



## Research Article

### **DETERMINANTS OF WILLINGNESS TO PAY FOR PHARMACISTS PROVIDED MEDICATION-RELATED SERVICES AMONG OUTPATIENTS IN SOUTH-EASTERN NIGERIA TEACHING HOSPITALS**

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#### **ABSTRACT**

Little is known about the economic value of hospital pharmacists' cognitive services in Nigeria. Hence, this study aimed to evaluate the willingness to pay (WTP) for hospital pharmacists' provided medication-related services among outpatients in South-Eastern Nigeria, and to explore its sociodemographic predictors. A cross-sectional study was conducted among outpatients receiving care in two Teaching Hospitals. Using contingent valuation, respondents' WTP were elicited for three pharmacist's services; namely patient education and counseling, drug therapy monitoring, and medication reconciliation. The price elasticity of demand for the services was determined. Descriptive statistics were used to present respondents' sociodemographic characteristics. Multivariate regressions were used to model the relationship between dependent and independent variables.  $P < 0.05$  was considered statistically significant. Of the 466 respondents, about half were female (52.6%) and aged 25-44 years (50.9%). Majority of the respondents had a tertiary education (63.9%). More than 65% of the patients surveyed were willing to pay an average of US\$0.80  $\pm$  1.17, US\$0.83  $\pm$  1.16, and US\$0.91  $\pm$  1.20 for patient education and counseling, drug therapy monitoring, and medication reconciliation, respectively. Price elasticity of demand for the services ranged from -0.19 to -1.00. Respondents' monthly income, income sufficiency, occupation, and health status were significant predictors of WTP for the services. Our findings suggest that a substantial proportion of respondents were willing to pay for hospital pharmacist's services. The major contributors to respondents' WTP were higher income, unemployment, and poor health status. Therefore, there is a promising potential for reimbursement of health institutions and service providers for medication-related services.

**Keywords:** cognitive services, hospital pharmacist, contingent valuation, Nigeria

#### **INTRODUCTION**

Medication-related services (MERS) are cognitive services provided by pharmacists for the purpose of achieving desired therapeutic goals in patient care. In recent years, pharmacy practice has evolved from product-oriented to patient-focused services. Consequently, in addition to drug dispensing, hospital pharmacists render cognitive services such as patient education and counseling (PEC), medication reconciliation (MR), and drug therapy monitoring (DTM) <sup>1,2</sup>. PEC is the provision of information on medications either orally or in writing to the patients or their caregivers. It includes appropriate directions for medication use; instruction on adverse effects, storage, nutrition, and lifestyle changes <sup>3,4</sup>. It is known that the provision of PEC in an ambulatory care setting in hospitals improves patients' medication adherence, therapeutic outcomes, and quality of life. It also increases patients' understanding of their medications and lifestyle modifications especially in chronic illnesses <sup>5,6</sup>. MR is a recognized procedure in which pharmacists work together with other healthcare professionals, patients, and caregivers to ensure communication of consistent, accurate and all-inclusive information on prescribed medications during care transitions. This is necessary in order to prevent or minimize medication errors <sup>7,8</sup>. Pharmacist-provided DTM services include routine assessment of therapeutic drug levels, monitoring of patients' outcomes, laboratory results, adverse drug events, possible drug interactions and treatment failures; and recommending adjustments in medication regimens where necessary <sup>4</sup>. The pharmacist ensures that patients receive the right medication at the right time, right dosage, and frequency <sup>9</sup>.

Presently, every health care service require economic evaluation to justify its worth for resource allocation <sup>10</sup>. The clinical and economic benefits of pharmacists-provided MERS and other pharmacist's interventions to the patients are well-documented. However, there appears to be a paucity of data regarding its economic impact to the healthcare institutions and service providers <sup>11</sup>. Therefore, it is important to appraise hospital pharmacists' services to ensure a clearer understanding of its value for money. Review of literature showed that previous studies have assessed the economic value and allocative efficiency of different pharmacist's services mainly in the community pharmacies <sup>11</sup>. Previously assessed community pharmacists' services were patient counseling, diabetes management, asthma management, blood level services, dispensing services, management of menopause and cognitive services <sup>12-15</sup>. Others are pharmaceutical care and medication therapy management <sup>16,17</sup>.

