# An Assessment of Healthcare Relationship Trust between Patent Medicine Vendors and Residents of Hard-to-Reach Settlements in Northern Nigeria

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## Abstract

A trusting relationship is required for effective communication between care providers and care seekers, and trust is a determinant of early healthcare-seeking and care outcomes. The patient-Doctor healthcare trust relationship has been widely studied in different settings. However, there is a dearth of information on whether the factors underlying healthcare relationship trust between patients and their doctors are the same as those underlying patients' trust in other healthcare professionals (including the PPMVs). This study, therefore, aims to assess the level and determinants of healthcare relationship trust between patent medicine vendors and their clients in hard-to-reach settlements in North-western Nigeria.

We adapted the revised healthcare relationship trust scale, administered by trained data collectors using android devices. The data were analysed using Stata (version 16). We used the Chi-square test to identify the correlates of the level of trust(high/low), and binary logistic regression was used to identify its determinants. Statistical significance was defined as P < 0.05.

Slightly above one-quarter (28.1%) of the underserved had high healthcare relationship trust in the PPMVs. Being married, male, residing in a rented or makeshift shelter in Kaduna state, with underfive child(ren) in their household, and self-reporting good health predicted a high level of healthcare relationship trust in PPMVs among the underserved who participated in this study. We concluded that the personal and household characteristics of the underserved could significantly influence their level of trust in PPMV. Therefore, to achieve the aim of improving health outcomes in deprived populations, initiatives seeking to integrate PPMVs into the formal health system in resource-constrained settings should seek to address the determinants of healthcare relationship trust in these populations as part of their rollout process.

Keywords: Communities, Hard-to-reach, Healthcare, Trust, Relationship, Workforce.

## Introduction

The health workforce is an integral part of the health system and plays a major role in achieving quality delivery of healthcare services. The World Health Organization (WHO) defines health workforce as people that are "primarily engaged in action with the intent of enhancing health" involved in diagnosing illnesses, providing care for people, involved in monitoring health outcomes, supporting adherence to treatment, providing medical information, and preventing diseases [1, 2]. They include physicians, nurses, midwives, dentists, pharmacists, and pharmacists' technicians, laboratory staff, environment, and public health workers, community health workers, other health workers, health management, and support staff [3].

The national health systems across many low and middle-income countries (LMICs) have suboptimal performance due to ongoing challenges within the health sector, with this particularly affecting the delivery of accessible healthcare services [4]. The publicly owned health facilities and private hospitals are the most prominent structures within most national health systems, with other non-state actors rarely recognized [5]. The health systems in these settings have limited capacity to recognize and maximizing the efforts of all parastatals that are primarily devoted to improving health [1, 4].

There have been popular calls for all forms of efforts towards strengthening health systems across sub-Saharan Africa (SSA) [6], but human resources for health challenges in these climeshave persisted.[7] There are only a few wellequipped and appropriately staffed governmentrun primary, secondary, and tertiary health facilities in Nigeria to meet population-wide health needs [1, 8]. Several studies have earlier reported an association between the availability of health workforce and health outcomes [4, 9]. Recent health indices in Nigeria signpost the weak capacity of the health system- the estimated infant mortality rate at 67 per 1000 live births; under-five mortality rate at 132 per 1000 live births; maternal mortality ratio at 512 per100 000 live births; and average life expectancy at 55 years [10, 11]. Maternal and child health indicators in northern Nigeria continue to be among the poorest in the world [12].

The prevalent social inequalities in the health sector across the socioeconomic classes in developing countries remain concerning [13, 14]. These inequalities contribute significantly to poor health outcomes [15, 16]. A large proportion of the deaths occur in rural communities where about 69–70% of the population lives [17]. The high mortality rates in Northern Nigeria have been associated with health system gaps, socioeconomic factors, and cultural norms regarding obstetric-related practices [18].

