Willingness-to-pay for Physiotherapy Services and Its Determinant Among Nigerian Stroke Survivors

Abstract

***Purpose*:** This study was aimed to examine willingness-to-pay (WTP) for physiotherapy services among stroke survivors, and to explore the determinants of WTP in terms of socio-demographic factors, satisfaction with treatment and Health Related Quality of Life (HRQoL).

***Methods*:** A total of 68 stroke survivors had their WTP, HRQoL and satisfaction with physiotherapy treatment assessed using Willingness-to-pay questionnaire, Stroke Specific Quality of Life Questionnaire, and Physical Therapy Outpatient Satisfaction Survey, respectively. Data was analysed using descriptive and inferential statistics.

***Results*:** A total of 63.2% expressed WTP for physiotherapy per visit. Majority of the respondents had high HRQoL (66.2%) and satisfaction with physiotherapy (55.9%) respectively. There was a significant association between WTP for physiotherapy and educational status (χ^2=6.248; p=0.044). Stroke survivors with tertiary education were six times more likely to have WTP for physiotherapy services compared with those who had primary education (OR=6.009, CI=1.528 – 23.630, P=0.01). Stroke survivors with right side affectation were five times more likely to have WTP for physiotherapy compared with those with left side affectation (OR=5.109, CI=1.305 – 19.997, P=0.019). There was no significant association between WTP for physiotherapy and each of HRQoL and satisfaction with treatment ($p > 0.05$).

***Conclusion*:** A high proportion of Nigerian stroke survivors attending public health facility expressed WTP for physiotherapy and it is influenced by educational status and side of affectation.

***Keywords*:** Stroke; Willingness-to-pay; Health-Related Quality of Life; Satisfaction; Physiotherapy

Introduction

Stroke is a major leading cause of disability and mortality globally and its sequelae results into substantial economic burden [1,2]. According to the Global Burden of Disease report, there were 80·1 (41.1 in women and 39.0 in men) million cases of stroke globally in 2016, 13·7 million new stroke cases, 5·5 million death, 116·4 million disability adjusted life years due to stroke, and all these indicate that the burden of stroke is likely to remain high [1]. In Africa, stroke appears to be increasing with an annual incidence and prevalence rates up to 316 per 100,000 populations and 981 per 100,000, respectively [3]. Furthermore, in Africa, men have a higher incidence of stroke than women in the ratio of 4:3 [4,5]. The prevalence of stroke in Nigeria is 1.14 per 1000, while the 30-day case fatality rate is as high as 40% [4].

Stroke disparities are widespread in many African countries due to lack of, or unequal access to healthcare, inability to afford optimal medical infrastructure and personnel, low health literacy, and problems with adherence [2]. All these left larger number of stroke survivors with varieties of disabilities including impairment of sensory, motor, mental, perceptual and language functions which required long term rehabilitation. This may make the economic costs of treatment and post-stroke care more substantial. If stroke survivors assessed rehabilitation services including physiotherapy earlier, this may improve health outcomes and reduce the disability in these individuals [6]. Early assess to rehabilitation may also reduce productivity loss of survivors or caregivers and its consequent burden on society. Thus, WTP by stroke survivors may assist in the funding of services provided, and availability of, and access to services for them.

In Nigeria, physiotherapy services are mostly available in urban cities, and majority of the patient pay out-of-pocket, and these in addition to time constraints, work commitment and travel cost make community physiotherapy utilization low [7]. Although, strokes were the most prevalent cases treated in home care model of physiotherapy practice in Nigeria, poor working environment and transportation logistics impacted the home care practice [8]. Travelling long distances to access physiotherapy services add to the cost which are already high for most of stroke survivors. Accessing willingness-to-pay (WTP) of stroke survivors may provide insights into reservations about paying for rehabilitation services, as well as inform policy on cost effectiveness and benefit-cost physiotherapy services for stroke survivors. WTP is an important and but often neglected economic evaluation practices in health services research. Expressing WTP for physiotherapy services may be an indirect indication of acceptance, preference, and quality of services. Thus, WTP may provide policymakers with evidence-based decision making, pricing decisions/schemes and funding strategies to increase access to physiotherapy services.