In Nigeria, pharmacists provided MERS are either under-utilized or unavailable in most hospitals. This situation had been attributed to lack of motivation via rewards or reimbursement for the services as it is currently free-of-charge <sup>18</sup>. Pharmacists' lack of motivation might likely explain the growing trend of medication-related problems, particularly among outpatients with chronic diseases <sup>19-22</sup>. To date, no prior study has assessed the economic value of pharmacist-provided services in the hospital. Economic evaluation of the potential rewards of these services to the pharmacists and possible service charge would help improve the availability, quality, and utilization of MERS in the hospital settings in Nigeria <sup>11</sup>. However, for the purpose of this study, we defined MERS to include patient education and counseling, drug

therapy monitoring, and medication reconciliation as provided by hospital pharmacists. Therefore, the objectives of this study were (1) to determine respondents' average WTP for MERS, (2) to determine the price elasticity of demand for MERS, and (3) to explore the sociodemographic determinants of WTP and the amount respondents are willing to pay for MERS in Teaching Hospitals in South-Eastern Nigeria.

## METHODS AND MATERIALS

A descriptive cross-sectional study was conducted among outpatients in two Teaching Hospitals in South-Eastern Nigeria.

### Study location and participants

This study was conducted at the Outpatients Pharmacy Departments of the University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu State, and Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State. The sample size for the study was calculated using the Online Raosoft® sample size calculator<sup>23</sup>. With an estimated annual outpatient population of 38,400, 95% confidence interval and error margin fixed at 5% (0.05), a minimum sample size of 381 was required for the study. Overall, 528 eligible patients were approached to participate in the study but 466 completed the study instrument. Non-responses recorded were mainly due to lack of interest and time for the study. Inclusion criteria for participants in this study were; (1) adult patients (18 years and above), (2) ability to read and write in the English language, and (3) consent to participate in the study. However, patients who are mentally unstable were excluded from the study.

### Questionnaire

The study instrument used was a self-administered questionnaire developed based on the principles of contingent valuations. The instrument was designed for the purpose of eliciting patients' maximum WTP for MERS. The instrument was divided into 2 sections. The first section of the questionnaire contained the patient's sociodemographic data. The sociodemographic data include gender, age of respondents, marital status, level of education, occupation, monthly income, income description, family size, place of residence, health status, health insurance status. The second section contained hypothetical descriptions of each of the MERS and 3 follow-up questions on respondents' WTP. The service descriptions were as follows:

“(1) Patient education and counseling: The pharmacist provides information to patients on the nature of the disease state, drug therapy, accurate drug dosing, proper medication storage techniques, the effect of food on drug absorption, proper medication timing, and strategies for managing adverse effects of drugs. (2) Drug therapy monitoring: The pharmacist closely observes patients' response to medication to ensure that the patient gets well as soon as possible. He educates patients on potential adverse effects and actions to take if problems occur. The pharmacist identifies and resolves adverse drug events if any. Also, ensures that patients take medications as prescribed and recommends therapy adjustment where necessary. (3) Medication reconciliation: The Pharmacist in collaboration with other healthcare providers assesses all prescribed medications for a patient to ensure that there are no discrepancies, thus reducing the incidence of medication errors. The pharmacist seeks to identify potential or actual drug-related problems, advice regarding dosage adjustments to address drug interactions or organ insufficiencies, suggest alternatives if current therapies or formulations are unsuitable or contraindicated, and ensure that complete regimens are prescribed, including co-medications.”

Afterward, respondents were asked a dichotomous question (yes/no), for example, "would you like to pay for patient education and counseling?" If 'yes', "given the under-listed prices, how much are you willing to pay for patient education and counseling?" And finally, "what is the exact amount you are willing to pay for patient education and counseling?" The price ranges were as follows: less than ₦100 (US\$0.33), ₦100-200 (US\$0.33-0.65), ₦200-300 (US\$0.65-0.98), ₦300-500 (US\$0.98-1.63), and more than ₦500 (US\$1.63). The values are derived based on the average 15 minutes salary earnings of hospital pharmacists in Nigeria. This was done on the assumption that a pharmacist would require 15 minutes to provide each of the services.

