glaucoma were used. Each questions was assigned one point for correct answer and zero if incorrect or unsure. Scores of seven or more were considered as good knowledge. Educational intervention on glaucoma were given via online to the intervention group while control group was given presentation on cataract. Post-test assessments were completed at one month and three months post intervention. The binary logistic regression was used to determine the factors associated while McNemar's test was applied to compare the significant changes in proportion of good knowledge score pre and post intervention.

Results

A total of 202 participants enrolled for the study with 102 in intervention group and 100 in the control group. 64.9% of the participants were aware of glaucoma and 49% of the

participants had good knowledge score on glaucoma. Higher educational attainments (tertiary education and diploma holders) were the only factors significantly associated with good glaucoma knowledge (OR 6.99, 95% CI 3.43 – 14.27, p <0.001; OR 5.27, 95% CI 2.24 – 12.41, p<0.001). There was significant increase in the proportion of good glaucoma knowledge in the intervention group one month after the educational intervention ($p < 0.001$) and the effect persisted after three months ($p < 0.003$). There was also significantly higher proportion of good post-test glaucoma knowledge between intervention and control group ($p = 0.003$).

Conclusion

Although the public was well aware of glaucoma, there was relatively little understanding of the condition. Educational interventions can be effective to bridge the gap in promoting the glaucoma awareness and better understanding of glaucoma. It is advisable to have public health education initiatives to expose and educate the public about glaucoma.

3.3 KEYWORDS

Glaucoma awareness, Glaucoma knowledge, Educational intervention, Working adults

3.4 INTRODUCTION

One of the important components of public health measures is raising awareness and information about a particular condition. It aims to increase knowledge and consciousness about specific diseases, risk factors, prevention measures, and health promotion initiatives by disseminating evidence-based information. Low health literacy hinders patients from comprehending the severity of a disease and the preventive measures as well as treatment options available for decision making [1]. The level of awareness and understanding of a number of communicable and non-communicable diseases has been found to be significantly lacking in numerous research [2–7].

Glaucoma is an ocular disease with the hallmarks characterized by chronic, progressive optic neuropathy associated with structural damage to the optic nerve and resulting visual field abnormalities [8–10]. Glaucoma is frequently referred to as the "thief of sight" because it normally causes no symptoms in the early stages of the disease but ruthlessly progresses to cause central vision loss and eventual blindness if untreated. Glaucoma is one of the major causes of blindness on a global scale; it is estimated to affect approximately 90 million people worldwide, and the number is increasing [11–13]. While in Malaysia, glaucoma is reported to be the third most prevalent cause of blindness, accounting for 6.6% of all cases of blindness, following untreated cataract and diabetic retinopathy [14].

Early stages of glaucoma are often symptomless and left undetected, which cause late presentation of the disease at a more advanced stage. Due to the absence of standardized screening measures for glaucoma, it is primarily dependent on public awareness and knowledge of the condition and early presentation for eye examination for glaucoma detection. [15,16]. Furthermore, there is currently no effective curative therapy for glaucoma. The major goal of current therapy is to regulate intraocular pressure to a

level where the progression of glaucoma can be halted, and blindness prevented [17]. Poor adherence to therapy and life-long clinic follow-ups are acknowledged as barriers to successful treatment. Patients' ignorance about the glaucoma disease is one of several variables linked to treatment failure [18]. With early glaucoma diagnosis and prompt administration of effective treatment, progression of the disease and blindness can be averted. Thence the high level of awareness and knowledge regarding glaucoma in the population is of utmost importance in early diagnosis of glaucoma and prevent blindness which could in turn reduce burden to the health care cost as well as the community [19].

Various studies have been conducted to evaluate the level of awareness and knowledge of the patients as well as general population in different geographical locations [20–24]. The glaucoma awareness level was found to be between 61.3% and 68.9%. The effectiveness of educational intervention in raising the knowledge of glaucoma was also demonstrated in a few studies [25–27]. After educational intervention, there was also a significant improvement in the subjects' knowledge scores on glaucoma. To our knowledge, there is lack of information on awareness and knowledge on glaucoma among Malaysian population as well as the evaluation on the impact of glaucoma educational intervention in raising the level of glaucoma awareness and knowledge among Malaysian population. In this study, we aim to evaluate the level of awareness and knowledge regarding glaucoma among adults in Kelantan state, Malaysia. as well as the effectiveness of glaucoma education intervention.

3.5 MATERIALS AND METHODS

A quasi-experimental study was conducted between 1st June 2021and 31st December 2022. This study involved using a validated questionnaire as self-administered online survey and an educational intervention in the form of a short video, a brief lecture, and a brochure to the government servants in Kota Bharu, Kelantan.