Nigeria's public health financing is characterised by a high level of out-of-pocket and low public spending [9]. Most Nigerians are not covered by the National Health Insurance Scheme (NHIS) with less than 5% enrolled for community-based health insurance [10] and less than 40% of Nigerians willing to subscribe to community-based health insurance [11]. A study reported that those who are willing to pay for community based health insurance are not willing to pay more than 11,142 Naira ($29) annually [12]. WTP for these services often depends on satisfaction with the services [13,14]. Most healthcare maintenance organisations (HMOs) saddled with the administration of NHIS do not cover public hospitals in the community. Assessing WTP for physiotherapy services among stroke survivors attending public health facilities may encourage

HMOs to cover more public hospitals in the community and thereby provide financial protection for the service utilization which otherwise have been paying out-of-pocket.

Previous study from Nigeria have shown that about 55% of patient with neurological and musculoskeletal problems were willing to pay for physiotherapy services [15]. Their decision to pay for physiotherapy services was influenced by factors such as physiotherapy satisfaction, socio-economic status, amount WTP for treatment and treatment duration [15]. Given the long term rehabilitation needs of stroke survivors, it is unclear whether they will be willing to pay for physiotherapy services. Understanding WTP for physiotherapy is important as it will aid health financing and facilitate access to stroke survivors. Therefore, this study was aimed to evaluate pattern and determinants of WTP for physiotherapy services among stroke survivors.

Method

Participants in this cross-sectional study were stroke survivors attending public health facilities based on the assumption that the ability to pay by the public facility attendees was lesser compared to private setting attendees. The public health facilities were the outpatient Physiotherapy Clinic of Obafemi Awolowo University Teaching Hospitals Complex Ile-Ife (OAUTHC), Ladoke Akintola University Teaching Hospital, and State Hospital Asubiaro, Osogbo, Nigeria. For homogeneity of sample, stroke survivors who had received physiotherapy for six or more sessions and have paid for therapy at least once were purposively recruited in this study. This treatment duration is deemed sufficient for a patient to be familiar with physiotherapy. Stroke survivors with mental or cognitive impairment (based on mini-mental state examination scores of 0 – 23) and are aphasic were excluded from the study. Sample size of 61

was chosen for the study based on the recommendation of Bartlett et al [16], however, a total of 68 stroke survivors were recruited.

Measurement

Willingness-to-pay questionnaire

The questionnaire seeks information on demographics, physiotherapy experience, type of physiotherapy treatment received, satisfaction with physiotherapy, least and maximum amount of money that could be paid for treatment, monetized health benefit, and what patient would have preferred to pay for instead of the treatment. The psychometric properties of the instrument were shown to be excellent with intra-class correlation coefficient of 0.837 and Cronbach's alpha of 0.911 [17].

Physical Therapy Outpatient Satisfaction Survey questionnaire

The Physical Therapy Outpatient Satisfaction Survey (PTOPS) questionnaire was used to measure satisfaction with physiotherapy treatment. It is a 34-item instrument containing positively and negatively worded statements that are scored using a 5-point Likert scale with responses ranging from strongly agree to strongly disagree. The instrument has four domains: enhancers, detractors, location and cost. The instrument has been used in various populations and found to have good psychometric properties [18–21]. Unweighted summary scores were used to classify participants as low (1- 84 scores), moderate (85 – 101 scores) and high (102 – 170 scores) satisfaction with physiotherapy treatments.

Stroke-Specific Quality of Life Questionnaire

The Stroke-Specific Quality of Life Questionnaire (SS-QOL) uses a 5-point Likert scale for every item. Higher scores indicate better function. In the original version, the SS-QOL consisted of a total of 49 items with 12 domains: energy, family roles, language, mobility, mood, personality, self-care, social roles, thinking, upper-extremity function, vision, and work/productivity [22]. The tool has been translated into other languages including three major Nigerian languages and found to be valid measure among stroke survivors [23–27]. The overall summary scores were used to classify participants as having low (1 – 122 scores), moderate (123 – 146 scores) and high (147 – 245 scores) quality of life.

Ethical approval for the study was obtained from the Ethics and Research Committee of Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife. Administrative approval was obtained from respective Heads of Department of the selected facilities where the study was conducted. Individuals gave their informed consent to participate in the study prior to administration of the questionnaires.

Data Analysis

Descriptive statistics (frequency and percentages) was used to summarise data. Chi Square was used to examine the association between WTP for physiotherapy and socio-demographic factors, health-related quality of life and patient satisfaction with physiotherapy. Logistic regression was used to examine the determinants of WTP for physiotherapy. Alpha level was set at $p < 0.05$. Statistical analysis was carried out using IBM SPSS Statistics, version 20 (SPSS Inc., Chicago, IL).

