

# Client Satisfaction with Quality of Prevention of Mother-To-Child Transmission (PMTCT) of HIV Services in The Oti Region Of Ghana: A Facility-Based Cross-Sectional Study

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## Research

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## Abstract

**Background:** Client satisfaction with the quality of prevention of mother-to-child transmission (PMTCT) of the Human Immunodeficiency Virus (HIV) services is essential if continual utilisation of the services, leading to reduction in MTCT is to be achieved, especially in rural settings of Africa, including Ghana.

**Methods:** A facility-based descriptive cross-sectional design was adopted, using a pretested semi-structured questionnaire to collect data from a systematic random sample of 567 pregnant women and postnatal mothers receiving PMTCT services from 44 health facilities. Data were analysed using STATA version 14.0 software. Simple frequency and percentages were used to present data on categorical variables. Chi-square was used to determine association between categorical and outcome variables and multivariable logistic regression analyses were conducted to determine the strength of the associations between categorical and outcome variables at a  $p$ -value  $<0.05$  and a 95% confidence interval.

**Results:** The overall satisfaction with PMTCT services among respondents was low (42.7%). After adjusting the multivariable logistic regression model for confounders, respondents who resided in urban areas [AOR=2.21(95% CI: 1.37-3.55);  $p<0.001$ ] and those who experienced no language barrier [AOR=2.86(95% CI: 1.88-4.36);  $p<0.001$ ] were more likely to be satisfied with PMTCT services respectively. Respondents who received services at health centers [AOR=0.33(95% CI: 0.18-0.60);  $p<0.001$ ] and hospitals [AOR=0.41(95% CI: 0.23-0.72);  $p=0.002$ ] and women who spend more than an hour in receiving PMTCT [AOR=0.41(95% CI: 0.21-0.75);  $p=0.004$ ] and those who said they would not recommend the PMTCT services to others [AOR=0.25(95% CI: 0.22-0.90);  $p=0.019$ ] were respectively less likely to be satisfied with PMTCT services.

**Conclusion:** Improvement of PMTCT services in the Oti region should take into consideration the quality of services rendered in hospitals and health centres while striving to reduce the waiting time across all facilities to make clients recommend PMTCT services to others.

## Introduction

The transmission of the Human Immunodeficiency Virus (HIV) from an infected mother to her child during pregnancy, labour, delivery, or breastfeeding is known as mother-to-child transmission (MTCT) [1]. Mother-to-child transmission has created enormous social and economic burden on individuals, families and states, especially in developing countries as it continues to be a major source of HIV infection among children under the age of fifteen years [2]. About 90% of the estimated 110,000 children newly infected with HIV worldwide occurs in Africa [3]. In Ghana, the National HIV/AIDS Control Programme (NACP) report in 2014 estimated HIV prevalence among pregnant women attending antenatal clinics (ANC) to be 1.6% whilst many ANC clients remained untested for HIV [4].

To address the problem of MTCT, the prevention of mother-to-child-transmission (PMTCT) of HIV strategy was initiated and has been at the forefront of global public health activities aimed at improving both child and maternal health in relation to HIV/AIDS outcomes [2]. As a result, pregnant women and postnatal mothers attending ANC and post-natal care (PNC) clinics are tested for HIV and provided with the appropriate services against HIV infection of new born babies [2].

The prevention of mother-to-child transmission of HIV is a comprehensive management approach aimed at improving the wellbeing of all women of reproductive age through the provision of HIV screening for all women, prevention of new infection among infants born to HIV-positive mothers and the provision of management for HIV-positive women [5]. The quality of PMTCT services is defined by existence of clear guidance on infant nutrition and the use of anti-retroviral therapy (ART) during pregnancy and lactation, access to the most efficacious regimen by pregnant women, extent of use of regimen, systems in place to monitor programme delivery and patient outcomes [6].

