

Factors Affecting Cotrimoxazole Prophylactic Therapy Compliance in HIV Patients Attending a Care and Treatment Clinic at Bugando Medical Centre in Mwanza, Tanzania

Stanley Mwita^{1*} , Felix Tarimo², Rahma Mbalamla¹

¹Department of Pharmaceutics and Pharmacy Practice, Catholic University of Health and Allied Sciences, Mwanza, Tanzania

²Department of Biochemistry, Catholic University of Health and Allied Sciences, Mwanza, Tanzania

Email: *stanleymwita@gmail.com

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Abstract

Introduction: Cotrimoxazole Prophylactic Therapy (CPT) compliance lowers the risk of opportunistic infections and other Acquired Immune Deficiency Syndrome (AIDS)-related diseases. The aim of this study was to examine factors that influence compliance with CPT among HIV patients in the Care and Treatment Clinic (CTC) at Bugando Medical Centre (BMC) in Mwanza, Tanzania. **Methods:** A descriptive cross-sectional study was conducted at the BMC between April 1, 2021, and June 30, 2021. Data were collected using face-to-face interviews and a semi-structured questionnaire. Data are presented in frequency, percentages, and cross-tabulation tables. A P-value of less than 0.05 was considered statistically significant. **Results:** The prevalence of compliance with CPT by self-reported measurement was 158 (63.7%). Most CPT-compliant participants were more likely to have a spouse who is familiar with CPT, have a family member who is aware of their HIV status, and be aware of the benefits of CPT. The majority of participants who complied with CPT were more likely to have experienced counseling during refill, felt that the length of time spent seeing doctors for treatment was reasonable, and received accurate information from them. **Conclusion:** Most adult HIV patients attending CTC at BMC were reported to be in compliance with CPT. These findings suggest that improving social support and patient-provider communication may be effective strategies for improving compliance with CPT among HIV patients.

Keywords

Factors, Compliance, Co-Trimoxazole Prophylactic Therapy, HIV/AIDS,

Tanzania, Bugando Medical Centre

1. Introduction

The pandemic known as the Human Immunodeficiency Virus or Acquired Immune Deficiency Syndrome (HIV/AIDS) affects millions of people worldwide [1]. According to the 2020 Joint United Nations Programme on HIV/AIDS (UNAIDS) report, the global HIV population was 38 million in 2019 [2]. Most HIV-positive individuals reside in low- and middle-income countries (LMIC), with around 68% of them being in sub-Saharan Africa. Almost 20.6 million of these people reside in East and Southern Africa, where 800,000 new HIV infections were reported in 2018 [3]. HIV targets and destroys the infection-fighting CD4+ T-lymphocytes of the human immune system, making a person more vulnerable to other infections and diseases, resulting in conditions known as opportunistic infections [4] [5].

Immunosuppression, resulting in potentially fatal opportunistic infections, is the cause of morbidity and mortality in HIV disease. A range of opportunistic infections can affect the health, quality of life, cost of care, and survival of HIV patients with severely impaired immune systems [6] [7]. Tuberculosis, oral candidiasis, herpes zoster, cryptococcal meningitis, toxoplasmosis, cytomegalovirus retinitis, and pneumocystis jiroveci pneumonia (PJP) are the most common opportunistic infections among HIV-infected individuals [8]. Antiretroviral therapy (ART) has been reported to reduce the incidence of opportunistic infections and improve survival [9].

A broad-spectrum antimicrobial drug known as cotrimoxazole is effective against a variety of aerobic gram-positive and gram-negative bacteria, fungi, and protozoa [10]. According to the World Health Organization (WHO), cotrimoxazole prophylactic therapy (CPT) is a feasible, well-tolerated, and economically sound intervention for HIV/AIDS patients to lower the prevalence of opportunistic infections [11]. Cotrimoxazole has been recommended as prophylaxis against PJP, toxoplasmosis, and other serious bacterial infections [12].

According to research, CPT compliance lowers the risk of opportunistic infections and other AIDS-related diseases. Thus, it improves the quality of life and life expectancy of HIV-positive individuals [13] [14]. Finding out what influences CPT compliance may help increase compliance. To the best of our knowledge, no prior research has been conducted on the factor(s) that influence CPT compliance among HIV/AIDS patients receiving treatment in Tanzania. As a result, little is known about CPT compliance in HIV patients in Tanzania, and the key factors for increasing compliance have not yet been thoroughly studied. The aim of this study was to examine factors that influence compliance with CPT among HIV patients in the Care and Treatment Clinic (CTC) at Bugando Medical Centre (BMC) in Mwanza, Tanzania.

