ABILITY TO PAY AND WILLINGNESS TO PAY FOR CATARACT SURGERY AND OBSTETRIC CONSULTATION: A CASE STUDY OF A MALAYSIAN PUBLIC HOSPITAL

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Abstract

Background: Household ability to pay (ATP) and public willingness to pay (WTP) for cataract surgery and obstetric consultation, the two commonly utilised private healthcare services in Malaysian public hospitals are largely unknown. This study assessed the patients' ATP and the WTP for these services. **Methods:** A cross-sectional study was conducted among respondents visiting outpatient clinics in an urban tertiary public hospital. Source of payment for healthcare used by the World Health Survey was used to assess ATP, while contingent valuation was used to elicit respondents' WTP by asking their WTP for a shorter waiting time for cataract surgery or an obstetric consultation. Chi-square test, Fisher's exact tests, and binary logistic regression were performed in the analyses. **Results:** No significant differences were observed for ATP between public and private respondents. Almost one quarter (23.5%) of total respondents used unaffordable sources for their healthcare services. More than a quarter (26.7%) of the public respondents were willing to pay for private user fees or higher and a proportion of them (14.8%) reported using unaffordable sources for healthcare services. Logistic regression showed that respondents reporting multiple affordable sources of payment were 3.7 times more likely to be willing to pay for these services after adjusting for other factors, compared with the use of a single affordable source. **Conclusion:** Although the majority reported using affordable sources of payment for health services, a small fraction claimed the use of unaffordable resources. The use of multiple affordable sources for healthcare payment influences WTP in seeking private services for cataract surgery and obstetric consultation.

Keywords: Ability To Pay, Dual Practice, Private Patient, Public Patient, Willingness To Pay

Introduction

Healthcare services in Malaysia are provided by both public and private sectors, with the government playing a major role in healthcare provision in the early years after independence in the 1950s and 1960s. With greater involvement of the corporate sector since 1980s, the number of private hospitals has proliferated, providing a lucrative lure to healthcare providers, especially medical specialists, resulting in exodus of medical specialists from the Ministry of Health (MOH) and public universities to the private sector (1). To ease the issue, various initiatives were introduced and implemented to retain medical specialists, including the establishment of private wings at medical centres of public universities (2).

Likewise, in addressing the challenges of exodus from MOH, senior specialists are given the opportunity to treat private patients in selected public hospitals since 2007 (3). In this initiative, participating specialists earn extra income by receiving fees for services rendered in addition to their monthly salaries as government employees, while the government obtains additional revenue. These private services offer those willing to pay higher user fees a faster access to healthcare treatments than the general queue and allow freedom of provider choice. The fees are higher than that for public patients but lower than private hospital charges (3). This raised concerns and debates about inequality of service provision in public hospitals, as the initiative is based on the ability to pay (4).

Malaysia has a tax-based financing public healthcare system with established universal health coverage where healthcare services are heavily subsidised (1). Conversely, the private healthcare delivery system is an unsubsidised, for-profit, market-oriented system, funded mainly by household out-of-pocket payments and/ or private health insurance (1).

Direct out-of-pocket (OOP) payments for health services may create affordability challenges or result in financial hardship (5). Sources of OOP payments include current household income, savings, loans, or other sources. When households are unable to pay for healthcare using their current income, they will use other forms of financing which can impact their financial security (5). Households may forgo healthcare services needed, or alternatively, borrow money from family, friends, and lenders or even sell assets to pay for the services (6-8). Examining financial sources for OOP payment has been used as an approach to measure affordability or ability to pay (ATP) for healthcare (6-8).

Another approach used in measuring affordability or ATP is based on the threshold of household spending on healthcare. Healthcare spending is considered to be unreasonable or catastrophic if they exceed 10% of a household's total spending or 40% of non-food spending (9). The arbitrary threshold value of 10% for affordability of healthcare can be subjective (8). For example, households with higher income levels or more liquid assets could still cope well even with higher healthcare costs, either by cutting luxurious spending or selling personal items, which may not be catastrophic to them (10). Other financial coping strategies: borrowing money and selling items, providing a better estimate of financial constraints due to healthcare services (8, 11).