The prevention of mother-to-child transmission has been recognized as vital to saving the lives of young children and reducing infant and child mortality associated with HIV infection [7]. However, the quality of PMTCT services has been found to influence client's utilization and satisfaction towards such services. Clients who are not satisfied with PMTCT services are less likely to utilize such services [2, 9, 10]. As such, client satisfaction with PMTCT services is important in achieving a total elimination of the acquired immune deficiency syndrome (AIDS) by 2030, as set by the world health organization (WHO) and the United Nations [11, 12].

Although several studies have been conducted on client satisfaction regarding PMTCT services on the African continent, most of them focused only on pregnant women attending ANC clinics [8, 13–15]. In Ghana, there is literature paucity on satisfaction with the quality of PMTCT services leaving a knowledge gap on the subject. Some studies conducted in the country either qualitatively explored challenges associated with PMTCT service provision and reasons why clients stay on the PMTCT programmes [16, 17] or quantitatively explored the utilization and implementation challenges associated with PMTCT [7, 18]. Moreover, the Oti region being a novel region, empirical studies on HIV in general and on PMTCT in particular, are yet to be conducted in the region. The current study therefore sought to fill this knowledge gap by assessing client satisfaction with the quality of PMTCT services in the region to better inform policy on the quality of PMTCT services. The study was conceived on the assumption that the quality of both tangible and intangible PMTCT services received by clients could influence their satisfaction with such services, as depicted in Fig. 1.

## Methods

### Study Setting

The study was conducted in the Oti Region of Ghana, in May, 2019. The region covers an area of 11,066km<sup>2</sup>, bounded on the North by the Northern Region, South by the Volta Region, East by the Republic of Togo and West by the Volta Lake. The region has a total population of 742,664 with a growth rate of 2.5% according to the 2019 Ghana statistical report [20]. There are designated facilities for PMTCT services in all the eight districts in the region. PMTCT

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interventions such as HIV testing and counseling, provision of ART, and continuum of care during antenatal, labour and delivery, as well as postpartum services are supposed to be rendered in the region [21]. The Oti region was selected for the study due to the fact that it is a newly created region and adequate number of studies have not been conducted on HIV/AIDS, specifically PMTCT in the region. Hence, quality of PMTCT services rendered in the region needed to be ascertained.

### Study Design

This study was a facility-based descriptive cross-sectional study, using a pre-tested paper-based semi-structured interviewer-administered questionnaire, to obtain data on clients' satisfaction with PMTCT of HIV services rendered in the Oti region of Ghana. The questionnaire consisted of three sections; section "A" was on respondent's socio-demographic characteristics, section "B" assessed PMTCT services received by clients and section "C" assessed satisfaction with the quality of PMTCT services received. The questionnaire was pretested on twenty clients from three facilities in the Volta region to assess its appropriateness for the study and also subjected to a Cronbach alpha test. The test resulted in a coefficient of 0.89 for questions on satisfaction on PMTCT services, which indicated the appropriateness of the instrument in measuring the expected outcome, per Taber's interpretation [22]. Respondents' level of satisfaction with PMTCT services was assessed on a 4-point Likert scale; thus, very satisfied (coded 4), satisfied (coded 3), dissatisfied (coded 2) and very dissatisfied (coded 1). An overall satisfaction score was generated using a more composite score of the various variables. Dichotomous variable: satisfied and dissatisfied, was generated from the four degrees of satisfaction and used to run logistic regression analysis. The highest score for the satisfaction variable was 52 and the lowest was 31. A mean of 42.2 was obtained for the satisfaction score. Respondents who had less than the mean score were classified as being dissatisfied with PMTCT services, and those with the mean score and above were classified as being satisfied with PMTCT services [23].

## Population and Sampling

The source population for this study was pregnant women and postnatal mothers who were 18 years or older receiving PMTCT services in forty-four (44) health facilities in the Oti Region of Ghana. Pregnant women and postnatal mothers receiving PMTCT services for up to 6 months and consented to participate were included in the study. However, pregnant women and postnatal mothers who met the inclusion criteria but were seriously ill and required medical attention were excluded from the study. A total of 567 respondents, comprising 424 ANC and 143 PNC attendees were sampled for the study, using the formula;  $N = \frac{Z_{1-\alpha/2}^2 P (1-P)}{d^2}$  [24], where  $Z_{1-\alpha/2}$  is standard normal variate of 1.96 at 95% confidence interval and a 5% margin of error; the proportion of clients satisfied with PMTCT services (P), assumed to be 50% and  $d = 0.05$ , considering an attrition rate of 5%.