2. Methods

2.1. Study Design

A descriptive cross-sectional study was conducted at the BMC between April 1, 2021, and June 30, 2021. BMC is a referral, consultant, and university teaching hospital for the lake and western zones of the United Republic of Tanzania. It is situated along the shores of Lake Victoria in Mwanza City.

2.2. Study Population

This study included all adult HIV patients who were on CPT, attended CTC at BMC, and provided informed consent to participate in the study. We included patients who had been attending the CTC at BMC for at least three months prior to the study period. We excluded seriously ill patients who were not able to talk.

A list of all patients attending the CTC was obtained from the clinic's records. Eligible patients were identified during their routine clinic visits. The attending healthcare providers briefly informed potential participants about the study and its objectives. Patients willing to participate were asked to sign a written informed consent form. Patients who provided informed consent were enrolled in the study.

2.3. Sample Size and Sampling Procedure

The sample size was calculated using the Yamane formula, $n = \frac{N}{1 + N(e)^2}$. The total population (N) was 600; the margin of error was 0.05. Thus, the minimum sample size was 240. Study participants were recruited using the consecutive sampling method.

2.4. Data Collection

A semi-structured questionnaire (Appendix I) with closed-ended and open-ended questions prepared in both English and Swahili was used to collect data. The information was gathered through a face-to-face interview. The questionnaire had three sections that contained information on compliance with CPT, social-demographic characteristics, patient-related factors, and health-facility-related factors. Two experts from the School of Public Health examined and validated the questionnaire's content to ensure that it was reliable and adequately covered the subject domain the study aimed to measure [15]. It was requested that reviewers assess each item for each category on their own and mark any questions they felt were poorly written or unnecessary. The items that most closely matched the panel's requirements for question clarity and accuracy across all domains were selected. This panel also contributed to the selection and assessment of the initial questionnaire items based on their content validity (relevance, coverage, and representativeness).

Good compliance was defined as taking greater than 95% of the prescribed dose or missing less than 4 doses per 30 doses. **Poor compliance** was defined as

taking less than 95% of the prescribed dose or missing more than 3 doses per 30 doses [16].

2.5. Study Variables

The dependent variable was compliance with CPT. Independent variables included social-demographic characteristics (age, sex, occupation, marital status, level of education), patient-related factors (spouse knowledge about client HIV status, spouse knowledge about client being on CPT, other family members' knowledge of the HIV status of the client, other family members on CPT, client knowledge on the benefit of CPT, client knowledge on the duration of CPT), and health-facility-related factors (distance from the hospital, time taken to see doctors for treatment, proper information on how to take a drug and counselling on refill).

2.6. Data Analysis

Data was entered in Microsoft Excel and analyzed using Statistical Package for Social Sciences software (SPSS version 22.0). Data are presented in frequency, percentages, and cross-tabulation tables. A P-value of less than 0.05 was considered statistically significant. The chi-square or Fisher exact tests were used to test differences between independent and dependent variables.

2.7. Ethical Consideration

Ethical clearance was obtained from the Catholic University of Health and Allied Sciences and the BMC Joint Ethics and Research Review Committee. Written informed consent was obtained from participants before their participation in the study. Importantly, participation was voluntary, and confidentiality was maintained in this study.

3. Results

3.1. Socio-Demographic Characteristics of the Respondents

Table 1 presents the socio-demographic characteristics of the participants. A total of 248 participants were included in this study. The mean age of the study respondents was 41.8 years, with an SD of 13.8 years. One hundred sixty-eight (67.8%) participants were female. The majority, 160 (64.5%), had only primary education, and 112 (45.2%) were single. One hundred and sixty-four (66.1%) were employed.

3.2. Compliance to CPT

Our results showed that 158 (63.7%) participants were in compliance with CPT over the past 30 days.

As presented in **Table 2**, age ($P < 0.001$), sex ($P = 0.047$), and marital status ($P = 0.023$) were the main socio-demographic factors that influenced compliance with the CPT. The majority of participants who complied with CPT were married (42.4%), between the ages of 18 and 35 (45.8%), and female (63.3%).

Table 1. Socio-demographic characteristics of the participants (N = 248).

