

Research Article

Determinants of Virologic Failure among Adult HIV Patients on First-Line Antiretroviral Therapy at Waghimra Zone, Northern Ethiopia: A Case-Control Study

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Introduction. The primary goal of antiretroviral therapy (ART) is to reduce the viral load in HIV-infected patients to promote quality of life, as well as to reduce HIV-related morbidity and mortality. A high rate of virologic failure was reported in Waghimra Zone, Northwest Ethiopia, in viral load assessment conducted among HIV-infected patients on ART in the Amhara region. However, there is limited evidence on the determinants of virological failure in the study area. This study aimed to identify the determinants of virological failure among HIV-infected patients on antiretroviral therapy in Waghimra zone, Northern Ethiopia, 2019. **Methods.** An institutional-based unmatched case-control study was conducted from May 21 to June 30, 2019. Cases were people living with HIV (PLHIV) on ART who had already experienced virological failure; controls were those without virological failure. Data were extracted from 92 cases and 184 controls through chart review using a pretested and structured checklist. The data were entered using Epi Info version 7 and exported to SPSS version 20 for analysis. A multivariate logistic regression analysis was carried out to identify factors associated with virological failure, and variables with a P value <0.05 were considered statistically significant. **Results.** This study revealed that poor adherence to ART (adjusted odds ratio (AOR) = 4.24, 95% confidence interval (CI): 2.17, 8.31), taking ART for longer than five years (AOR = 3.11, 95% CI: 1.17, 8.25), having drug toxicity (AOR = 3.34, 95% CI: 1.54, 7.23), age of PLHIV ≥ 35 years (AOR = 2.45, 95% CI: 1.29, 4.64), and recent CD4 count <200 cells/mm³ (AOR = 3.06, 95% CI: 1.52, 6.13) were factors associated with virologic failure. **Conclusion and Recommendation.** This study showed that poor adherence to treatment, longer duration on ART, experiencing drug toxicity, older age, and recent CD4 <200 cell/mm³ are factors that increase the risk of virologic failure.

1. Introduction

Since the start of the human immunodeficiency virus (HIV) epidemic, 74.9 million people have been infected, and 32 million people have died from acquired immunodeficiency syndrome- (AIDS-) related illnesses. In 2018, 37.9 million people were living with HIV/AIDS globally, from which 95% were adults. About 1.7 million people became newly infected, and one million died from AIDS-related illness. Of all people living with the human immunodeficiency virus

(PLHIV), 62% were accessing treatment and 53% were virally suppressed in 2018 [1]. Africa contains most of the disease and is largely affected by the epidemic. In Eastern and Southern Africa, 20.6 million people were living with HIV in 2018, which accounts for 54% of global total HIV infection. From all PLHIV in this region, 67% had access to antiretroviral therapy (ART) [1].

In Ethiopia, the prevalence of HIV among adults was 0.9% and varying across regions with the highest prevalence observed in Gambella 4.8% followed by Addis Ababa 3.4% in

2016 [2]. In Amhara regional state, there were about 187,975 PLHIV, contributing to 30% of the PLHIV population of the country [3]. ART was introduced in Ethiopia in 2003, and in 2005, the Ethiopian Government launched free access for ART in different health sectors to improve the quality of life of PLHIV [4].

The primary goal of ART is to achieve long-term durable suppression of HIV replication, which gives immunologic and clinical benefits, and in turn leads to a reduction in morbidity and mortality and improved quality of life. Unable to suppress HIV viral replication results in treatment failure and development of antiretroviral (ARV) drug resistance [5]. The World Health Organization (WHO) recommends the use of routine HIV viral load (VL) testing as the preferred approach for PLHIV on ART to monitor treatment response and diagnose treatment failure. While routine virologic monitoring is the standard of care in industrialized countries, targeted VL testing is still practiced in some resource-limited settings to confirm immunologic and/or clinical failure before switching to second-line treatment [5].

Previous studies suggest some of the factors that may be associated with virologic failure. Studies in Africa showed that men have less HIV virologic suppression than women [6–8]. Age [9], income [10], and educational status [11] are some of the sociodemographic factors associated with virologic failure. Similarly, clinical and medication-related factors such as drug adherence [12, 13], drug toxicity [14], cluster of differentiation 4 (CD4) count [15, 16], tuberculosis (TB) coinfection [16–18], duration of stay on ART [11], WHO clinical stage [15], and anemia [19] are mentioned as determinants for viral suppression.

