Factors Influencing Consumer Purchase Decisions for Health-Promoting Goods and Services in Malaysia

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Abstract

Background: In the context of global increases in the prevalence of non-communicable diseases, the objective of the present study is to investigate the factors affecting individuals' decisions to use health-promoting goods and services.

Methods: The Third National Health and Morbidity Survey (NHMS III), consisting of 30992 respondents, was analysed. The Pearson chi-square test was applied to compare the distribution of categorical variables. A binary logistic regression model was used to assess the likelihood of using health-promoting goods and services.

Results: Age, income, gender, ethnicity, education, marital status, location of residence, job characteristics, and being diagnosed with hypercholesterolemia were significantly associated with use of health-promoting goods and services. In contrast, young individuals, low income earners, males, Indians and others, the less-educated, single individuals, rural dwellers, the unemployed and individuals with hypercholesterolemia were less likely to use health-promoting goods and services than others.

Conclusion: Socio-demographic and health factors played an important role in affecting the use of health-promoting goods and services. Based on these factors, several intervention measures with the intent of increasing the use of health-promoting goods and services were suggested, if only applicable to Malaysians.

Keywords: demography, disease, expenditure, health promotion, lifestyle

Introduction

Non-communicable diseases (NCDs) such as diabetes, hypertension, stroke, cancer, and cardiovascular diseases are becoming increasingly prevalent (1–2). Approximately 36 million deaths worldwide were associated with NCDs in 2010 (2). It was estimated that NCD-induced deaths would continue to increase in the future (2,3). In Malaysia, the majority of the disease burden is related to NCDs, accounting for more than two-thirds of the total disease burden (4). This occurrence is equivalent to a disease burden of almost 2 million individuals in Malaysia. The Institute for Public Health (5) reported that a large proportion (70%) of adults in Malaysia were diagnosed with NCDs in 2006, most notably heart diseases, diabetes and cancers.

Health-promoting goods and services are defined as out-of-pocket health expenditures incurred by healthy individuals to improve their health and prevent diseases, including the purchase of medical equipment and services, food supplements, and health education services

and products (5). The Institute for Public Health (5) showed that adults in Malaysia spent a total of 2.9 billion Malaysian Ringgit (RM) on health-promoting goods and services in 2006, which was far more than the cost of ambulatory care (Medical and paramedical services delivered to outpatient during the period of curative care) (RM 0.54 billion). In fact, the majority (93%) of expenditures on health-promoting goods and services was spent at private facilities. Previous studies have found that health-promoting goods and services such as dietary health supplements (6–9), health screenings (10), and health-related courses and seminars (11,12) can help to lower the risk of acquiring NCDs.

Because health promotion may help to prevent morbidity and mortality, the factors affecting health promotion have received considerable attention (13–15). Surprisingly, however, no study has examined this topic in Malaysia, which has one of the highest prevalences of NCDs in Southeast Asia (5). In an effort to fill this research gap, the present study set out to investigate the factors affecting the decision-making of people

who choose to use health-promoting goods and services in Malaysia. The main research question to be answered is how socio-demographic and health factors affect the use of health-promoting goods and services.

The present study attempts to contribute to the existing literature in several ways. First, the focus of the present study is on Malaysia, where NCDs are prevalent and no studies exist. Second, a nationally representative dataset that comprises a large sample size and detailed information on individual socio-demographic and health profiles is exploited for analysis. Third, in addition to socio-demographic variables, the present study includes several important health variables, such as diagnoses of hypertension and hypercholesterolemia, with the aim of examining their impacts on the use of health-promoting goods and services. Finally, the findings of the present study can assist the Ministry of Health Malaysia in developing a better public policy.