As Nigeria continues to pursue the Universal Health Coverage (UHC) goals and make healthcare more accessible, existing data has shown that the role of PPMVs has become more important [19, 20], although not always recognized as front-line health workers in Nigeria and other sub-Saharan countries. Medicine shops often serve as an alternative source of healthcare in settings where there are healthcare system gaps (including human resource shortage) and are usually the closes care options in most communities [19-23]. Findings from a recent study by Daini and colleagues showed that the distribution of PPMV shops in the southern and northern parts of Nigeria is far above twice that of the most populous health facilities; ranking 32 and 46 per 100,000, respectively, in Lagos (from Southern Nigeria) and Kaduna (from Northern Nigeria), and have continued to grow progressively in recent years compared to other traditional health facilities, thereby becoming the most accessible health facility for potential clients for different healthcare services [20]. Physical access is one of the domains of UHC, and it's dependent on the proximity of health facilities to potential clients [24]. Studies have also shown the increase in the spread of PPMVs has major implications, especially in Rural areas [23-26]. With some recent studies in Nigeria revealing the emergence of PPMVs who report having undergone formal medical training [19, 20, 22, 27], there is a shift from the previous consensus about the general definition of medicine vendors, who were only characterized as being able to read and write [23], having completed mainly primary education and not having formal training in medicine and pharmacy [28].

The scenario of the increasing numbers and relevance of PPMVs and the gap in the health workforce, in addition to some scoping analysis by the federal government of Nigeria, has led to Nigeria embarking on the task-shifting and tasksharing (TSTS) policy which, among other roles aims to fill the prevailing health workforce gap (especially for essential healthcare services across the country) through the utilization and expansion of services to personnel at the community-level (such as PPMVs) [29-30]. Services currently being considered by the federal government include the provision of treatment services, counselling, and referrals for key Maternal, Newborn, and Child Health services (including FP) [30].

While task sharing and shifting is usual within the public sector [31-33], there is limited evidence of the practice being extended to key community healthcare workers (chiefly PPMVs and CPs), which has been shown to have potentials to provide basic healthcare services and have increased contact with the population, especially within the rural areas [34]. Between 2017 and 2021, the FMOH, supported by Bill and Melinda gates, piloted a three-tiered accreditation system for PPMVs; under the pilot, PPMVs were divided into three distinct groups based on their healthcare qualifications and further supported to provide FP services in southern and northern Nigeria [35]. There is a popular conjecture that the integration of PPMV into the public healthcare system could improve access to high-quality primary healthcare services [19]. However, the processes and considerations involved in seeking and obtaining healthcare is complex and never straightforward [36-39].

Thom and colleagues [40] emphasized the connotation of the perceived or expected behaviour of healthcare providers in their definition of trust. Another Author [41] added the dimension that trust also encompasses an expectation of future actions in favor of care seekers.

A trusting relationship is required for effective communication between care providers and care seekers [42]. Trust is a determinant of early healthcare-seeking [41-44], adherence to treatment [45], and return to follow-up and continuity of care [46-52]. Carr asserted in 2001 [53] that trust in healthcare professionals is a complex process that evolves, and it's based on mutual intention, reciprocity, and expectations. [54] established that healthcare trust is a strong determinant of treatment outcomes.

Bova and Colleagues [55] However, emphasize the lack of clarity on whether the factors underlying healthcare relationship trust between patients and their doctors are the same as those underlying patients' trust in other healthcare professionals (including the PPMVs). Our literature search did not find any study on the healthcare relationship trust between patent medicine vendors and their clients in Nigeria or even elsewhere in Africa. This study, therefore, aims to assess the level and determinants of healthcare relationship trust between patent medicine vendors and their clients in hard-toreach settlements in North-western Nigeria.

### **Materials and Methods**

#### **Study Design**

A descriptive cross-sectional study of residents of hard-to-reach communities selected from 2 states selected in the north-western geopolitical zone of Nigeria. Kaduna and Jigawa states were randomly selected from a total of 7 states in the geopolitical zone. The zone predominantly houses the Hausa, Fulani, and Kanuri tribes. The region is largely rural and agrarian in feature and makes up about 15% of the entire population of Nigeria [56].

#### Sample Size

The sample size for the study, which comprised heads of households in hard-to-reach settlements, was calculated using the formula in the equation below:

Minimum sample size (per State),

n=  $D_{eff} * \frac{Z^2 P(1-P)}{d^2} = 318$  head of households ------ equation 1

Where:

Z= Z-score corresponding to the level of statistical significance desired (0.05) = 1.96.

P= Proportion of rural dwellers diagnosed with their ailment by medically trained PPMV= 0.078 [22].