Willingness to pay (WTP) measures the maximum amount that an individual is willing to pay for a goods or service. This has been shown to be associated with ATP in healthcare services (12, 13). The WTP of an individual for a health service could be assessed through hypothetical scenarios in surveys (14). This concept is useful to estimate the economic value of medical or health services even though its use is debatable (15). It is frequently criticised for its validity and reliability (14), nevertheless, it has been extensively used in economic evaluation in health to assess patient preferences (14, 15). For example, studies were conducted to examine the WTP for private sector surgery as a strategy to reduce the length of public waiting lists (4, 16).

Since the implementation of private services in the public hospital, patients are offered a range of ambulatory care, outpatient and inpatient services. However, the public's valuation of these services is largely unknown in Malaysia, including the two commonly utilised private services in public hospitals, namely cataract surgery and obstetric consultation. This study aimed to 1) assess the ATP for healthcare services among public and private respondents who attended these healthcare services, 2) estimate public respondents' WTP for private services on cataract surgery and obstetric consultation, and 3) investigate factors associated with WTP.

Materials and Methods

Study design

A cross-sectional study was conducted in an urban tertiary referral MOH hospital providing both public and private healthcare services; one of the two pioneer MOH hospitals with established private service provision. This hospital was chosen because it serves population with diverse socioeconomic backgrounds.

Face-to-face interviews using a structured close-ended questionnaire were conducted among two groups of respondents: public and private patients or their family members visiting Ophthalmology as well as Obstetrics and Gynaecology (O&G) specialist outpatient clinics, the commonly utilised private inpatient and outpatient services at the time of study (17). Only Malaysians, aged 18 years old and older, and able to answer in either Malay or English, were included.

Sample size calculation

We estimated that 30% of private respondents would need to borrow money or sell possessions to pay for healthcare services, based on a multi-country study in low- and middle-income countries that reported 21.9% and 9.9% borrowed and sold assets respectively (7). The sample size was calculated using a two populations proportion formula, 30.0% of private patients and 11.8% of public patients (6) used unaffordable sources, with an 80% power and 95% confidence level in Epicalc 2000 (13). The minimum sample size needed was 77 respondents per group. Assuming a 10% non-response rate, a sample size of 85 respondents in each group was required with a total of 170 respondents for both public and private groups. We assumed that 50% of the public patients were willing to pay for private services with a precision ±10% and confidence level of 95%, the minimum sample required was 96 (13).

Study instrument

A structured close-ended bilingual questionnaire was developed, pretested, and used in this survey. The questionnaire was first developed in English and later translated to Malay. It was pretested for linguistic validity using cognitive debriefing.

Questions on sources of payment for healthcare were adapted from the World Health Survey 2002 (6). Items on sources of payment include current income of any household members, savings, insurance reimbursement, sold items, sourced from family members or friends outside the household, borrowed from bank/moneylender/ etc. and, others. Respondents were allowed to answer affirmatively for each item.

Contingent valuation (CV), one of the commonly used WTP valuation methods (18) was used to determine public

respondents' WTP for better service quality on selected procedures, i.e. shorter waiting time for cataract surgery and clinic wait time for obstetric consultation in O&G clinic. Questions on WTP was developed by modifying the method adopted by Liu et al. (19).

The hypothetical scenarios in the WTP section of the questionnaire were intended to elicit responses on respondents' WTP out-of-pocket, without any form of reimbursement. The hypothetical scenario used in the ophthalmology group was a reduction in the mean waiting time in public hospitals, from 9 weeks to 2 weeks for cataract surgery by a specialist. In the O&G group, the scenario adopted was a reduction in the mean waiting time from 160 minutes to 60 minutes for obstetric consultation with a specialist.

