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Quality of life among Visually Impaired Elderly People

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ABSTRACT

The purpose of this study was to determine factors are associated to visual impairment and assess quality of life among two welfare home residents. A cross-sectional design was employed to determine the factors that are associated with visual impairment among elderly people. A total of 150 subjects were selected by simple random sampling from two welfare homes (Cheras in Selangor, and Seremban) in Malaysia. The socio-demographic variables (age, gender, ethnicity, income), health behavior (smoking) and self-reported medical condition (diabetic, eye disease, hypertension, heart disease, and stroke) were examined in relationship with visual impairment. Instruments used in this study included eye exam test by Snellen E Chart and a list of questions about socio-demographic factors, health behavior and self-reported medical conditions and disease. Data analyzes were carried out using SPSS, 20. Descriptive analysis such as mean, standard deviation (SD) and frequency were utilized to describe the characteristics of the respondents. The mean age of respondents was 69 years (SD = 7.31). A chi-square test (Pd" 0.05) and multiple linear regression (R^2=0.64) analyzes were utilized to determine predictors of visual impairment. Also independent t test were utilized to determine quality of life among elderly people. It was found that the majority respondents had visual impairment (46%) and blindness (28%) in compare with normal vision (26%).Sociodemographic factors (age,gender,ethnicity,income) health behavior (smoking) and disease (diabetic,eye disease, heart disease, hypertension and stroke) were associated to visual impairment. Also the subjects with visual impairment had poorer quality of life than subjects without visual impairment. The results indicated the important role of visual impairment on quality of life among elderly people. Health care providers are in position to prevent and control of visual impairment. Visual impairment should be acknowledged and emphasized in policy and intervention programs are needed to improve quality of life in older Malaysians.

Key word: visual impairment, quality of life, welfare homes, elderly.

INTRODUCTION

The ageing population has become a global phenomenon. World Health Organization revealed that the cohort of 60 years and above is expected to increase globally from 600 million in 2000 to 1.2 billion in 2050 (World Health Organization, 2006).

Malaysia like many other countries world-wide is experiencing the population aging phenomenon, owing to declining fertility rates combined with increasing life expectancy over the latter half of the 20th **c**entury (Ong, 2002). With increasing life expectancy, it is predicted that the number of people with visual impairment will increase significantly in the near future. World health organization stated globally 285 million

people were visually impaired that 39 million were blind and 246 million had low vision. About 90% of the worlds visually impaired lived in developing countries. Globally, uncorrected refractive errors were the main cause of visual impairment. Cataracts remained the leading cause of blindness in middle and low income countries. The number of visually impaired people from infectious diseases had greatly reduced in the last 20 years and 80% of all visual impairments could have been avoided or cured (WHO, 2011). Visual impairment and blindness are recognized as important determinants of decreased quality of Life (Jacobs et al, 2005).The impact of visual impairment on quality of life includes loss of independent living, loss of confidence and depression (McDonnall, 2009).Likewise age related eye diseases was found to be associated with physical impairment and poorer health related quality of life (Datta, 2008; Li Y et al, 2011). Despite the rapid ageing of the population and increasing number of visually impaired elderly, there is a little study about visual impairment among elderly people in Malaysia. Consequently, it is necessary to do this research and identify factors which affect the visual impairment among elderly people. Investigating about risk factors that predict visual impairment among elderly can be useful for identifying needs in treatment and rehabilitation services, planning and implementing blindness prevention programs, and determining priorities for aging population. The purpose of this study is to determine the factors that are associated with visual impairment and quality of life of older persons in two welfare homes in Malaysia.

Research Framework

Based on the literature review that examined the visual impairment; risk factors for visual impairment and the association between visual impairment and quality of life a research framework is proposed. The framework classifies three types of risk factors; first, socio-demographic factors, secondly, health behavior factors and thirdly, diseases or impairment. The socio-demographic factors include age, gender, ethnicity and socioeconomic. Health behavior includes smoking. In this framework, diseases are classified as medical conditions such as: Diabetic, eye disease, hypertension, heart disease and stroke. The outcomes in this research framework are visual impairment and quality of life. Visual impairment is defined as scores of Snellen E Chart .A global evaluation item is used to measure quality of life.