### Data collection

The questionnaires were administered directly to the eligible patients through six research assistants who were trained on the protocols of the study. The questionnaires were retrieved immediately after completion in the outpatient waiting room of the hospitals. On average, respondents spent about 20 minutes in completing the questionnaires. Where necessary, the researchers or research assistants provided clarification for the respondents while completing the questions. The data collection lasted for a period of 6 months, between May 1-November 28, 2017.

### Statistical analyses

Descriptive statistics were used to present respondents' sociodemographic characteristics and their WTP data. Price elasticities of demand for the services were determined based on the distribution of patients who stated positive WTP across different price levels. Multivariate linear regression was used to model the relationship between the independent variables (sociodemographic characteristics) and the dependent variable (amount respondents are willing to pay for the services). Linear regression was carried out using the Backward conditional method. Multivariate logistic regression was used to determine the sociodemographic predictors of WTP (Yes = 1, No = 0) using the Enter method.  $P < 0.05$  was considered statistically significant. All analyses were performed using IBM Statistical Product and Service Solution (SPSS) for Windows, version 20 (IBM Corp, version 20 and Armonk, NY, USA).

### Ethical considerations

Ethical approval was sought from the Health Research Ethics Committee of the University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu State, and Nnamdi Azikiwe University Teaching Hospital Ethical Committee, Nnewi, Anambra State. Oral consent was obtained from all eligible patients before initiation of the study. The researcher ensured strict confidentiality of data provided, and respondents' identities were concealed from any third party during and after the study.

## RESULTS

Of the 528 patients approached for the study, 466 completed the study questionnaire, giving a response rate of 88.26%. About half of the respondents were female (52.6%) and aged 25-44 years (50.9%). Majority of respondents were married (61.8%) and had tertiary education (63.9%). More than half of the patients (59.1%) were Civil servants and traders and earn a monthly income below US\$326.80. However, most of the participants (78.3%) had no form of health insurance premium. Other sociodemographic data of the respondents are as shown in Table 1.

**Table 1: Sociodemographic characteristics of respondents (n = 466)**

Characteristics	Frequency*	Percentage
<b>Gender</b>		
Male	221	47.4
Female	245	52.6
<b>Age (years)</b>		
18-24	45	9.7
25-34	120	25.8
35-44	117	25.1
45-54	75	16.1
55-70	80	17.2
>70	29	6.2
<b>Marital status</b>		
Single	118	25.3
Married	288	61.8
Separated	15	3.2
Divorced	10	2.1
Widowed	33	7.1
<b>Level of Education</b>		
No Formal Education	33	7.1
Primary	36	7.7
Secondary	96	20.6
Tertiary	298	63.9
<b>Occupation</b>		
No Job	54	11.6
Farming	29	6.2
Civil Servant	175	37.6
Trader	100	21.5
Self-employed	104	22.3
<b>Monthly income</b>		
<₦18,000 (US\$58.82)	78	16.7
₦18,000- ₦50,000 (US\$58.82-US\$163.39)	109	23.4
₦50,000 -₦100,000 (US\$163.39-US\$326.80)	137	29.4
₦100,000- ₦200,000 (US\$326.80-US\$653.59)	99	21.2
₦200,000-₦500,000 (US\$653.59-US\$1,633.98)	29	6.2
<b>Income (Description)</b>		
Not sufficient	268	57.5
Meet the need	117	25.1
Allows saving	68	14.6
<b>Place of Residence</b>		
Village	94	20.2
Town	194	41.6
City	176	37.8
<b>Health Status</b>		
Good	184	39.5
Average	230	49.4
Bad	43	9.2
<b>Health Insurance</b>		
No	365	78.3
Yes	100	21.5

\* Some data were missing; Exchange rate as at November, 2017 (₦306.00 = US\$1.00)

**Table 2: Respondents' willingness to pay for medication-related services**

Services	WTP	WTP (US\$)	WTP (US\$)
	n, %	Mean (SD)	Minimum-Maximum
PEC	303 (65.1)	0.80 (1.17)	0.10 (16.34)
DTM	328 (70.4)	0.83 (1.16)	0.07 (16.34)
MR	333 (71.5)	0.91 (1.20)	0.07 (16.34)