According to the National Consolidated Guidelines for Comprehensive HIV Prevention, Care, and Treatment of Ethiopia, the recommended first-line regimens for adults are TDF + 3TC + DTG, AZT + 3TC + EFV/NVP, TDF + 3TC + EFV/NVP, or ABC + 3TC + EFV/NVP, and the second-line regimens could be TDF + 3TC + LPV/r or ATV/r or AZT + 3TC + LPV/r or ATV/r depending on the regimen type used in the first-line [20].

The government of Ethiopia has adopted the global goal to attain the 90-90-90 targets: 90 percent of PLHIV know their status, 90 percent of PLHIV who know their status are on treatment (ART), and 90 percent of PLHIV on treatment have attained viral suppression. In Ethiopia, as of May 2018, 79% of PLHIV knew their status; 71% of eligible PLHIV are on ART, and 87% of those on ART have attained viral suppression [3]. A VL assessment that was conducted in 2018 in the Amhara region by the regional health bureau revealed that 18% of PLHIV on first-line ART in Waghimra Zone had a virologic failure [21], which is the highest in the region. Therefore, this study aimed to determine factors related to virologic failure among adult PLHIV in the Waghimra zone.

2. Methods and Materials

2.1. Study Design and Setting. An institutional-based unmatched case-control study was conducted from May 21 to

June 30, 2019, in the Waghimra zone. Waghimra zone is a special administrative zone in Amhara regional state. Sekota is the administrative capital of the Waghimra zone and is located 715 km far from Addis Ababa, the capital of Ethiopia, and 560 km from Bahir Dar, the capital city of Amhara regional state. Waghimra zone has 31 health centers and 3 district hospitals and provides health care services for more than 600,000 residents. Currently, 11 health centers and 1 district hospital provides comprehensive HIV care. The regional health bureau conducted a VL test for 512 PLHIV in 6 randomly selected health facilities (5 health centers and 1 primary hospital) in 2018. A total of 1,984 PLHIV were enrolled in these health facilities: 195 in Amdework Health Center (HC), 163 in Chila HC, 278 in Asketema HC, 166 in Hamusit HC, 292 in Tsisika HC, and 890 in Tefera Hailu Hospital.

2.2. Population and Sample. The sample size of the study was calculated by Epi Info™ 7 software Statcalc program using the following assumptions: key predictor of virological failure (age) from a previous study, proportion of controls exposed 47.7%, odds ratio 2.52 [11], 5% level of significance, 80% power of the study, and 1:2 case to control ratio. Therefore, the calculated sample size was 197 (66 cases and 131 controls). However, to improve the power of the study, all of the cases (92) and comparable controls (184) were included in the study. Controls were selected by using simple random sampling techniques. All adult PLHIV aged ≥ 15 years who have at least two VL measurements after initiation of first-line ART in the Waghimra zone were included in the study. PLHIV who have taken the first-line ART for less than 6 months were excluded. All HIV-infected adults whose plasma VL is $\geq 1,000$ copies/mL in two consecutive VL measurements within a 3-month interval with adherence support between measurements were defined as cases (virologic failure), while study participants with a VL level of $< 1,000$ copies/mL were considered as controls [5]. All 92 cases found from 5 health centers and 1 primary hospital were included in the study. The case of virologic failure distributions were 9 from Amdework HC, 8 from Chila HC, 15 from Asketema HC, 6 from Hamusit HC, 14 from Tsisika HC, and 40 from Tefera Hailu Hospital.

2.3. Data Collection Tools and Procedure. Data were extracted from the clients' medical records using a pretested structured checklist adapted from the Ethiopian Federal Ministry of Health ART clinic intake and follow-up form. The data were collected by 5 trained health professionals. The principal investigator and supervisors closely monitored the whole data collection process.

2.4. Assessment of Drug Toxicity and Adherence. When drug toxicity is suspected, the clinical condition is assessed to identify whether it is due to ARV toxicities, other drugs, or other illness including new opportunistic infections. The responsible ARV drug will be identified, and the severity of toxicity will be assessed using the toxicity grading matrix.

Then, drug regimens or single-agent substitutions may be required [20]. In our study, we have included all the recorded toxicities irrespective of the severity.