Risk factors of visual impairment in old age

Socio demographic factors

Age

Visual acuity (VA) declines and the prevalence of visual impairment increases with increasing age; Visual acuity declines with age and this deterioration is faster in higher age (Klein et al., 2006). The prevalence of visual impairment increases from 0–0.6% in persons aged 40–49 years to 3–12% in persons aged 70 years and older and to 6–27% in persons aged 80 years and older (Häkkinen 1984;Tielsch et al., 1990;Ponte et al., 1994;Hirvelä &Laatikainen, 1995;Taylor et al., 1997;Cedrone et al., 2006).

Gender

A meta-analysis of population-based surveys on blindness prevalence in Asia, Africa, and the industrialized countries in 2000 indicated that women bear approximately two-thirds of the burden of blindness in the world (Abou-Gareeb, 2001). Two large population-based surveys in Africa showed a statistically higher prevalence of blindness (adjusted for age) among women compared to men.

Ethnicity

Many of the differences by race can also be attributed to interactions between race and life expectancy, as well as health disparities, and socioeconomic variables. A study in UK reported that blacks and south Asians had a higher prevalence of visual impairment compared to white people (Sivaprasad et al., 2012). According to the chronic disease center (CDC) in 2006 year, the prevalence of “vision troubles” among African Americans is 9.4%, but only 8.9% for their white counterparts. According to The Eye Diseases Prevalence Research Group (2004a), the specific pathological causes of blindness and visual impairment differ by race.

Socioeconomic (income)

It is not inconceivable that lower income is a contributing factor to worse eye health and

poorer access tocorrective lenses. A study in Malaysia reported that the prevalence of visual impairment and blindness varies geographically due to socio-economic factors, availability of health services and awareness of eye diseases among the population (Thevi et al., 2012). Having a low income and lower Educational attainment were significantly associated with reported vision problems (Anthony et al., 2010).

Health behavior factors in visual impairment
Smoking

Smoking is linked to self-reported visual impairment among older adults with age-related eye diseases, particularly cataract and age-related macular degeneration (Xinzhi Zhang,Theodore,&Thompson, 2011). Smoking is thought to depress antioxidant levels, decrease luteal pigments in the retina, activate the immune system, reduce choroid blood flow, reduce drug detoxification by the retinal pigment epithelium, and potentiate nicotine antigenic activities, all of which have been hypothesized to be involved in the pathogenesis of AMD(Ivan et al., 2004).

Disease and impairments
Eye Disease affecting vision in old age

In addition to normal age related changes in vision, many primary ocular disease as well as systematic disease affect visual functions. Age related macular degeneration (AMD) is an ocular disease that causes damage to the retinal macula, mostly in the older people. AMD is a disease that gradually destroys sharp, central vision ultimately leaving the affected individual with only orienting vision and the peripheral visual field (Binder &Falkner –Radler, 2008).

Central vision is needed for seeing objects clearly and for common daily tasks.AMD occurs in two main forms: wet and dry. Wet AMD occurs when abnormal blood vessels behind the retina start to grow under the macula. These new blood vessels tend to be very fragile and leak blood and fluid .the blood and fluid raise the macula from its normal place.

Damage to the macula and consequently loss of central vision may occur rapidly in days or weeks. Dry AMD occurs when the light sensitive cells in the macula slowly break down gradually blurring central vision (Saari, 2001).normal aging processes can lead to structural and blow flow changes that can predispose patients to AMD, also advanced aged does not inevitably cause AMD .however age as well as family history smoking and hypertension are considered risk factors for age related macular degeneration (Ting et al., 2009). AMD is the leading cause of visual deterioration and legal blindness in patients over 60 years of age in the western world (Congdon et al., 2004).

