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Correlation between parental willingness to pay, health-related quality of life, and satisfaction with physiotherapy services in Nigeria: a cross-sectional study

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Abstract

Background Being a parent of a child with a disability requiring many clinic visits is burdensome. Therefore, understanding the willingness-to-pay (WTP) for physiotherapy for children with disability is important to facilitating access to care and for policy-making. This study aimed to investigate patterns and correlates of parental WTP for physiotherapy.

Methods A total of 65 parents of children with disability receiving physiotherapy as outpatients were recruited from selected tertiary hospitals in Nigeria. A WTP questionnaire, SF-12 health survey, and Physiotherapy Satisfaction Questionnaire were used to assess the WTP, health-related quality of life (HRQoL), and satisfaction with physiotherapy respectively. Descriptive statistics of mean, standard deviation, frequency, and percentages were used to summarize the data. Chi-square and regression analysis were also used to test the association and determinants of WTP from each of the socio-demographic factors, satisfaction with physiotherapy, and health-related quality of life, respectively.

Results A majority (49.2%) of the respondents were in the 21–35 years age category. There was 30.8% "no WTP" for physiotherapy among parents of children with disability. A significant association was observed between socio-economic status and WTP for all treatment modalities ($p < 0.05$). The majority of the respondents had above-average levels of physical and mental health domain of SF-12. No significant association was observed between WTP and each satisfaction with physiotherapy and HRQoL ($p > 0.05$).

Conclusion There was a high rate of 'no WTP' for physiotherapy among parents of children with disability. Level of satisfaction with physiotherapy and health-related quality of life was not significantly associated with parental WTP for physiotherapy.

Keywords Parents, Pediatrics, Physiotherapy, Socio-economic status, Willingness to pay

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Introduction

Willingness to pay (WTP) is defined as the maximum amount an individual is willing to sacrifice to procure a good or avoid something undesirable [1]. WTP is a metric that is used to assess the value of a good or service and is used widely in the cost–benefit analyses of programs and policies [2]. WTP analyses can provide valuable information to payers and policymakers, both about the value of different policy targets as well as the financial viability of specific programs [3]. According to economic theory, WTP should increase with income, and this relationship should be considered as a test of the contingent validation method's validity [4].

There is increasing advocacy for the use of WTP methods in health care as a means to facilitate cost–benefit analysis [5, 6], as a method of measuring benefits from healthcare providers [7] and as a measure of benefits in public speaking. Thus, WTP studies help to identify the true demand for healthcare programs by actively involving the patients in deciding if they want and can afford the treatment, and also if it satisfies their perceptions towards meeting their needs [8]. In Nigeria, studies have reported WTP for community healthcare insurance [9], the treatment of tuberculosis [10], and antiretroviral drugs [11]. However, there is an apparent dearth of such studies on parental WTP.

Parents are integral members of their child's team, who provide vital information about their child's functioning, facilitate peer relationships, and act as liaisons and advocates for their child during the school transition [12]. A related study by Liu et al. [13] found that mothers have a WTP of about 20% greater to prevent a son's than a daughter's illness. Another study by Agee and Crocker [14] estimated parental WTP to reduce the risk of neurological impairments due to childhood exposure to lead using a revealed-preference approach based on the parents' decision to obtain chelating therapy for their child. Furthermore, Olivier et al. [15] in a study found that most parents of children in a weight management program were interested in continuing after it ended, but fewer were willing to pay out of pocket for it.

Assessment of parents' preferences provides a broader perspective to decision-makers by helping them understand the aspects of drug treatments of Juvenile Idiopathic Arthritis (JIA) that are most valued by families [16]. However, there is an apparent dearth of studies on parental WTP in physiotherapy. The objective of this study was to investigate parental WTP for physiotherapy and explore correlates such as parents' satisfaction with treatment and health-related quality of life in Nigeria.