Adherence status was assessed based on the reported number of pills taken in the last one month divided by the number of prescribed pills multiplied by 100%. Clients who reported an intake of $\geq 95\%$ of the prescribed medication were considered good adherent; those with a reported intake of $< 95\%$ were classified as poor adherent [20].

2.5. Data Processing and Analysis. Data were entered using Epi Info version 7 and exported to Statistical Package for Social Sciences (SPSS) version 20 software for analysis. Descriptive statistics, including frequencies and percentages, were used to describe demographic, clinical, hematologic, and medication-related characteristics of the study participants. Bivariate analysis was carried out for all independent variables with an outcome variable, and variables with P value ≤ 0.2 were entered into a multivariable logistic regression model to identify the independent determinants of virological failure. Finally, the adjusted odds ratio with 95% CI was determined, and variables with P value < 0.05 were considered significant.

3. Results

3.1. Sociodemographic Characteristics. A total of 276 HIV-positive individuals (92 cases and 184 controls) who have at least 6 months ART follow-up participated in the study. More than half (55.1%) of the study participants were females. Two-thirds, 122 (66.3%) of controls and 44 (44.6%) of cases, were under the age of 35 years. Over half (57.1%) of controls and 40.2% cases were married. More than half (58.7%) of cases and 52.2% controls were urban dwellers. The majority of cases (57.6%), as well as controls (64.1%), have no formal education (Table 1).

3.2. Hematological and Immunological Factors. In this study, 65 (70.7%) of the cases and 113 (61.4%) of the controls had < 200 cells/mm³ CD4 count at baseline, while 40 (43.5%) of the cases and 38 (20.7%) of the controls had current CD4 count of < 200 cells/mm³. Baseline white blood cell (WBC) count of the majority of cases (67 (72.8%)) and controls (130 (70.7%)) was laid between 4×10^3 and 10.9×10^3 cells/mm³. The baseline hemoglobin level was greater than 12 g/dl for 52 (56.5%) of cases and 110 (59.8%) of controls (Table 2).

3.3. Medication-Related Factors. In this study, 58 (63.1%) of the cases and 98 (53.3%) of the controls were on AZT-based first-line ART regimen. The median period that PLHIV had been on ART was 8 years (IQR 6 to 10 years), and 82 (89.1%) of the cases and 134 (72%) of the controls stayed on ART for more than five years. Thirty-two (34.8%) of cases and 35 (19%) of controls faced drug toxicity, while 29 (31.5%) of cases and 50 (27.2%) of controls had a history of regimen change on first-line ART drugs. More than half (53.3%) of the cases and 29 (15.8%) of the controls were poorly adherent

to ART. The majority of cases 72 (78.3) and controls 134 (72.8) had a history of cotrimoxazole preventive therapy (CPT) use (Table 3).

3.4. Clinical Characteristics. According to the WHO clinical stage classification, 55 (59.8%) of the cases and 64 (34.8%) of the controls were classified as stage III at baseline. From the participants, 25 (27.2%) of cases and 17 (9.2%) of the controls had a history of TB coinfection, while 34 (37%) of cases and 25 (13.6%) of the controls had a history of opportunistic infection other than TB. The baseline body mass index (BMI) was < 16 kg/m² for 42 (45.7%) of cases and 46 (25%) of controls (Table 4).

3.5. Determinants of Virological Treatment Failure. In this study, age, current CD4 count, duration on ART, drug toxicity, and ART medication adherence were factors significantly associated with virologic failure.

The likelihood of developing virological failure for PLHIV aged ≥ 35 years was 2.45 times (AOR = 2.45, 95% CI: 1.29, 4.64) more likely as compared with their younger counterparts. The odds of developing virologic failure among PLHIV who had less than 200 cells/mm³ in recent CD4 count were 3 times (AOR = 3.06, 95% CI: 1.52, 6.13) more likely as compared to clients with baseline CD4 count ≥ 200 cells/mm³. Participants who stayed five years and above on first-line ART were also 3 times (AOR = 3.11, 95% CI: 1.17, 8.25) more likely to develop virologic failure as compared to those who stayed for less than five years. Clients who had experienced drug toxicity were 3.34 times (AOR = 3.34, 95% CI: 1.54, 7.23) more likely to have virologic failure as compared to those who had no history of drug toxicity. Clients who were not adherent to their ART drugs were 4 times (AOR 4.24, 95% CI: 2.17, 8.31) more likely to have virologic failure as compared to those who were adherent to their treatment (Table 5).