Cataract is a common cause of visual loss in older population (Congdon et al., 2004). cataract occurs as the lens become cloudy and yellowish with aging .the normal lens is clear .cataract reduces visual acuity and the loss of transparency in the lens may also contribute to a decrease in the ability to discriminate colours .in addition to advanced age smoking diabetes and exposure to UVB light have consistently been identified as risk factors for cataract development(Abraham et al., 2006).the prevalence cataract increases significantly with age from 2%in persons under 65to 67%in those aged 85 or older(Laitinen et al., 2009).

Glaucoma is considered one of the leading causes of visual impairment in the world .primary open angle glaucoma is the most common form of the disease, representing around 90% of all cases (Gupta, 2005). Risk factors for glaucoma include age (glaucoma is significantly more common after age 45), family history, diabetes, and most notably, race/ethnicity (Ryskulova et al., 2008).Anthony et al in 2010 year, reported that Cataracts, diabetes, and glaucoma in particular, weresignificantly associated with reported vision problems (Anthony et al., 2010).

Diabetic

Visual impairment remains an important public health problem in people with diabetes (Sivaprasad et al., 2012)and insulin use, longer diabetes duration and higher levels of blood glucose are associated with retinopathy in persons with diabetes (Bertelsen, 2012).Visual impairment adds to the burden of several other microvascular and macrovascular complications in people with diabetes, threatens independence and compromises quality of life (Hirai, 2011). Diabetes

is one of the leading causes of visual loss in older people. Diabetic retinopathy is the result of micro vascular retinal changes.

Heart disease

A recent meta-analysis of nine cohort studies failed to demonstrate any significant association between primary open-angle glaucoma and all-cause or cardiovascular mortality (Ophthalmology, 2011). Studies examining the association between retinal vein occlusion (RVO) and mortality have found as much as a two-fold increase in the risk of cardiovascular mortality in persons with RVO (Cugati, 2007). Other systematic disease especially cardiovascular disease, hypertension, thyroid and romatoide disease, may affect the eye (Saari, 2001). Cataract may be associated with cardiovascular disease, diabetes and hypertension (Borger et al., 2003). Cataract has also shown to be associated with increased cancer and cardiovascular mortality risk (Thiagarajan et al., 2005).

Hypertension

Systolic blood pressure was identified as the major correlate of intraocular pressure (IOP) (Paul& Foster1, 2011).Hypertension and diabetes were associated to the prevalence of visual impairment (George & Ploubidis, 2012). Hypertensive retinopathy refers to retinal micro vascular signs that are related to raise blood pressure (Wong TY, 2001).

Stroke

Stroke can lead to a variety of ocular motility disorders including infra nuclear cranial nerve palsies, supra nuclear gaze disorders, intern clear ophthalmoplegia, nystagmus and ocular dysmetria (C, 2003).Visual field loss has many causes but is a well-recognized complication of stroke, with an incidence in acute stroke patients reported as 20% (Allen , 1988).

Quality of life

Definition of Quality of Life

Quality of life is a personal idea that is not easily defined or explained and there is no consensus on its definition (Arnold, 1991; Bowling, Banister, Sutton, Evans, & Windsor, 2002; Ormel, Lindenberg, Steverink, & Vonkorff, 1997). World Health Organization (WHO) (1997) conceptualized it as “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”.

Disability and Quality of Life

Quality of life is relevant to all outcomes of the stages in the disablement process in determining how individuals cope (Lamb, 1996; Pope & Tarlov, 1991). As mentioned earlier there were few studies on disability and quality of life of older people with disability. Disability has considerable negative impact on older person’s quality of life (Hellström, Persson, & Hallberg, 2004; Hellström, Andersson & Hallberg 2004). A study from Taiwan by Tseng and Wang (2001) found that for older people residing in nursing homes, higher educational level, higher socioeconomic status, better physical function and activities of daily living, social support provided by families and the frequency of interaction with the families were significantly related to higher overall quality of life. Social support from nurses, nursing aids and family members had a significant positive relationship with quality of life but longer time of residence in a nursing home was associated with lower overall quality of life.