Respondents were informed that reduction in the scenarios' waiting time would not affect the clinical quality of services delivered. Respondents were asked if they were willing to pay according to the given scenario as described above. If they were willing to pay, additional questions were asked on their valuation of the time saved, in terms of the maximum amount they were willing to pay to reduce the waiting time. A payment scale format was used. The average fee charged in the private sector (private market prices) was used as the highest endpoint in these scales, MYR7000 for cataract surgery and MYR300 for an obstetric consultation session. These private market prices were obtained through an informal market survey with private healthcare practitioners from eye care centres and O&G clinics in urban areas, during the development of the payment scale. We defined private user fees in this study as fees greater than the private services fees charged by the public hospital.

Data collection

This survey was carried out over a 3-week period in September and October 2017, employing convenient sampling methods. Trained research assistants conducted face-to-face interviews using the pretested questionnaire. Public and private patients or their family members attending Ophthalmology and Obstetrics & Gynaecology (O&G) specialist outpatient clinics were approached. Eligible respondents were interviewed. Both public and private respondents answered the items on sources of payment while only public respondents answered items on WTP.

Data analysis

Data analysis was performed using IBM The Statistical Package for the Social Sciences (SPSS) version 26. ATP was determined by examining reported sources of payment for healthcare as used by the World Health Survey 2002 (6). Unaffordable sources were "borrowing from family/friends", "loan from bank", "selling items" or "others" (7).

Descriptive statistics regarding the characteristics of respondents, ATP, and WTP were presented as frequencies and percentages. We conducted chi-square or Fisher's exact tests to compare the difference between two groups and binary logistic regression to identify contributing factors of WTP for private services. The dependent variable was WTP for the private services provided while the independent variables were demographic and socioeconomic characteristics. These were gender, age, ethnicity, occupation, education, household size, and income as well as source of payment. Income was grouped into four categories according to the classification used by the Department of Statistics Malaysia (DOSM) (20). For sources of payment, the respondents were asked to answer "Yes" or "No" for every item: "current income of any household members", "savings (e.g. bank account)", "insurance reimbursement (payment or reimbursement from a health insurance plan)", "sold items (e.g.: furniture, animals, jewellery)", "family members or friends outside the household", "borrowed from bank/moneylender, etc. (someone other than a friend or family)", and "others". In the analysis, affordability was categorised as follows: 1) Single affordable source includes respondents who used "current income" only or "savings" only as the source of healthcare payment, 2) multiple affordable sources include a combination of "current income", "savings" and/or "insurance reimbursement", while 3) unaffordable sources of payment comprised "sold items", "borrowed from non-household family members/friends" or "loan from bank/moneylender" and "others". The significance level was set at $p<0.05$.

Ethical consideration

This study was registered in the National Medical Research Register (www.nmrr.gov.my), NMRR-17-575-35270. Ethics approval was attained from the Medical Research and Ethics Committee Malaysia (MREC No: (8)KKM/NIHSEC/P17-677). Informed consent was obtained from each respondent prior to the interview. No personal identifiers of respondents were collected to ensure anonymity and confidentiality.

Results

Socio-demographic characteristics of respondents

This study consisted of 187 respondents who fulfilled the inclusion criteria. There were significant differences between public and private respondents in terms of ethnicity, level of education, and income (Table 1).

Sources for healthcare payment

Majority of the respondents used current income (93.6%) to pay for their healthcare, followed by savings (47.6%), insurance reimbursement (27.8%), and borrow from family members or friends (16.0%). There were 23.5% of respondents reported using unaffordable sources for payment (Table 2), 27.7% among the public respondents compared with 18.6% for private respondents.

Table 1: Socio-demographic characteristics of respondents (n=187)

