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The Malaysian community's acceptance and willingness to pay for a National Health Financing Scheme

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ABSTRACT

Objectives: Currently, Malaysia faces great challenges in allocating adequate resources for healthcare services using a tax-based system. Therefore, Malaysia has no choice but to reform its healthcare financing system. The objective of this study is to assess Malaysian household willingness to pay and acceptance levels to the proposed National Health Financing Scheme.

Study design: This is a cross-sectional study.

Methods: In total, 774 households from four states in Malaysia completed face-to-face interviews. A validated structured questionnaire was used, which was composed of a combination of open-ended questions, bidding games and contingent valuation methods regarding the participants' willingness to pay.

Results: The study found that the majority of households supported the establishment of the National Health Financing Scheme, and half proposed that a government body should manage the scheme. Most (87.5%) of the households were willing to contribute 0.5–1% of their salaries to the scheme through monthly deductions. Over three-quarters (76.6%) were willing to contribute to a higher level scheme (1–2%) to gain access to both public and private healthcare basic services. Willingness to pay for the National Health Financing Scheme was significantly higher among younger persons, females, those located in rural areas, those with a higher income and those with an illness.

Conclusion: There is a high level of acceptance for the National Health Financing Scheme in the Malaysian community, and they are willing to pay for a scheme organised by a government body. However, acceptance and willingness to pay are strongly linked to household socio-economic status. Policymakers should initiate plans to establish the National Health Financing Scheme to provide the necessary financing for a sustainable health system.

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Introduction

Health is an intrinsic human right as well as a central component of poverty alleviation and socio-economic development. As healthcare expenditure escalates, healthcare financing becomes an important subject that has been raised and debated by stakeholders worldwide. Health financing is a fundamental component of a health system's ability to maintain and improve human welfare.[1] Health financing refers to the "function of a health system concerned with the mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively, in the health system. The purpose of health financing is to make funding available, as well as to set the right financial incentives to providers, to ensure that all individuals have access to effective public health and personal health care".[1] There are various health financing schemes that have been adopted by different countries around the world. Among the schemes are taxation, fee for service, social health insurance, private health insurance and many others. In most countries, the schemes can be either a combination system or selection of one of the most suitable systems.[1]

Most countries in the world are facing problems with healthcare financing. Many developed nations are currently looking at ways to contain healthcare expenditure, regardless of whether they have privately or publicly funded systems. These problems with health service financing are not confined to developed countries; currently, Malaysia is facing great challenges in allocating adequate resources to cover healthcare costs.

Malaysia Vision 2020 and Vision for Health state that the principles, values and goals of the healthcare system are equity in coverage, access and financing, as well as the provision of affordable, efficient and effective services.[2] Design of the present health delivery and financing system began during the Fourth Malaysia Plan between 1981 and 1985. The major concern with service provision during that time was ensuring that the poor and those residing in rural areas were adequately covered. The government assumed the responsibility of providing and financing most of the healthcare services in the country. To date, most of the healthcare costs are borne by the government through subsidisation. However, there is a growing concern that it may be difficult for the government to maintain the existing health financing system based on taxation. Therefore, the government should review existing health services and examine the problem of health insurance, individual disability and the Health Ministry's inability to continue providing free and cost-effective health services to the entire community. Thus, Malaysia needs an alternative financing system that can sustain escalating healthcare costs.

In many developing countries, people are expected to contribute to the cost of health care using their own resources, and those in the private sector are encouraged to provide a larger proportion of finance for health care. In addition, the present healthcare system should be reformed to cater for future needs and to achieve universal financial risk protection. Since the late 1980s, active policy debate has generated ideas on ways to reform the system to improve its effectiveness and efficiency, while improving access to health care. Consequently, a growing number of policymakers and researchers are seeking detailed information on healthcare expenditures. Healthcare systems change constantly and rapidly; thus, policymakers must refinance or revamp their existing programmes and address the concerns of those who can no longer afford insurance coverage because governments can no longer afford to subsidise everyone. Trade-off among these elements is an inevitable decision that society must determine.

