Assessment of Patients' Willingness to Pay for Drugs for Non-Communicable Diseases in Senawang Health Clinic

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Abstract

Introduction: The cost for healthcare is on the rise in most countries including Malaysia. With the increased burden of diseases, drug expenditure increases simultaneously. As medicines in the Ministry of Health Malaysia facilities are highly subsidised by the government, alternative medicines financing mechanism to help cover these costs may be required in the coming future.
Objective: To assess patients' willingness to pay (WTP) for drugs for non-communicable diseases (NCD) in Senawang Health Clinic, Negeri Sembilan and determine its' influencing factors.
Methods: This was a cross-sectional study conducted from April to June 2022. A self-administered questionnaire was used to assess patients' WTP for NCD drugs and the factors. The associations between patient's sociodemographic characteristics and factors affecting their WTP were analysed.
Results: A total of 390 patients participated in this survey. Most patients (70.5%) disagreed if government implements drug payment charges. The number of dependents and the disease severity were significantly associated with the WTP for NCD drugs. The number of dependents and the income level demonstrated a significant association with WTP for drugs if additional services were offered at KK Senawang. Income, gender, education level and disease severity were not associated with the WTP.
Conclusion: Assessing factors that influence the WTP may help the government to propose an effective and sustainable medicine financing mechanism.
Keywords: Willingness to pay, non-communicable diseases, factors

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Introduction

The rise of non-communicable diseases (NCDs) was stemming from the changes in lifestyle and diet, as well as ageing of the population. The prevalence of NCDs generally increases with age and causes an increase in the demand for healthcare services which are associated with higher healthcare costs. NCDs are also known as chronic diseases which are generated from a combination of genetic, physiological, environmental and behavioral factors that cause people to suffer for a long period (1). NCDs killed 41 million people each year, which accounted for 71% of all deaths globally. Cardiovascular diseases accounted for most NCD deaths, or 17.9 million people annually, followed by cancers (9.3 million), respiratory diseases (4.1 million), and diabetes (1.5 million) (1). Two thirds of the Malaysian population have a least one of three NCDs, namely diabetes, hypertension or hypercholesterolemia (2). More than a quarter have at least two NCDs and almost 10 percent have all three. Willingness to pay (WTP) was defined as the amount of money a person is willing to spend for medical interventions in order to have a better health outcome of his or her disease conditions (3). It was a concept being used increasingly to inform policy decisions in the health sector. WTP can also estimate the fair price of medical services from the consumers' point of view and determine the population's acceptance and their agreement to contribute financially to access healthcare services.

Malaysia has a dichotomous healthcare system that consists of a highly subsidised public sector and a private sector that is funded mainly by patients' own out-of-pocket payment and private health insurance. With more than half of the populations seeking care from the government clinics and hospitals, the public sector facilities are constantly facing financial pressure (4). The financial constraints become

more prevalent with the constant surge of medicines prices and medicine expenditure, that is resulted by multiple factors, such as aging population, higher consumer expectations, long-term drug treatment for chronic conditions, polypharmacy, improvements in diagnostics or treatment of diseases, and novel expensive drugs offered due to advancement of health technology (5).

Medications provided in the Ministry of Health (MOH) facilities receive full government subsidies, irrespective of patients' income level and their ability to pay. This medicine financing mechanism may not be sustainable in the long term. While it is essential to preserve health services as equitable and affordable for all, including the poor, sustainability must be ensured. Many countries have already introduced co-payment systems for cost recovery. Nevertheless, any proposals for medicines cost sharing must be carefully considered. For example, investigating the WTP for medicines can help decision makers to understand the preferences for pharmacy services among our local population. There may be certain factors that affect patient's WTP such as age, gender, education status, number of dependents and more (6). Therefore, this study was carried out to assess patients' WTP for NCD drugs and to determine the factors influencing patients' WTP. This study may serve as preliminary evidence in proposing a co-payment or any cost sharing mechanisms in the MOH.

Method

This was a cross-sectional study to assess patients' WTP for NCD drugs in Senawang Health Clinic (KK Senawang), Negeri Sembilan. This study was conducted from 1st April to 1st June 2022. The study was registered under the National Medical Research Registry (NMRR ID-22-00101-TDQ) and the ethical approval was obtained from the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia (MOH).