Characteristics	All		Public		Private		P-value
	Count	%	Count	%	Count	%	
Gender							
Male	63	33.7	32	31.7	31	36.0	0.529[b]
Female	124	66.3	69	68.3	55	64.0	
Age							
<25 years	12	6.4	10	9.9	2	2.3	
25-44 years	138	73.8	70	69.3	68	79.1	0.058[b]
45-64 years	26	13.9	17	16.8	9	10.5	
>64 years	11	5.9	4	4.0	7	8.1	
Ethnicity							
Malay	80	42.8	56	55.4	24	27.9	
Chinese	79	42.2	30	29.7	49	57.0	<0.001*[b]
Indian	28	15.0	15	14.9	13	15.1	
Occupation							
Government/ Semi-government	25	13.4	16	15.8	9	10.5	
Private	93	49.7	45	44.6	48	55.8	
Self-employed or Unemployed	51	27.3	30	29.7	21	24.4	0.446[b]
Retiree	17	9.1	9	8.9	8	9.3	
Unknown	1	0.5	1	1.0	0	0.0	
Education							
Lower secondary & below	24	12.8	17	16.8	7	8.1	
Upper Secondary	35	18.7	25	24.8	10	11.6	
PreU/Cert/Diploma	61	32.6	35	34.7	26	30.2	0.003*[b]
Degree & above	64	34.2	24	23.8	40	46.5	
Unknown	3	1.6	0	0.0	3	3.5	
Household size							
1-3	85	45.5	40	39.6	45	52.3	
4-6	82	43.9	47	46.5	35	40.7	0.248[c]
7-9	15	8.0	10	9.9	5	5.8	
10 & above	5	2.7	4	4.0	1	1.2	
Income[a]							
<RM4360	56	29.9	46	45.5	10	11.6	
RM4360-RM9620	85	45.5	36	35.6	49	57.0	<0.001*[b]
>RM9620	44	23.5	17	16.8	27	31.4	
Unknown	2	1.1	2	2.0	0	0.0	

Notes: *p<0.05, PreU=Pre-university, Cert=Certificate.
[a] Household income of respondents was grouped according to the definition used by the Department of Statistics Malaysia in the *Household Income and Basic Amenities Survey Report 2016,* where Bottom 40%, Middle 40%, and Top 20% were the percentages of the country's population.
[b] Chi squared test
[c] Fisher's exact test

Table 2: Sources of payment for healthcare by respondents' group

Source of payment†	All (n=187)		Public (n=101)		Private (n=86)	
	Count[a]	%	Count[a]	% (95%CI)	Count[a]	% (95%CI)
Current income	175	93.6%	96	54.9(47.5-62.1)	79	45.1(37.9-52.5)
Savings	89	47.6%	42	47.2(37.0-57.5)	47	52.8(42.5-63.0)
Insurance reimbursement	52	27.8%	25	48.1(34.9-61.5)	27	51.9(38.5-65.1)
Borrow from family/friend	30	16.0%	20	66.7(48.9-81.4)	10	33.3(18.6-51.1)
Loan from bank	7	3.7%	6	85.7(49.9-98.4)	1	14.3(1.6-50.1)
Sold items	3	1.6%	2	66.7(17.7-96.1)	1	33.3(3.9-82.3)
Others	8	4.3%	3	37.5(11.9-70.5)	5	62.5(29.5-88.1)
Ability-to-pay*,†						
Single affordable source[b]	56	29.9%	32	31.7(23.2-41.2)	24	27.9(19.3-38.0)
Multiple affordable sources[c]	87	46.5%	41	40.6(31.4-50.3)	46	53.5(43.0-63.8)
Unaffordable[d]	44	23.5%	28	27.7(19.7-37.0)	16	18.6(11.5-27.8)

Notes: CI=Confidence interval
[a] Count= number of respondents who answered affirmatively for each item of this section and the answer was independent of each other.
[b] Single affordable source includes 55 respondents who used income only as the source for healthcare payments, while one respondent answered using savings only.
[c] Multiple affordable sources include a combination of income, savings, and/or insurance reimbursement.
[d] Unaffordable sources of payment comprised sold items, borrow from non-household family members/friends, and loan from bank/moneylender and others.
* Chi-square test between public and private respondents: p-value=0.172.
† We showed row percentages for the source of payment, while column percentages were presented for ability-to-pay.

Willingness to pay (WTP) among public respondents

Table 3 shows that 59.4% of respondents were willing to pay for a shorter waiting time and choice of provider, however, only 26.7% of respondents were willing to pay for private user fees or higher. Among respondents willing to pay private user fees or higher, 14.8% reported using unaffordable payment sources. The amount of user fees respondents would be willing to pay for obstetric consultation and cataract surgery is provided in Supplementary Table 1.