SD = Standard deviation; WTP = Willingness to pay; PEC = Patient education and counselling; DTM = Drug therapy monitoring; MR = Medication reconciliation

Table 3: Multiple linear regression of WTP amount for Medication-related services and sociodemographic characteristics of respondents

Variables	B coefficient	SEM	t	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	P value
<b>Patient counseling &amp; education</b>				0.289	0.084	0.036	
Constant	326.690	104.937	3.113				0.002*
Monthly income	61.717	21.053	2.932				0.004*
Health status	-77.680	37.981	-2.045				0.042*
<b>Drug therapy monitoring</b>				0.330	0.109	0.067	
Constant	278.686	106.319	2.621				0.009*
Monthly income	55.597	20.310	2.737				0.007*
Income description	62.113	29.657	2.094				0.037*
Health status	-77.246	34.312	-2.251				0.025*
<b>Medication reconciliation</b>				0.370	0.137	0.097	
Constant	262.268	122.415	2.142				0.033*
Monthly income	65.708	20.305	3.236				0.001*
Place of residence	60.163	31.681	1.899				0.059
Health status	-107.123	35.843	-2.989				0.003*

\*Significant at  $p < 0.05$

Table 4: Logistic regression of WTP and sociodemographic characteristics of respondents

Characteristics	Patient education & counseling		Drug therapy monitoring		Medication reconciliation	
	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value
<b>Gender</b>						
Male	Referent		Referent		Referent	
Female	0.912 (0.561-1.482)	0.711	1.372 (0.804-2.34)	0.246	1.092 (0.649-1.839)	0.740
<b>Age (years)</b>						
18-24	Referent		Referent		Referent	
25-34	2.044 (0.490-8.529)	0.327	0.532 (0.117-2.410)	0.413	2.201 (0.450-10.761)	0.330
35-44	2.007 (0.672-5.995)	0.212	1.266 (0.403-3.979)	0.686	2.478 (0.781-7.864)	0.123
45-54	2.158 (0.758-6.142)	0.150	2.015 (0.662-6.134)	0.217	2.130 (0.721-6.292)	0.171
55-70	2.357 (0.797-6.976)	0.121	1.039 (0.339-3.186)	0.947	1.432 (0.471-4.354)	0.526
>70	2.243 (6.286)	0.125	2.147 (0.730-6.312)	0.165	1.378 (0.484-3.920)	0.548
<b>Marital status</b>						
Single	Referent		Referent		Referent	
Married	0.636 (0.165-2.456)	0.512	0.267 (0.063-1.134)	0.074	0.856 (0.202-3.625)	0.833
Separated	0.504 (0.186-1.363)	0.177	0.876 (0.323-2.380)	0.796	0.780 (0.291-2.091)	0.621
Divorced	0.789 (0.163-3.819)	0.768	0.790 (0.143-4.375)	0.788	0.984 (0.189-5.119)	0.984
Widowed	0.176 (0.027-1.150)	0.070	0.134 (0.019-0.942)	0.043*	0.219 (0.032-1.508)	0.123
<b>Level of Education</b>						
No Formal Education	Referent		Referent		Referent	
Primary	0.966 (0.349-2.680)	0.948	1.242 (0.395-3.902)	0.711	2.510 (0.728-8.657)	0.145
Secondary	0.805 (0.293-2.215)	0.675	0.768 (0.263-2.242)	0.629	1.075 (0.370-3.120)	0.894
Tertiary	1.279 (0.648-2.527)	0.478	1.266 (0.604-2.655)	0.532	0.924 (0.452-1.889)	0.829
<b>Occupation</b>						
No Job	Referent		Referent		Referent	
Farming	0.809 (0.227-2.880)	0.743	2.558 (0.622-10.512)	0.193	1.027 (0.248-4.261)	0.971
Civil Servant	1.019 (0.306-3.398)	0.976	1.414 (0.390-5.118)	0.598	2.161 (0.604-7.738)	0.236
Trader	0.412 (0.208-1.783)	0.011*	0.685 (0.327-1.433)	0.315	0.772 (0.377-1.580)	0.479
Self-employed	0.842 (0.397-1.783)	0.653	1.850 (0.785-4.363)	0.160	1.623 (0.722-3.650)	0.241
<b>Monthly income</b>						
<US\$58.82	Referent		Referent		Referent	
US\$58.82-US\$163.40	0.807 (0.211-3.084)	0.753	0.381 (0.086-1.698)	0.206	0.493 (0.116-2.094)	0.338
US\$163.40-US\$326.79	0.677 (0.219-2.089)	0.497	0.503 (0.143-1.771)	0.285	0.417 (0.124-1.406)	0.158
US\$326.79-US\$653.49	0.893 (0.316-2.525)	0.831	0.706 (0.222-2.244)	0.555	0.796 (0.262-2.417)	0.688
US\$653.49-US\$1633.98	1.115 (0.405-3.071)	0.834	1.090 (0.349-3.411)	0.882	0.731 (0.251-2.131)	0.566
<b>Health Status</b>						
Good	Referent		Referent		Referent	
Average	3.679 (1.475-9.176)	0.005*	2.954 (1.126-7.747)	0.028*	2.508 (0.951-6.616)	0.020*
Bad	2.755 (1.183-6.416)	0.019*	1.319 (0.549-3.172)	0.536	1.302 (0.536-3.163)	0.560
<b>Health Insurance</b>						
No	Referent		Referent		Referent	
Yes	1.252 (0.664-2.358)	0.488	0.539 (1.660-2.684)	0.946	1.420 (0.728-2.770)	0.304