Material and method

A total of sixty-five parents of children with disability receiving physiotherapy as outpatients at the Obafemi Awolowo University Teaching Hospital Complex (OAUTHC), Ile-Ife, and Ladoke Akintola University Teaching Hospital (LAUTECH), Osogbo, Nigeria were purposively recruited for this cross-sectional study. The responding parents/guardians were those with children who were not older than 12 years old; who had attended at least two sessions of physiotherapy services and who had paid for physiotherapy more than once. Parents/caregivers with mental or cognitive impairment having less than 24 scores in the Mini-Mental State Examination were excluded.

A validated WTP questionnaire adapted from a similar study was employed in this study [8]. The questionnaire sought information on demographics, physiotherapy experience, type of physiotherapy treatment received, the least and maximum amount of money that could be paid for treatment, monetized health benefits, and what patients would have preferred to pay for instead of the treatment. The health-related quality of life of the respondents was assessed using a general health status short form-12 questionnaire. The Short Form-12 survey contains categorical questions (e.g., yes/no) that assess limitations in role functioning as a result of physical and emotional health. The survey also contained Likert response formats including those that are on a three-point scale (limited a lot, limited a little, or not limited at all) that assessed limitations in physical activity and physical role functioning. In addition, a five-point scale (not at all, a little bit, moderately, quite a bit, and extremely) that assesses pain, and a five-point scale that assesses overall health (excellent, very good, good, fair, and poor) are included. The Short Form-12 also contains a six-point scale (all of the time, most of the time, a good bit of the time, some of the time, a little of the time, and none of the time) that assesses mental health, vitality, and social functioning. Its psychometric properties have been reported to be adequate in assessing health-related quality of life in various disease conditions and populations [17–19].

An adapted questionnaire from the Physical Therapy Outpatient Satisfaction Survey (PTOPS) was used to assess the parents/caregivers' satisfaction with physiotherapy treatment. The questionnaire contains positively and negatively worded statements that are scored using a Likert scale with responses ranging from agree to disagree [20]. Ethical approval was obtained from the Health Research and Ethics Committee of the Institute of Public Health (HREC), Obafemi Awolowo University, Ile-Ife, Nigeria. Permission was also sought from respective heads of departments of the hospitals in which the study

was conducted. The purpose of the study was explained to the respondents and informed consent was obtained. Thereafter, questionnaires were administered to the respondents.

Data analysis

Descriptive statistics of mean, standard deviation, frequency, and percentages were used to summarize the data. Chi-square was used to test the association between WTP and each of the socio-demographic factors, satisfaction with physiotherapy, and health-related quality of life. Logistic regression was used to predict WTP from a set of discrete independent variables. The alpha level was set at $p < 0.05$. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp. was used for the analysis.

Results

The socio-demographic characteristics of the respondents are presented in Table 1. A total of 30.8% of no WTP was found in this study. Most of the respondents were females (87.7%), in the 21–35 years age category (49.2%), of the Yoruba tribe (98.5%), and had low economic status (56.9%). The clinical condition and physiotherapy utilization of the respondents is presented in Table 2. All the respondents have had a previous experience of physiotherapy. Most of the parents had children with cerebral palsy (44.6%) and injection palsy (15.4%). Most of the respondents (69.1%) were willing to pay for physiotherapy services for their children (Fig. 1).

Table 1 Socio-demographic data of respondents ($N = 65$)

Variable		Frequency	Percentage
Age (years)	21–25	1	1.5
	< 20	32	49.2
	36–50	27	41.5
	51 +	5	7.7
Sex	Male	8	12.3
	Female	57	87.7
Marital status	Single	4	6.2
	Married	59	90.8
Religion	Islam	33	47.7
	Christianity	31	50.8
Education	Secondary	34	52.3
	Tertiary	30	46.2
Ethnicity	Yoruba	64	98.5
	Igbo	1	1.5
Income (*N*)	< 7500	7	10.8
	7500–15,000	11	16.9
	15,000–50,000	32	49.2
	50,000–100,000	13	20.0
	100,000–150,000	2	3.1
Socio-economic status	Low	37	56.9
	Middle	17	26.2
	High	11	16.9