Table 3: Public respondents' willingness to pay by procedure type and ability to pay among public respondents

		Willingness to pay					
		No		Yes, < private user fees		Yes, private user fees or higher	
	n	count	% (95%CI)	count	% (95%CI)	count	% (95%CI)
All	101	41	40.6(31.4-50.3)	33	32.7(24.1-42.2)	27	26.7(18.8-35.9)
Type of procedure†							
Cataract surgery	47	16	34.0(21.8-48.2)	22	46.8(33.1-60.9)	9	19.1(9.9-32.0)
O&G consultation	54	25	46.3(33.5-59.5)	11	20.4(11.3-32.5)	18	33.3(21.9-46.5)
Ability-to-pay*,†							
Single affordable source[a]	32	15	36.6(23.2-51.8)	7	21.2(10.0-37.2)	10	37.0(20.9-55.8)
Multiple affordable sources[b]	41	11	26.8(15.2-41.6)	17	51.5(34.9-67.8)	13	48.2(30.3-66.4)
Unaffordable[c]	28	15	36.6(23.2-51.8)	9	27.3(14.4-43.9)	4	14.8(5.2-31.5)

Notes: LL = lower limit; UL = upper limit; CI=Confidence interval
[a] Single affordable source includes 31 respondents who used income only as the source for healthcare payments, while one respondent answered using savings only
[b] Multiple affordable sources include a combination of income, savings, and/or insurance reimbursement.
[c] Unaffordable sources of payment comprised sold items, borrow from non-household family members/friends, and loan from bank/moneylender and others.
* Chi-square test: p-value=0.101.
† We showed row percentages for the type of procedure, while column percentages were presented for ability-to-pay.

Regression analysis of WTP for private services in the public hospital

Those who reported using multiple affordable sources of payment were 3.7 times more likely to be willing to pay for private services compared with a single affordable source, while those self-employed or unemployed were less likely to be willing to pay for private services (Table 4).

Table 4: Logistic regression analysis of WTP for private services among public respondents at an outpatient specialist clinic

Characteristics	WTP		Crude OR		Adjusted OR[a,b,c]	
	Yes (%)	No (%)	Exp(B) 95%CI	p-value	Exp(B) 95%CI	p-value
Gender						
Male	18.0(56.3)	14.0(43.8)	1			
Female	42.0(60.9)	27.0(39.1)	1.21(0.52-2.83)	0.660		
Age						
<25 years	7.0(70.0)	3.0(30.0)	1			
25-44 years	40.0(57.1)	30.0(42.9)	0.57(0.14-2.40)	0.444		
45-64 years	11.0(64.7)	6.0(35.3)	0.79(0.15-4.21)	0.778		
>64 years	2.0(50.0)	2.0(50.0)	0.43(0.04-4.64)	0.486		
Ethnicity						
Malay	39.0(69.6)	17.0(30.4)	1		1	
Chinese	16.0(53.3)	14.0(46.7)	0.50(0.20-1.25)	0.136	0.21(0.06-0.68)	0.010*
Indian	5.0(33.3)	10.0(66.7)	0.22(0.07-0.74)	0.014	0.15(0.03-0.65)	0.011*
Occupation						
Government/ Semi-government	11.0(68.8)	5.0(31.3)	1		1	
Private	33.0(73.3)	12.0(26.7)	1.25(0.36-4.35)	0.726	1.52(0.35-6.56)	0.572
Self-employed or Unemployed	11.0(36.7)	19.0(63.3)	0.26(0.07-0.96)	0.043*	0.24(0.06-1.01)	0.052
Retiree	5.0(55.6)	4.0(44.4)	0.57(0.11-3.07)	0.511	0.68(0.10-4.66)	0.694
Unknown		1.0(100.0)				
Education						
Lower secondary & below	6.0(35.3)	11.0(64.7)	1			
Upper Secondary	18.0(72.0)	7.0(28.0)	4.71(1.26-17.71)	0.022*		
PreU/Cert/Diploma	22.0(62.9)	13.0(37.1)	3.10(0.93-10.39)	0.066		
Degree & above	14.0(58.3)	10.0(41.7)	2.57(0.71-9.27)	0.150		
Household size						
1-3	26.0(65.0)	14.0(35.0)	1.86(0.24-14.64)	0.557		
4-6	25.0(53.2)	22.0(46.8)	1.14(0.15-8.76)	0.902		
7-9	7.0(70.0)	3.0(30.0)	2.33(0.22-25.25)	0.486		
10 & above	2.0(50.0)	2.0(50.0)	1			
Income						
<RM4360	25.0(54.3)	21.0(45.7)	1			
RM4360-RM9620	23.0(63.9)	13.0(36.1)	1.49(0.61-3.63)	0.385		
>RM9620	12.0(70.6)	5.0(29.4)	2.02(0.61-6.65)	0.250		
Unknown	0.0(0.0)	2.0(100.0)				
Affordability						
Single affordable source-Income[d]	17.0(53.1)	15.0(46.9)	1		1	
Multiple affordable sources[e]	30.0(73.2)	11.0(26.8)	2.41(0.90-6.41)	0.079	3.74(1.17-11.90)	0.026*
Unaffordable source(s)[f]	13.0(46.4)	15.0(53.6)	0.77(0.28-2.11)	0.605	1.32(0.39-4.50)	0.660

