# The Demand For Health Care By The Elderly In Kedah: Do Enabling Factors Matter?

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## ABSTRACT

Understanding factors that affect health care demand by the elderly is vital for the health system to be more responsive in providing care to this special group. Since health care demand studies at micro level are rather limited within Malaysia context, this research attempts to reduce the gap by focusing on elderly demand. The main objective of this paper is to identify the effect of enabling factors on health care demand by the elderly in Kedah, Malaysia. Enabling factors are factors that may support demand. We concentrate on two enabling factors which are individual total income and social capital. Informal interaction with the surrounding community is used to represent social capital. Health care demand in in this paper is measured by whether the respondents have had a doctor visit in the past one month before the interview. A multistage cluster sampling was used in selecting the sample for the study. A total of 399 of respondents aged 62 to 98 were interviewed face-to-face using a structured questionnaire. A probit model with robust variance estimates was used in estimating the demand equation. It is found that both income and social capital, after controlling for other socioeconomic and health related factors, are statistically significant in affecting demand. The higher the income is, the higher the likelihood to visit a doctor. On the other hand, the informal interaction in the society has reduced the likelihood for doctor visit. This is evident that health condition is not the only factor that determines health care demand of the elderly in Kedah state. The findings from this analysis imply that the government's policy to reduce income inequality of the people may indirectly reduce the incomerelated inequity in health care demand. In addition, support programs in the community need to be intensified to raise awareness of health and consequently reduce unnecessary visits to health services.

Keywords: health care demand, elderly demand, health status, enabling factors

## INTRODUCTION

A population is classified as ageing when older people become a proportionately larger share of the total population. Declining fertility and increasing survival rates have led to this phenomenon. Ageing is seen as a triumph of development. People live longer because of improved nutrition, sanitation, medical advances, health care, education and economic well-being. It has important and far-reaching implications for all aspects of a society. In the 21<sup>st</sup> century, population ageing is one of the most significant trends. This trend can be seen not only in the developed and industrialized nations but also

Persidangan Kebangsaan Ekonomi Malaysia ke VIII (PERKEM VIII) "Dasar Awam Dalam Era Transformasi Ekonomi: Cabaran dan Halatuju" Johor Bahru, 7 – 9 Jun 2013 in developing countries. The growth in the numbers and proportion of elderly is rapidly progressing in the developing countries including countries that have a large population of young people. According to United Nations Population Fund (2012), of the current 15 countries with more than 10 million older persons, seven are from developing countries. It is also found that life expectancy at birth is over 80 years in year 2012 in 33 countries as compared to only 19 countries had reached this level in the last five years.

At present, only Japan has an older population of more than 30% and by 2050 it is expected that 64 countries are going to join Japan. In 2010, Malaysia has about 2.3 million of older persons aged 60 and over which representing 7.9% of the Malaysian population of 28 million. This number showed an increase when compared to year 2000 with 1.45 million older persons or 6.3% of total population. Based upon the projection rate and current trend, the Malaysian population is expected to reach 35 million by 2020, with 3.4 million (9.71%) being senior citizens (Department of Statistics of Malaysia (DOSM), 2011; Rabieyah and Hajar, 2003). The age structure of the population largely depends on the changing trends in fertility, mortality and migration and the transition to a lower fertility and mortality rates of the population in Malaysia

According to the statistics by DOSM, the proportion of the population aged 60 and over in Kedah state has increased from 9.0% in 2009 to 9.5% in 2010 (Department of Statistics, 2012), which was higher than the national rate. With the number and proportion of older persons growing faster than any other age group, and in an increasing range in Malaysia, specifically in Kedah state there are concerns about the capacities of societies to address the challenges associated with this demographic shift in terms of health care demand. The older generation is not a homogenous group for which providing a specific health care fits to all. It is important not to standardise older people as a single category but to recognise that the older population is just as diverse as any other age group, in terms of, for example, age, sex, ethnicity, education, income and health. Each group of older persons, such as those who are low-income, women, men, oldest old, indigenous, illiterate, urban or rural, has particular needs and interests that must be addressed specifically through tailored health care provision. There are various factors, such as demographic, socioeconomic and need factors, that may have affected the demand for health care and it is country-specific. These factors may positively or negatively influence health care utilisation.

Therefore it is a necessary to identify how these factors affect health care demand within the context of Malaysia which studies are rather limited. The main objective of this paper is to identify the effect of enabling factors on health care demand by the elderly in Kedah, Malaysia. Enabling factors are factors that may push demand which in this paper, we concentrate only on two factors that are individual income and social interaction in the community.