Table 2 Clinical condition and physiotherapy utilization of the respondents

Variable		Frequency	Percentage
Condition	Cerebral palsy	29	44.6
	Delayed developmental milestone	9	13.8
	Erbs palsy	8	12.3
	Orthopaedics	9	13.8
	Injection palsy	10	15.4
Total		65	100.0

Most of the respondents were satisfied with convenience of care (93.8%), overall care (92.3%), quality of care (92.3%), efficacy of care (92.3%), last visit (90.8%), and continuity of care (90.8%). However, satisfaction with payment arrangement/fee schedule recorded the lowest percentage (73.8%) of agreements (Table 3). The mean scores of the quality of life of respondents are presented in Table 4. The highest and lowest mean scores were obtained for role limitation attributable to energy/fatigue (77.8) and physical functioning (41.6). The domain scores for physical and mental health were 64.0 and 68.3.

Table 5 shows the chi-square test of the association of parental WTP with the level of satisfaction and health-related quality of life. A total of 88.0% of the respondents with high satisfaction with physiotherapy are willing to pay. Furthermore, a total of 15.85% of the respondents with good physical health are willing to pay while 84.4% of the respondents with good mental health are willing to pay. However, there was no significant association between parental WTP and health-related quality of life ($p > 0.05$). A number of variables (nominal and ordinal) were fitted using logistic regression to predict WTP. Also, age, patient satisfaction, and health-related quality of life were inputted as scale variables in the regression model. Only socioeconomic status was a significant predictor of parental WTP ($B = 1.468$; $p = 0.022$) (Table 6).

Discussion

This study aimed to investigate the pattern and correlates of parental WTP for physiotherapy services among parents/guardians of children attending selected tertiary hospitals in Nigeria. A total of 30.8% 'no WTP' for physiotherapy was found in this study. There is a dearth of data by which the rate of parental WTP obtained in this study can be compared, however, a similar rate of WTP was obtained for diabetic patients [21], Alzheimer's disease [22], and prevention of mother-to-child

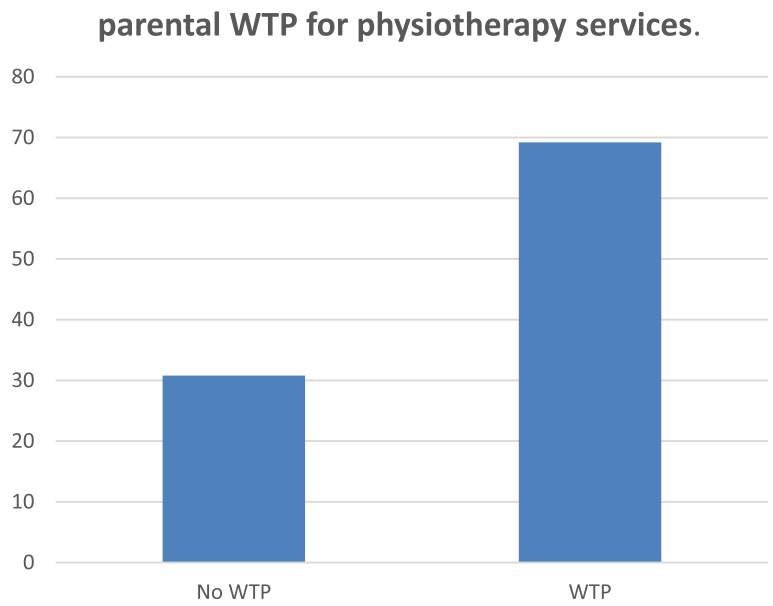

Fig. 1 Parental willingness to pay (WTP) for physiotherapy services, which was wrongly embedded on the top of the figure instead of the bottom