The government commissioned five studies to review the health financing system between 1985 and 1996. The recommendations from most of the studies were for the government to establish a National Health Financing Scheme (NHFS) to pool health resources and provide universal financial risk protection. The idea was originally mooted in 1985, but problems arose in trying to develop mechanisms to cover social insurance for the population. In the Seventh Malaysia Plan, the suggestion to privatise or corporatise health services was severely criticised and the proposal was removed in 1999 because it attracted negative publicity from the media.[1] Discussions on health financing reform were resurrected in 2000. Between 2000 and 2006, the idea of establishing a NHFS was presented again to stakeholders in the country by the government. Since then, the National Health Care Financing Unit in the Planning and Development Division, Ministry of Health, was created to formulate a NHFS for Malaysia. The idea of a 'one health' policy reform was used to initiate discussion and workflow to achieve this goal. However, until now, NHFS has not been implemented, and the formation of NHFS has remained at the concept stage.

There are several systems of healthcare payment/financing used and implemented in countries worldwide. Social health insurance is one of the systems used as an alternative to taxation in the healthcare financing system. It is also known as social safety insurance. The government contributes a portion of money to the scheme with additional payment sources from individuals in the community. NHFS is a type of social health insurance. NHFS would create a more regulated and controlled health system that makes healthcare services in Malaysia more affordable and accessible. For this scheme to succeed, cooperation and participation from everyone is required, and there is a need for a cross-subsidy for the lower-income groups to ensure that they are not deprived of healthcare services.[3]

Yet, there is a lack of community/population exposure and participation in developing this reform. Empirical studies are available that highlight the importance of health utility using information on subjective well-being in making decisions about health policy.[4] Willingness to pay (WTP) is a valid and reliable measurement of health states preference or health utility measurement.[5] Therefore, the objective of this study is to identify the level of acceptance and WTP to the proposed NHFS and the factors associated with it.

Methods

A cross-sectional survey was conducted in eight districts from four different states representing four regions of Peninsular

Malaysia from February to September 2014. Based on sample size calculation, a total of 915 respondents were required with an additional 10% to allow for non-respondents. Therefore, the Malaysia Statistic Department selected 1154 household addresses using multistage random sampling to be included in the study. Face-to-face interviews were conducted among Malaysian household members aged ≥18 years. Every selected empty house was visited at least three times, and the absent of non-response respondents were counter checked with the neighbourhood before the household was excluded from the survey.

Validated structured questionnaires were adapted from previous WTP studies and modified to fit the local context.[6–8] There are five separate sections in the questionnaire: (1) household head sociodemographic characteristics; (2) household socio-economic characteristics; (3) household health utilisation; (4) household health insurance; and (5) WTP for NHFS. The first three sections were to elicit the independent variables and WTP for NHFS was the dependent variable. Several studies stated that measuring WTP is a mechanism to draw out the value from the respondent and it can be obtained or assessed in many ways, including through direct or indirect measurement, open-ended or closed-ended questions such as bidding games and contingent valuation.[6–29] To control for error in WTP measurements, multiple assessments for WTP were used in this study in the following order: first an open-ended question, followed by bidding and then contingent valuation.

Initially, the current Malaysian health financing system and the proposed NHFS were explained to participants. Information provided on the current Malaysian health financing system included were the rise in healthcare costs and the dependency of health sector on general taxation would not be sustainable in the future. NHFS was proposed as the option for the future. Information provided to participants on the NHFS included were the NHFS basic concept of compulsory contribution by the community who have the ability to pay, in addition to the concept of a national budget for health via taxation/resource pooling to increase the health funds to serve the entire population.

Households were then asked, through closed-ended questions, about their acceptance of the formation of NHFS in Malaysia. In addition, respondents were asked to choose the best options for the authority to manage NHFS, the contributions method and the collection method to be used. The maximum amount of WTP for NHFS in Malaysian Ringgit (MYR) and percentage of monthly income were asked in open-ended questions. Subsequently, bidding games were used to determine the highest amount of money that a respondent was willing to pay for NHFS. Based on the amount they gave in the open-ended question, they were then asked if they were willing to pay the next highest bid/level for NHFS. A 'yes' answer would lead to an increased amount in the next bid until a 'no' answer was obtained. A 'no' answer would lead to a decreased amount in the bid until a 'yes' answer was obtained. These upward and downward bids continued until the highest amount of WTP was recorded by the respondent. Finally, contingent valuation methods were applied, in which options of basic packages with different contribution amounts were proposed (Appendix 1).

Data were initially recorded in Microsoft Excel before being exported into and analysed using STATA version 13. The information on household sociodemographics, socio-economic status, household health utilisation, health insurance ownership and WTP for the NHFS were explored descriptively. As all variables were categorical, data were preceded with simple logistic and multiple logistic regressions to examine the determinant factors of WTP for NHFS.