Translation and Validation of Questionnaire

A self-administered, structured questionnaire to evaluate the glaucoma awareness and knowledge among working adults in Kelantan was adapted from Baker et. al. [28] and was translated into Bahasa Melayu through the stages which follows the guideline proposed by [29]. Forward translation of the questionnaire was performed by three independent translators who are proficient in both English and Bahasa Melayu. A committee team comprised lecturers from department of Ophthalmology, Community Medicine, and Biostatistics, as well as master trainees were involved in the process of review and reconciliation of the forward translation. The back translation of the questionnaire from Bahasa Melayu to English was then performed by four translators which consisted of four ophthalmologists who are fluent in both languages. The committee team was then involved in the harmonization, proofreading and finalization of the translated questionnaire.

A pilot study was conducted to assess the reliability and validity of the translated questionnaire. There were 100 responses collected for the pilot study. Principal Component Analysis (PCA) was used to determine the construct validity using Statistical Package for the Social Sciences (SPSS) version 27 software. For extraction method, the principal component method was used. The Kaiser-Meyer-Olkin (KMO) was computed to test the partial correlation among items to ensure the sampling adequacy and to test

whether the variables in the sample were adequate to correlate. Item selection was based on communalities, correlation and factor loading values.

The glaucoma knowledge questionnaire consisted of 14 items. The initial solution showed KMO of 0.929 which demonstrated the sampling adequacy. The Bartlett's test of Sphericity was statistically significant ($p<0.001$) with only one component was suggested by Eigenvalues. All items in the questionnaire were retained in the final analysis with the factor loading from 0.665 to 0.858. The Cronbach's alpha of the glaucoma knowledge questionnaire was 0.954 which indicated a high level of internal consistency.

Study Population

The Malaysian federal and state government servants in Kota Bharu, Kelantan were recruited according to inclusion and exclusion criteria. The inclusion criteria include adults aged between 25-55 years old who were working in Malaysian government sectors. The exclusion criteria include those who were healthcare-related staff or with the confirmed diagnosis of glaucoma. Those who were unable to participate in both pre and post-test questionnaire were also excluded from the study. The participations were voluntary and informed consents were obtained prior to the study. The subjects were divided into interventional group and control group. To avoid sample contamination, intervention group comprised subjects from the government departments located in Kota Bharu Federal Building, whilst the control group was consisted of the subjects from Kota Bharu Municipal Council and Kelantan State Public Works Department which were not within the Kota Bharu Federal Building.

Data Collection

Glaucoma Awareness and Knowledge questionnaires including the sociodemographic information were distributed in the form of Google Forms online system via email and WhatsApp. A comprehensive summary of the study was presented in the first page of the Google forms and a consent form was signed before proceeding to the questionnaire. This was a self-administered questionnaire; the data was then recorded for further analysis. Awareness was considered present when a participant has had heard of or knows the existence of glaucoma. Each glaucoma knowledge question was given one mark if answered correctly, zero mark if the answer was incorrect or unsure. If a participant answered seven or more questions correctly, he or she was considered to have good glaucoma knowledge.

Educational Intervention

Educational intervention was conducted by presenting a short video, a lecture, and a brochure to the participants after they had completed the pre-test questionnaire.

For the interventional group, the educational intervention consisted of a two-minute video on glaucoma information created by USM students, a 30-minute slides presentation by the Glaucoma consultant ophthalmologist as well as a brochure with the general information on `in glaucoma. The sessions of video and lecture presentations were conducted via online using Webex by Cisco (https://usm-cmr.webex.com/usm-cmr/onstage/g.php?MTID=ed80cf908dd21f81965f0a8b104fba50c). The same questionnaire was then completed by the same subjects one month and three months after the sessions of educational intervention.

Nevertheless, for the control group, the subjects received 30-minute slide presentations on cataract by an ophthalmologist. The sessions of slide presentations were

conducted via online using Google Meet (https://meet.google.com/pqw-mixt-fru). The same questionnaire was then completed by the same subjects one month and three months after the sessions of educational intervention.

Data Analysis

The data entry and analysis were performed by using Statistical Package for the Social Sciences (SPSS) version 27 licensed to USM. All data was entered and checked for incomplete entry and double entry using SPSS version 27.0. For the descriptive statistics data, numerical variables were presented by means (standard deviations) and categorical variables were presented in frequency (percentage). Simple logistic regression and multiple logistic regression were used to analyse the association between sociodemographic factors and glaucoma awareness as well as the high level of glaucoma knowledge. The McNemar's test was used to determine the difference on the proportion of subjects with good glaucoma knowledge scores between pre-intervention, one-month post-intervention and three-month post intervention. A p value of <0.05 was considered statistically significant.

Ethical Consideration

This study has been granted ethical approval from the Universiti Sains Malaysia Ethical Committee (USM/JEPeM/21020150) and was conducted in accordance with World Medical Association Declaration of Helsinki ethical principles for medical research involving human subjects. The confidentiality of the data was strictly safeguarded.