All the health facilities comprising public and private hospitals, health centers and CHPS compounds providing PMTCT services in the Oti region were included in the study. The list of all ANC and PNC clients receiving PMTCT services for each facility was obtained and used as the sampling frame. The sample was then proportionately allocated to the selected health facilities based on their registered number of ANC and PNC clients receiving PMTCT services. Proportional sample was then allocated to each facility per the required sample size. A sampling interval,  $k$ , was calculate for each facility by dividing the total sample size by the number of registered PMTCT clients per facility. The first participant to be interviewed was selected randomly from table of random numbers and thereafter, every eligible  $k$ th person that reported for PMTCT services at the ANC or PNC clinic was selected until the clinics closed for the day. The process was repeated on every data-collection day until the required sample size for each facility was obtained.

## Data Collection Procedure

Data was collected using a pre-tested semi-structured questionnaire after obtaining ethical clearance from the University of Health and Allied Sciences' Research Ethics Committee. We trained three undergraduate students from the School of Public Health, University of Health and Allied Sciences for two days as field assistants on the data collection tool and data collection procedures. They were informed on the purpose of the study and on ethical procedures to be followed. Data was collected on the socio-demographic characteristics of caregivers, PMTCT services received and clients' satisfaction with those services. Data were collected at the selected centres on daily basis until the required sample size was obtained. The data collectors were supervised on the field by the principal investigator. All interviews were conducted face-to-face.

## Study Variables

The categorical variables of the study were; age, sex, religious affiliation, occupation, highest level of education, marital status, place of residence of respondents as well as type of health facility, gravidity and parity. The outcome variable was satisfaction with PMTCT services.

## Data Management and Analysis

Data were entered into EpiData 3.1 software for cleaning and validation to ensure quality before analysis began. The cleaned data were then exported to Stata version 14.0 for analysis. Simple frequencies and percentages were used for categorical variables. Chi-square was used to determine the association between client's satisfaction (outcome variable) with PMTCT services and the categorical variables (demographic characteristics, structures and processes). Multivariate logistic regression analysis (C.I of 95% and p-value) was used to determine the strength of the association between the outcome and categorical variables. Statistical significance was considered based on the  $p$ -value  $< 0.05$  at a confidence interval of 95%. The results were presented in tables and graphs.

## Results

### Socio-Demographic Characteristics of Respondents

Table 1 shows the socio-demographic characteristics of respondents involved in the study. Out of a total of 567 participants, 424 (74.8%) were pregnant women and 143 (25.2%) were postnatal mothers. The mean ages for the pregnant women and postnatal mothers were  $26.8 \pm 6.4$  years and  $26.9 \pm 7.6$  years respectively. The most common age group was aged 25–34 years 260 (45.9%). The majority 452 (79.7%) of the women were married, 211 (37.2%)

had attained Junior High School (JHS) level of education, 428 (75.5%) were Christians and 193 (34.0%) were traders. Women residing in semi-urban areas accounted for 225 (39.7%) and the Ewe tribe accounted for 218 (38.5%). A slight majority 298 (52.5%) of the women were multiparous, 284 (50.1%) were multigravida and 296(52.2%) received PMTCT services from hospitals.