Vision relation to quality of life

World Health Organization (1996) defines quality of life as; Quality of life is defined as individual’s perceptions of their position in life in the context of the culture and value system where they live, and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept, incorporating in a complex way a person’s physical health, psychological state, level of independence, social relationships, personal beliefs and relationship to salient features of the environment.

Living with chronic illnesses and their manifestations affects daily functioning and influences the quality of life of older people (Kemp, Husser, Roberto &Gigliotti, 2004). Studies have found that being dependent on others is one of the greatest fears of older adults and that maintaining independence is a goal that has been rated as integral to their quality of life (Gignac, Cott, & Radley,

2000). Promoting independence, limiting disability, preventing secondary problems, and promoting wise use of health services are all necessary components of minimizing the effects of shrinking resources as larger numbers of older persons require services. Attending to quality of life and the importance of helping persons adjust to and manage their health problems is a way of avoiding more costly situations such as nursing homes and hospitals(Kemp, et al., 2004; Nesbitt & Heidrich, 2000).

Measurement of Quality of Life

Considering quality of life focuses on the person, and each person views it differently, using multidimensional scales to assess quality of life is vital. A variety of self-administered measurements have been developed to assess quality of life (McDowell, 2006) such as global, generic or specific instruments. Global scales have been developed to measure quality of life that may be a single question about overall quality of life or an instrument that assesses satisfaction in several domains (Scott & Garrood, 2000). The Sickness Impact Profile (SIP) was developed as a measure of perceived health status to assess the impact of disease on physical behavior. The Nottingham Health Profile (NHP) was a shorter scale than the SIP that evaluate the level of emotional, social, and physical distress that is caused by ill health. These two scales more closely measure HRQOL than general quality of life.

MATERIAL AND METHODS

A cross-sectional design, utilizing eye exam and questionnaire was employed in this study. In the first step elderly people 60 years and above were asked to participate in the survey. In the second step those who agreed to participate were written informed consent. The survey was conducted in two welfare homes in Serdang and Seremban states of the Malaysia country. Every registered elderly who live in welfare homes had a recorded document called personal file in the welfare home center.

According to inclusion and exclusion criteria and using a complete list of identification number for every older people the simple random sampling (using computer) was used to select every subject for this study. We invited and explained for elderly people in coming to this study and fortunately most of them accepted.

The study adopted face to face interview technique for questionnaires to gather data. It has done from the first day of august 2012 through the first day of November 2012.

Independent variable measurement

Socio-demographic characteristics

Age was used as a continuous variable for descriptive purposes. For the analysis, age was categorized into age groups and coded as 1 = 60 - 69 years, 2 = 70-79 years, 3 = 80 years and above. Gender was dichotomous, dummy coded variable and coded as male = 1 and Female = 2 .Ethnicity was defined as Malay, Chinese, Indian and others (Malay= 0, Chinese = 1, Indian=2 and others=3).Income was a continuous variable and thus was recoded as a two categorical variable: 1= RM 1-49, 2= RM 50-99.

Health behaviors

A single item that used to assess health behavior statues was smoking. Cigarette smoking statues was categorized at baseline as those who never smoked ,were former smokers or who currently smoked .those who never smoked were identified according to the question " have you ever smoked at least 100 cigarettes in your entire life?" Those with a history of smoking were asked "do you smoke cigarettes now?" to distinguish former from current smokers.

Dependent variables

The three main outcomes of the study were any visual impairment, disability and quality of life. The assessment in visual impairment was done by Snellen E Chart and the determination of disability status as measured by ADL and IADL difficulties was based on the respondent's reported difficulties to perform the six activities of daily living and eight instrumental activities of daily living. Quality of life was based on the respondent's subjective or perceived overall quality of life.

Eye exam test by snellen e chart

The assessment of visual acuity was performed by means of the Snellen E Chart, a

standardized measure for visual analysis (DB, 1983). This assessment is widely used because it can be understood by literate and illiterate individuals, and it is easy-to-use and low-cost (Lee, 2003). The test is performed with the individual seated six meters from the chart, which is fixed to the wall at eye level of the assessed individual. The individual must state the direction that the letter "E" faces (up, down, right or left).