Table 3 Frequency distribution of responses on satisfaction with physiotherapy

Item	Agree *n* (%)	Neutral *n* (%)	Disagree *n* (%)
1. I am satisfied with overall care	60(92.3)	3(4.6)	2(3.1)
2. I am satisfied with last visit	59(90.8)	5(7.7)	1(1.5)
3. I am satisfied with personal aspect care	59(90.8)	6(9.2)	0(0.0)
4. I am satisfied with care choices	60(92.3)	5(7.7)	0(0.0)
5. I am satisfied with quality care	60(92.3)	5(7.7)	0(0.0)
6. I am satisfied with my first appointment	58(89.2)	7(10.8)	0(0.0)
7. I am satisfied with continuity of care	59(90.8)	6(9.2)	0(0.0)
8. I am satisfied with convenience of care	61(93.8)	4(6.2)	0(0.0)
9. I am satisfied with arrangement/fees schedule	48(73.8)	9(13.8)	8(12.3)
10. I am satisfied with physical setting	58(89.2)	7(10.8)	0(0.0)
11. I am satisfied with efficacy of care	60(92.3)	5(7.7)	0(0.0)

HIV transmission service [23]. Several factors may account for the high 'no WTP' observed in this study including out-of-pocket payment, lack of insurance coverage, and low value for treatment benefits. For example, Nigeria's use of out-of-pocket spending as the most important mechanism for health care payment is inefficient and inequitable [24–26]. Out-of-pocket spending is known to be a major hindrance to the use of healthcare services [27] and the burden is heavier on the poor and more vulnerable population groups. In a study by Olivier et al. [15], it was found that most parents of children in a weight management program were interested in continuing after it ended, but fewer were willing to pay out of pocket for it.

The SES of the parents in this study was associated with parental WTP for physiotherapy. The association between SES and WTP has been established in some studies [28, 29]. It is believed that those in the low SES are not willing to pay for health care services and other packages [30, 31]. Moreover, the literature has stressed that socio-demographic factors are important determinants of WTP [30, 31]. However, there is an apparent dearth of physiotherapy-related studies to the findings of this study. Nonetheless, this study found a significant association between SES and WTP for physiotherapy.

From the findings of this study, data on satisfaction with physiotherapy revealed that the respondents were satisfied with their convenience of care, personal aspects of

Table 4 Mean rank and standard deviation of quality of life of respondents

Item		Mean	Standard deviation
Scale	Physical functioning	41.6	28.5
	Role limitations attributable to physical health	73.4	28.3
	Bodily pain	77.2	23.4
	Health perception	64.6	20.2
	Energy/fatigue	77.8	19.9
	Social functioning	70.9	28.2
	Role limitations attributable to mental health	64.9	28.0
Domain	MH	60.0	9.7
	Physical health	64.0	9.4
	Mental health	68.3	15.2

Table 5 Association of WTP with patient satisfaction level and health-related quality of life

		Not WTP *n*(%)	WTP *n*(%)	χ^2	*P* value
Satisfaction level	Low	0(0.0)	2(4.4)	1.091	0.581
	Middle	2(10.0)	3(6.7)		
	High	18(90.0)	40(88.9)		
Health-related quality of life					
Physical health	Poor	3(15.0)	5(11.1)	0.194	0.660
	Good	17(85.0)	40(88.9)		
Mental health	Poor	4(20.0)	7(15.6)	0.195	0.659
	Good	16(80.0)	38(84.4)		

Table 6 Multiple regression analysis of WTP and respondents' characteristics

Item	*B*	*P* value
Age group	−0.092	0.872
Sex	−0.704	0.627
Marital status	0.769	0.599
Religion	−0.70	0.924
Ethnicity	19.902	1.000
SES	1.468	0.022*
Condition	0.362	0.720
Satisfaction level	0.042	0.933
PHD level	0.497	0.317
MHD level	0.298	0.578
Constant	−22.915	1.000

B beta co-efficient, *PHD* physical health domain, *MHD* Mental health domain

*indicates significance at $p < 0.05$, *SES* socio-economic status

care, continuity of care, last visit, and overall care. However, satisfaction with payment arrangement/fee schedule has the least positive rating from this study. There was no significant association between respondents' characteristics and satisfaction level with physiotherapy. In Poland, the evaluation of the satisfaction of parents/guardians with childcare in pediatric departments is a relatively new research area; at the same time, it is one of the priority recommendations for healthcare providers. However, some studies reveal that parents of children admitted to the hospital in an emergency mode gave a lower score for the individual criteria of satisfaction with care (I "Information", II "Care and Treatment", IV "Parental participation") and general satisfaction with cares [32]. Also, Holroyd and McArthur found that in comparison with mothers of children with Down syndrome, mothers of children with autism were more upset and disappointed with their children and more anxious about obtaining appropriate services. There was no significant association between parental WTP and satisfaction with physiotherapy level. However, a large percentage (88.9%) of the patients who had high satisfaction were willing to pay.