Table 1  
Socio-Demographic Characteristics of Respondents

Characteristics	Frequency (n = 567)	Percentage (%)
<b>Age group (in years)</b>		
15–24	230	40.6
25–34	260	45.9
35+	77	13.6
<b>Marital status</b>		
Married	452	79.7
Divorced	10	1.8
Widowed	4	0.7
Never Married	101	17.8
<b>Educational status</b>		
No Formal Education	113	19.9
Primary	117	20.6
JHS	211	37.2
Secondary	90	15.9
Tertiary	36	6.34
<b>Religious affiliation</b>		
Christian	428	75.5
Islam	132	23.3
Traditional	7	1.2
<b>Occupation</b>		
Housewife	55	9.7
Trading	193	34.0
Farming	150	26.5
Artisan	118	20.8
Civil Servant	51	9.0
<b>Place of residence</b>		
Rural	167	29.4
Semi-Urban	225	39.7
Urban	175	30.9
<b>Tribe</b>		
Ewe	218	38.5
Akan	155	27.3
Guan	126	22.2
Konkomba	68	12.0
<b>Number of children</b>		
Nulliparous	120	21.2
Primiparous	149	26.3
Multiparous	298	52.5
<b>Number of pregnancies</b>		
Primigravida	164	28.9
Secundigravida	119	21.0

Characteristics	Frequency (n = 567)	Percentage (%)
Multigravida	284	50.1
<b>Facility type</b>		
Health Center	194	34.2
Hospital	296	52.2
CHPS compound	77	13.6

### Prevention of Mother-to-Child Transmission Services Received by Respondents

Table 2 presents the PMTCT services received by respondents. The most common PMTCT services utilized were; HIV testing 535 (94.4%), pre-test counselling 500 (88.2%) and post-test counselling 408 (72.0%).

Table 2  
Prevention of Mother-to-Child-Transmission Services Received by Respondents

Variable	Frequency (n = 567)	Percentage (%)
<b>Testing for HIV</b>		
Received	535	94.4
Not Received	32	5.6
<b>ART medication</b>		
Received	22	3.9
Not Received	545	96.1
<b>Infant feeding and counselling</b>		
Received	76	13.4
Not Received	491	86.6
<b>Pre-test counselling</b>		
Received	500	88.2
Not Received	67	11.8
<b>Post-test counselling</b>		
Received	408	72.0
Not Received	159	28.0

### Client Satisfaction with Quality of Prevention of Mother-to-Child Transmission Services Received

Table 3 presents clients' satisfaction with the quality of PMTCT services received at the health facilities. With respect to the tangible services received, most of the clients were satisfied with the comfortability at the waiting 503 (88.7%) and counselling rooms 538 (94.9%) respectively. Nine out of every ten women 544 (95.9%) were satisfied with the privacy they received during counselling. The majority 560 (98.8%) of the clients were satisfied with the working environment at the facilities and almost every woman 556 (98.1%) was satisfied with the quality of interaction they had with the service providers. With reference to the intangible services, the majority 501 (88.4%) and 535 (94.4%) were satisfied with the waiting time and the duration of counselling session respectively. Seven out of ten women 405 (71.4) had no challenge with the language of communication and were thus satisfied and the majority of pregnant and postnatal women, 511 (90.1%) and 545 (96.1%), said the counselling session was beneficial and they would recommend PMTCT services to others respectively. The overall satisfaction with PMTCT services among respondents was 242 (42.7%).

Table 3  
Client Satisfaction with Quality of Prevention of Mother-to-Child  
Transmission Services

Variable	Frequency (n = 567)	Percentage
<b>Tangible services</b>		
<b>Comfortability of waiting room</b>		
Satisfied	503	88.7
Dissatisfied	64	11.3
<b>Comfortability of counselling room</b>		
Satisfied	538	94.9
Dissatisfied	29	5.1
<b>Privacy in counselling room</b>		
Satisfied	544	95.9
Dissatisfied	23	4.1
<b>Sanitation and hygiene</b>		
Satisfied	560	98.8
Dissatisfied	7	1.2
<b>Interaction with service providers</b>		
Satisfied	556	98.1
Dissatisfied	11	1.9
<b>Intangible services</b>		
<b>Average waiting time</b>		
Satisfied	501	88.4
Dissatisfied	66	11.6
<b>Adequacy of counselling time</b>		
Satisfied	535	94.4
Dissatisfied	32	5.6
<b>Language of communication</b>		
Had challenges	162	28.6
No challenges	405	71.4
<b>Benefit of counselling session</b>		
Beneficial	511	90.1
Not Beneficial	56	9.9
<b>Recommendation of PMTCT services</b>		
Yes	545	96.1
No	22	3.9
<b>Overall satisfaction with quality of PMCTC services</b>		
Satisfied	242	42.7
Not satisfied	325	57.3