The research proposal was reviewed and approved by the Medical Research Ethic Committee, Faculty of Medicine, Universiti Kebangsaan Malaysia, with Ethic Number FF 331–2012 for commencing the study and publishing the results of the study. All participants provided informed consent before commencing interviews.

Results

In total, 774 households were interviewed. The response rate was 84.6% referring to the minimum sample size needed for the present study. The non-response respondents included those who were not willing to be surveyed and those who did not provide all the health or socio-economic status data required. The majority of household heads were 40 years old with mean age 48.93 and standard deviation (SD) 13.29; male and married and had a middle-to-high education level. More than half of respondents were Malays (68.7%), in the low-income category group (57.0%) and lived in urban areas (63.7%). The mean number of household head dependents was 3.14 (SD 2.08). The sociodemographic and socio-economic characteristics of household heads are shown in Table 1.

Table 2 shows the distribution of household healthcare services utilisation. The majority of households choose government clinics and hospitals for their outpatient (OP) and inpatient (IP) healthcare services. Most of the households had at least one episode of illness in the past year, with more than half of those with an acute disease seeking treatment from government clinics. The majority of these patients received only OP treatment and were treated conservatively. Moreover, third-party protection is not a common feature in Malaysia, where more than half of the households admitted that they are not covered by any health insurance scheme.

The majority of households agreed that NHFS should be established in Malaysia as shown in Table 3. Of these households, more than half suggested that the government should be the authorised entity to run the NHFS. One-third of respondents agreed the contributions should be based on the ability to pay, and half of respondents agreed that the premium should be collected through monthly income deductions. The mean amount of WTP for the NHFS was MYR 23.44 (SD 47.11) and median MYR 10 (interquartile range [IQR] = 10–30). Half of households agreed to pay 0.5% of their monthly income towards NHFS. When given a basic package option in the contingent valuation question for NHFS, nearly half of households were willing to pay 2% of their monthly income for NHFS to have access to both public and private extra health services (option 3 in Appendix 1).

Based on the results obtained from simple logistic regression, as shown in Table 4, all factors with $P < 0.25$ were

Table 1 – Sociodemographic and socio-economic characteristics of household heads.

Variable	n (%)
Age	
≤40 years	213 (27.5)
41–60 years	412 (53.2)
≥61 years	149 (19.2)
Gender	
Female	148 (19.1)
Male	626 (80.9)
Ethnicity	
Malay	532 (68.7)
Chinese	178 (23)
Indian	59 (7.6)
Others	5 (0.7)
Marital status	
Unmarried	72 (9.3)
Married	614 (79.3)
Separated	88 (11.4)
No. of dependents	
≤2	299 (38.6)
3–4	306 (39.5)
≥5	169 (21.8)
Education	
Low	206 (26.6)
Middle	366 (47.3)
High	202 (26.1)
Locality	
Rural	281 (36.3)
Urban	493 (63.7)
Monthly income	
Low (MYR <3000.00)	441 (57.0)
Middle (MYR 3000.00–4999.99)	200 (25.8)
High (MYR ≥5000.00)	133 (17.2)

MYR, Malaysian Ringgit.

Table 2 – Healthcare utilisation patterns of households.

Health service	n (%)
Choice of OP healthcare services	
Government clinic	444 (57.4)
Private clinic	259 (33.5)
Government hospital	45 (5.8)
Private hospital	8 (1.0)
Pharmacy	9 (1.1)
Alternative medicine	6 (0.8)
Supplement	3 (0.4)
Choice of group OP healthcare services	
Government	487 (62.9)
Others	287 (37.1)
Choice of IP healthcare services	
Government hospital	659 (85.2)
Private hospital	114 (14.7)
Alternative medicine	1 (0.1)
Illness in past year	
No	180 (23.3)
Yes	594 (76.7)
Disease type (n = 594)	
Acute	354 (59.6)
Acute and chronic	103 (17.3)
Chronic	137 (23.1)
Treatment place (n = 594)	
Government clinic	282 (47.5)
Private clinic	189 (31.8)
Government hospital	76 (12.8)
Private hospital	22 (3.7)
Alternative medicine	7 (1.2)
Pharmacy	18 (3)
Treatment type (n = 594)	
OP	496 (83.5)
IP	98 (16.5)
Treatment method (n = 594)	
Conservative	566 (95.3)
Operation	28 (4.7)
Health insurance	
No	513 (66.3)
Yes	261 (33.7)

IP, inpatient; OP, outpatient.

selected for the multivariate analysis.[30–32] Multiple logistic regression stepwise forward and stepwise backward were conducted to examine determinant factors influencing WTP for NHFS.