Results

Characteristics of the respondents are shown in Table 1. Most of the respondents were male (58.8%), 51-60 years of age (36.6%), married (82.4%), and of Yoruba tribe (95.5%). The respondents had tertiary education qualification (47.1%) and of middle socio-economic status (45.6%). Most of the respondents were admitted to the hospital because of stroke (82.4%), right side of their body was affected (57.4%). Majority (78.0%) were hypertensive and 25% were not on medication.

Most of the respondents were satisfied with their first appointment (85.3%), overall care (82.4%), last visit (80.9%), and personal aspect of care (80.9%). However, satisfaction with payment arrangement/fee schedule (58.8%) received the least agreement rating (Figure 1). Most of the respondents would prefer to pay for an infra-red therapy than load a mobile phone recharge voucher (88.2%), would prefer to pay higher insurance premium for general coverage of physiotherapy services (70. 6%). However, 16.2% of the respondents would prefer to pay for haircut than for massage (Figure 1).

The overall expression of WTP between ₦500 and ₦5000 ($1.30 and $13.01) per session of the respondents in this study was 63.2%. There was a low 'WTP' for cryotherapy (0%), thermotherapy modalities (23.5%), and manual therapy (13.2%). 11.8% of the respondents indicated 'WTP' for exercise and electrical stimulation (table 2). Pattern of overall WTP for physiotherapy revealed that only education was significantly associated with WTP ($\chi^2 = 6.248$; $p = 0.044$) (Table 3). When pattern of WTP for each modality was examined, there was significant

association between WTP for thermotherapy and age (χ^2 = 28.096; p = 0.005). There was significant association between WTP for manual therapy and each of marital status (χ^2=15.373; p = 0.018), education (χ^2 = 20.848; p = 0.002) and occupation (χ^2 = 26.089; p =0.037). There was significant association between WTP for exercise and each of religion (χ^2 =10.534; p = 0.015), education (χ^2 =16.183; p = 0.013), occupation (χ^2 = 33.956; p = 0.003) and socio-economic status (χ^2 =14.189; p = 0.028). There was significant association between WTP for cryotherapy and religion (χ^2 = 6.697; p = 0.010). There was significant association between WTP for electrical stimulation and socio-economic status (χ^2 = 17.278; p = 0.015).

The health-related quality of life (HRQoL) score of the respondent was 192.44±41.32 while satisfaction with physiotherapy services was 110.67±13.83. However, only 66.2% and 82.4% reported high HRQoL and satisfaction with physiotherapy services, respectively (Table 4). Only 56.2% of respondents with low HRQoL and 42.9% with moderate HRQoL indicated 'WTP' for physiotherapy while 68.9% of the respondents with high HRQoL expressed positively for WTP for physiotherapy. 60% and all respondents with low and moderate satisfaction with physiotherapy services, respectively indicated 'WTP' for physiotherapy while 60.5% of respondents with high satisfaction with physiotherapy services also indicated positively on WTP for physiotherapy. The results of Chi-square test of association between WTP, HRQoL and satisfaction with physiotherapy showed no significant association between WTP and HRQoL, and between WTP for physiotherapy and satisfaction with physiotherapy ($p > 0.05$).

Level of education and side of affectation were the significant predictors of WTP for physiotherapy when sociodemographic and clinical variables were entered into logistic

regression using forward stepwise conditional method (table 5). Stroke survivors with tertiary education were six times more likely to have WTP for physiotherapy compared with those who have primary education (OR = 6.009, CI = 1.528 – 23.630, p = 0.01). Stroke survivors with right side affectation were five times more likely to have WTP for physiotherapy compared with left side affectation (OR = 5.109, CI = 1.305 – 19.997, p = 0.019).

Discussion

This study investigated WTP for physiotherapy services among stroke survivors attending three selected outpatient physiotherapy clinics in South–West, Nigeria. The overall expression of WTP for physiotherapy among stroke survivors was 63.2%. Generally, there is a dearth of similar studies with which the finding of this study can be compared. To the knowledge of the researchers, this is the first study investigating WTP for physiotherapy among stroke survivors. Related studies from Nigeria found WTP rates of 55% among patients with neurological and musculoskeletal problems respectively who were attending physiotherapy [15]. However, the rate observed in this study was lower than those reported among people with type 2 diabetes mellitus that were willing to pay a considerable amount of money each month to lose weight, reduce or avoid hypoglycemic events [28]. Also, a higher WTP for the prescription drug for Alzheimer's disease prevention was reported by participants with higher perceived risks, and greater household wealth [29]. It is possible that methodical variations in the assessment of WTP may contribute to divergences in findings [28,29]. Differences in health systems, standard of living or earning power/affordability or ability to pay may also contribute divergent findings.