**Predictors Client Satisfaction with Prevention of Mother-to-Child Transmission Services**  
After adjusting the multivariable logistic regression model for confounders in Table 4, respondents who resided in urban areas were 2 times more likely to be satisfied with PMTCT services as compared to those resided in rural areas [AOR = 2.21(95% CI: 1.37–3.55);  $p < 0.001$ ]. Respondents who experienced no language barriers when receiving

PMTCT services were over 2 times more likely to be satisfied with PMTCT services as compared to those who experienced language barriers [AOR = 2.86(95% CI: 1.88–4.36);  $p < 0.001$ ]. Respondents who received services at health centers and hospitals were 67% and 59% less likely to be satisfied with PMTCT services as compared to those who received services at the CHPS compounds [AOR = 0.33(95% CI: 0.18–0.60);  $p < 0.001$ ] and [AOR = 0.41(95% CI: 0.23–0.72);  $p = 0.002$ ] respectively. Women who said they spend more than an hour in receiving PMTCT services were 59% less likely to be satisfied with PMTCT services as compared to those who said they spend less than 30 minutes [AOR = 0.41(95% CI: 0.21–0.75);  $p = 0.004$ ]. Respondents who said they would not recommend the PMTCT services to others were 75% less likely to be satisfied with PMTCT services as compared to those who said they would recommend the services to others [AOR = 0.25(95% CI: 0.22–0.90);  $p = 0.019$ ].

**Table 4**  
**Predictors of Overall Satisfaction with Quality of PMTCT Services**

Variable	Satisfied	Dissatisfied	Chi-Square(p-value)	COR (95% CI) p-value
<b>Place of residence</b>				
Rural	56(33.5)	111(66.5)	11.94(0.003)*	1
Semi-Urban	95(42.2)	130(57.8)		1.45(0.95,2.20)0.081
Urban	91(52.0)	84(48)		2.15(1.39,3.32) p ≤ 0.001*
<b>Gravidity</b>				
Primigravida	59(36.0)	105(64.0)	5.44(0.066)	
Secundigravida	59(49.6)	60(50.4)		
Multigravida	124(43.7)	160(56.3)		
<b>Language barrier</b>				
Had Challenges	42(25.9)	120(74.1)	26.02 (P ≤ 0.001)*	1
No Challenges	200(49.4)	205(50.6)		2.79(1.86, 4.16) p ≤ 0.000*
<b>Facility type</b>				
CHPS	47(61.0)	30(39.0)	12.32 (0.002)*	1
Health centre	76(39.2)	118(60.8)		0.41(0.24, 0.71) p ≤ 0.001*
Hospitals	119(40.2)	117(59.8)		0.43(0.26, 0.72) p ≤ 0.001*
<b>Average waiting time</b>				

Variable	Satisfied	Dissatisfied	Chi-Square(p-value)	COR (95% CI) p-value
< 30 minutes	163(43.0)	216(57.0)	9.09(0.011) *	1
30 minutes to an hour	61(50.0)	61(50.0)		1.32(0.88, 1.99)0.177
More than 1 hour	18(27.3)	48(72.7)		0.50(0.28, 0.89)0.018*
<b>Recommend services to others</b>				
Recommended	238(43.7)	307(56.3)	5.61 (0.018)*	1
Did Not Recommend	4(18.2)	18(81.8)		0.29(0.09, 0.86)0.026*