#### PAST STUDIES

In economics, health is viewed as a durable good, which is 'good health' as suggested by Grossman (1972) in his model of demand for health. People demand health for both consumption and investment benefits. Individuals consume health care to improve their stock of health and stay healthy. Health care is an input in the production of health and the utilisation of health care depends on several factors. Among the factors are age, gender, education, income, insurance status, lifestyle, health status and supply-side factors. Income and social capital, among others, are categorised as factors that would facilitate demand which is known as the enabling factors according to the framework of Aday and Anderson (1974). The ability of a person to utilise health care depends on their financial capability that may come from family resources such as income or community resources. Types of income that were used in previous empirical studies include family income, personal income and equivalised household income. Higher income increases individuals' purchasing power, and may allow them to demand and utilise health services, and thus enjoy good health. Alderman and Gertler (1989) indicate that individuals from households with a relatively high income stand a higher probability of seeking medical care than those from poor households. Lim, Jacobs and Klarenbach (2005), also reveal the link between income and health care utilisation using data from the Canadian Community Health Survey 2000–2001. High-income individuals are more likely to seek medical attention from several practitioners than people earning less than \$30,000 per annum. It implies that barriers for appropriate care may exist within low-income groups. They are also less likely to report suffering from long-term activity limitations as compared to those with a lower income. Similar finding regarding the effect of income on health status within the Canadian context are also found in Laroche (2000), but it reveals insignificant role of income in determining health care use.

Some studies also suggest that income may reduce the utilisation for specific health care services but not others. In Italy, Atella, Brindisi, Deb and Rosati (2004) suggest that high income people are less likely to visit general practitioners (GP) as this group prefer to visit private specialist. Studies in Germany and Canada also suggest the similar effect that high income people prefer services by specialist than GP (Pohlmeier & Ulrich, 1995; Santos Silva & Windmeijer, 1997; van-Doorslaer, Masseria, & Koolman (2006). The effect of income can also be non-linear (Windmeijer & Santos-Silva, 1997), implying that health care demand is lower in both the higher and lowest income groups, or insignificant (Sarma & Simpson, 2006; Deb & Trivedi,1997).

Another enabling factor that may affect health care demand is social capital. Many studies have reveal that social capital is among the major determinants of health status (Norstrand & Xu, 2012; Poulsen et al., 2012; Rose, 2000) which may later affect health care utilisation. Social capital can be originated within the same or nearby community or interactions between communities. The impact of community-level social capital or social capital at individual level may have a negative relationship on health care use among the elderly as found in Laporte, Nauenberg and Shen (2008) by using 2001 Canadian Community Health Survey and Canadian Census. While the net effect of social capital on health care access has been discussed in the literature, the findings are not conclusive. This is found from a systematic review of 21 studies by Pitkin and Varda (2009).

# **RESEARCH METHODS**

#### Data

This study concentrates on health care utilisation in the state of Kedah. The multistage cluster sampling was used in selecting the sample for the study. The survey was conducted in October 2012. A total of 399 respondents were interviewed face-to-face using a structured questionnaire. All districts in Kedah were first divided into three strata, based on the status of the municipal council of the district: urban city (City Council), urban (Municipal Council) and rural (District Council). Next, one district (two in the case of rural), was randomly selected from each stratum. The number of respondents chosen was proportionate to the number of total population in each stratum.

#### Variables

In this study, doctor consultation or visits (DOCTOR) is used to represent the demand for health care. The respondents were asked if they have had visited a doctor, whether from public or private provider, in the past one month before the interview. The exploratory variables have been selected based on the literature and are divided into three main categories based on Aday & Anderson (1974) framework. These three categories are known as predisposing, enabling and need factors. Predisposing factors consist of inherent factors that exist within individuals and other socioeconomic factors that we assume exist prior to illness. In this study, the predisposing factors are age, gender, ethnicity, education level and economic activity. The engagement in exercise activities, diet and smoking behaviour are also included in this category as proxies of individual attitude towards health care seeking behaviour. They measure, controlling other factors, the direct effect of individuals' attitudes toward health care consumption. We presume that those who exercise and are vegetarians are those with positive attitudes towards health care consumption, and those who smoke are the opposite.

Other factors, that include individual, family and community resources that are able to influence health care use are categorised as enabling factors. We include marital status, income, living arrangement, social capital, medical insurance, district, over-the-counter (OTC) market and alternative care as control variables in this category. We categorise marital status and living arrangement as enabling factors rather than predisposing because we want to identify the role of partners or family members as a source of alternative care to formal care or it can be treated as a source of moral support to individual in seeking care. Social capital is measured by informal interaction within the community and the level of trust placed for the society. The district variable is included as a proxy for health care supply or it can also be considered a predisposing factor if it represents the overall socioeconomic status of the people. The over-the-counter services and alternative health care which represent supply of care may act as a substitute or complementary to doctor visits.