In this study, a structured questionnaire was adapted from a local study (4). Permission was obtained from the author to use the questionnaire in this study. The study instrument was readily available in both English and Malay language. Questions that were beyond the scope of our study were removed from the original questionnaire. A pilot study was carried out to validate the modified questionnaire, which was disseminated among 30 respondents consisting of family medicine specialist (FMS), doctors and pharmacists from KK Senawang for content validation. This aimed to analyse the clarity of the questions, wordings and titles. Cronbach's Alpha was applied to determine the reliability and internal consistency of the modified questionnaire. The obtained Cronbach's Alpha value was 0.705 which indicated a high level of internal consistency.

The final questionnaire comprised two sections. Part 1 collected socio-demographics information of the respondents, whereas Part 2 consisted of five questions regarding patients' willingness to pay for drug charges with response recorded as either "yes" or "no", and questions about patients' willingness to pay for drugs if additional services were provided with multiple-choice answers.

The questionnaire was disseminated to the patients with NCDs who attended KK Senawang during the study period. Random sampling was applied in this study, using a lottery method to select patients. In this method, the researcher drew numbers from the box containing slips of paper numbered one to ten. The randomly chosen number determined the n-th patient to be approached at the screening counter of Outpatient Pharmacy at KK Senawang. After screening for inclusion and exclusion criteria, a brief explanation of the study's objectives was provided to every potential respondent, and they were required to complete the consent form before participating. They were also given the option to choose their preferred language for the questionnaire. Patients answered the questionnaire while waiting for their medications to be prepared, and returned the completed questionnaire to the dispensing pharmacists.

The Raosoft Software was used to attain the recommended sample size for this study. With a 5% margin of errors and 95% confidence interval, population size was set to 20,000 and response distribution of 50%. The recommended sample size calculated was 383. The included study population were patients with diabetes mellitus, hypertension and/or hyperlipidaemia, from age group from 25 to 60 years old with the ability to read and understand Bahasa Melayu or English. Patients from age group of 25-60 was chosen to represent average starting age of employment up until retirement age. In contrast, patients from the Maternal and Child Health Clinic with NCDs, patients with psychiatric illnesses, healthcare staffs, and foreigners were excluded from the study.

IBM SPSS Statistics version 26 was used to analyse the data. Normality was assessed and the associations between the study variables were tested for statistical significance using chi square (X^2) test. Data collected from the sociodemographic section was described using descriptive statistics. Association

was also tested between sociodemographic data and WTP for medications if additional services were provided in healthcare. A p-value <0.05 was considered statistically significant.

Results

A total of 400 patients were approached. Excluding incomplete questionnaires, a total of 390 patients participated this study with a response rate of 97.50%. Majority of the patients (33.3%) were aged 50-54. More than half of the patients were female. Most patients (36.1 %) had diploma education level, followed by degree (25.6 %) and secondary school (14.4%) (Table 1). The total amount of money spent for medication and treatment per month ranged from RM0 to RM500 with a mean of RM144.50.

Table 1: Patient's demographical characteristics (n=390)

Socio-demographic	n (%)
Age (years)	
25-29	12 (3.1)
30-34	10 (2.6)
35-39	13 (3.3)
40-45	49 (12.6)
46-49	99 (25.4)
50-54	130 (33.3)
54-59	77 (19.7)
Gender	
Male	186 (47.7)
Female	204 (52.3)
Ethnicity	
Malay	205 (52.6)
Indian	69 (17.7)
Chinese	104 (26.7)
Others	12 (3.1)
Marital status	
Married	259 (66.4)
Single	100 (25.6)
Widow/widower	31 (7.9)
Education level	
Primary School	52 (13.4)
Secondary School	56 (14.4)
Diploma	141 (36.1)
Degree	100 (25.6)
Master	41 (10.5)
PHD	0
Number of dependents	
Less than 3	151 (38.7)
Three and above	239 (61.3)
Household Income	
< RM5,000	252 (64.6)
RM5,000 – 10,000	85 (21.6)
> RM10,000	53 (13.6)
Diseases	
Diabetes Mellitus	240 (61.5)
Hypertension	273 (70.0)
Hyperlipidemia	232 (59.5)

Majority of patients (70.5%) disagreed on implementing drug charges and most of them (64.6%) preferred the charges to be in accordance with one's salary. Most of the patients (58.5%) said that severity of the disease affects their ability to pay for drugs (Table 2). Besides that, nearly half of the patients (53.3%) expressed a preference for a system where services are received based on ability to pay. However, the majority disagreed with the concept of paying half of the actual price for drugs consumed (76.7%) (Table 3).