Methods

Participants and procedures

The present study used data from the Third National Health and Morbidity Survey (NHMS III). The NHMS III was a cross-sectional population-based survey conducted by the Ministry of Health of Malaysia over the period April 2006 to January 2007. The data covered all urban and rural areas in the 13 states of Malaysia, including the Federal Territory of Kuala Lumpur. Following the sampling frame designed by the Department of Statistics Malaysia, a two-stage stratified sampling approach, proportionate to the size of population in Malaysia, was used to collect the data. The first stage sampling unit was based on geographically contiguous areas of the country (Enumeration Blocks (EBs)). The second stage sampling unit was based on the Living Quarters (LQs) in each EB, and all households and individuals who resided in the selected LQs participated. In particular, each EB consisted of 80–120 LQs with populations of approximately 600. The EBs were categorised based on the population of the gazetted and built-up areas: urban (≥ 10000 populations) and rural (< 10000 populations).

The inclusion criteria were as follows: 1) adults aged 18 years old and above; and 2) Malaysian citizens. The sample size was calculated based on three criteria: 1) the 10% prevalence rate of health problems (e.g., hypertension, diabetes, smoking, overweight, hyperlipidemia, and obesity) in Malaysia obtained from the Second

National Health and Morbidity Survey (NHMS II); 2) the overall response rate of NHMS II, i.e., 97%, and 3) margin of error of 1.2 and design effect of 2, which were used at the initial stage of the calculation of the sample size of each state. More detailed information on the calculation was provided in the official NHMS III report (5). The calculated sample size was 34 539 respondents, which represented 12 923 504 Malaysian adults. The targeted household member was classified as 'no response' after three consecutive unsuccessful visits. The overall response rate was approximately 99% (34 194 respondents), which was quite similar to that of NHMS II (97%) (5).

The pre-tested and piloted bi-lingual (*Bahasa Malaysia* and English) questionnaires were used by trained health professionals to interview (face-to-face) the respondents. During the interview, the respondents were asked, "If you do not have any health problems, do you still pay for health promotion (e.g., health education courses, preventive medical care, dietary health supplements, etc.)?" In addition, the respondents were asked to report their socio-demographic, lifestyle and health profiles. If the respondents reported that they did not have hypertension or hypercholesterolemia, their blood pressure and blood cholesterol were examined by the health professionals using an Omron Digital Automatic Blood Pressure Monitor Model HEM-907 and an Accutrend GC battery-operated gluco-photometer (Roche Diagnostics). The respondents were classified as having hypertension if their systolic blood pressure was ≥ 140 and diastolic blood pressure was ≥ 90 mmHg, and they were classified as having hypercholesterolemia if their blood cholesterol was ≥ 5.2 mmol/L. Likewise, if the respondents reported that they were not diabetic, their blood glucose was measured using an Accutrend GC battery-operated gluco-photometer (Roche Diagnostics). After the examination, if a respondent's blood glucose was ≥ 6.1 mmol/L (after eight hours of fasting), the respondent was referred to the nearest clinic or hospital for further investigation. The study was approved by the Medical Research Ethics Committee of Ministry of Health Malaysia.

Measures

The present study used 'use of health-promoting goods and services' as the dependent variable, with a value of 1 identifying those respondents who used health-promoting goods and services such as medical care, health supplements, and health education-related services and products, and a value of 0 otherwise.

Given the lack of empirical studies in Malaysia, the selection of variables as determinants of use of health-promoting goods and services was based on previous studies that were conducted elsewhere (14,16–27). In particular, the explanatory variables used in the present study were as follows: 1) age, 2) income, 3) gender, 4) ethnicity, 5) education, 6) marital status, 7) location of residence, 8) job characteristics, 9) diagnosed of hypertension, and 10) diagnosis of hypercholesterolemia.