Measurement of Quality of Life

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Justification for using single question in perceived quality of life

There is no "gold standard" and there is no "external criterion of quality of life against which measures could be tested" (Hunt, 1997, p.206). Since quality of life is a subjective concept, the best way to derive ratings of importance would be by asking respondents directly what is important for their quality of life or to ask respondents to rate the various aspects of life on a scale of importance to their quality of life (Saxena et al, 2001). The fundamental issue is to determine what is important to the person's quality of life, taking into account the cultural orientation of an individual. Bowling (2005) postulates "if one question works, why ask several?" (p.344). Single item measures have obvious benefits for research in terms of reduced burden and costs and ease of interpretation.

Quality of life

Quality of life was defined as a personal construct influenced by the cultural orientation of the individual. It is the respondent's evaluation of his/her life contents as was pointed out by Gill and Feinstein (1994), quality of life is a uniquely personal perception. A single item, perceived quality of life was used to measure overall quality of life (QOL). Respondents were asked, "Overall, how would you describe your quality of life? Excellent, good, moderate, poor or very poor" Responses were coded as very poor = 0, poor = 1, moderate = 2, good = 3, or excellent = 4.

Statistical analysis

Prior to analyzing data, a new data file that integrates the relevant measures was created. Data were analyzed using the Statistical Package for the Social Sciences (SPSS 20, for Windows). Descriptive statistics including mean, standard deviation, frequency, and percentage were used to describe socio demographic characteristic, health behavior status, and self-reported medical condition, the prevalence of visual impairment, disability and quality of life. For analyses a p value d" 0.05 (two-sided) was considered as significant.

RESULTS

Exploratory Data Analysis (EDA)

According to Tabachnick and Fidell (2001), a standardized score with a value greater than the critical value of 3.29 is considered as outlier. Results of the outlier assessment revealed no outlier., the normality of distribution for major variables including disability was evaluated through

skewness and kurtosis. According to the rule of thumb, a variable is reasonably close to normal if its skewness falls between -1.0 and +1.0, and kurtosis has value between –2.0 and +2.0 (Peat & Barton, 2005).

Independent variable

Socio-demographic characteristics

The sample consisted of 150 persons living in the two welfare homes in Malaysia, ranging in age from 60 to 92 ages. Table 4.2 presents the socio-demographic characteristics of the respondents. The mean age of the sample was 69.39 age (S.D. = 7.31). The majority of the respondents were aged between 60 and 69 age (86%), 47.0% were aged between 70 - 79 age, and about17.0% were aged 80 years and over. Respondents comprised the different ethnic groups in Malaysia; Malays (41.3%), Chinese (25.3%), Indians (24%), and Others slightly more than nine percent (9.3%). More than half of the respondents reported a monthly income less than RM49.00 (67.3%).

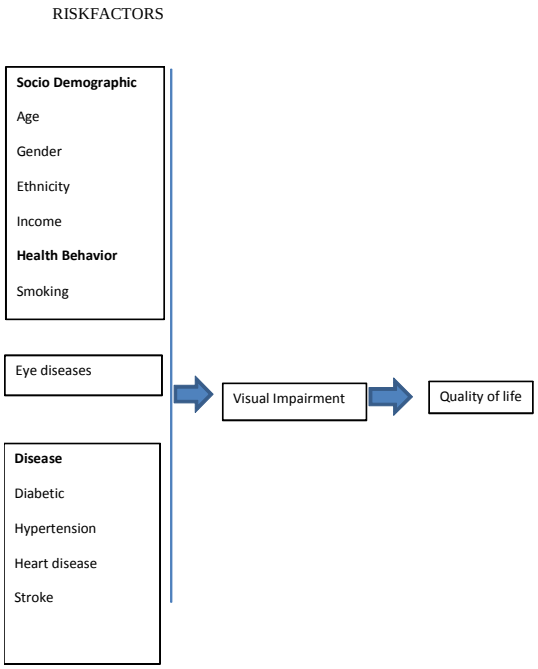

Fig. 1.1: Research Frameworks for Visual Impairment and quality of life

Health behavior

The health behavioral characteristics of the respondents are presented in Table 4.3. More than half of the respondents were smoked in former (57.3%), current smoker (15.3) and about twenty seven percent (27.3%) never smoked