Similar to the findings of Dong et al [30], the pattern of WTP observed in this study indicate that male stroke survivors, those who were in the older adult category and of middle socio-economic class were more likely to be willing to pay for physiotherapy. The association between socio-economic status and WTP has been established in some studies [31–33]. The findings of this study revealed a significant association between WTP for physiotherapy and educational status. Stroke survivors with tertiary education were six times more likely to exhibit WTP for physiotherapy compared with those who have primary education. Similar to the results of this study, some researchers have observed that individuals with higher educational qualifications were likely to pay for healthcare including health insurance premium because they are more aware of the benefits [11,30] whereas a few studies have demonstrated contrary results [31,34]. Ogundeji et al. [31] postulated issues of trust in health system, availability of other healthcare options amongst others as the reasons for the atypical trend.

Another determinant of WTP for physiotherapy among stroke survivors in this study was side of affectation. Stroke survivors with right side affectation were five times more likely to have WTP for physiotherapy compared with those with left side affectation. Specifically, from this study, more stroke survivors with left side affectation demonstrated low WTP for physiotherapy compared with those with right side affectation. Though, limb dominance was not assessed in the present study, however, it is possible that majority of the participating stroke survivors were right hand dominant. The desire to regain the functional use of their right hand may have influenced their WTP for physiotherapy. Our data indicate that 72% of those with right side affectation had high WTP for physiotherapy.

The findings of this study on satisfaction with physiotherapy revealed that the patients were satisfied with their first appointment, personal aspects of care, continuity of care, last visit and overall care. However, satisfaction with payment arrangement/fee schedule has a least positive rating. This is similar to the results of Szőcs et al. [35] wherein they observed good satisfaction with treatment among stroke survivors and discovered that patients are more satisfied with physicians, nurses and organization of care generally. In a study by Hills and Kitchen [36], it was stated that patient satisfaction is a complex construct and is regarded as an important component in the assessment of care quality. Public spending on health plays prominent role on patient satisfaction as greatly shapes and positive relates to patient satisfaction, while private spending on health related negatively [37]. It is likely that this high rate of satisfaction with physiotherapy were responsible for high WTP for physiotherapy rate among the stroke survivors.

Although there was no significant association between WTP for physiotherapy and HRQoL and satisfaction with physiotherapy, the findings of this study showed that 68.9% of the stroke survivors with high HRQoL and 60.5% of the survivors with high satisfaction with physiotherapy indicated ‘no WTP’. These findings are unexpected as the high HRQoL and satisfaction with physiotherapy may have spurred them to pay for their treatment. Stroke patients with good satisfaction with care are reportedly more willing to adhere to treatment which may include payment for therapy [38]. Patient satisfaction has been reported to be positively related to WTP out of pocket for healthcare. This implies that patients with good satisfaction with treatment are positively inclined for WTP [37].

There are policy implications from the findings of this study. About 40% of stroke survivors in this study indicated 'no WTP' for physiotherapy services. Though, the reason for this substantial number is unclear. It is likely stroke survivors are unwilling to pay for some of the therapies (for example cryotherapy) probably because they do not believe it can help them treat their impairment. This may necessitate health services providers to offer pragmatic solutions in terms of providing current practice (therapies) which are affordable and accessible in resource-limited settings like Nigeria. However, the potential limitation of this study include that it was conducted in public facilities only, thus the findings may not be totally extrapolated to the stroke survivors in private setting. It is possible for the stroke survivors in the private hospital setting to have different factors influencing their WTP.

Conclusion

A high proportion of Nigerian stroke survivors attending public health facility expressed WTP for physiotherapy and it is influenced by educational status and side of affectation. Policymaker can capitalise on the higher number of stroke survivors that are willing to pay to proliferate the physiotherapy services in the community.

Disclosure statement

No potential competing interest was reported by the authors.

Declaration of Interest Statement

The authors report no conflicts of interest

Data availability statement

The data that support the findings of this study are available from the corresponding author,

[OOO], upon reasonable request.