Age (in years) and monthly individual income (in Malaysian Ringgit) were measured as continuous variables. Gender was divided into male and female. Ethnicity consisted of three categories: Malay, Chinese and Indian/other. Education was categorised into three groups: tertiary (≥ 12 years of schooling), secondary (7–11 years of schooling) and primary (≤ 6 years of schooling). Marital status was grouped into three categories: married, widowed/divorced and single. Location of residence was divided into two categories: urban (≥ 10 000 populations) and rural (< 10 000 populations). Job characteristics comprised four categories: civil servant, private sector employee, self-employed, and unemployed (including housewife, student and retiree). The respondents who reported having hypertension or were diagnosed with hypertension during the survey were categorised as 'being diagnosed with hypertension'. Similarly, the respondents who reported having hypercholesterolemia or were diagnosed with hypercholesterolemia during the survey were categorised as 'being diagnosed with hypercholesterolemia'.

Statistical analysis

The present study first used the mean and standard deviation to describe the numerical variables (age and income). Then, frequencies and percentages were used to describe the categorical variables (gender, ethnicity, education, marital status, location of residence, job characteristics, hypertension, and hypercholesterolemia). The Pearson chi-square test was applied to compare the distribution of categorical variables. A binary logistic regression model was used to examine the relationship between the factors and the outcome of using goods and services because the residuals were not normally distributed (28). Any variable that was found to be significant in previous studies was a candidate for the current multivariable logistic regression analysis (i.e., age, income, gender, ethnicity, education, marital status, location of residence, and job characteristics). The significance level of all tests was based on a *P* value of less than 5% (two-sided). The statistical

analyses were performed using Stata statistical software (29).

Results

The results of the Pearson chi-square test are presented in Table 1. Of the total 30 992 respondents, only a minority (7 829 respondents) used health-promoting goods and services. The average income of those who use health-promoting goods and services (RM 2621.60) is higher than those who do not (RM 1740.47), indicating that use of health-promoting goods and services is more frequent among high income earners than low income earners.

Only 37.3% of those who use health-promoting goods and services are males, compared to 62.7% females, showing that use of health-promoting goods and services is more frequent among females than males. Of the total health-promoting goods and services users, 62.37% are Malays, and 15.92% are Indians and other races. This result implies that the use of health-promoting goods and services is more frequent among Malays than Indians and other races.

More than half (56.69%) of those who use health-promoting goods and services have secondary education, while only 24.25% and 19.06% have primary and tertiary education, respectively, thus implying that use of health-promoting goods and services is most frequent among individuals with secondary education. 77.06% of health-promoting goods and services users are married, whereas only 16.30% and 6.64% are single and widowed/divorced, respectively. This result shows that the use of health-promoting goods and services is most frequent among married individuals.

A high proportion (66.05%) of urban dwellers exist among the health-promoting goods and services users, thus indicating that the use of health-promoting goods and services is more frequent among urban dwellers than rural dwellers. The use of health-promoting goods and services is most frequent among the unemployed (37.12%), while it is least frequent among civil servants (15.72%). Interestingly, only the minority of those who use health-promoting goods and services are diagnosed with hypertension (36.58%) or hypercholesterolemia (25.70%).

The results of the logistic regression analysis show that an additional year of age increases the odds of using health-promoting goods and services by approximately 1.6%, while an increase of RM 100 in monthly individual income raises the odds of using health-promoting goods and

services by 0.7%. With regard to gender, males are less likely to use health-promoting goods and services than females. In terms of ethnicity, both Malays and Chinese have a higher likelihood of using health-promoting goods and services than Indians and other races (Table 2).

The results indicate that individuals with tertiary and secondary education are more likely