4. Discussion

This study aimed to assess the determinants of virological failure among adult PLHIV on first-line ART and showed that older age (≥ 35 years), low recent CD4 count (< 200 mm³), longer duration of stay on ART, having history of ART drug toxicity, and poor adherence to ART were found to have increased odds of virological failure.

This study revealed that PLHIV aged ≥ 35 years were 2.45 times more likely to develop virologic failure as compared with their younger counterparts. This finding is supported by studies conducted in Ethiopia [22], Mozambique [23], and the United States of America [24]. On the contrary, the odds of virological failure decreased with increased age as evidenced by the studies conducted in Uganda [18], Canada [25], and Gondar, Ethiopia [11]. The possible reasons for higher odds of virologic failure among older clients maybe that old PLHIV tend to develop drug toxicity and age-related kidney and liver function reduction, which may result in impaired drug elimination [26, 27].

TABLE 1: Sociodemographic characteristics of PLHIV on ART at Waghimra zone health institution ART clinic, Northern Ethiopia, in 2019 ($n = 276$).

Variable	Cases (n %)	Control (n %)	Chi-square (X^2)	P value
Age (years)				
<35	41 (44.6)	122 (66.3)	11.98	0.001
≥ 35	51 (55.4)	62 (33.7)		
Sex				
Male	43 (46.7)	81 (44)	0.183	0.669
Female	49 (53.3)	103 (56)		
Residence				
Urban	54 (58.7)	96 (52.2)	1.05	0.305
Rural	38 (41.3)	88 (47.8)		
Occupation				
Farmer	21 (22.8)	53 (28.8)	6.83	0.234
Housewife	22 (23.9)	37 (20.1)		
Government	14 (15.2)	28 (15.2)		
Nongovernment	2 (2.2)	16 (8.7)		
Private	10 (10.9)	14 (7.6)		
Unemployed	23 (25)	36 (19.6)		
Religion				
Orthodox	90 (97.8)	180 (97.8)	0.60	0.741
Muslim	2 (2.2)	4 (2.2)		
Marital status				
Married	37 (40.2)	105 (57.1)	8.08	0.044
Single	36 (39.1)	45 (24.5)		
Widowed	5 (5.4)	8 (4.3)		
Divorce	14 (15.2)	26 (14.1)		
Educational status				
No formal education	53 (57.6)	118 (64.1)	2.02	0.363
Primary	22 (23.9)	31 (16.9)		
Secondary and above	17 (18.5)	35 (19)		

TABLE 2: Hematologic and immunological findings on ART clients at Waghimra zone health institution ART clinic, Northern Ethiopia, in 2019 ($n = 276$).

Variable	Cases (n %)	Control (n %)	Chi-square (X^2)	P value
<i>Hematologic factors</i>				
Baseline WBC count				
$1-3.9 \times 10^3$ cells/mm ³	20 (21.7)	22 (11.9)	11.532	0.003
$4-10.9 \times 10^3$ cells/mm ³	67 (72.8)	130 (70.7)		
$>11 \times 10^3$ cells/mm ³	5 (5.4)	32 (17.4)		
Baseline hemoglobin level				
<11.9 g/dl	40 (43.5)	74 (40.2)	0.233	0.629
≥ 12 g/dl	52 (56.5)	110 (59.8)		
Current hemoglobin level				
<11.9 g/dl	8 (8.7)	12 (6.5)	0.431	0.511
≥ 12 g/dl	84 (91.3)	172 (93.5)		
<i>Immunological factors</i>				
Baseline CD4 count				
<200	65 (70.7)	113 (61.4)	2.286	0.131
≥ 200	27 (29.3)	71 (38.6)		
Peak CD4 count				
<200	13 (14.1)	9 (4.9)	7.137	0.08
≥ 200	79 (85.9)	175 (95.1)		
Current CD4 count				
<200	40 (43.5)	38 (20.7)	15.762	<0.001
≥ 200	52 (56.5)	146 (79.3)		

In this study, PLHIV who had a recent CD4 count of fewer than 200 cells/mm³ had a 3-fold increased odds of developing virological failure as compared to those with

higher CD4 count. This finding was consistent with studies conducted in Ethiopia [11, 28] and Gabon [29]. This might be since clients with a low CD4 count are more likely to

TABLE 3: Medication-related factors on ART clients at Waghimra zone health institution ART clinic, Northern Ethiopia, in 2019 ($n = 276$).