\*Significant at  $p < 0.05$ ; OR= Odds ratio; CI= Confidence interval

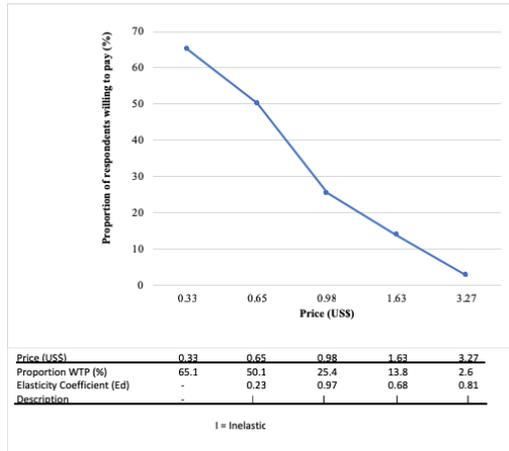


Figure 1: Willingness to pay demand curve and price elasticity of demand for patient education and counseling

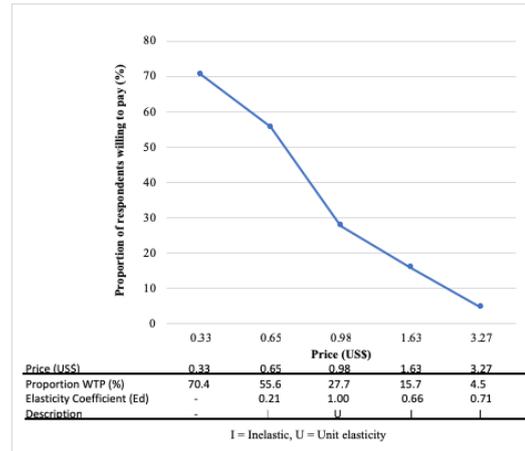


Figure 2: Willingness to pay demand curve and price elasticity of demand for drug therapy monitoring

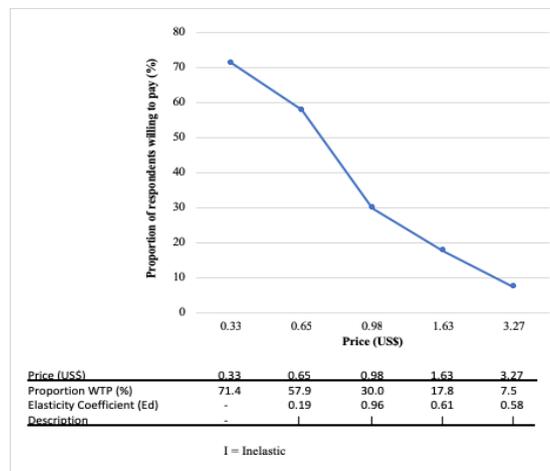


Figure 3: Willingness to pay demand curve and price elasticity of demand for Medication reconciliation

The respondents' WTP characteristics for MERS are shown in Table 2. About two-thirds of the respondents were willing to pay US\$0.80 ± 1.17, US\$0.83 ± 1.16, and US\$0.91 ± 1.20 for PEC, DTM, and MR services, respectively.