The variables with significant fit to the model were age in years, gender, monthly income, illness in past year and locality as shown in Table 5. Pseudo R^2 calculated was 0.114, indicating 11.4% of the identified factors influenced WTP for the NHFS model in this analysis. Another 88.6% may be contributed by other unstudied factors. A preliminary main effect model was obtained and further checked for multicollinearity and interaction. The correlations between variables were found to be relatively small, between 0.04 and 0.25. The interactions between variables were checked, and no interaction term was significant. Assumptions were checked by assessing the goodness of fit of the model using the Hosmer–Lemeshow test ($P = 0.204$), Pearson's Chi-squared test ($P = 0.540$), a classification table (overall correctly classified = 91.2%) and the area under the receiver operating characteristic (ROC) curve (0.75). The data showed that the model could accurately discriminate 75% of cases.

The final model of WTP for NHFS was achieved as shown in Table 6. A person with a one-year increase in their age has less than 3% odds of WTP for NHFS, and a person with MYR 1000 increase in their income has less than 1% odds of WTP for NHFS. Females have 3.95 times odds of WTP for NHFS than males. Households in urban areas have less than 74% odds of WTP for NHFS compared with households in rural areas. A person with an illness has 1.76 times odds of WTP for NHFS compared with an individual without any known illness. Pseudo $R^2 = 0.107$ indicates that 10.7% of factors influencing WTP for NHFS are explained by this model. The remaining 89.3% may come from other factors. Therefore, the logistic regression equation for WTP for NHFS was:

$$\text{Odds} = (p/1-p) = e^{(4.71-0.03*\text{ageinyr}-0.0001*\text{income}+1.37*\text{female}-1.36*\text{urban}+0.56*\text{HaveDz}}$$

Discussion

WTP is a basis for determining the level of acceptance of the population and the population's agreement concerning contributions to NHFS. The study revealed that the majority of households agreed to the formation of NHFS in Malaysia. This

Table 3 – Distribution of households' willingness to pay (WTP) for the National Health Financing Scheme (NHFS).

Variable	n (%)
NHFS formation	
No	68 (8.8)
Yes	706 (91.2)
NHFS authority (n = 706)	
Government	432 (61.2)
Private	83 (11.8)
Semi-government	147 (20.8)
Corporate	38 (5.4)
Others	6 (0.8)
Method of contribution to NHFS (n = 706)	
Ability to pay level	254 (36.0)
Fixed percentage of income	211 (29.9)
Fixed amount	61 (8.6)
Willingness to pay	180 (25.5)
Method of collection for NHFS (n = 706)	
Monthly income deduction	393 (55.7)
LHDN deduction annually	142 (20.1)
Cash out of pocket	171 (24.2)
Bidding games WTP for NHFS in percentage of monthly income for NHFS (n = 706)	
0.5%	346 (49.0)
1.0%	272 (38.5)
1.5%	22 (3.1)
2.0%	64 (9.1)
3.0%	2 (0.3)
Contingent valuation WTP for NHFS (n = 706)	
Option 1–0.5%	165 (23.4)
Option 2–1.0%	246 (34.8)
Option 3–2.0%	295 (41.8)

LHDN, Lembaga Hasil Dalam Negeri.

Table 4 – Factors associated with willingness to pay for the National Health Financing Scheme by simple logistic regression.

Variable	Regression coefficient (b)	Crude odds ratio (95% CI)	P-Value
Age in years	−0.01	0.99 (0.97, 1.01)	0.155*
No. of dependents	−0.09	0.91 (0.82, 1.02)	0.095*
Income	−0.0001	1.00 (1.00, 1.00)	<0.001*
Gender			
Male	0	1	
Female	1.41	4.10 (1.47, 11.44)	0.007*
Ethnicity			
Malay	0	1	
Non-Malay	−0.54	0.58 (0.35, 0.96)	0.036*
Martial status			
Unmarried	0	1	
Married	−0.85	0.43, (0.13, 1.39)	0.158*
Education			
Low	0	1	
High	−0.09	0.91 (0.51, 1.62)	0.752
Locality			
Rural	0	1	
Urban	−1.41	0.24 (0.12, 0.50)	<0.001*
Outpatient choice			
Government	0	1	
Others	−0.39	0.68 (0.41, 1.12)	0.130*
Inpatient choice			
Government	0	1	
Private	−0.63	0.53 (0.29, 0.97)	0.038*
Illness in past year			
No	0	1	
Yes	0.43	1.54 (0.89, 2.65)	0.121*
Health insurance			
No	0	1	
Yes	−0.53	0.59 (0.36, 0.97)	0.039*