 $d = Desired \ level \ of \ precision = 0.05.$  $D_{eff} = Design \ effect = 2.5.$ 

### **Sampling Method**

Multi-stage sampling approach was employed in selecting the 665 heads of households who participated in the study. From 2 randomly selected states in the Northwest region (Kaduna and Jigawa), We ranked the LGAs in each of the two selected states (using the list of communities designated as hard to reach by the Local health authorities) in descending order of the concentration of hard-toreach settlements they contained. The top 30% (3LGA in Kaduna and 5 in Jigawa) were purposively selected. We then selected 40 hardto-reach communities (20 per State) using a systematic random sampling method with the probability of selection proportional to the presence the relative of underserved. Households were after that selected from the 20 sampled communities using systematic random sampling with probability proportional to the relative size of the population of the already selected settlements. The final selection of individual households in selected communities a systematic random sampling involved after household listing approach and determination.

### **Data Collection Tool and Procedure**

Trained data collectors utilized a semistructured questionnaire that was digitized on the *KOBO toolbox* (an open-source data collection platform) and preloaded on android phone devices to obtain data from the selected heads of household. The questionnaire included items on the personal and household characteristics of the respondents and adapted the revised Healthcare relationship trust scale [55] and the Health Perception questionnaire [57-58]. We analyzed the data with Stata (version 16).

#### **Data Analysis**

The primary outcome of this study was Healthcare relationship trust between the underserved in hard-to-reach communities and the PPMV. We computed overall trust scores as prescribed by Bova's and colleagues [55]. For ease of interpretation, the overall trust scores were dichotomized (into high and low trust) using the procedure recommended by Barua and Colleagues [59]. We explored the relationship between the personal and household characteristics and the three sub-scales sores of healthcare relationship trust (Interpersonal connection, respectful communication, and professional partnering) using independent sample t-test and one-way ANOVA. We also used the Chi-square test to investigate the association between level of trust(high/low) and the respondent's characteristics (personal, household), as well as the perceived health status reported by the residents of hard-to-reach settlements. Binary logistic regression was used to identify the determinants of healthcare relationship trust between the PPMVs and the residents of hard-to-reach communities. Statistical significance was defined as P<0.05. The ethics review committee of the state ministry of health of Kaduna and Jigawa states approved the protocol for the study.

### **Results**

## Description of Healthcare Trust Relationship between Residents of underserved Communities and Patent Medicine Vendors

The healthcare relationship trust scale measured the level of trust a participant has in patent medicine vendors. Out of the maximum of 65 scores, the total mean score among the participants was  $42.17(\pm 8.91)$ , with a minimum score of 11 and a maximum score of 52 (Table 1). The higher the trust score, the higher the trust the participants have in the patent medicine

vendors [55]. The participants in Jigawa had a slightly higher trust in patent medicine vendors

 $(42.91\pm10.75)$  compared to  $41.40\pm6.38$  among those in Kaduna state.

Variable	Mean (SD)	Median (IQR)	Min, Max						
Kaduna									
Interpersonal connection	22.44 (3.75)	23 (20 - 25)	11, 29						
Respectful communication	18.96 (3.09)	19 (17 -21)	10, 25						
Professional partnering	6.16 (1.28)	6 (5-7)	3, 10						
Overall trust score	41.40 (6.38)	42 (38 - 46)	21, 54						
Jigawa									
Interpersonal connection	23.06 (5.89)	24 (20-27)	6, 30						
Respectful communication	19.84 (5.01)	20 (18-24)	5, 25						
Professional partnering	6.97 (1.35)	6 (6-8)	3, 10						
Overall trust score	42.91 (10.75)	44 (39-51)	11, 55						
Total									
Interpersonal connection	22 (4.97)	24 (20-26)	6, 30						
Respectful communication	19.41 (4.20)	20 (18-22)	5, 25						
Professional partnering	6.57 (1.38)	6 (6-7)	3, 10						
Overall trust score	42.17 (8.91)	43 (38-48)	11, 55						

Table 1. Description of Respondents' Healthcare Trust Relationship Score by the State of Residence

## **Correlates of Healthcare Trust Relationship Constructs**

Table 2 revealed that State of residence, religion, and tribe are statistically associated with the interpersonal connection between the underserved and patent medicine vendors. We also found that the State of residence, age, and sex of household heads, religion, tribe, and marital status are correlated with respectful communication between PPMV and the underserved. Professional partnering, on the other hand, is associated with the State of residence, religion, and tribe of the underserved.