Notes: * p<0.05, PreU=Pre-university, Cert=Certificate, OR=Odds ratio, n=101.
[a] Final model used the backward:LR method to remove variables from the full model.
[b] The final model accounted for 33.2% of the variance in WTP. Nagelkerke R Square =0.332
[c] This regression analysis included all willing to pay any amount for private services. We also analysed respondents who were willing to pay the same price or more than private user fees and only one variable, occupation was found to be significant.
[d] 31 respondents used income only as the source for healthcare payments while one respondent answered using savings only.
[e] Multiple affordable sources include a combination of income, savings, and/or insurance reimbursement.
[f] Unaffordable sources of payment comprised sold items, borrow from non-household family members/friends, and loan from bank/moneylender and others.

Discussion

Socio-demographic characteristics of the public and private respondents were significantly different. Using source of payment as a measure of affordability, three-quarters of respondents could afford to pay for their healthcare with no significant differences between public and private respondents. More than a quarter of public respondents were willing to pay private user fees and yet the status of using unaffordable sources did not deter public respondents from willing to pay for private services. The use of multiple affordable sources was associated with WTP for private service, after controlling for the effect of ethnicity and occupation.

In determining ATP, compared with the use of threshold for healthcare expenditure, coping strategies of borrowing money and selling items provide a more sensitive estimate of those facing financial constraints to access healthcare services (8, 11). Additionally, the assessment of coping mechanisms of borrowing and/or selling assets are clearer indicators of barriers to healthcare due to affordability constraints (10). In general, private respondents could afford healthcare services, with a relatively smaller percentage needing to borrow money and/or sell items compared with public respondents. This could be due to a higher proportion of income and savings available for healthcare payments among private respondents. Nevertheless, our inference is limited by the lack of quantitative data on the proportion of income and savings used by respondents to pay for healthcare costs.

Private services are typically meant for those who could afford to pay extra for faster specialist care. Yet, a small fraction of private respondents who accessed services for cataract surgery and obstetric consultation used unaffordable sources for their healthcare services. As out-of-pocket payments are a known deterrent to accessing healthcare services (5), exploring the motivation behind this occurrence is an area for future research. One possible explanation could be that those who opt to pay for private services might choose to face financial hardship earlier than to wait for a longer time to recover from ill-health due to delay (7).