Table 2: Patients' WTP for NCD drugs

Questions	n (%)
Agree on implementation of drug charges	
Yes	105 (26.9)
No	275 (70.5)
Unsure	10 (2.6)
Drug payment charges depending on salary	
Yes	252 (64.6)
No	119 (30.5)
Unsure	19 (4.9)
Severity of disease affects WTP	
Yes	228 (58.5)
No	125 (32.0)
Unsure	37 (9.7)
Expenditures affected due to drug payment	
Yes	327 (82.8)
No	63 (17.2)

Table 3: Patients' suggestions for improving MOH's medicine financing system

Questions	n (%)
Increase government fee from RM1-RM5	
Yes	178 (45.7)
No	212 (54.3)
Pay half of the actual price for drugs	
Yes	91 (23.3)
No	299 (76.7)
High charges for registration depending on salary	
Yes	112 (28.7)
No	278 (71.3)
Health services based on ability to pay	
Yes	208 (53.3)
No	182 (46.7)

Referring to Table 4, patients were then asked about their willingness to contribute to drug payment charges if additional services were offered at KK Senawang. The majority of patients expressed interest in receiving express number at pharmacy counter (57.5%) followed by drive-thru option (56.2%), medications delivered by post (46.4%) and for being involved in decision making (37.7%).

Table 4: WTP for drugs if additional services were offered in KK Senawang

Additional services	n (%)
Drive Thru	
Yes	219 (56.2)
No	171 (43.8)
Involved in decision making process with doctor	
Yes	147 (37.7)
No	243 (62.3)
Receive medication through postage	
Yes	181 (46.4)
No	209 (53.6)
To choose brand of medication	
Yes	93 (23.8)
No	297 (76.2)
Express number at pharmacy	
Yes	224 (57.5)
No	166 (42.6)

There was a significant association between the severity of disease and number of dependents with WTP for drugs (p-value 0.03 and 0.01, respectively). However, there was no association between gender, income and education level with WTP for medication, as shown in Table 5. In addition, the relationship between sociodemographic data and WTP for medications when additional services were provided in healthcare settings was analysed. The data indicated that the number of dependents and level of income significantly affected WTP for medications if additional services were provided, whereas gender, education level and severity of diseases did not have any significant association (Table 6).

Table 5: Association between sociodemographic factors and WTP for drugs

Sociodemographic factors	Yes	No	Unsure	Total	*p*-value [a]
Gender					
Male	52	131	3	186	0.498
Female	53	144	7	204	
Education level					
Primary school	16	40	0	56	0.522
Secondary school	71	164	6	241	
Diploma	16	54	3	73	
Degree	2	16	1	19	
Masters	0	1	0	1	
Dependents					
Below three	39	60	3	102	**0.010**
Three	33	115	1	149	
Above three	33	100	6	139	
Income					
>RM10,000	11	42	0	53	0.120
RM5,000 – 10,000	26	59	0	85	
<RM5,000	68	174	10	252	
Severity of disease					
Yes	68	156	4	228	**0.030**
No	35	87	3	125	
Unsure	2	32	3	37	

[a] Chi-square (X^2) analysis

Table 6: Association between sociodemographic factors and WTP for drugs if additional services were offered in KK Senawang

Sociodemographic factors	Yes	No	Total	*p*-value [a]
Gender				
Male	112	74	186	0.442
Female	115	89	204	
Education level				
Primary school	29	27	56	0.136
Secondary school	139	102	241	
Diploma	42	31	73	
Degree	16	3	19	
Masters	1	0	1	
Dependents				
Below three	71	31	102	**0.020**
Three	71	78	149	
Above three	85	54	139	
Income				
>RM10,000	24	29	53	**0.039**
RM5,000 – 10,000	47	38	85	
<RM5,000	156	96	252	
Severity of disease				
Yes	134	94	228	0.639
No	69	56	125	
Unsure	24	13	36	