Self-reported medical condition or disease

Table 4.4 displays the prevalence of medical conditions or disease reported by the respondents. The most common medical conditions or disease were diabetes mellitus (78.7%), hypertension (76.7%), heart disease (76.0%), eye disease (76.0%), and stroke (56.7).

Prevalence of visual impairment and blindness

Table 4.5 shows to the prevalence of visual statues reported by the elderly to snellen E chart. The normal vision (6/6- 6/12) among welfare home residents were about 26%, impaired vision (6/18-6/36) reported 46% and blindness (6/60) 28%.

Prevalence of Blindness, Visual Impairment and Adequate Vision by Selected Socio Demographic Characteristics, Health Behavior (Smoking) And Self-Reported Medical Condition (Disease)

In this study reduced visual acuity was significantly associated with increasing age (Table 4.9). Blindness increased significantly with age from 5.8% in subjects 60-69 years of age and 25.8% in subjects 70-79 years of age to 67.7% in subjects 80 years old or older. Visual impairment also

Table 1: The inclusion and exclusion criteria for the subjects

Inclusion criteria	Exclusion criteria
Age 60 years or above	Patient too ill
Patient with written informed consent	No written informed consent
No dementia or other mental disease	dementia or other mental disease

increased with age ranging from 34.6% in subjects 60-69 years of age to more than 71% in subjects 70-79 years of age. Female subjects (54.5%) were somewhat more like to be visually impaired compared to males (47.6%).Also female subjects (36.9%) more like to be were blind in compared to males (15.2). Although Chinese subjects were more like to be visually impaired (73.7%) but Malay subjects were more to be blind (33.9%) compared to other races. additionally lower level socioeconomic was associated to increasing visual impairment (51.9%).

Smoking statues was correlated with impaired vision although former smokers had a higher prevalence of visual impairment (36%) and blindness (21.3%) compared to current smokers or subjects who never smoked. Also subjects with diabetic, eye disease, heart disease, hypertension and stroke were significantly more likely to be blind or visually impaired ($p<0.01$).

Multiple Regressions

Table 4.11 displays the results of the enter method multiple regression analysis utilizing visual impairment as the dependent variable. The variables which entered the regression model were age, gender, ethnicity, income, smoking, diabetic, eye disease, heart disease, hypertension and stroke in relationship.

According to the results generated by the SPSS, the coefficient of determination(R-squred) of model was .64.This means that 64% of visual impairment was explained by the independent variables. The independent variables for this study and in regression model are including: age, gender, ethnicity, income, smoking, diabetic, eye disease, heart disease, hypertension and stroke. The finding of regression model showed that there is a significant association between age, gender, ethnicity, income, smoking, diabetic, eye disease,

Table 4.2: Percentage distribution of socio-demographic characteristics

Demographic characteristic	n	%
Age group		
60-69	86	53.7
70-79	47	31.3
80^{+}		11.3
Age (means ± SD)	17	
Gender	69.39 ±7.31	46.0
Male	69	54.0
Female	81	
Ethnicity		41.3
Malay	62	25.3
Chinese	38	24.0
Indian	36	9.3
othersincome	14	67.3
Less than RM 49	101	32.7
RM 50- RM 99	49	32± 47
Income (means ± SD)		

Table 4.3: Percentage distribution of health behavior characteristics

Health behavior characteristics Smoking statues	n	%
Never smoked	41	27.3
Former	86	57.3
Current	23	15.3

Table 4.4: Prevalence of self-reported medical condition or disease

Medical condition	n	%
Diabetic	118	78.7
Eye disease	114	76.0
Heart disease	114	76.0
Hypertension	115	76.7
Stroke	85	56.7

Table 4.5: The Prevalence of visual impairment among elderly

Visual acuity group	n	%
Normal (6/6 – 6/12)	39	26.0
Impairment (6/18-6/36)	69	46.0
Blind (6/60)	42	28.0

heart disease, hypertension, stroke and visual impairment.