## Discussion

In this study, we assessed the satisfaction of pregnant and postnatal women regarding the quality of PMTCT of HIV services they received in the Oti Region of Ghana. Our findings revealed that the most PMTCT services received were HIV testing (94.4%) and counselling (94.0%). High rates of HIV counselling and testing have been reported in other studies conducted in Ghana over the years [21]. HIV counselling and testing seems to be the most popular PMTCT services offered in most African countries. For instance, studies carried out in Ethiopia [2] and Uganda [25] show that HIV testing is the service most received by pregnant mothers as PMTCT service. In Ghana, the current policy guidelines governing PMTCT require that HIV counseling and testing be integrated into reproductive and child health services. Also, all pregnant women accessing reproductive and child health services need to be counselled and tested for HIV by trained counsellors and nurses [4]. Considering the guidelines, there has been missed opportunities for all pregnant women and postnatal mothers to be counselled and tested in the current study, and thus fall short of expectations. Missed opportunities to counsel and test pregnant women for HIV and also initiate those who are positive on ARTs across the country pose challenges to the quest to eliminate mother-to-child transmission of HIV [21].

Satisfaction with PMTCT services was assessed based on satisfaction with tangible and intangible services received. With regards to satisfaction with tangible PMTCT services, respondents were satisfied with all the variables assessed: thus, comfortability of the waiting and counselling rooms, privacy in the counselling rooms, sanitation and hygiene and the quality of interaction they had with service providers. Clients' satisfaction with intangible PMTCT services such as waiting time, adequacy of counseling time, language barrier and beneficence of counselling were also found to be encouraging. It could therefore, be said that PMTCT services provision in the Oti region is satisfactory as clients were satisfied with both tangible and intangible PMTCT services they received. The finding suggests that there is good ambience in health facilities providing PMTCT services in the Oti region as well as good service delivery. This is welcoming, as the role of the quality of tangible and intangible PMTCT services cannot be underestimated. For instance, Lyatuu et al. [8] found that clients' dissatisfaction with PMTCT services in the Dodoma district of Tanzania, was as a result of the poor quality of the tangible and intangible services such as lack of privacy and long waiting time. Other tangible services such as physical structures and warm reception have also been found to influence clients' satisfaction with health services and utilization [26]. Overall, the satisfaction with PMTCT services was 42.7% in the present study. Thus, although respondents said they were satisfied with the individual PMTCT services they received, cumulatively, they were not satisfied with such services. The current finding disagrees with those of other studies carried out on the continent that showed a higher level of satisfaction with PMTCT services compared to our study [13, 14, 27, 28]. The reason for the differences could however be attributed to differences in health systems settings and support across various African countries. Our findings however, fill a knowledge void by empirically ascertaining the actual level of satisfaction with PMTCT services offered in the Oti region of Ghana. The implication of our finding, compared to literature, is that the quality of PMTCT services offered in the region and in the country by extension, should not be assessed as units but as an aggregate, if a true reflection of clients' satisfaction is to be ascertained. It could also be said that if the low level of satisfaction found in the present study is not improved, client utilization of PMTCT services could be affected [29]. Therefore, healthcare providers and authorities in charge of PMTCT services in the Oti region should strive to improve the quality of both tangible and intangible PMTCT services they offer.

With reference to socio-demographic variables that influenced satisfaction with PMTCT services, we found that pregnant women and postnatal mothers who lived in urban areas were 2 times more likely to be satisfied with PMTCT services than those living in rural areas. This finding is not in line with results of a study conducted by Yaya et al. in Ghana [30] which reported no significant differences in level of satisfaction among respondents in rural and urban areas. Also, on the contrary, Farmer et al. [31] from their study conducted in Scotland, reported that clients in rural areas were better satisfied with service provision than those in urban areas. The high likelihood of satisfaction found among urban dwelling respondents in the present study could be as a result of disparity in

the quality of health facilities found in urban and rural Ghana [32]. Comparatively, hospitals equipped with better resources are found in urban Ghana while poorly-resourced health centres and Community-based Health Planning and Services (CHPS) compounds are found in rural parts of the country [33]. Moreover, health care facilities in urban areas are often manned by competent health workers compared to rural health facilities, and this could influence client satisfaction with the quality of service received in these facilities [34].