	Interpersonal		Respect	ful	Profess	ional	
	Connec	ction	Commu	Communication		ring	
	Mean	T/F stat	Mean	T/F stat	Mean	T/F stat	
Characteristics	Score	(P-value)	Score	(P-value)	Score	(P-value)	Total (N)
State							
Kaduna	17.59	3.1045	27.45	2.6474	16.70	7.318	326
Jigawa	16.89	(0.0020)*	26.43	(0.007)*	18.71	(<0.01)*	339
Age-group							
<25	16.43		24.96		17.67		51
25-34	17.33		27.09		18.05		169
35-44	17.16	1.580	26.69	2.530	17.53	0.730	207
45-54	17.64		27.66		17.87		137
55-64	17.23		27.37		17.71		59
65+	16.76	(0.1635)	26.88	(0.028)*	17.02	(0.600)	42
Sex							

Table 2. Relationship between HCR subscales and Respondents Characteristics

			1		1	1			
Male	17.26	0.6357	27.15	2.3968	17.63	1.3737	541		
Female	17.08	(0.5250)	26.98	(0.0168)*	18.13	(0.170)	124		
Education	Education								
None	17.09		26.96		17.55		47		
Quranic	16.98	1.9400	26.53	1.670	17.76	0.2500	366		
Primary	17.62		27.59		17.44		98		
Secondary	17.53		27.60		17.89		126		
Tertiary	18.00	(0.101)	26.86	(0.1561)	17.82	(0.909)	28		
Religion									
Christianity	16.66	2.730	25.38	2.6921	14.71	7.2281	65		
Islam	17.29	(<0.001)*	27.10	(0.007)*	18.01	(<0.01)*	600		
Tribe									
Hausa	17.72		27.92		18.14		341		
Fulani	16.65	6.770	25.46	12.270	17.27	25.910	165		
Kanuri	16.84		27.03		19.43		86		
Others	16.73	(<0.001)*	25.51	(<0.001)*	14.84	(<0.001)*	73		
Marital status	Marital status								
Married	17.28	1.9324	27.02	4.770	17.74	0.4372	632		
Single	16.27	(0.053)	25.12	(0.0294)*	17.45	(0.662)	33		

Table 3 also revealed that some household characteristics are statistically associated with healthcare relationship constructs. Household size, type of household abode, presence of child(ren) under 5 in the household, and household health insurance status are associated with interpersonal communication. Respectful communication between PPMV and the underserved is associated with household size and health insurance status of the household, while professional partnering is only associated with health insurance status.

	Interpersonal		Respect	ful	Professi	onal		
	Communication		Commu	Communication		Partnering		
	Mean	T/F stat	Mean	T/F stat	Mean	T/F stat		
Characteristics	Score	(P-value)	Score	(P-value)	Score	(P-value)	Total(N)	
Number in househo	ld							
1-10	16.97	4.250	26.42	4.980	17.54	1.800	377	
11-20	17.47		27.53		18.09		239	
21+	18.06	(0.014)*	27.96	(0.007)*	17.45	(0.166)	49	
Type of abode								
Permanent	17.14	3.130	26.82	2.520	17.69	0.350	602	
Semi-perm(rented)	18.20		28.42		18.08		49	
Temporary	17.64	(0.044)*	26.42	(0.081)	18.14	(0.706)	14	
Pregnant women in	HH							
Yes	17.30	0.1625	27.08	0.3151	18.01	1.632	291	
No	17.26	(0.871)	26.96	(0.752)	17.54	(0.103)	354	
Child Under-5 Men	Child Under-5 Member							
Yes	17.29	2.1169	27.01	1.5392	17.78	1.366	618	

Table 3. Association between Household Characteristics and 'Healthcare Trust Relationship

No	16.36	(0.034)*	25.87	(0.124)	17.02	(0.172)	47
Health insurance Cover							
Yes	18.27	4.3055	28.69	4.3641	18.67	3.084	118
No	17.00	(<0.01)*	26.55	(<0.01)*	17.72	(0.002)*	547

Table 4 shows 71.9% of the underserved had low trust in the PPMVs. The level of trust was statistically associated with the State of residence, sex of respondents, religion, tribe, marital status, type of residence, and presence of a child under 5.