The last category according to Aday & Anderson framework is the need factors. Factors that represent the need for medical care may include perceived need by individuals or evaluated needs by medical provider. Need factors used as control variables in this study comprises of three self-reported health conditions, i.e. self-assessed health status, the existence of longstanding health problems and the

highest three types of health problem reported by the respondents. The definition and summary statistic of each variable used in the demand model is presented in Table 1.

#### **Empirical Specification**

The probit model is used in estimating the model. Assume that for each elderly, there is a latent variable that represents his or her unobserved demand for health care. This unobserved demand is associated with variables such as socio-demographic characteristics of the elderly  $(x_i)$ . Let  $y^*$  represent this latent variable and assume that  $y^*$  is a linear function of  $x_i$ , then,

$$y_1^* = \sum_{i=1}^n \beta x_i + u_i$$
 (1)

where  $y^* =$  unobserved demand on health care x = independent variables u = error term

Let *y* be the random variable that represents the observed outcomes such that value of *y* is observed as: y = 1 if the elderly have had a doctor visit (during the last one month), 0 otherwise. Assume that the error term in the latent equation (1) follows a normal distribution, we have the probit model. The probability that the elderly have observed outcome of demand for health care (y=1) or otherwise (y=0) is given as below:

$$Prob(y = 1) = Prob(y^* > 1) = Prob(x \beta + u > 0) = Prob(u < x \beta) = \Phi(x \beta)$$
$$Prob(y = 0) = 1 - Prob(y = 1) = 1 - \Phi(x \beta)$$

The  $\Phi$  is the cumulative standard normal distribution function. The maximum likelihood parameter estimates (MLE) are obtained by maximising the following log likelihood function

$$LF(\beta) = \sum_{i=1}^{n} y_i \ln(\Phi(x'\beta)) + (1 - y_i) \ln(1 - \Phi(x'\beta))$$

with respect to  $\beta$ . The model is estimated with the robust variance estimates.

#### FINDINGS

The goodness of fit tests for the estimated probit model suggest that the estimated probit model fits the data significantly with the p-value of almost zero and pseudo R square of 0.36. The percentage correctly predicted is found to be 77.44% which is higher than the percentage correctly predicted using a naive model (50%). There is also no evidence of general specification errors with p-value of 0.618. Thus, the estimated probit is found to have high goodness of fit statistically. In terms of multicollinearity among independent variables, the values of Variance Inflation Factors (VIF) are found to be ranged from 1.08 to 2.16, which is below the value of 10. Hence, the estimated probit model for doctor visit. From Table 2, it shows that age, gender, being a vegetarian or married, total individual income, social interaction, district and health status variables are statistically significant in determining the likelihood of doctor visit. This result implies that, besides health status, factors under predisposing and enabling groups may have also influenced demand. Despite of many significant factors, this study concentrates on two enabling factors that have the potential for government intervention, which are income and social interaction.

From the probit model, it is found that total individual income has positively influenced demand for doctor services by the elderly, *ceteris paribus*. Therefore, there is evidence of incomerelated inequity for doctor visit. This is because high-income individuals may utilise more private health services or private specialist (Atella, Brindisi, Deb & Rosati, 2004) than the low-income, or greater income may represent greater accessibility to health care (Alderman and Gertler, 1989; Lim, Jacobs & Klarenbach, 2005; Laroche, 2000). However from this study we are not able to identify with certainty the causes of inequity, whether it is due to over-utilisation of health services by high-income earners or under-utilisation among low-income individuals. Relating to social interaction, elderly who engages in informal activities such as chatting in the coffee shops or with neighbours (CHAT) are less likely to visit doctors. From this informal interaction, it is believed that the elderly could exchange ideas and view about life and health that may act as a substitute of formal care.

# CONCLUSION AND POLICY IMPLICATION

The older age group are highly exposed to a variety of health problems. The proportion of individual aged 60 and over in the country has increased every year that have impacted the society in many ways, one of which is the demand for health care. Understanding the factors that affect the demand of health care is not only important from a financial point of government, but also the welfare of this vulnerable group. From the literature, the importance of health status or need factors on the use of health services is well established but the effect of other enabling or push factors is inconsistent between studies that require further investigation. The main objective of this study is to determine the effect of income and social interactions in the community on the use of doctor services among the elderly aged 60 and over in the state of Kedah, Malaysia. Probit model was used in estimating the effect of these factors on doctor visits, which is the proxy for health care demand, together with other control variables.

From the model, it was found that income is significantly affecting the likelihood of doctor visit with a positive effect. This may be due to two reasons: (1) higher or over consumption of private services among high-income group, or (3) limited access to health care among low-income earners. All these reasons have different policy implications. The first reason, although contributing to the disparity in use, has a low impact on government finances. A high consumption of private services to those who can afford it, is an individual choice that may increase their utility. Government policies, however, is necessary if income related inequity in health care use is due to limited access, especially among the low-income group. One of the measures that have already been taken to reduce the burden of the elderly is by waving their registration cost for services at public hospitals. The government might also consider providing a so-called "mobile hospital" that will supply the necessary medication for the elderly who fails to visit the hospital on the appointment time. Besides, this type of services could help to identify their hidden needs and the treatment cost would be reduced by early detection of any health problems. The effect of income also implies that the government's policy to reduce income inequality of the people may indirectly reduce the income-related inequity in health care demand.