Respondents without any language barrier were 2 times more likely to be satisfied with the PMTCT service provision. Though a diverse region with varied languages, language barrier seemed not to be a problem in the delivery of PMTCT services. Language barriers pose challenges in terms of achieving high levels of satisfaction among medical professionals and patients, providing high quality healthcare and maintaining patient safety [35]. Findings from a systematic review revealed that language barriers in healthcare lead to miscommunication between the medical professional and patient, reducing both parties' satisfaction and decreasing the quality of health care delivery and patient safety [35]. Deducing from the findings, policy makers in the region should endeavor to address the minor language barrier issues that exist in PMTCT facilities to holistically improve on the overall satisfaction with PMTCT services.

Moreover, respondents who received services at health centers and hospitals were 67% and 59% less likely to be satisfied with PMTCT services compared to those who received services from the CHPS compounds. The CHPS initiative aims to make healthcare services including maternal and child health services easily available to rural communities in Ghana [36]. The CHPS compounds are health posts in rural communities that serve as first level of primary care for rural areas, often manned by a nurse or a midwife or both [37]. Hence, there is a lot of interpersonal interaction between CHPS staff and the community members translating into client satisfaction with PMTCT services compared to hospitals, which serve a large number of people per day from different geographical backgrounds. Meanwhile, the issue of dissatisfaction with health care services across hospitals and health centres in Ghana has been a problem of public health concern for some time [38] and often linked to the attitude of hospital staff towards clients. Interpersonal relationship between hospital staff and clients need to be improved if dissatisfaction with PMTCT services rendered at the hospital level is to be addressed. It has also been suggested that dissatisfaction on quality of care at hospitals could be improved by adequate structures, supplies and logistics as well as good communication skills [39].

Furthermore, the present study found that respondents who waited for up to an hour or more to access PMTCT services were 59% less likely to be satisfied, as compared to those who waited for less than 30 minutes. Waiting time and dissatisfaction with healthcare provision has been well researched [40–42]. As clients have other pressing matters, such as economic ventures, to attend to, spending more time to receive PMTCT services could easily lead to dissatisfaction, as it may lead to loss of income. In order to shorten waiting time, the clinics may be structured such that clients access PMTCT services strictly by appointment. This may ensure that clients do not do not spend more than thirty minutes at health centres to access PMTCT services.

Lastly, respondents who indicated that they will not recommend PMTCT services to others were 75% less likely to be satisfied with PMTCT services. Recommendation of a service or product to others signifies trust and confidence in such a service or product. The findings suggest that PMTCT service providers do not have loyal clients as a result of dissatisfaction with the quality of services they render. According to Reibstein et al. [43], when a brand has loyal customers, it gains positive word-of-mouth marketing, which is both free and highly effective. This is not the case in the present study as dissatisfied clients are not willing to offer free word-of-mouth marketing of PMTCT services in the Oti region. Client satisfaction should be prioritised by PMTCT service providers in the Oti region in order to improve the uptake of such services and lead to effective prevention of mother to child transmission of HIV in the region.

Potential limitation of this study is that, although measures were taken to interview clients in privacy, conducting the interviews at the various healthcare settings may have given room for response bias in favour of the service providers due to fear of victimisation.

## Conclusions

The overall satisfaction of PMTCT services was low in this study, with HIV counselling and testing being the major PMTCT services received by clients in the Oti region. Client satisfaction with PMTCT services was influenced by their place of residence of clients, language barrier, type facility where PMTCT services are received, waiting time and decision to recommend PMTCT services to others. Hence, PMTCT service providers in the Oti region should endeavor to improve on service in hospitals and health centres while striving to reduce the waiting time across all facilities to make clients recommend PMTCT services to potential clients through free word-of-mouth recommendation.

## Abbreviations

AIDS: Acquired Immune Deficiency Syndrome; Antenatal Clinics: ANC; AOR: Adjusted Odd Ratios; ART: Antiretroviral Therapy; CHPS: Community-based Health Planning and Services; COR: Crude Odd Ratios; HIV: Human Immunodeficiency Virus; NACP: National HIV/AIDS Control Programme; PMTCT: Prevention of mother-to-child transmission; PNC: Post-Natal Care; WHO: World Health Organisation.