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Table 1: Characteristics of the participants

Variable	Frequency	Percentage
Age(years)		
<40	4	5.9
40 – 50	14	20.6
41 -60	25	36.8
61 – 70	22	32.3
>70	3	4.4
Sex		
Male	40	58.8
Female	28	41.2
Marital Status		
Single	8	11.8
Married	56	82.3
Widowed	4	5.9
Religion		
Christianity	52	76.5
Islam	16	23.5
Ethnic		
Yoruba	65	95.5
Igbo	1	1.5
Other	2	3
Education		
Primary	20	29.4
Secondary	16	23.5
Tertiary	32	47.1
Socio-economic status		
Low	26	38.2
Middle	31	45.6
High	11	16.2
Occupation		
Professionals	14	20.6
Middle level	29	42.6
Semi-skilled	3	4.4
Unskilled	5	7.4
Unemployed	4	5.9
Retired	13	19.1
Admission status		
Yes	56	82.4
No	12	17.6
Type of stroke		
Haemorrhagic	54	79.4
Ischaemic	14	20.6

Laterality		
Right	39	57.4
Left	29	42.6
Hypertension co-morbidity		
Yes	53	77.9
No	15	22.1
Medication		
Yes	51	75.0
No	17	25.0
cognitive impairment		
Severe	0	0.0
Mild	0	0.0
None	68	100.0

Table 2: Willingness-to-pay for physiotherapy services

Variable	Thermotherapy	Manual therapy	Exercise	Cryotherapy	EMS
	n(%)	n(%)	n(%)	n(%)	n(%)
no WTP	34(50.0)	28(41.2)	34(50.0)	66(97.1)	47(69.1)
WTP less	12(17.6)	16(23.5)	17(25.0)	2(2.9)	10(14.7)
WTP	16(23.5)	9(13.2)	8(11.8)	0(0)	8(11.8)
WTP more	6(8.8)	15(22.1)	9(13.2)	0(0)	3(4.4)

Key: WTP = Willingness-to-pay, EMS = Electrical muscle stimulation

Table 3: patter and determinant of willingness-to-pay for physiotherapy services

Variable	Thermotherapy		Manual therapy		Exercise		Cryotherapy		EMS		Overall WTP	
	χ^2	p-value	χ^2	p-value	χ^2	p-value	χ^2	p-value	χ^2	p-value	χ^2	p-value
Age group	28.096	0.005*	9.158	0.689	8.967	0.706	3.544	0.471	11.838	0.459	2.450	0.654
Sex	5.505	0.138	3.803	0.284	5.589	0.133	0.666	0.797	1.870	0.600	0.023	0.881
Marital status	9.857	0.131	15.373	0.018*	4.545	0.603	0.442	0.802	3.377	0.760	2.711	0.258
Religion	1.001	0.801	4.854	0.183	10.534	0.015*	6.697	0.010*	1.861	0.602	2.921	0.087
Ethnic	6.738	0.346	6.184	0.403	5.046	0.538	0.095	0.954	6.749	0.345	4.075	0.130
Education	12.727	0.480	20.848	0.002*	16.183	0.013*	2.318	0.314	8.397	0.210	6.248	0.044*
Occupation	22.967	0.085	26.089	0.037*	33.956	0.003*	2.771	0.735	20.495	0.154	11.026	0.051
Socio-Economic Status	9.795	0.134	3.537	0.315	14.189	0.028*	2.254	0.324	15.728	0.015*	2.626	0.269
Admission status	0.210	0.847	3.547	0.315	2.637	0.451	0.442	0.506	0.991	0.803	0.868	0.352
Laterality	6.729	0.810	1.157	0.763	3.187	0.364	1.532	0.216	3.633	0.304	2.882	0.090
Hypertension co-morbidity	3.534	0.739	8.399	0.210	6.200	0.401	0.634	0.728	17.278	0.008	1.532	0.465
Medication	0.261	0.967	0.533	0.912	3.651	0.302	0.687	0.407	11.574	0.009	0.527	0.468

Key: EMS = Electrical muscle stimulation, WTP = Willingness-to-pay, *significant at p=0.05

Table 4: Health related quality of life and satisfaction with physiotherapy services

	Health related quality of life			Physiotherapy services satisfaction		
Variable	Reference score	n(%)	Mean±SD (range)	Reference score	n(%)	Mean±SD (range)
Low	1-122	16(23.5)	114.67±6.35 (111-122)	1-84	5(7.4)	75.40±10.43 (64-84)
Moderate	123-146	7(10.3)	135.00±6.00 (124-142)	85-101	7(10.3)	94.29±5.28 (87-100)
High	147-245	45(66.2)	206.56±30.78 (150-245)	102-170	56(82.4)	115.87±6.87 (104-130)
Total		68(100)	192.44±41.32(111-245)		68(100)	110.67±13.83 (64-130)