Table 1: Results of Pearson chi-square test

Variables	Total sample	Those who used health-promoting goods and services	Those who did not use health-promoting goods and services	P value#
	(n = 30 992)	(n₁ = 7 829)	(n₂ = 2 3163)	
	Frequency (%)*	Frequency (%)*	Frequency (%)*	
Age	42.10 (15.69)	41.99 (14.00)	42.14 (16.22)	0.461
Income	1963.05 (2674.48)	2621.60 (3405.72)	1740.47 (2335.46)	< 0.001
Gender				
Male	13756 (44.39)	2920 (37.30)	10836 (46.78)	< 0.001
Female	17236 (55.61)	4909 (62.70)	12327 (53.22)	
Ethnicity				
Malay	17515 (56.51)	4883 (62.37)	12632 (54.54)	< 0.001
Chinese	6683 (21.56)	1700 (21.71)	4983 (21.51)	
Indian/other	6794 (21.93)	1246 (15.92)	5548 (23.95)	
Education				
Tertiary	3199 (10.32)	1492 (19.06)	1707 (7.37)	< 0.001
Secondary	16020 (51.69)	4438 (56.69)	11582 (50.00)	
Primary	11773 (37.99)	1899 (24.25)	9874 (42.63)	
Marital status				
Married	22105 (71.32)	6033 (77.06)	16072 (69.39)	< 0.001
Widowed/divorced	2426 (7.83)	520 (6.64)	1906 (8.23)	
Single	6461 (20.85)	1276 (16.30)	5185 (22.38)	
Location of residence				
Urban	18415 (59.42)	5171 (66.05)	13244 (57.18)	< 0.001
Rural	12577 (40.58)	2658 (33.95)	9919 (42.82)	
Job characteristics				
Civil servant	3079 (9.93)	1231 (15.72)	1848 (7.98)	< 0.001
Private sector	8931 (28.82)	2238 (28.59)	6693 (28.90)	
Self-employed	6071 (19.59)	1454 (18.57)	4617 (19.93)	
Unemployed	12911 (41.66)	2906 (37.12)	10005 (43.19)	
Hypertension				
Yes	12008 (38.75)	2864 (36.58)	9144 (39.48)	< 0.001
No	18984 (61.25)	4965 (63.42)	14019 (60.52)	
Hypercholesterolemia				
Yes	7378 (23.81)	2012 (25.70)	5366 (23.17)	< 0.001
No	23614 (76.19)	5817 (74.30)	17797 (76.83)	

Note: *For age and income variables, the value refers to mean (standard deviation), whereas for the other variables, the value refers to frequency (percentage). #P value of Pearson chi-square test.

to use health-promoting goods and services than individuals with only primary education. Married and widowed/divorced individuals have higher odds of using health-promoting goods and services than single individuals. Location of residence is found to be significantly associated with use of health-promoting goods and services, as urban dwellers have a higher likelihood of using health-promoting goods and services than rural dwellers. It is interesting to note that civil servants, private sector employees and self-employed individuals have higher likelihoods of using health-promoting goods and services than the unemployed. In terms of health variables, individuals who had been diagnosed with hypercholesterolemia were more likely to use health-promoting goods and services

Table 2: Results of logistic regression analysis of use of health-promoting goods and services

Variables	Adjusted OR	95% CI	*P* value
Age	1.016	1.013, 1.019	< 0.001
Income#	1.007	1.006, 1.009	< 0.001
Gender			
Male	0.546	0.514, 0.581	< 0.001
Female*	1.000	–	–
Ethnicity			
Malay	1.551	1.442, 1.668	< 0.001
Chinese	1.252	1.145, 1.368	< 0.001
Indian/other*	1.000	–	–
Education			
Tertiary	4.862	4.358, 5.424	< 0.001
Secondary	2.454	2.276, 2.645	< 0.001
Primary*	1.000	–	–
Marital status			
Married	1.530	1.409, 1.661	< 0.001
Widowed/divorced	1.246	1.080, 1.437	0.003
Single*	1.000	–	–
Location of residence			
Urban	1.139	1.073, 1.210	< 0.001
Rural*	1.000	–	–
Job characteristics			
Civil servant	1.594	1.449, 1.753	< 0.001
Private sector	1.222	1.135, 1.315	< 0.001
Self-employed	1.378	1.272, 1.493	< 0.001
Unemployed*	1.000	–	–
Hypertension			
Yes	0.943	0.885, 1.004	0.065
No*	1.000	–	–
Hypercholesterolemia			
Yes	1.076	1.009, 1.147	0.026
No*	1.000	–	–

Note: Likelihood ratio χ² (15) = 2660.540, *P* < 0.001. Proportions of correct prediction = 75.8%. Observations = 30 992. Dummy variables with three to four categories are coded for the analysis as indicators. OR refers to odds ratio, and CI refers to confidence interval. #income divided by 100. *refers to reference/base category (coded as 0).

than individuals who had not been diagnosed with hypercholesterolemia.