Characteristics		Frequency (n)	Percentage (%)
Age (mean ± SD)		41.8 (±13.8)	
Sex	Male	80	32.2
	Female	168	67.8
Level of Education	Illiterate	23	9.3
	Primary	160	64.5
	Secondary	50	20.2
	College and above	15	6.0
Marital status	Single	112	45.2
	Married	94	37.9
	Separated/ divorced/ widowed	42	16.9
Occupation	Unemployed	84	33.9
	Employed	164	66.1

Table 2. Socio-demographic factors of participants with compliance to CPT (N = 158).

Variable	Compliant		P-Value
	Yes, n (%)	No, n (%)	
Age (years)			
18 - 35	65 (45.8)	15 (14.1)	<0.001
36 - 55	44 (26.8)	40 (43.4)	
56 and above	49 (27.4)	35 (42.5)	
Sex			
Male	58 (36.7)	22 (24.4)	0.047
Female	100 (63.3)	68 (75.6)	
Level of Education			
Illiterate	13 (8.2)	10 (11.1)	0.213
Primary	97 (61.4)	63 (70.0)	
Secondary	38 (24.1)	12 (13.3)	
College and above	10 (6.3)	5 (5.6)	
Marital status			
Single	61 (38.6)	51 (56.7)	0.023
Married	67 (42.4)	27 (30.0)	
Separated/ divorced/ widowed	30 (19.0)	12 (13.3)	
Occupation			
Unemployed	48 (30.4)	36 (40.0)	0.124
Employed	110 (69.6)	54 (60.0)	

Spouse knowledge about the client being on CPT ($P = 0.022$), other family members knowing the client's HIV status ($P = 0.001$), and the client being aware of CPT benefits ($P = 0.028$) significantly influenced the client's compliance with CPT. The majority of participants who complied with CPT were more likely to: have a spouse with knowledge of CPT (92.5%); have another family member who knows his or her HIV status (67.7%); and be aware of CPT benefits (71.6%). (**Table 3**).

Time taken to see doctors for treatment ($P = 0.029$), proper information on how to take a drug ($P < 0.001$), and counselling done on refill ($P = 0.012$) significantly influenced CPT compliance. Most of the participants who complied with CPT were more likely to be those who: perceived the time taken to see doctors for treatment as not too long (62.0%); got proper information from the health-care provider during the clinical visit (64.6%); and had counseling during refill (58.8%) (**Table 4**).

Table 3. Patient-related factors of participants with compliance to CPT (N = 248).

Variable	Compliant		P-Value
	Yes, n (%)	No, n (%)	
Spouse knowledge about client HIV status*			
Yes	58 (86.6)	22 (81.5)	0.369
No	9 (13.4)	5 (18.5)	
Spouse knowledge about client on CPT*			
Yes	62 (92.5)	20 (74.1)	0.022
No	5 (7.5)	7 (25.9)	
Other family member knows of your HIV status			
Yes	107 (67.7)	78 (86.7)	0.001
No	51 (32.3)	12 (13.3)	
Any other family member on CPT			
Yes	50 (31.6)	26 (28.9)	0.651
No	108 (68.4)	64 (71.1)	
Benefit from CPT			
Yes	106 (71.6)	52 (57.8)	0.028
No	42 (28.4)	38 (42.2)	
Duration on CPT			
<6 months	49 (31.0)	27 (30.0)	0.868
>6 months	109 (69.0)	63 (70.0)	

*Only married participants, *i.e.*, N = 94.

Table 4. Health-facility-related factors in CPT compliance (N = 248).

Variable	Compliant		P-Value
	Yes, n (%)	No, n (%)	
Distance from the hospital			
<5 km	34 (21.5)	12 (13.3)	0.111
>5 km	124 (78.5)	78 (86.7)	
Time taken to see doctors for Treatment			
Long	60 (38.0)	47 (52.2)	0.029
Not long	98 (62.0)	43 (47.8)	
Proper information on how to take a Drug			
Yes	102 (64.6)	24 (26.7)	<0.001
No	56 (35.4)	66 (73.3)	
Counselling done on refill			
Yes	93 (58.8)	38 (42.2)	0.012
No	65 (41.2)	52 (57.8)	

4. Discussion

WHO recommends the use of CPT for people infected with HIV in an effort to extend and improve the quality of life for people living with HIV [11]. The CPT's success depends on strict compliance. Patients' good compliance means taking greater than 95% of the prescribed dose or missing less than 4 doses per 30 doses. At the population level, all HIV patients should comply with CPT [16]. In this study, the prevalence of compliance with CPT by self-reported measurement was 158 (63.7%). The current result is in line with a similar study that was conducted in Ethiopia (67.8%) [16] and Uganda (65.7%) [17].