[a] Chi-square (X^2) analysis

Discussion

This study was conducted to assess patients' WTP for NCD medications and to determine the factors influencing their WTP. A high proportion of respondents expressed disagreement on the implementation of medication charges. This is not a surprising findings as the patients are currently enjoying free medications from the MOH health facilities, regardless of their ability to pay. The severity of disease had a significance association with the WTP for NCDs' drugs. This showed that patients who prioritise their health were more willing to pay extra money to improve their condition. For diseases with high risks of morbidity, mortality and increased costs of future care, educating patients about the benefits of specific treatments may enhance their perceived value of these therapies and increase patient WTP. In a study on COPD patients, those with severe or very severe COPD were willing to pay more for symptom relief (5). This may be due to a heightened awareness of their symptoms and their impact among those with more severe disease. Similarly, a study conducted by Kawata et al. found that patients were willing to pay more per month to reduce the number of hypoglycaemic events from three per month to none (6).

Income showed a significant association with WTP for drugs if additional services were offered in KK Senawang. This may be because people with steady income sources are more capable of making regular payments than those with uncertain or irregular income. Using Malaysia's average household gross monthly income (RM7,901.00) and middle income (RM5,873.00) in 2019 published by the Department of Statistics Malaysia as a reference, more than half of our respondents' (57.0%) household monthly income were at the lower end of the income distribution. Higher-income individuals were generally more able to spend, resulting in a high WTP. A study conducted in 2018 showed that those were employed presented higher WTP for healthcare services compared to those who were unemployed (7). Similarly, a study by Aziruddin in 2018 found that patients with higher incomes were more willing to pay for healthcare services leading to an increased service utilisation (8). This indicated that economic resources serve as a determinant for WTP that is independent of the morbidity and mortality risk associated with a given disease (10). Therefore, it is important to consider the economic factor when establishing pricing models, especially for diseases with higher long-term health risks that could ultimately results in higher patient care costs over time (11).

From our analysis, education level was not associated with the WTP for medications with or without additional services. However, other studies have shown a link between the higher education level and increased WTP due to greater awareness of the benefits of treatments. For instance, patients with better education were willing to pay for post-operative antiemetic therapy due to their understanding of its advantages (12). Also, patients with professional degrees, or with one or more comorbid conditions were more likely to pay for a disease-modifying therapies. Furthermore, another study concluded that education level and WTP for psoriasis treatment was significantly associated towards each other as patients with higher education levels may be engaged in work-related activities in which their physical appearance may impact their ability to succeed or achieve career advancement. Someone with higher education tend to process information more effectively which could influence their knowledge in a matter, including in the utilisation of health services (13).

Our study found that there was a significant association between the number of dependents in a household and the WTP for drugs, including when additional services were provided. Those with a high number of dependents would have more responsibilities and higher household expenses, which may lead to hesitancy in paying for medications. A study on WTP for lung cancer treatment stated that patients with family around to take care of, were significantly more willing to pay as compared with those without dependents (14). It was also noted that those with high number of dependents were more willing to pay for luxuries such as vacation and shopping rather than for healthcare. By providing services such as Drive-thru, medication postage, or express pharmacy counter, may reduce the need for patients to visit pharmacy in person, saving their time and effort. These may encouraged them to be more willing to pay for this services, which would also reduce the burden of prescription handling and waiting times.

There were several limitations in this study. The results in this study were only limited to patients in a single health clinic and cannot be generalised to the broader population. It was also noted that some of the sociodemographic questions were not answered. This may be due to the nature of elderly patients in answering questionnaires, who may be hesitant in disclosing their personal information such as income or expenses.

Conclusion

This study provided preliminary insights on patients' potential responses if any medicine charges or cost-sharing mechanism is proposed. It is recommended that governments review existing health services in both the public and private carefully and address all related matters prior to implementing a new healthcare financing system. Assessing the factors influencing the WTP may help the government to improve the medicine financing mechanism to protect the needed group from catastrophic health expenditure and enhance the fair utilisation of health care services provided to all for more equitable health care.

Acknowledgement

The authors would like to express the deepest appreciation to the Director General of Health for his permission to publish the article.

Conflict of interest statement

This study is not funded by any source and the authors does not have any conflict of interest.