Discussion

Age, income, gender, ethnicity, education, marital status, location of residence, job characteristics, and being diagnosed with hypercholesterolemia were found to be significantly associated with use of health-promoting goods and services. In particular, young individuals, low income earners, males, Indians/others, the less-educated, single individuals, rural dwellers, the unemployed and individuals with hypercholesterolemia had high likelihoods of using health-promoting goods and services.

The findings regarding age were consistent with those of Hulme et al. (14) using nationwide data from Spain. Conversely, however, the findings of Pullen et al. (21), based on a sample consisting of 102 respondents in Nebraska, were not supported by the present study. As noted by Grossman (30), health is a form of capital used to produce an output of 'healthy time', and it can be depreciated as people age. Hence, older individuals tend to possess a lower value of health capital than younger individuals and, consequently, are more devoted to improving their health by using health-promoting goods and services (30). Additionally, older individuals are more likely to be aware of their health conditions and the consequences of diseases than younger individuals, who tend to take health for granted (14).

Using Canadian National Population Health Survey data comprising 13 756 respondents and a survey consisting of 264 Turkish employees, Qi et al. (19) and Beser et al. (20), respectively, found that individuals with a high household income had a higher likelihood of participating in health-promoting lifestyle than individuals with a low household income. Interestingly, these findings are also supported by the present study, using monthly individual income as the explanatory variable. Two plausible reasons were noted. First, low income earners were likely to face more financial constraints in using health-promoting goods and services than high income earners. Second, high income earners tended to value their health more greatly than low income earners because high income earners could earn more money than low income earners if they had more healthy time for work which, stated differently, meant that the time high income earners spent on money-earning activities was more valuable than the time spent by low income earners (30).

The relationship between gender and the use of health-promoting goods and services found by the present study was in agreement with the results of Felton et al. (22), who used a sample comprising 331 white-collar workers in United States, and those of Paulik et al. (21) based on a population-based health survey data of Hungary. The higher likelihood of using health-promoting goods and services among females than males is probably attributable to the fact that females possess the natural family caretaker characteristic, which males often lack. Hence, females are generally more aware of their health and the importance of health-promoting goods and services than males (14,31).

Previous studies in Western countries consistently found that ethnicity (e.g., Caucasian, White, Black, Hispanic) was significantly associated with individuals' propensity to indulge in a health-promoting lifestyle (23,24). Somewhat similarly, the multi-ethnic composition of Malaysia (i.e., Malay, Chinese, Indian and other races) allowed the present study to find significant ethnic differences in the use of health-promoting goods and services. Hence, it can be concluded that cultural, racial-political and religious factors may play an important role in explaining the health behaviours of adults in Malaysia. However, because of the secondary nature of the data used in the present study, an in-depth qualitative study is needed to provide a better understanding of how ethnicity affects the use of health-promoting goods and services in Malaysia.

The finding regarding education was in line with those of previous studies, such as Duffy (17), based on a sample of women workers in Texas, and Qi et al. (19), using Canadian National Population Health Survey data. As suggested by Grossman (30), well-educated individuals tend to have better health knowledge and understanding skills than less-educated individuals and, consequently, are more efficient at improving their health (30). In other words, well-educated individuals are efficient health producers. Because health-promoting goods and services can improve health, well-educated individuals tend to have a higher propensity to use them than less-educated individuals. Nevertheless, well-educated individuals are also more future oriented, i.e., exhibit a lower rate of time preference, than less-educated individuals; thus, they are more devoted to spend money on health promotion with the aim of living well in the future (32).