Variable	Cases (n %)	Control (n %)	Chi-square (X^2)	P value
ART regimen at baseline			3.038	0.219
AZT based	58 (63.1)	98 (53.3)		
TDF based	21 (22.8)	60 (32.6)		
D4T based	13 (14.1)	26 (14.1)		
ART regimen at the time of VL testing			3.251	0.071
AZT based	59 (64.1)	97 (52.7)		
TDF based	33 (35.9)	87 (47.3)		
Duration on ART in years			9.583	0.002
<5 years	10 (10.9)	50 (27.2)		
≥ 5 years	82 (89.1)	134 (72.8)		
Drug toxicity			8.288	0.004
Yes	32 (34.8)	35 (19)		
No	60 (65.2)	149 (81)	0.567	0.451
ART shift on first-line drugs				
Yes	29 (31.5)	50 (27.2)		
No	63 (68.5)	134 (72.8)		
ART medication adherence			42.54	0.001
Good	43 (46.7)	155 (84.2)		
Poor	49 (53.3)	29 (15.8)		
CPT use			0.957	0.328
Yes	72 (78.3)	134 (72.8)		
No	20 (21.7)	50 (27.2)		

TABLE 4: Clinical-related factors on ART clients at Waghimra zone health institution ART clinic, Northern Ethiopia, in 2019 ($n = 276$).

Variable	Cases (n %)	Control (n %)	Chi-square (X^2)	P value
Baseline WHO stages			38.107	<0.001
Stage 1	2 (2.2)	35 (19)		
Stage 2	23 (25)	80 (43.5)		
Stage 3	55 (59.8)	64 (34.8)		
Stage 4	12 (13)	5 (2.7)		
Tb coinfection			15.291	<0.001
Yes	25 (27.2)	17 (9.2)		
No	67 (72.8)	167 (90.8)		
An opportunistic infection other than TB			19.93	0.001
Yes	34 (37)	25 (13.6)		
No	58 (63)	159 (86.4)		
Baseline BMI (kg/m^2)			13.625	0.001
<16	42 (45.7)	46 (25)		
16–18.49	17 (18.5)	62 (33.7)		
≥ 18.5	33 (35.9)	76 (41.3)		

develop different opportunistic infections, and the added burden of these diseases further complicates their response. This likely increases the possibility of viral mutations and virological failure [30, 31].

The current study also found that PLHIV who stayed for more than 5 years on ART were 3 times more likely to develop virologic failure as compared to those who had less than five years follow-up. This result is supported by different studies conducted in Ethiopia [11, 32] and Swaziland [33]. The possible reason might be related to the persistent replication of the virus during ART, and longer time on ART could be associated with drug resistance mutations, which eventually leads to virological failure [29, 34].

In this study, adherence to ART was an important determinant of virological failure. PLHIV with poor medication adherence were 4 times more likely to develop virologic failure as compared to clients with good adherence. A meta-analysis finding [35] supports our study, and similar findings were also reported in previous studies conducted in Ethiopia [11, 28, 36] and Zimbabwe [37]. Poor adherence to medication reduces viral suppression due to suboptimal drug concentration and subsequently increasing the viral load [5, 38].

The current study found that PLHIV who had experienced drug toxicity were 3.34 times more likely to have virologic failure as compared to those who had not

TABLE 5: Determinant factors of virologic failure among adult PLHIV attending ART clinic at Waghimra zone health institutions, Northern Ethiopia, in 2019($n = 276$).