Table 3 shows multivariate linear regression of sociodemographic variables and the amount respondents are willing to pay for MERS. Significant predictors of the amount respondents were willing to pay were monthly income, income sufficiency, and health status. Precisely, monthly income ( $p = 0.004$ ) and health status ( $p = 0.042$ ) were significant determinants of the amount patients are willing to pay for PEC. The result showed that every unit increase in monthly income was associated with an approximately ₦61.72 (US\$0.20) increase in the amount respondents were willing to pay for PEC. Also, a unit increase in health status (e.g., from 'average' to 'good') led to ₦77.68 (US\$0.25) decrease in respondents' valuation for the same service. Similarly, every unit increase in perceived income sufficiency (e.g., 'not sufficient' to 'meet needs') was associated with ₦62.11 (US\$0.20) increase in valuation of DTM.

Table 4 shows the results of a multivariate logistic regression of sociodemographic variables and WTP. Occupational status, monthly income, and health status significantly predicted respondents' WTP. Specifically, respondents who were traders have approximately 59% lower odds of WTP for PEC compared with those who are unemployed. Respondents who reported 'average' health status are 3.68 times more likely to pay for PEC compared to those who stated a 'good' health status. Similarly,

respondents who have 'average' health status had about 2.5 times higher WTP odds for MR compared to those with reported 'good' health status.

Figures 1, 2 and 3 shows the willingness to pay demand curve and price elasticity for PEC, DTM and MR, respectively. The figures depict the relationship between the price of the pharmacist's services and the percentage of respondents who are willing to pay to utilize the services. The demand curves had negative slopes, moving downwards from left to right. The demand curves thus imply that as the price of MERS increases, the proportion of respondents who are willing to pay decreases, provided other factors are held constant. Additionally, the Figures show that price elasticity of demand for PEC, DTM, and MR was largely inelastic as they varied from -0.19 to -1.00.

## DISCUSSION

To the best of our knowledge, this study was the first attempt to examine the economic value of hospital pharmacists' services in Nigeria. We aimed to examine the WTP for MERS among outpatients in two teaching hospitals. Additionally, we sought to determine the price elasticity of demand for the services, and the sociodemographic predictors of WTP and the amount respondents are willing to pay. Overall, we found that about two-thirds of the respondents were willing to pay less than US\$1.00 for PEC, DTM, and MR services. Price elasticity of demand for all the services was essentially inelastic. Overall, the significant predictors of WTP and the amount respondents were willing to

pay for MERS were monthly income, perceived income sufficiency, health status, and occupation.

Our result demonstrates that a considerable proportion of respondents were willing to pay for MERS. Previous studies showed that the proportion of respondents that were willing to pay for pharmacist's services range from 37%-85% depending on the type of service provided<sup>24-27</sup>. For instance, a study in Malaysia reported that 67% of the respondents were willing to pay for pharmacist's dispensing services<sup>14</sup>. Similarly, about 60% of respondents were willing to pay for pharmacist's services aimed at reducing medication-related problems<sup>24</sup>. However, a lower proportion (38%) of patients were willing to pay for pharmacist cognitive services in Serbia<sup>15</sup>. Although pharmacist's services generally appear unnoticed in Nigerian hospitals, the high proportion of patients who are willing to pay for MERS in the present study probably indicate high patients' acceptance due to the perceived benefit of MERS.