Objective two

An independent t test revealed a significant difference in mean quality of life scores for the visually impaired subjects (M = .1053 , SD=.3082) and subjects without visual impairment (M=.6667 ,SD= .4780); t (44.554)= -6.624 ,p < 0.001.The findings, showing that the visually impaired subjects had lower level of quality of life than the subjects without visual impairment. With

Table 4.9: Prevalence of blindness, visual impairment and adequate vision by selected socio demographic characteristics

	Normal (6/6-6/12)		Impairment (6/18-6/36)		Blind (6/60)		Total	χ^2
	n	%	n	%	n	%	n	
Age group								
60-69	31	59.6	18	34.6	3	5.8	52	19.27
70-79	2	3.0	48	71.6	17	25.8	67	
80^{+}	0	0.0	10	32.3	21	67.7	31	
Gender								
Male	20	30.3	36	47.6	10	15.2	66	10.44
Female	13	15.5	40	54.5	31	36.9	84	
Ethnicity								
Malay	13	21.0	28	45.2	21	33.9	62	16.59
Chinese	2	5.3	28	73.7	8	21.1	38	
Indian	13	36.1	14	38.9	9	25.0	36	
Other	5	35.7	6	42.9	3	21.4	14	
Income								
RM 0-RM49	22	16.8	68	51.9	41	31.3	131	19.00
RM50-RM99	11	57.9	8	42.1	0	0.0	19	

P<0.05

Table 4.10: Prevalence of blindness, visual impairment and adequate vision by selected health behavior (smoking) and self-reported medical condition (disease)

	Normal (6/6-6/12)		Impairment (6/18-6/36)		Blind (6/60)		Total	χ^2
	n	%	n	%	n	%	n	
Smoking								
Former	0	0.0	54	62.8	32	37.2	86	43.32
Current	0	0.0	14	60.9	9	39.1	23	
Nonsmoker	33	22.0	8	5.3	0	0.0	41	
Disease								
Diabetic	16	13.6	63	53.4	39	33.1	118	25.33
Eye disease	12	10.5	64	56.1	38	33.1	114	37.48
Heartdisease	14	12.3	62	54.4	38	33.3	114	27.94
hypertension	19	16.5	58	50.4	38	33.0	115	12.60
Stroke	15	17.6	47	55.3	23	27.1	85	12.52

P<0.05

increasing visual impairment quality of life is decreasing.

DISCUSSION

The first specific objective for this study is: to determine the relationships between socio-demographic factors (age, gender, ethnicity and income), health behavior factors (smoking) and diseases (diabetes mellitus, eye diseases, hypertension, heart disease and stroke) and visual impairment among elderly. This finding showed that with increasing age, vision will be decreased. On the whole, the results of this study was consistent with and support current literature (Munoz et al., 2000;Sjöstrand, Laatikainen, Hirvela, Popovic, & Jonsson, 2011) which found that visual impairment increased significantly with increasing age. Other finding from the study showed that sex significantly contributed toward visual impairment. Older women reported higher level of visual problems than men. This results in general replication of past findings that older women had lower levels of vision than male counterparts (Kyari, 2009;Herrieth ,et al., 2011)), because women are less likely to express a need for sight due to fear of being seen as a burden, and some household heads seem to be more inclined to support surgery for elderly men than elderly women(Geneau, 2005).