In terms of marital status, applying a Health-Promoting Lifestyle Profile II instrument to investigate health-promoting behaviours among

Spanish adults, Hulme et al. (14) found that the likelihood of participating in health-promoting behaviours was lower among married individuals than unmarried individuals. However, using a sample consisting of 477 respondents in Texas, Duffy (16) found the opposite result. The finding of the present study is similar to that of Duffy (16) but not Hulme et al. (14). A likely reason for this finding suggested by Cheah (10) is that because single individuals have less family commitments and also carry fewer responsibilities to look after their family than married, widowed and divorced individuals, they tend to be less aware of their own health and the consequences of diseases.

The effect of the level of urbanisation of the dwelling areas on health behaviours was considered in previous studies (25,26). Drawing on the German Socio-economic Panel data (SOEP) and a sample comprising 21155 Spanish households, Bauer et al. (25) and Manrique and Jensen (26), respectively, reported outcomes that were similar to that of the present study. In essence, there are two plausible explanations for this finding. First, a lack of health care facilities in rural areas causes dwellers to face difficulties in using health-promoting goods and services (33). Second, health-related information is fairly limited in rural areas (31), thus, rural dwellers are less likely to be aware of the benefits of health-promoting goods and services relative to urban dwellers.

The finding regarding job characteristics was consistent with those of Hulme et al. (14) and Manrique and Jensen (26) in that unemployed individuals had a lower likelihood of participating in health-promoting behaviours than employed individuals. This result may be due to employed individuals bearing more job commitments than unemployed individuals, and, consequently, being more concerned about their own health (14). In addition, employed individuals also tend to be more financially independent than the unemployed; thus, they are generally more capable of purchasing health-promoting goods and services.

Previous studies constantly found that health status was significantly associated with the likelihood of participating in health-promoting behaviours (17,20-21,27). In particular, the studies suggested that individuals with self-rated good health were more likely to engage in health-promoting behaviours than individuals with self-rated poor health. However, the reasons for these findings were not explained. Unlike previous studies, the present study used chronic health conditions as health-related explanatory variables and submitted that individuals with chronic health conditions tended to be more aware of their health and the adverse effects of diseases than those without chronic health condition and, consequently, were more devoted to spending money on health promotion. However, further studies are needed, as the present study did not find a causal relationship between hypertension and the use of health-promoting goods and services.

Several policies are suggested based on the findings of the present study. First, in light of the findings on age, the government should focus on increasing health awareness among young and healthy individuals by making a concerted effort to publicise the fact that NCDs are no longer diseases of the elderly. Second, because low income may pose a barrier to health promotion, the government should consider subsidising health-promoting goods and services or even providing them free for the poor. Third, the findings on gender imply that government intervention strategies should concentrate more on increasing the use of health-promoting goods and services among males than females. Detailed information on how health-promoting goods and services can improve men's health, for instance, should be widely advertised in mass media.

Fourth, in efforts to increase the use of health-promoting goods and services among Indians and those of other races, the government should use health professionals from Indian and other ethnic backgrounds as spokespersons in nationwide health promotion campaigns to highlight the benefits of health-promoting goods and services. Finally, because education can increase the likelihood of using health-promoting goods and services, it is worthwhile for the government to advocate introducing population-based education programmes with a specific focus on the less-educated segments of the population in rural areas, especially given the current findings that rural dwellers have a low likelihood of using health-promoting goods and services.

Owing to the limited availability of data, several limitations are acknowledged. First, several important variables, such as household size, presence of children in a household and household income, could not be included in the present study. Second, the present study could not segregate health-promoting goods and services into more detailed categories for analysis. Therefore, with data availability, future studies should take account of these shortcomings.

Conclusion

Drawing on a nationally representative data set of Malaysia, the present study has found that age, income, gender, ethnicity, education, marital status, location of residence, job characteristics and being diagnosed with hypercholesterolemia can affect use of health-promoting goods and services. Hence, policy makers should take these factors into account when formulating population-based intervention measures.

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Conflict of Interest

None.

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