Comparison between studies on affordability face constraints due to differing definitions and methods (8). However, studies investigating sources of payment used for healthcare are extensive. An earlier study in Malaysia using the 2002 World Health Survey found that 9.13% borrowed money from relatives, 0.96% borrowed from others, and 1.78% sold personal items to pay for health expenditures (6). Leive and Xu (21) conducted a study in 15 African countries and reported that around 30% of the population needed to borrow or sell assets to cope with health expenses. In comparison, although the urban subpopulation of this study had a higher proportion who borrowed money from relatives and others, or sold personal items than the previous local World Health Survey (6), this is low compared with the rates seen in African countries (7, 21).

WTP measures the monetary value that a customer ascribes to a service (22). A considerable proportion of respondents (66%) were willing to pay some amount for cataract surgery, similar to a study conducted in Malawi (64%) (23) but lower than those reported in Nigeria (91%) (24) and Southern China (80%) (25). This might due to the differences in user satisfaction or experience in using the healthcare services.

A study by Anderson et al. (16) discovered that 25%, 15%, and 12% of candidates for cataract surgery from Spain, Canada, and Denmark respectively were willing to pay out-of-pocket at actual private costs to reduce waiting time for cataract surgery to less than one month (16). Studies in developing countries reported similar findings. In Nigeria (24), only about half of the participants were willing to pay the actual subsidised fee as compared with China (25), 80% of the participants were willing to pay rates similar to the actual cost for cataract surgery; while only one-fifth of the respondents were willing to pay private user fees or higher for cataract surgery in this study.

The WTP of public respondents could assist in determining the value of private services in public hospitals from the public user's perspective. The results indicated most of the public respondents who were attending the clinic for cataract surgery and obstetric consultation were unwilling to pay private prices, although a considerable proportion of respondents claimed to use affordable payment sources for their healthcare services. This is consistent with the findings by Anderson et al. (16) that most respondents were unwilling to pay higher taxes for a shorter wait time or to pay more for faster treatment in the private sector. Conversely, a survey in Hong Kong (19) showed many patients were willing to pay for private cataract surgery as they had waited for a significant period. Malaysians enjoy highly subsidised, relatively cheap public healthcare services, and some deemed the public to be complacent (1, 26) with universal coverage provided by the government. The public perceives provision of healthcare services as public goods; with the government seen as having legitimate roles and responsibilities to fund and deliver highly subsidised healthcare for the people (1, 27). Citizens pay a nominal user fee for public healthcare services while the government recoups about 2-3% of the total health expenditure from patient charges (1). An underestimation of the WTP amount may occur if the respondents perceived that the information will be used to establish a new user fee, hoping that it would indirectly help in setting lower prices for private health services (28). This might contribute to the high percentage of respondents unwilling to pay anything. Moreover, the public may not be aware of the actual costs of medical care, hence affecting their monetary valuation and willingness to purchase (29). Previous studies also showed respondents with a higher valuation of time were more likely to seek and willing to pay for faster specialist care in the private sector (30, 31).

Conversely, a small fraction of public respondents were still willing to pay for private services to reduce waiting

time and choice of providers, although some reported the use of unaffordable sources in this study. Malaysia has good coverage with healthcare safety nets, and low proportions experiencing catastrophic health expenditures (1). However, there remains a subgroup who opts for unaffordable payment sources and were willing to pay for private services. This warrants further research to explore the reasons behind this.

An individual's ATP does not necessarily translate or equate to WTP for health services as factors such as household support, spending priorities, and allocation plans influence their decisions for health expenditure (11). Malasari et al. (32) showed a significant correlation between patients' ability and WTP for inpatient class selection. Similar to this study, the presence of multiple affordable sources was associated with higher WTP. Additionally, studies on associated factors of WTP for cataract surgery found income, locality, gender, household size, socio-economic status, illnesses, choices of healthcare provider, and education influence WTP and its quantum (23, 25). Similarly, our results showed occupation was one of the factors influencing WTP for private services.

A higher percentage of respondents were willing to pay for cataract surgery compared with obstetric consultation. This could be due to differences in valuation of time for both scenarios; cataract surgery had a waiting time reduction in weeks, in comparison to hours for obstetric consultation. Hence this may affect their WTP. Nevertheless, a lower percentage of respondents who were not willing to pay for private user fees of cataract surgery compared with obstetric consultation might be due to its higher fees, a median of MYR2000 and MYR80 respectively (Supplementary Table 1).