Age, sex, and marital status were all found to be significant predictors of compliance with the CPT. Most CPT-compliant participants were more likely to have a spouse who is familiar with CPT, have a family member who is aware of their HIV status, and be aware of the benefits of CPT. The majority of participants who complied with CPT were more likely to have experienced counselling during refill, felt that the length of time spent seeing doctors for treatment was reasonable, and received accurate information from them. Previous studies showed a significant association between compliance with CPT and the following factors: availability of drugs, the attitude of health care providers and HIV patients, follow-up, spouse knowledge and attitude, social support, level of education, substance use, knowledge of the benefits of CPT, duration of CPT, and information given by health care workers on how to take CPT [16] [18] [19]. Our findings on the socio-demographic factors influencing compliance with CPT were not in agreement with the study conducted in Ivory Coast, which reported that the group of compliers was associated with a paid occupation and was not associated with age or gender [20]. This could have been attributed to

the difference in methodology, as the Ivorian study was a randomized controlled trial. Consistent with the current study, a similar study conducted in Ethiopia [16] reported that having a spouse aware of the participants being on CPT, knowledge of the benefits of CPT, proper information by the health care provider during the clinical, and counselling during refill were significantly associated with CPT compliance. These results might be due to the fact that spouses' support, adequate counselling, and clear information on CPT enhance compliance.

Medication compliance is the act of taking drugs according to instructions in terms of care (for example, on time for a scheduled appointment at the clinic) (correct drug, timing, dosing, compliance with food restrictions, and no missed doses) [21]. The patient's level of compliance directly relates to the effectiveness of the medication, just like with any drug for people living with HIV [22]. In adults with HIV infection, CPT appears to have a beneficial effect, with an estimated reduction in mortality, morbidity, and the number of patients hospitalized [23]. Significant reductions have been reported for bacterial and parasitic infections. The beneficial effect appears to be similar for early and advanced HIV infection [24]. A previous study conducted in Uganda reported that CPT was associated with reduced morbidity and mortality and had beneficial effects on CD4-cell count and viral load [25].

5. Study limitations

To the best of our knowledge, this is the first study in Tanzania to assess factors affecting CPT compliance in HIV adult patients attending CTC, thus providing baseline information. However, there are some limitations to the current study that must be considered. First, this was a cross-sectional study design, so a causal relationship cannot be inferred. Second, self-reporting was used to assess compliance, which has the potential to introduce recall bias on the part of the respondents. This should be taken into account when interpreting the findings.

6. Conclusion

Most adult HIV patients attending CTC at BMC were reported to be in compliance with CPT. Factors associated with higher compliance rates included having a spouse or family member who is familiar with CPT, being aware of the benefits of CPT, receiving counselling during refills, feeling that the length of time spent seeing doctors for treatment was reasonable, and receiving accurate information from healthcare providers. These findings suggest that improving social support and patient-provider communication may be effective strategies for improving compliance with CPT among HIV patients. Further research is needed to confirm these findings and explore other factors that may influence adherence to CPT in this population.

Author's Contribution

SM contributed to the conception and design of the study, acquired, analysed

and interpreted the data, and drafted and revised the manuscript. FT and RM contributed to the design of the study, data interpretation and critically revised the manuscript. All authors read and approved the final manuscript.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