 Table 4. Association between Respondents' Characteristics and 'Healthcare Trust Relationship between underserved and PPMVs

	Overall trust	Overall trust			
	Low trust	High trust			
Characteristics	Frequency [n (%)]	Frequency [n (%)]	Total	χ2-value	<b>P-value</b>
State					
Kaduna	267(81.9)	59(18.1)	326		
Jigawa	211(62.2)	128(37.8)	339	31.779	0.000*
Age-group	•				
<25	39(76.5)	12(23.5)	51		
25-34	121(71.6)	48(28.4)	169		
35-44	149(72.0)	58(28.0)	207		
45-54	96(70.1)	41(29.9)	137		
55-64	45(76.3)	14(23.7)	59	7	
65+	28(66.7)	14(33.3)	42	1.888	0.864
Sex	•				
Male	369(68.2)	172(31.8)	541		
Female	109(87.9)	15(12.1)	124	19.361	0.000*
Education					
None	32(68.1)	15(31.9)	47		
Quranic	258(70.5)	108(29.5)	366		
Primary	74(75.5)	24(24.5)	98		
Secondary	93(73.8)	33(26.2)	126		
Tertiary	21(75.0)	7(25.0)	28	1.689	0.783
Religion	•				
Christianity	63(96.9)	2(3.1)	65		
Islam	415(69.2)	185(30.8)	600	22.353	0.000*
Tribe					
Hausa	227(66.6)	114(33.4)	341		
Fulani	122(73.9)	43(26.1)	165	7	
Kanuri	60(69.8)	26(30.2)	86	1	
Others	69(94.5)	4(5.5)	73	23.808	0.000*
Marital status					•
Married	461(72.9)	171(27.1)	632		
Single	17(51.5)	16(48.5)	33	7	
Total	478(71.9)	187(28.1)	665	7.1243	0.008*

Table 5 shows that the household's type of abode and presence of child(ren) under-5 in a household is the household characteristics associated with healthcare relationship trust in the study population.

				111110		-	
	Overall trust						
	Low trust		High trust		Total		
Characteristics	Number	%	Number	%	Number	χ2-value	<b>P-value</b>
Number in househo	ld						
1-10	266	70.6	111	29.4	377		
11-20	173	72.4	66	27.6	239		
21+	39	79.6	10	20.4	49	1.798	0.407
Type of abode							
Permanent	442	73.4	160	26.6	602		
Semi-perm(rented)	27	55.1	22	44.9	49		
Temporary	9	64.3	5	35.7	14	7.932	0.019*
Have pregnant won	nen in HH						
Yes	202	69.4	89	30.6	291		
No	264	74.6	90	25.4	354	2.121	0.145
Child Under-5 Men	nber						
Yes	436	70.6	182	29.5	618		
No	42	89.4	5	10.6	47	7.647	0.006*
Health insurance C	over						
Yes	80	67.8	38	32.2	118		
No	398	72.8	149	27	547		
Total	478	71.9	187	28.1	665	1.183	0.277

 
 Table 5. Relationship between Household Characteristics and Healthcare Trust Relationship between underserved and PPMVs

## Determinants of PPMV-Underserved Healthcare Relationship

Table 6 shows that the underserved in Kaduna state had 3.8 times higher trust in patent medicine vendors than those in Kaduna (OR=3.82, 95% CI: 2.46-5.93). Females had 6.25 lower healthcare relationship trust than males in underserved communities (OR=0.16, 95% CI:0.08-0.30). Underserved who reside in the rented building had 3.89 times higher trust than those living in owned residences (OR=3.89, 95% CI: 1.96-7.73).

Similarly, those who reside in temporary or makeshift shelters had 3.3 times higher trust than

underserved living in permanent/rented houses (OR=3.3, 95%CI: 1.25 - 10.5). Findings also revealed that underserved with an under-five child(ren) in their household had 3.4 times higher trust in PPMV than those who had none(OR=3.4, 95%CI: 1.27-9.28); Unmarried heads of household had 2.5 times higher trust than married heads of households (OR=2.54, 95%CI: 1.09-5.92), and underserved with perceived good health rating had 2.48 times higher trust in PPMV than those with poor health rating(OR=2.48, CI:1.65-3.71).

Characteristics	High Trust (N, %)	Odds Ratio (95% CI)	<b>P-value</b>
State			
Kaduna	59(18.1)	1.00	< 0.001
Jigawa	128(37.8)	3.82(2.46 - 5.93)	
Sex			
Male	172(31.8)	1.000	< 0.001
Female	15(12.1)	0.16(0.08 - 0.30)	
Type of abode			
Permanent	160(26.6)	1.000	0.048
Semi-perm(rented)	22(44.9)	3.89(1.96 - 7.73)	
Temporary	5(35.7)	3.30(1.25 - 10.54)	
Under-5			
No	182(29.5)	1.000	0.015
Yes	5(10.6)	3.44(1.27 - 9.28)	
<b>Marital Status</b>			
Married	171(27.1)	1.000	0.031
Single	16(48.5)	2.54(1.09 - 5.92)	
General health rati	ng		
Poor rating	99(20.5)	1.000	< 0.01
Good rating	88(48.62)	2.48(1.65 - 3.71)	