Overall, respondents in the present study were willing to pay less than \$1 for the hospital pharmacist's services evaluated. However, previous studies that investigated the economic value of certain pharmacist's services reported that respondents were willing to pay between US\$1 to US\$33<sup>15,28</sup>. For instance, studies in the United States and Canada independently reported that patients were willing to pay about US\$33 and US\$25, respectively for pharmacist-provided medication management services<sup>17,28</sup>. The lower valuations of pharmacist-provided MERS obtained in this study could be attributed to the difference in economic status of the study populations. Perhaps, it is a reflection of the poverty index in Nigeria and other third world countries, where more than half of the population live below US\$1.25 per day<sup>29</sup>. Further, as a developing economy, the exchange rate of the local currency (Naira) to those of commonly used foreign currency (e.g., United States Dollars) is appreciably high.

The price elasticity of demand for MERS was generally inelastic. This implies that a higher percentage change in the price of the services would cause minimal change in "quantity demanded" of the services. The price elasticities of demand for MERS was consistent with those of previously reported pharmacist's services. Overall, the demand for healthcare services is price inelastic<sup>30,31</sup>. However, preventive care and drug-related services appear to be less sensitive to price changes compared to other health care services<sup>32</sup>. Our findings suggest that increases in the price of MERS would lead to increased revenue for hospitals as long as price increases do not shift the resultant equilibrium beyond the inelastic segment of the demand curve. Nonetheless, price increases can only be done with caution as price elasticity may differ for the different groups (e.g., income groups) in the population. In such a situation, increases in user fees may impact negatively on the utilization of MERS among the poor income group<sup>30</sup>. Studies have shown that patients respond to price changes either by adjusting the frequency of service consumption or the quality of care to reduce per visit costs<sup>33</sup>. Therefore, if patients are to pay, it is important for health policy-makers in Nigeria to seek to regulate the pricing of MERS while upholding the quality of care.

The significant predictors of respondent's WTP and the amount respondents are willing to pay were monthly income, perceived income sufficiency, occupation, and health status. As expected, high-income earners were more likely to pay for the services than lower income participants. This is likely the consequence of higher ability to pay by the former compared to the later. This finding corresponds with those of previous studies on WTP<sup>14,24,25</sup>. Also, as expected, respondents with poorer health status were willing to pay more than those with a perceived better health condition. A similar finding was reported by Brisson and Edmund<sup>34</sup>. However, Larson found no significant relationship between

WTP and respondents' health status<sup>16</sup>. A possible explanation for this observation is that participants who have poor health status are more likely to experience medication-related problems, as they might be on multiple drugs for a prolonged period of time. Hence, are most likely to utilize pharmacist's services. They are also more likely to show desperation to improve their health condition. Surprisingly, we found that respondents who were employed had a lower WTP probability compared to those without a job. Specifically, respondents who were traders are about 2 times less likely to pay for patient education and counseling compared to those who were unemployed. Nonetheless, the age of respondents, gender and educational status were not significant predictors of WTP and the amount respondents were willing to pay. There are inconsistent reports in the literature regarding the impact of age, gender, and level of education on WTP for health care services. Some studies reported an association between WTP and age<sup>24</sup>, WTP and gender, and WTP and education<sup>35</sup>, while others found no relationship between WTP and these sociodemographic variables<sup>14,16,36</sup>.

Our study had few limitations deserving consideration. The limitations are characteristic of the measurement bias of WTP research. Hypothetical and strategic biases are often the major challenges associated with contingent valuations. In our study, respondents were presented with a hypothetical description of the services. Some patients may have provided responses without understanding the role of these services in patient care, and why they should pay for pharmacist's services which are presently free-of-charge. Hence, the option of paying extra out-of-pocket charges for these services might be unrealistic to such patients. In addition, our study was limited to Teaching Hospitals in South-Eastern Nigeria, hence may not necessarily reflect the views of patients in other regions of the country.

## CONCLUSION

Our findings suggest that medication-related services are cost-beneficial as a substantial proportion of the patients were willing to pay for the services. Patients' utilization of the services was largely unaffected by the price. The major contributors of WTP and the amount respondents were willing to pay for MERS were higher monthly income, perceived sufficient income, unemployment, and poor health status. Evidently, there appears to be a promising potential for reimbursement of hospital pharmacist's services. Further public awareness of pharmacists' capabilities and expertise in the patient care process are recommended. However, for a broader perspective, future research should concentrate on inpatient services and the models of funding for MERS in the hospitals.

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