Variable	Virologic failure		COR (95% CI)	AOR (95% CI)	P value
	Cases	Controls			
Age of patient					0.006
<35 years	41	122	1	1	
≥35 years	51	62	2.45 (1.47, 4.09)*	2.45 (1.29, 4.64)	
Educational status					
None	53	118	0.93 (0.48, 1.80)	1.47 (0.63, 3.44)	0.369
Primary	22	31	1.46 (0.66, 3.24)	2.32 (0.81, 6.58)	0.115
Secondary and above	17	35	1	1	
Baseline CD4 count					
<200	65	113	1.51 (0.88, 2.59)	0.87 (0.45, 1.68)	0.673
>200	27	71	1	1	
Current CD4 count					
<200	40	38	2.96 (1.71, 5.10)*	3.06 (1.52, 6.13)	0.002
>200	52	146	1	1	
Duration on art in years					
1–5 years	10	50	1	1	
>5 years	82	134	3.06 (1.47, 6.37)*	3.11 (1.17, 8.25)	0.023
Drug toxicity					
Yes	44	53	2.26 (1.22, 3.63)*	3.34 (1.54, 7.23)	0.002
No	48	131	1	1	
Art medication adherence					
Good	43	155	1	1	
Poor	49	29	6.09 (3.44, 10.77)**	4.24 (2.17, 8.31)	<0.001
TB coinfection					
Yes	25	17	3.67 (1.86, 7.22)*	1.82 (0.71, 4.68)	0.214
No	67	167	1	1	
Opportunistic infections other than TB					
Yes	34	25	3.73 (2.05, 6.78)*	2.33 (0.98, 5.35)	0.054
No	58	159	1	1	
Baseline BMI					
<16	42	46	2.1 (1.17, 3.77)*	1.57 (0.76, 3.27)	0.223
16–18.45	17	62	0.63 (0.32, 1.24)	0.53 (0.23, 1.22)	0.137
18.5–28	33	76	1	1	
ART regimen at baseline					
AZT based	58	98	1.18 (0.58, 2.48)	1.99 (0.72, 5.54)	0.188
TDF based	21	60	0.70 (0.31, 1.61)	2.14 (0.62, 7.39)	0.231
D4T based	13	26	1	1	
ART regimen at the time of VL testing					0.940
AZT based	59	97	1.61 (0.96, 2.68)	0.97 (0.44, 2.15)	
TDF-based	33	87	1	1	

* $p < 0.05$, ** $P < 0.001$.

experienced drug toxicity. This finding is consistent with a study conducted in Nigeria [39]. This might be due to the fact that clients who have experienced drug toxicity would interrupt ART and causes acquired drug resistance, which leads to virologic failure [5, 40, 41].

4.1. Limitation of the Study. We used unmatched case-control study design, and differences in baseline between the cases and controls may lead to selection bias. Our study may also be affected by survivor bias since deaths and loss to follow-up were not accounted for and may compete with the outcome. The study was entirely based on secondary data, which may affect the reliability of the data.

5. Conclusion

This study showed that poor adherence to treatment, longer duration on ART, experiencing drug toxicity, older age, and recent $CD4 < 200$ cell/mm³ were important factors that increase the risk of virologic failure. Therefore, identifying the cause of nonadherence and increasing adherence to ART would help to suppress viral replication. Special attention should be given to older clients, PLHIV with longer time on ART, and low recent CD4 count. Managing the drug toxicity and the use of a safer ART regimen is also an important strategy to prevent virologic failure, besides the promotion of adherence.

Abbreviations

3TC:	Lamivudine
ABC:	Abacavir
AIDS:	Acquired immunodeficiency syndrome
ART:	Antiretroviral therapy
ARV:	Antiretroviral
AOR:	Adjusted odds ratio
ATV/r:	Atazanavir/ritonavir
AZT:	Zidovudine
BMI:	Body mass index
CD4:	Cluster of differentiation
CI:	Confidence interval
CPT:	Cotrimoxazole preventive therapy
DTG:	Dolutegravir
EFV:	Efavirenz
HC:	Health center
HIV:	Human immunodeficiency virus
LPV/r:	Lopinavir/ritonavir
NVP:	Nevirapine
PLHIV:	People living with human immunodeficiency virus
SPSS:	Statistical Package for Social Sciences
TB:	Tuberculosis
TDF:	Tenofovir
VL:	Viral load
WBC:	White blood cells
WHO:	World Health Organization.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Ethical Approval

Ethical clearance was obtained from the School of Medicine Institutional Review Board, University of Gondar (Ref. No. SOM/7038/2019). Permission letters were obtained from the Amhara Regional State Health Bureau, Waghimra Zone Health Bureau, and each respective health institution where the data were collected. Personal identifying information was not recorded on the questionnaire, and all information obtained from the clients' chart was kept confidential.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

AE conceived the idea, and the research was designed by AE, ZA, ABB, and YA. AE coordinated the data collection process. AE and YA analyzed the data. AE, ZA, ABB, and YA wrote the manuscript. All authors read and approved the final manuscript.

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