*P < 0.25.
CI, confidence interval.

finding is consistent with previous studies in Malaysia.[6,9–12] The majority of these studies found that households agreed to the formation of a national/social health financing insurance/scheme. The present study showed that the majority of households understood that healthcare costs have increased and they accepted the resource-pooling concept of NHFS. Furthermore, the '1Care for 1Malaysia' policy concept that the government has recently announced also received no objection from the parliament or public.[33–35] The majority of households suggested that the government should have the authority over the NHFS. This finding is slightly different to previous studies in Malaysia. Aizuddin et al.[6] found that the majority of respondents wanted the NHFS to be handled by a non-profit agency. The fact that most Malaysian communities preferred the government or a non-profit agency to handle NHFS may be because they believe that health services are part of the government's social services and they cannot be traded. The difference shows that the trust of community upon government is currently higher than before. For the method of contribution, one-third of households suggested using the level of ability to pay. For the collection method, half of the households suggested using monthly income deductions. Asenso-Okyere et al.[11] also found similar results, whereby the majority of their respondents advocated for monthly premium payments. The choice for monthly premiums was based on convenience because it is believed that when the premium is due, it is easily remembered as another major household expenditure. Referring to other countries experiences in implementing social health insurance, they use level of ability to pay or household income as a cut-off point for compulsory contribution and percentage of monthly salary deduction as the collection method.[36–41]

The study found that the mean amount of WTP for the NHFS was MYR 23.44 (SD 47.11). Almualm et al.[10] revealed similar findings, where the WTP reached MYR 20 per month for National Health Insurance. In contrast, Aizuddin et al.[6] found much lower amounts, at only MYR 2 (IQR = 7.5); however, the study was performed among farmers with low and inconsistent incomes in 2004.[6] Shafie and Hassali[12] revealed a higher amount of Int$114.38 per month per household (median = 86.71; SD = 99.75) for a voluntary community health insurance scheme.

Findings of the present study give an important elementary guide to the Ministry of Health in planning possible contributions that are acceptable by the community. Three quarters of respondents were willing to pay 0.5–1% of their monthly income for NHFS. In addition, more than half of the respondents were willing to pay 1–2% of their monthly income for the NHFS to access both public and private health services. These results show that people are willing to pay more to have access to private health services and WTP is

Table 5 – Factors influencing willingness to pay for the National Health Financing Scheme (NHFS) (multiple logistic regression stepwise).

Variable	Regression coefficient (b)	Standard error	z	Adjusted odds ratio (95% CI)	P-Value
Age in years	−0.03	0.01	−2.49	0.97 (0.95, 1.00)	0.013*
Gender					
Male	0			1	
Female	1.20	1.80	2.20	3.30 (1.14, 9.61)	0.028*
Ethnicity					
Malay	0			1	
Non-Malay	−0.39	0.20	−1.30	0.68 (0.38, 1.22)	0.193
Marital status					
Not married	0			1	
married	−0.32	0.48	−0.48	0.73 (0.20, 2.66)	0.630
No. of dependents	−0.08	0.06	−1.23	0.92 (0.80, 1.05)	0.217
Locality					
Rural	0	1		1	
Urban	−1.34	0.10	−3.42	0.26 (0.12, 0.56)	0.001*
Monthly income	−0.0001	0.00006	−0.33	1.00 (1.00, 1.00)	0.054
Outpatient choice	0			1	
Government	−0.02	0.31	−0.05	0.98 (0.53, 1.83)	0.957
Others					
Inpatient choice					
Government	0			1	
Private	0.07	0.42	0.18	1.07 (0.50, 2.31)	0.859
Illness in past year					
No	0			1	
Yes	0.65	0.57	2.16	1.91 (1.06, 3.43)	0.031*
Health insurance					
No	0			1	
Yes	−0.01	0.30	−0.04	0.99 (0.55, 1.78)	0.970

*$P < 0.05$.
CI, confidence interval.