Also ethnicity statues did appear to be an important predictor of visual impairment among elderly. Consistent with previous reports (Varma, 2010;Sivaprasad et al., 2012), ethnicity has an important role in visual impairment. Another result showed that socioeconomic statues did appear to be another important predictor of visual impairment among elderly people. This finding is consistent with some previous studies which found income to be a significant impact on visual impairment (Wilson, 2008; Anthony et al., 2010). Other findings from this study showed that smoking significantly contribute in visual impairment. Smoker group reported higher level of visual impairment than nonsmokers(Xinzhi Zhang, Theodore& Thompson, 2011; Tan, 2008). In this study, diabetic, eye disease, heart disease, hypertension and stroke were found to be a predictor of visual impairment in the regression model.Diabetic had significant relationship with visual impairment and most studies have shown that persons with higher level of diabetes are more probably to report visual impairment (Sivaprasad et al., 2012; Hirai, 2011).the association between

Table 4.11: Result of Multiple Regressions to predict visual impairment of elderly people

Independent variables	B	SE	B	Sig	Tolerance	VIF
(Constant)	-71.319	9.362		.000		
Age	1.11	.13	.51	.000	. 65	1.53
Gender	6.28	2.05	.16	.003	.87	1.14
Ethnicity	1.84	.98	-.04	.039	.92	1.08
Income	2.83	3.50	-.05	.042	.67	1.47
Smoking	6.13	2.23	.15	.007	.83	1.19
Diabetic	3.98	2.83	.08	.016	.68	1.46
Eye disease	6.04	2.65	.13	.024	.71	1.39
Hypertension	3.85	2.53	.08	.013	.79	1.25
Heart disease	3.39	2.66	.07	.020	.70	1.41
Stroke	1.36	2.06	.03	.050	.88	1.13
Relationship F(10,140)=24,752	R^2=0.64					

P< 0.05

eye diseases and visual impairment is another result of regression model. This result is parallel with other studies about eye disease and visual impairment (Binder &Falkner –Radler 2008; Congdon et al.2004). Also heart disease had a significant association with visual impairment .the relationship between heart disease and visual impairment reported in some studies (Ophthalmology, 2011; Cugati S, 2007).moreover hypertension had a significant association with visual impairment in regression model. Some studies reported that persons with increasing blood pressure are more probably to report visual impairment (Paul J, Foster L, 2011; George B, Ploubidis, 2012) and finally stroke had a significant association with visual impairment in regression model. The results of some studies confirmed the relationship between stroke and visual impairment (C, 2003; Simon JE, 2003). The second specific objective for this study is assessing the effect of visual impairment on quality of life among elderly people. The findings, showing that the visually impaired subjects had lower level of quality of life than the subjects without visual impairment. Furthermore, vision loss has a negative impact on health-related quality-of-life (Lamoureoux, 2009).

Summery

In this cross sectional study, predictors of visual impairment in elderly people in Malaysia were examined. 150 older people were selected by simple random sampling in two welfare homes (Cheras in Selongor and Seremban). Instrument used in this study included the eye exam by Snellen E Chart, quality of life scale and other questionnaire about socio demographic factors, health behavior and self-reported medical conditions. Data analyses were carried out using SPSS, 20. The mean age was 69.39 age (S.D. = 7.31). Malay respondents were more (41.3%), in compare to Chinese (25.3%), Indians (24%), and Other races (9.3%).Female gender were (54%) more than male (46%). More than half of the respondents reported a monthly income less than RM49.00 (67.3%).it was found that former smoking (54%)and older people with diabetic (78%) were more in compare to other disease in this study. the majority respondents had visual impairment (46%) and blindness (28%) in compare with normal vision (26%). A chi-square test showed that visual impairment increased with age ranging from 34.6% in subjects 60-69 years of age to more than 71% in subjects 70-79 years of age. Female subjects (54.5%) were somewhat more like to be visually impaired compared to males (47.6%). Although Chinese subjects were more like to be visually impaired (73.7%) but Malay subjects were more to be blind (33.9%) compared to other races. additionally lower level socioeconomic was associated to increasing visual impairment (51.9%). analysis of multiple linear regression showed that age, gender, race, income, smoking statues, diabetes, eye disease, heart disease, hypertension and stroke associated to visual impairment. Follow up analysis showed that quality of life of respondents was different based on visual impairment. Respondents with visual impairment reported significantly lower quality of life than the respondents with normal vision.

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