Table 5: Logistic regression of willingness-to-pay for physiotherapy's determinants factors

					95% CI for OR	
	B	**S.E.**	**p-value**	**OR**	**Lower**	**Upper**
Constant	-1.051	0.617	0.089	0.349		
Education						
Primary (ref)						
Secondary	-0.234	0.762	0.759	0.791	0.178	3.525
Tertiary	1.793	0.699	0.010	6.009	1.528	23.630
Laterality						
Left side (ref)						
Right side	1.631	0.696	0.019	5.109	1.305	19.997

CI: confidence interval; OR: odd ratio; SE: standard error; B: beta

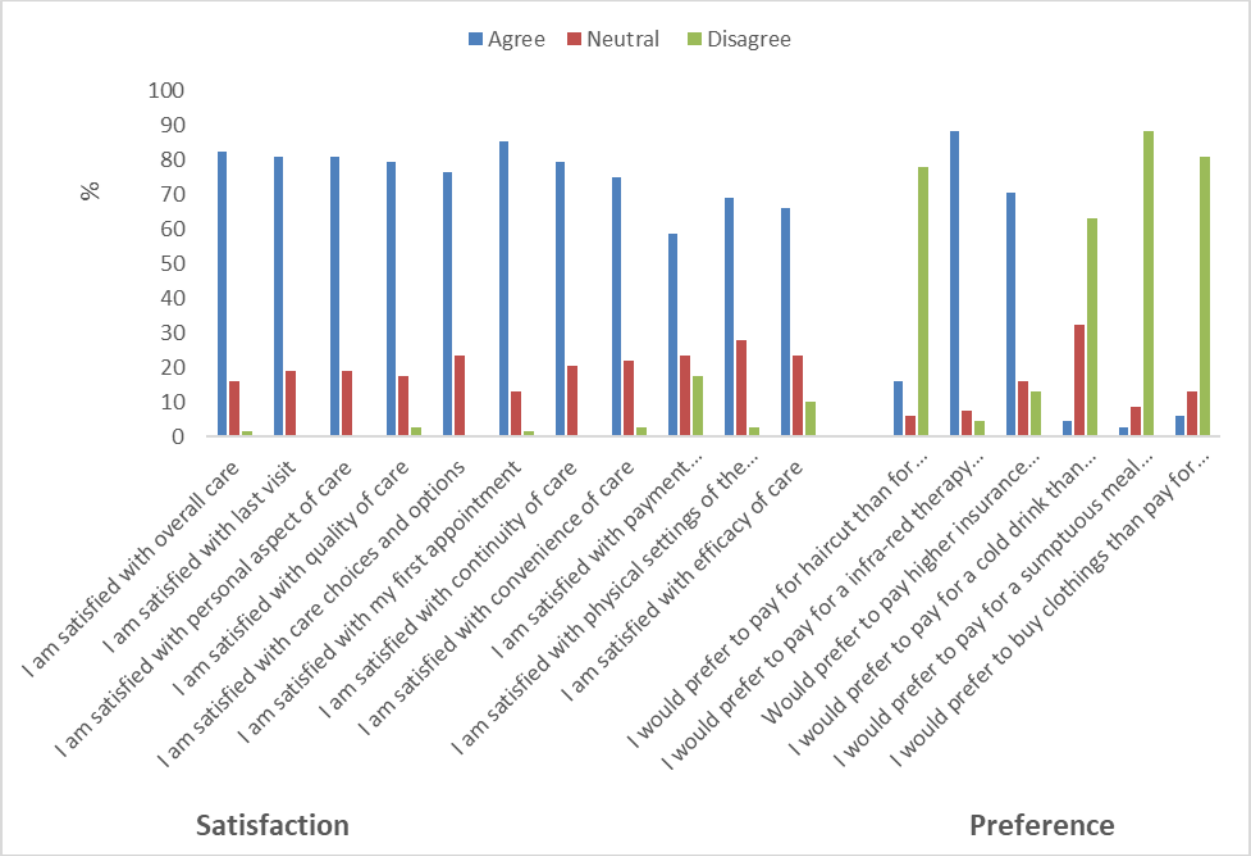

Figure 1: Participants' satisfaction with and preference for physiotherapy