Results on Health-related quality of life (HRQoL) of the patients in this study showed that energy/fatigue had the highest mean rank score while physical functioning had the lowest mean rank score. The domain scores for physical and mental health were 64.0 and 68.3 respectively. The majority of the respondents (72.3% and 75.4%) had above-average physical and mental health levels respectively. There was a significant association between the mental health level and socio-economic status (SES) of the parents. This indicates that parents with low SES have above-average health-related mental health. Studies have shown that family and community indices including parent impact [33], family support [34], school environmental supports [35], parenting styles, parent's emotional health, and parent's rating of general health [36, 37] are associated with psychosocial HRQoL. Although these findings are from cross-sectional studies, they do indicate the potential that the amount and direction of change in psychosocial HRQoL over time is explained by child behavior, disability level, impact on family, family support, parents' health, parenting styles, and perceptions of environmental supports. There was no significant association between WTP and health-related physical health and health-related mental health. However, the majority of patients with good physical health (88.9%) and mental health (84.4%) status were willing to pay.

This study may provide proxy data on the value of physiotherapy for children with a disability using the WTP method as an avenue to explore parents' perceptions. Parents play an essential role in their child's team, providing crucial information about their child's abilities,

facilitating peer relationships, and serving as a liaisons, and advocates for their child during the school transition. Parental WTP in this study was not influenced by religion, gender, and marital status which are important covariates other than socioeconomic factors. It is adducible that having a preponderance of females, married persons, and a comparable number of respondents based on religion may have contributed to the non-significant association between these variables and parental WTP. However, socioeconomic status has been found in a systematic review to significantly influence WTP [38]. According to the findings of Xu et al. [39], the relationship between socioeconomic status and willingness to pay (WTP) for health improvement is predicated on the assumption that individuals of higher economic standing tend to assign greater value to their health and are better equipped to allocate financial resources towards improving it. This suggests that WTP may be influenced by an individual's financial capabilities, as well as their perception of the importance of health.

One potential limitation of this study is its limited generalizability due to the relatively small sample size and recruitment of respondents from only one region of the country. However, it is worth noting that the immediate catchment areas for OAUTHC and LAUTECH include the states of Osun, Ekiti, and Ondo [40], and Osun and Oyo, respectively. Other limitations of the study include methodological issues associated with using questionnaires to assess WTP [41], as well as non-response and recall bias that often affect cross-sectional surveys [42]. Therefore, it is recommended that more studies on parental WTP that will address some of the shortcomings of this study be conducted. This study is the first of its kind to examine parental WTP for physiotherapy in Nigeria. WTP is an area that has been overlooked in the field of physiotherapy. Therefore, the results of this study will be valuable in guiding professionals, policymakers, and other stakeholders in providing better access to physiotherapeutic services for children with disabilities. This is especially important in a context where payment for care is largely made out-of-pocket.

Conclusion

There was a high rate of "no WTP" for physiotherapy among parents of children with disability. Level of satisfaction with physiotherapy and health-related quality of life was not significantly associated with parental WTP for physiotherapy.

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Authors' contributions
FF and MCE were involved in the conceptualization and design of the study. MCE, AMA, GT, FCT, AAB, OOO, OAO, and OAM were involved in the acquisition, analysis, and interpretation of data. The authors read and approved the final manuscript.

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Availability of data and materials
The datasets used and/ or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
Ethical clearance was obtained from the Health Research and Ethics Committee of the Institute of Public Health (HREC), Obafemi Awolowo University, Ile-Ife, Nigeria.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests to declare.

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