Table 6 – Multiple logistic regression model associated factors of willingness to pay for the National Health Financing Scheme (NHFS) (backward logistic regression).

Variable	Regression coefficient (b)	Standard error	z	Adjusted odds ratio (95% CI)	P-Value
Age in years	−0.03	0.01	−2.76	0.97 (0.95, 1.00)	0.006
Monthly income	−0.0001	0.00003	−3.32	0.9998 (0.9998, 0.9999)	0.001
Gender					
Male	0			1	
Female	1.37	2.10	2.58	3.95 (1.39, 11.22)	0.010
Locality					
Rural	0			1	
Urban	−1.36	0.10	−3.58	0.26 (0.12, 0.54)	<0.001
Illness in past year					
No	0			1	
Yes	0.56	0.52	1.92	1.76 (0.99, 3.12)	0.055
Constant	4.71	81.53	6.39	110.70 (26.14, 468.88)	<0.001

CI, confidence interval.

higher for additional or extra health services. The 1–2% rate from the study finding is comparable with the current rate for Social Security Organization (SOCSO) in Malaysia. For SOCSO, there are two types of insurance schemes (Employment Injury Insurance Schemes and Invalidity Insurance Schemes). The contributions are shared between employers (1.75%; 1.25% for employment injury and 0.5% for invalidity) and employees (0.5% for the invalidity insurance scheme only).[42] The 1–2% of individual contribution for social or national health insurance/scheme is comparable with other countries. In Indonesia, in the national healthcare financing scheme called Jaminan Kesehatan Nasional, people in formal employment pay a premium of 5% of their salary, which is broken down as a 4% contribution paid by the employer and 1% by the employee.[36,37] In Thailand, for Public Health Protection Schemes, employees in the private sector pay 1–1.5% of payroll and the employer pays 0.2–2% of payroll.[38] In the Philippines, for the National Health Insurance Philippine, monthly contributions are shared equally between the employer and employee at a prescribed rate set by the corporation, not exceeding 5% of their respective basic monthly salary.[39] Moreover, according to the National Health

Insurance Administration, Ministry of Health and Welfare of Taiwan, the country's insurance premium rate has been 4.91% since 2013, based on basic salary payroll.[40] The data in the present study give an important initial value to the Ministry of Health to use in deciding a contribution amount for NHFS, which is acceptable to the community and is internationally comparable.

Many studies have shown that WTP for National/Community Health Financing Schemes/Insurance is influenced by many factors. This study found that age, income, gender, residential area and having a disease were the significant influencing factors for WTP for NHFS.

The negative association of age with WTP for NHFS is most likely because most of the elderly population were not in a financially strong position. The results obtained in the present study are consistent with several other studies.[6,16–21] These studies also stated that individuals at a younger age were more motivated to make changes for better health services, and they are more educated and have more financial ability to purchase insurance/contribute to schemes.[6,16–21] However, in contrast, some studies revealed that age has positive association.[7,31] According to Zhang et al.,[7] the positive associations of age with WTP for insurance may imply adverse selection of joining the health insurance scheme, while others found age was not significantly associated with WTP.[7,22,23]

In a study by Usman[16] in Osun State, Nigeria, the author found a similar finding whereby income has significant negative associations with WTP to Community Based Health Financing Scheme in that the rich exhibited less WTP than the poor. However, positive associations were found in many other studies, most probably because of high purchase power among high-income individuals.[6,7,11–13,15,17,18,22,24,25] Income is an important variable in determining the demand for any goods,[14] including health insurance choice.[26]

In this study, WTP is higher among females compared with many other studies, most likely because Malaysian females often work, therefore, earn enough money for themselves and have more freedom. In contrast, in other countries, females typically have less control over the household resources, males are the sole breadwinners of the family and males earn more than females.[11,15,16,18,21] However, Lang and Lai[22] found no strong relationship between WTP and gender.