Table 6. Predictors of Healthcare trust between PPMVs and the Underserved

#### Discussion

The finding on low trust among the underserved in this present study agrees with the conclusion of Hooper and colleagues [60] that distrust for healthcare providers in underserved communities is strong and complex. This complex nature of trust between underserved communities and their healthcare providers may explain, in part, the difference in trust levels between states, sexes, marital status, and household features. A study conducted by [61] in other climes among African Americans also found a significant relationship between trust in healthcare providers and tribe/ethnicity. However, while the ethnic minorities in that study reported lower trust in healthcare providers, the reverse is the case in this present study as only 5.5% of ethnic minorities had high trust in PPMVs compared to above 25% among the predominant tribes in the study location (Hausa, Fulani, and Kanuri). In our study, the tribe was only identified as a correlate, and it

didn't predict the level of trust in PPMVs in our study population. Nguyen and colleagues [9] reported that there is no relationship between trust and the ethnic group. The observed difference in the findings could also be due to the difference in the care of healthcare providers focused on in this study. Previous authors. Previous authors [63-65] have established that disparity in the level of trust fuels health disparities across populations. These ethnic/tribal disparities in the level of healthcare relationship trust could signal the existence of further health disparities between tribal and ethnic groups in the medically underserved communities where we conducted our study.

Our study reported a lower level of trust among females than males. Despite the focus of our study on non-physician healthcare providers, our finding is consistent with that of a study [9] (among the Mexican population) and among the Swedish population [62]. This may suggest a potential difference in the expectations and experiences of men and women regarding their healthcare providers. This finding, therefore, calls for sex-specific interventions to improve trust in PPMV as part of the processes for integrating the PPMV into the formal health system.

[66] found that age moderates the relationship between trust and perceived health status. We reported that age was not a predictor of healthcare relationship trust in our study population but found a significant relationship between trust and perceived health status. The difference in the role age played in the two studies may have been due to the difference in study populations-Katz and colleagues [66] used age groups as a recruitment criterion. The higher trust in PPMV among those who perceived their health status as good in our study is comparable with the findings of [9], where those who reported difficulty in accessing healthcare had lower trust in care providers. Other authors [67-70] have also reported a higher level of trust among those with perceived good health.

Elsewhere, low trust in healthcare providers has been attributed to low or irregular utilization of healthcare services [71-72] and lower adherence to recommendations of healthcare providers. [73] explained that low trust may result from past experiences and prior interactions.

This submission appears to explain the finding that those living in less sophisticated shelters (rented or temporary shelters) who may have patronized PPMVs more frequently due to their socioeconomic status [23] have a higher level of trust in PPMV than those who reside in own homes. A positive relationship between trust and income level has been reported in previous studies [74-75] where they concluded that income status influences the level of trust in healthcare providers.

#### Conclusion

The level of healthcare relationship trust between the PPMV and the residents of hard-to-

reach settlements studied in Northwestern Nigeria remains sub-optimal. Personal and household characteristics could significantly influence the level of trust in non-physician healthcare providers. Therefore, to achieve the aim of improving health outcomes in deprived populations, initiatives seeking to integrate PPMVs into the formal health system in resource-constrained settings should seek to address the determinants of healthcare relationship trust in these populations as part of their rollout process.

The study could not establish a cause-andeffect relationship between the respondents' characteristics and healthcare relationship trust due to the inherent limitation of cross-sectional surveys. However, our study is the first (in Nigeria and perhaps Sub-Sahara Africa) to highlight the status of healthcare relationship trust between patent medicine vendors and residents of hard-to-reach communities. Providing this evidence at a time when Nigeria (and some other African countries) are making efforts towards leveraging PPMVs to address human resources for health challenges in rural underserved populations could potentially alert policymakers to further examine the contextspecific roles of the determinants of trust as they design, refine, and implement approaches to improve healthcare access in their jurisdictions.

#### **Conflict of Interest**

The authors declare that there is no conflict of interest.

#### Acknowledgments

The authors acknowledge the support of Mr. Muazu Habibu and Pharmacist Aminu Alhassan during the field data collection phase of this research. We also appreciate Mr. Nathanael Afolabi for supporting data processing.

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