References

- [1] Andarge, D.E., Hailu, H.E. and Menna, T. (2022) Incidence, Survival Time and Associated Factors of Virological Failure among Adult HIV/Aids Patients on First Line Antiretroviral Therapy in St. Paul's Hospital Millennium Medical College—A Retrospective Cohort Study. *PLOS ONE*, **17**, e0275204. <https://doi.org/10.1371/journal.pone.0275204>
- [2] UNAIDS (2020) UNAIDS Data 2020.
- [3] UNAIDS (2019) Power to the People.
- [4] Chepkondol, G.K, Jolly, P.E, Yatich, N., Mbowe, O. and Jaoko, WG. (2020) Types and Prevalence of HIV-Related Opportunistic Infections/Conditions among HIV-Positive Patients Attending Kenyatta National Hospital in Nairobi, Kenya. *African Health Sciences*, **20**, 615-624. <https://doi.org/10.4314/ahs.v20i2.9>
- [5] Zaongo, S.D., Ouyang, J., Chen, Y., Jiao, Y., Wu, H. and Chen, Y. (2022) HIV Infection Predisposes to Increased Chances of HBV Infection: Current Understanding of the Mechanisms Favoring HBV Infection at Each Clinical Stage of HIV Infection. *Frontiers in Immunology*, **13**, Article 853346. <https://doi.org/10.3389/fimmu.2022.853346>
- [6] Gona, P., Van Dyke, R.B., Williams, P.L., Dankner, W.M., Chernoff, M.C., Nachman, S.A., et al. (2006) Incidence of Opportunistic and Other Infections in HIV-Infected Children in the HAART Era. *JAMA*, **296**, 292-300. <https://doi.org/10.1001/jama.296.3.292>
- [7] Ireozindu, M. (2016) Disparities in the Magnitude of Human Immunodeficiency Virus-Related Opportunistic Infections between High and Low/Middle-Income Countries: Is Highly Active Antiretroviral Therapy Changing the Trend? *Annals of Medical and Health Sciences Research*, **6**, 4-18.
- [8] Ghate, M., Deshpande, S., Tripathy, S., Nene, M., Gedam, P., Godbole, S., et al. (2009) Incidence of Common Opportunistic Infections in HIV-Infected Individuals in Pune, India: Analysis by Stages of Immunosuppression Represented by CD4 Counts. *International Journal of Infectious Diseases*, **13**, e1-e8. <https://doi.org/10.1016/j.ijid.2008.03.029>
- [9] Press, N., Tyndall, M.W., Wood, E., Hogg, R.S. and Montaner, J.S.G. (2002) Virologic and Immunologic Response, Clinical Progression, and Highly Active Antiretroviral Therapy Adherence. *AIDS Journal of Acquired Immune Deficiency Syndromes*, **31**, S112-S117. <https://doi.org/10.1097/00126334-200212153-00005>
- [10] Tsadik, J.G., Amelo, W. and Mulisa, E. (2015) Evaluation of Cotrimoxazole Use in the Out Patient Ward of Seka Chekorsa Health Center, Jimma Zone, Oromia Region, Ethiopia. *Indo American Journal of Pharmaceutical Research*, **5**, 1594-1599.
- [11] WHO (2013) Guidelines on Post-Exposure Prophylaxis for HIV and the Use of Co-Trimoxazole Prophylaxis for HIV-Related Infections among Adults, Adolescents and Children Recommendations for a Public Health Approach.