There are several limitations in interpreting this study's findings. This study was conducted in a single public facility with private healthcare services and was limited to O&G and Ophthalmology departments. Additionally, patients or their family members attending the clinics for existing treatments could introduce biases, with a higher value of threshold compared with the general public (33). Although the minimum sample size was achieved we could not further explore subgroups, such as those with unaffordable sources of payment and yet sought private healthcare services. This study did not consider the possible differences in sociodemographic and other characteristics of respondents in these two services. We also did not consider credit usage. Future research could include services from more specialties, the general public, and a sample size that accounts for further stratification.

A common concern of the WTP method was that respondents might not consider their ability to pay when answering survey questions (25). To reduce this effect, face-to-face interviews with close-ended questions were done with a hypothetical scenario in this study (25). Centralised training of interviewers was also done to minimise interviewer bias.

Although public healthcare is generally affordable, the public valuation of private services in public facilities provides evidence to policymakers for monitoring and evaluation of existing services. Studies investigating factors affecting choices and the amount they are willing to pay are pertinent to ensure that private services are of value.

The health system in Malaysia is evolving, with greater involvement of the private sector in healthcare provision and the continuing exodus of the public health workforce to the private sector. Additionally, as the study was conducted in 2017, the ongoing COVID-19 pandemic has affected household incomes which might influence the ATP and WTP of public patients. This warrant further research to explore the situation in a wider population.

Conclusion

Although most respondents reported using affordable sources to pay for health services in a country with good health coverage, a small fraction claimed the use of unaffordable resources. Many public service respondents were willing to pay for better service quality, however, only a small percentage reported willing to pay private user fees or higher to reduce waiting time and choose their provider. The use of multiple affordable sources for healthcare payment influences WTP in seeking private services for cataract surgery and obstetric consultation. These characteristics of ATP and WTP could be considered in planning for future private services in public facilities.

Author contributions

Conceptualization: FWH, TEH, SS, JS, and ABNS; Methodology: FWH, TEH, SS, JS, and ABNS; Data collection: ABNS; Formal analysis: FWH, TEH, SS, and JS; Writing - original draft: FWH, TEH, SS; Writing – review & editing: FWH, TEH, SS, JS, and ABNS. All authors have read and agreed to the published version of the manuscript.

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Competing Interest

The authors declare that they have no competing interest.

Supplementary Table 1: Willingness to pay among public users to reduce mean waiting time for obstetric consultation and cataract surgery.

Obstetric consultation				Cataract surgery			
User fee range (RM)	**Count**	**%**	**Cum. %**	**User fee range (RM)**	**Count**	**%**	**Cum.%**
0	25	46.3	46.3	0	16	34.0	34.0
10-50	11	20.4	66.7	100-500	12	25.5	59.6
80†-100	10	18.5	85.2	700-1000	7	14.9	74.5
110-200	8	14.8	100.0	1200-1500	3	6.4	80.9
300§	0	0.0	100.0	2000‡-3000	8	17.0	97.9
Total	54	100.0		7000¶	1	2.1	100.0
				Total	47	100	

Note: % = percentage; Cum=Cumulative

†*RM80 and* ‡*RM2000 are the median values for obstetric consultation and cataract surgery respectively for private user fees in public hospitals in Malaysia according to Fees (Medical) Order 2007, 2014, and 2015.*

§*RM300 and* ¶*RM7000 are the maximum amounts shown in payment scales in the WTP questionnaire (average private market price of obstetric consultation and cataract surgery respectively)*

For cataract surgery, the quantum respondents were willing to pay ranged from RM100 to RM7000. Only one (2.1%) respondent was willing to pay the highest fee of RM7000 (the average private market price) as stated in the payment scale of the questionnaire. On the other hand, the respondents from the O&G Department were willing to pay between RM10 (the lowest on the payment scale) to RM200.

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