Households residing in rural areas have higher WTP for NHFS. This finding could be due to the fact that NHFS offers better accessibility than the current situation, where there are limited health facilities available in rural areas. Likewise, several other studies obtained similar results where respondents in rural areas are more willing to pay for health schemes.[14,16,18,21] According to Usman,[16] urban communities are less willing to pay for health schemes because they have access to urban health centres with good health care and they also have strong earning power so can afford the user fee when required. However, Onwujekwe et al.[15] found WTP for Community Based Health Insurance was negatively associated to geographic location, whereby WTP was highest in the urban areas and lowest in rural areas. It was suggested this was because of the fact that those living in rural areas are primarily farmers who earn less and mostly depend on subsistence farming for survival.[15] On the other hand, Lang and Lai[22] found no strong relationship between the area of residence and WTP for National Health Insurance.

Similar to most other studies on WTP for health insurance, the present study found significant association between WTP for NHFS and the presence of disease.[7,12,17,19–22,29] This is probably because those who are unwell are the most likely to utilise health services and they are also worried about medical expenses.[7,32]

In addition to the aforementioned factors, this study also found other characteristics that have associations with WTP for NHFS; these were significant in earlier simple logistic regression analyses but were not significant in subsequent multiple logistic regression analyses. Education has positive association with WTP for NHFS, which might be because education often relates to income, which is similar to many other findings.[6,7,12,15,16,18,19,22] According to Onwujekwe et al.[15] and Gustafsson et al.,[19] the positive association of education on WTP is explained by people's knowledge/understanding/exposure and their values on the scheme in decision-making. Nevertheless, some studies found that education has no significant association with WTP.[21,24,27,28]

In the present study on WTP for NHFS, a positive association was observed between household choice for OP and IP healthcare services and having health insurance. The study showed a higher WTP for NHFS among households who chose government facilities for their OP and IP healthcare services. Lower WTP for NHFS was found among households with health insurance. Only Shafie and Hassali[12] studied the relation between WTP for health schemes and health insurance; they found a similar result. Other studies found additional factors that have influence on WTP, such as positive perception towards healthcare facility services,[6,17,21,43,44] quality of health care,[9,14,45] marital status[16,18,21,22] and dependency ratio.[11] However, very few studies have examined the relation between ethnicity and WTP. This study found that ethnicity has an association with WTP for NHFS, whereby non-Malay households have a higher WTP for NHFS than Malay households. Similarly, Shafie and Hassali[12] found an association between ethnicity and WTP in their study; they suggest that there is a greater risk aversion among the Chinese population, especially when compared with the Malay population.[12]

This study was intended to assess Malaysian households WTP for NHFS and identify their level of acceptance. Multistage random sampling applied by an external agency for the selection of respondents to represent Malaysian households gave this study an advantage of high external validity. The findings in the study suggest that generally the Malaysian community accept and understand the concept of NHFS and WTP for the scheme. This may assist policymakers in pursuing the NHFS proposal and convincing stakeholders with an evidence-based study. This study included a representative sample of the Malaysian population and includes a comprehensive list of possible influencing factors involved. Thus, findings from this study could also be used as an initiator in preparing the proposed NHFS. However, it is suggested that the detail of the basic packages for NHFS should be studied further.

Conclusions

A number of reviews have been performed on the Malaysia Health Care System since the 1980s. The suggestions from these studies are all the same—for Malaysia to undergo reformation of healthcare finance and to establish a national or social health insurance scheme. The implementation of reform is highly recommended with community participation. The findings of this study provide evidence of a high level of acceptance for NHFS among the Malaysian community, and individuals are willing to pay towards a government-organised NHFS. Acceptance and WTP are strongly linked to household socio-economic status. Thus, implementation of the NHFS should take into account all associated factors. Policymakers should not delay and should initiate the establishment of an NHFS to provide the financial resources to sustain the current health system.

Author statements

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Ethical approval

Ethical approval was obtained from Universiti Kebangsaan Malaysia Medical Research Ethics Committee Board.

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Competing interests

None declared.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.puhe.2019.07.008.

Appendix B

Contingent valuation (CV) willingness to pay/contribute to the National Health Financing Scheme.

Attribute	Option 1	Option 2	Option 3
Outpatient (OP) services	Government clinic only	Both government and private clinics	Both government and private clinics
Inpatient (IP) services	Government hospital only	Both government and private hospitals	Both government and private hospitals
Ward Class	3	3	2
Operation services	Only selected minor operation	Only selected minor operation	Selected minor and major operations
Vaccination services	Selected vaccination only	Selected vaccination only	All vaccination
Medical screening services	Selected investigation only	Selected investigation only	All related investigations
Premium rate % of income per month	0.5%	1%	2%