References

1. World Health Organization. Noncommunicable diseases [Internet]. Geneva: WHO; 2024 Dec. Available from: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases.
2. Institute for Public Health. National Health and Morbidity Survey (NHMS) 2019: Vol. I: NCDs – Non-Communicable Diseases: Risk Factors and other Health Problems. Selangor, Malaysia; Ministry of Health Malaysia; 2020. Available from: https://iku.moh.gov.my/images/IKU/Document/REPORT/NHMS2019/Report_NHMS2019-NCD_v2.pdf.
3. Babar ZD, Izham MIM. Effect of privatization of the drug distribution system on drug prices in Malaysia. Public Health [Internet]. 2009 Aug [cited 2023 Dec 12];123(8):523–33. Available from: https://doi.org/10.1016/j.puhe.2009.06.011.
4. Puteh SEW, Ahmad SNA, Aizuddin AN, Zainal R, Ismail R. Patients' willingness to pay for their drugs in primary care clinics in an urbanized setting in Malaysia: a guide on drug charges implementation. Asia Pac Fam Med [Internet]. 2017 [cited 2024 Nov 11];16(1):1–8. Available from: https://doi.org/10.1186/s12930-017-0035-5.
5. Kawata AK, Kleinman L, Harding G, Ramachandran S. Evaluation of patient preference and willingness to pay for attributes of maintenance medication for chronic obstructive pulmonary disease (COPD). Patient [Internet]. 2014;7(4):413–26. Available from: http://dx.doi.org/10.1007/s40271-014-0064-1.
6. Jendle J, Torffvit O, Ridderstråle M, Lammert M, Ericsson Å, Bøgelund M. Willingness to pay for health improvements associated with anti-diabetes treatments for people with type 2 diabetes. Curr Med Res Opin [Internet]. 2010 Apr [cited 2023 Dec 12];26(4):917–23. Available from: https://doi.org/10.1185/03007991003657867.
7. Xuan Tran B, Thu Vu G, Hong Thi Nguyen T, Nguyen LH, Dinh Pham D, Quang Truong V, et al. Demand and willingness to pay for different treatment and care services among patients with heart diseases in Hanoi, Vietnam. Patient Prefer Adherence [Internet]. 2018 [cited 2023 Dec 12];12:2253–2261. Available from: http://dx.doi.org/10.2147/ppa.s176262.
8. Noor Aizuddin A, Al Junid SM. Willingness to pay for outpatient services user fees: Malaysian community perspective. J Sains Kesihat Malays [Internet]. 2018;16(01):145–53. Available from: http://dx.doi.org./10.17576/JSKM-2018-1601-18.
9. Mbachu C, Okoli C, Onwujekwe O, Enabulele F. Willingness to pay for antiretroviral drugs among HIV and AIDS clients in south-east Nigeria. Health Expect [Internet]. 2017 [cited 2023 Dec 12];21(1):270–278. Available from: http://dx.doi.org/10.1111/hex.12612.
10. Mehin N, Posnett J, Dixit S, Oppenheimer B, Kili S. Patient preference and willingness to pay for knee osteoarthritis treatments. Patient Prefer Adherence [Internet]. 2015 Jun [cited 2023 Dec 12];9:733-744. Available from: https://doi.org/10.2147/PPA.S84251.
11. Audureau E, Davis B, Besson MH, Saba J, Ladner J. Willingness to pay for medical treatments in chronic diseases: a multicountry survey of patients and physicians. J Comp Eff Res [Internet]. 2019 Apr [cited 2023 Dec 12];8(5):357–369. Available from: https://doi.org/10.2217/cer-2018-0106.

12. Kerger H, Turan A, Kredel M, Stuckert U, Alsip N, Gan TJ, et al. Patients' willingness to pay for anti-emetic treatment. Acta Anaesthesiol Scand [Internet]. 2007 Jan [cited 2023 Dec 12];51(1):38–43. Available from: https://doi.org/10.1111/j.1399-6576.2006.01171.x.
13. Masaki S, Tatsukawa R, Uryu M, Takahara M, Furue M, Ohata C, et al. Treatment satisfaction, willingness to pay and quality of life in Japanese patients with psoriasis. J Dermatol [Internet]. 2017 Feb [cited 2023 Dec 12];44(2):143–146. Available from: https://doi.org/10.1111/1346-8138.13541.
14. Lang H-C. Willingness to pay for lung cancer treatment. Value Health [Internet]. 2010 Sep-Oct;13(6):743–749. Available from: http://dx.doi.org/10.1111/j.1524-4733.2010.00743.x.