From the analysis, it is also found that informal interaction with the society reduces the likelihood of doctor visits. In the literature of social capital, the interaction will take two forms which are horizontal interactions (within the community) or vertical interactions (with government agencies or other parties outside the community). In this respect, an integrated health programmes establishment can be established in Kedah particularly at the location where there are many elderly. Besides, health workers from the Ministry of Health, who may be part of the programme, could be trained in diagnosis and management of, for example, high blood pressure and diabetes. By engaging trained health workers in these informal interactions, such programme would be more benefited, thus, the health care demand by the elderly can be well-managed by the authority.

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Variables	Definition	Mean (Std.	Min	Max
Dependent variable				
DOCTOR	Doctor visits for the past one month before the interview.	0.52 (0.5)	0	1
Independent variables I. Predisposing				
AGE	Age in year	70.03 (7.27)	70.03	7.27
MALE	1 if gender is male, 0 female	0.49 (0.50)	0	1
MALAY	1 if Malay, 0 otherwise	0.79 (0.40)	0	1
EDU	Highest Education level 1 if has no formal school to 10 if post degree	2.31 (1.47)	1	9
NO_WORK	1 if economic inactive, 0 otherwise	0.79 (0.41)	0	1
SMOKER	1 if a smoker, 0 otherwise	0.20 (0.40)	0	1

TABLE 1: Dependent And Independent Variables For Doctor Visit (DOCTOR)

VEGE	1 if full vegetarian, 0 otherwise	0.02 (0.15)	0	1
EXCERSICE	Time allocation for exercising in a week 1 if does not exercise at all to 5 if exercises more than 3 hours	2.03 (1.30)	1	5
II. Enabling				
factors				
INCOME	Total of individual	601.91	0	7500
	income from all sources	(741.50)		
INSURANS	1 if have medical insurance, 0 otherwise	0.05 (0.22)	0	1
MARITAL STATUS	1 if married, 0 otherwise	0.71 (0.45)	0	1
LIVE	Number of individuals aged 18 and above that are currently living together	1.85 (1.42)	0	7

# **TABLE 1**: Continued

СНАТ	1 if had informal interaction with the society (e.g. chatting at coffee shop or at home),	0.58 (0.49)	0	1
TRUST	$\hat{1}$ if living community can be trusted, 0	0.94 (0.23)	0	1
DISTRICT	District (Kota Setar			
	(reference variable)	0.40 (0.49)	0	1
	KPBB - 1 if lives in Kubang Pasu and Bandar Baharu, 0 otherwise	0.39 (0.49)	0	1
OTC	1 if had utilised over the counter market for health care (e.g. pharmacy, <i>sinseh</i> , etc), 0 otherwise	0.54 (0.50)	0	1
ALT	1 if had utilised alternative health services or traditional	0.10 (0.30)	0	1
III. Needs factors				
SAH	Self-assessed health 1 - Good, 2 - Average, 3 - Poor	1.77 (0.66)	1	3

LONG_ILL	1 if have longstanding health problems, 0	0.66 (0.47)	0	1
BP	1 if reported of having high blood pressure, 0	0.40 (0.49)	0	1
DIABETES	1 if reported of having diabetes, 0 otherwise	0.24 (0.42)	0	1
ARMS	1 if reported of having problems with arms, legs, hands, feet, back, neck, 0 otherwise	0.32 (0.47)	0	1

Variables	Coefficient	p-value
Predisposing factors		
AGE	-0.022	0.076*
MALE	0.410	0.056*
MALAY	-0.084	0.655
EDU	0.058	0.450
RETIRED	-0.186	0.400
SMOKER	-0.306	0.146
VEGE	0.788	0.087*
EXERCISE	0.089	0.161
Enabling factors		
INCOME	0.000	0.070*
INSURANCE	-0.069	0.847
MARRIED	-0.370	0.069*
LIVE	0.018	0.740
CHAT	-0.514	0.001***
TRUST	0.022	0.940
KM	0.587	0.007***
KPBB	0.937	0.000
OTC	-0.369	0.035**
ALT	0.200	0.493
Need factors		
SAH	0.688	0.000***
LONG_ILL	0.709	0.002***
BP	0.645	0.001***
DIABETES	0.381	0.066*
ARMS	0.362	0.055*
CONSTANT	-0.543	0.567
LogL	-1	77.93

The symbol \*\*\*,\*\*, and \* denote 1.5.10% level of significance, respectively

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