## Declarations

### Ethics approval and consent to participate

Approval to conduct the study was obtained from the University of Health and Allied Sciences Research Ethics Committee (UHAS-REC), with identification number UHAS-REC A.5 [6] 18-19, before the commencement of the study. After ethical clearance was obtained, Administrative approval was sought from the Oti Regional Health Directorate and from the heads of the various health facilities where the study was conducted. Before inclusion in the study, a written informed consent was sought from the respondents, after the objectives and nature of the study had been thoroughly explained to potential participants.

### Consent for publication

## Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available due to ethical reasons but are available from the corresponding author on reasonable request.

## Competing interests

The authors declare that they have no competing interests.

## Funding

Not applicable

## Authors' contributions

MS, EM and EET conceived this study. MS collected the data and performed the analysis. MS, EM and JAT drafted the original manuscript. EET, EM and JAT supervised the study from its conception up to write-up and editing. All authors provided resources, read and approved the final manuscript submitted for publication.

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## Figures

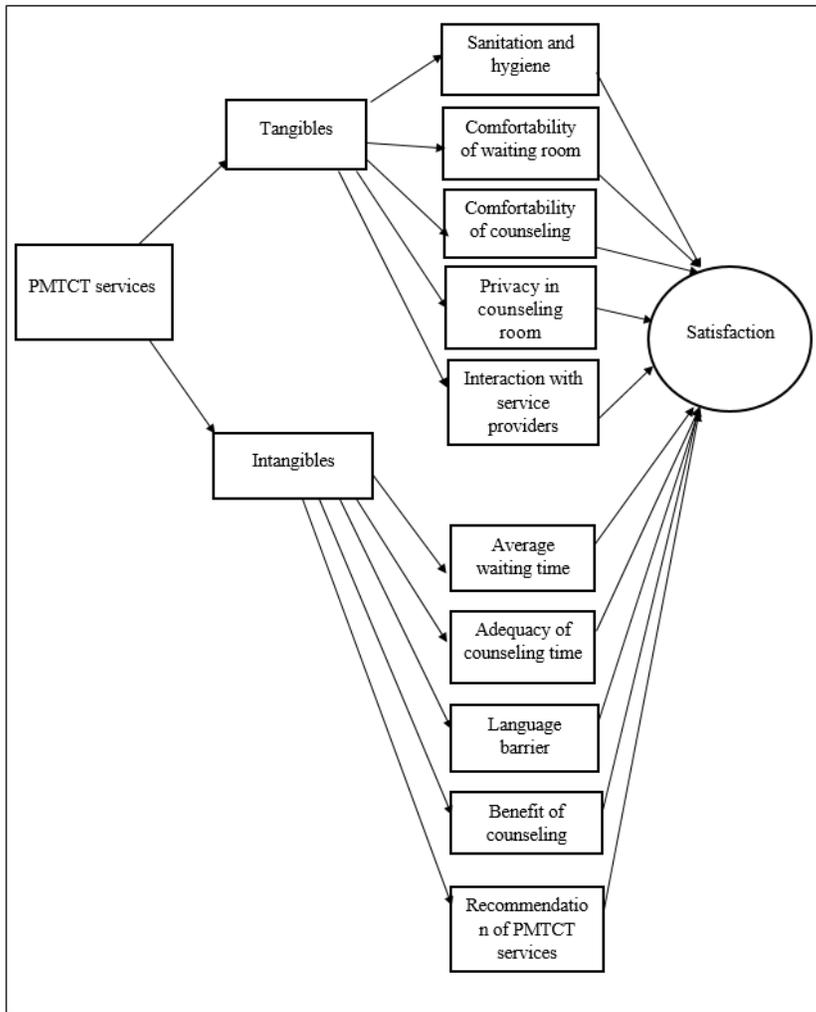


Figure 1

Conceptual framework of satisfaction with PMTCT services adapted from Mosadeghrad [19]