- [12] Gupta, S., Granich, R., Hersh, B., Lepere, P. and Samb, B. (2014) Global Policy Review of Recommendations on Cotrimoxazole Prophylaxis among People Living with HIV. *Journal of the International Association of Providers of AIDS Care (JIAPAC)*, **13**, 397-401. <https://doi.org/10.1177/2325957414535976>
- [13] Lowrance, D., Makombe, S., Harries, A., Yu, J., Aberle-Grasse, J., Eiger, O., *et al.* (2007) Lower Early Mortality Rates among Patients Receiving Antiretroviral Treatment at Clinics Offering Cotrimoxazole Prophylaxis in Malawi. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, **46**, 56-61. <https://doi.org/10.1097/qai.0b013e3181378ed2>
- [14] Suthar, A.B., Granich, R., Mermin, J. and Van Rie, A. (2011) Effect of Cotrimoxazole on Mortality in HIV-Infected Adults on Antiretroviral Therapy: A Systematic Review and Meta-Analysis. *Bulletin of the World Health Organization*, **90**, 128C-138C.
- [15] Elangovan, N. and Sundaravel, E. (2021) Method of Preparing a Document for Survey Instrument Validation by Experts. *MethodsX*, **8**, Article 101326. <https://doi.org/10.1016/j.mex.2021.101326>
- [16] Mekonnen, G.B. and Addis, S.A. (2020) Factors Affecting Adherence to Co-Trimoxazole Preventive Therapy in HIV/Aids Patients Attending an Antiretroviral Therapy Clinic in Ethiopia University Hospital: A Cross-Sectional Study. *Patient Preference and Adherence*, **14**, 881-890. <https://doi.org/10.2147/ppa.s252805>
- [17] Simon, M. (2009) Factors Affecting Adherence to Cotrimoxazole Prophylaxis among HIV/AIDS Patients in Rukungiri District, Uganda. <http://makir.mak.ac.ug/handle/10570/992>
- [18] Musembi, J. (2014) Determinants of Adherence to Cotrimoxazole Preventive Therapy among HIV Infected Persons on Treatment in Machakos District Hospital, Machakos County, Kenya. Doctoral Dissertation, Kenyatta University.
- [19] Mweemba, Z.N. and Ngoma, C.M. (2016) Cotrimoxazole Prophylaxis Compliance among HIV Exposed Infants in Chikankata District in Southern Zambia. *Medical Journal of Zambia*, **42**, 102-107.
- [20] Gourvellec, G., Anglaret, X., Toure, S., *et al.* (2004) Compliance in HIV Infected Adults. Study of Opportunistic Infection Prophylaxis with Cotrimoxazole in Ivory Coast. *La Presse Médicale*, **33**, 595-600. [https://doi.org/10.1016/S0755-4982\(04\)98683-6](https://doi.org/10.1016/S0755-4982(04)98683-6)
- [21] Bardfield, J., Agins, B., Palumbo, M., Wei, A.L., Morris, J., Marston, B., *et al.* (2014) Improving Rates of Cotrimoxazole Prophylaxis in Resource-Limited Settings: Implementation of a Quality Improvement Approach. *International Journal for Quality in Health Care*, **26**, 613-622. <https://doi.org/10.1093/intqhc/mzu085>
- [22] Nigatu, D., Dinegde, N.G. and Sendo, E.G. (2019) Cotrimoxazole Prophylaxis Treatment Adherence and Associated Factors among Human Immunodeficiency Virus (HIV) Exposed Children in Public Hospitals in Ilubabor Zone, Southwest Ethiopia, 2018. *The Open Public Health Journal*, **12**, 184-198. <https://doi.org/10.2174/1874944501912010184>
- [23] Suthar, A.B., Vitoria, M.A., Nagata, J.M., Anglaret, X., Mbori-Ngacha, D., Sued, O., *et al.* (2015) Co-Trimoxazole Prophylaxis in Adults, Including Pregnant Women, with HIV: A Systematic Review and Meta-Analysis. *The Lancet HIV*, **2**, e137-e150. [https://doi.org/10.1016/s2352-3018\(15\)00005-3](https://doi.org/10.1016/s2352-3018(15)00005-3)
- [24] Grimwade, K., Swingler, G.H. and Cochrane HIV/AIDS Group (1996) Cotrimoxazole Prophylaxis for Opportunistic Infections in Adults with HIV. *Cochrane Database of Systematic Reviews*, No. 3, Article No. CD003108. <https://doi.org/10.1002/14651858.CD003108>

- [25] Mermin, J., Lule, J., Ekwaru, J.P., Malamba, S., Downing, R., Ransom, R., *et al.* (2004) Effect of Co-Trimoxazole Prophylaxis on Morbidity, Mortality, CD4-Cell Count, and Viral Load in HIV Infection in Rural Uganda. *The Lancet*, **364**, 1428-1434. [https://doi.org/10.1016/s0140-6736\(04\)17225-5](https://doi.org/10.1016/s0140-6736(04)17225-5)

Appendix I: Questionnaire (English Version)

Factors Affecting Cotrimoxazole Prophylactic Therapy Compliance in HIV Patients Attending a Care and Treatment Clinic at Bugando Medical Centre in Mwanza, Tanzania

Section A: Social-demographic characteristics

1. Age (Yrs).....

2. Sex

A. Male

B. Female

3. Education

a. Illiterate

b. Primary

c. Secondary

d. Collage

4. Marital status

A. Single

B. Married

C. Separated/divorced/widowed

5. Occupation

A. Employed

B. Unemployed

Section B: Compliance and patient-related factors

6. Have you ever missed a CPT dose?

a. Yes

b. No

If yes, how many CPT doses have you missed in the past 30 days?

.....

7. Does your spouse know about your HIV status?

a. Yes

b. No

8. Does your spouse know that you are on CPT?

a. Yes

b. No

9. Is there any other family member who knows your HIV status?

a. Yes

b. No

10. Is there any other family member who knows you are on CPT?

a. Yes

b. No

11. Do you know the benefits of CPT?

a. Yes

b. No

If yes mention.....

12. For how long have you been on CPT?

a. <6 months

b. >6 months

Section C: Health-facility related factors

13. How far is your home from the hospital?

A. <5 Km

B. >5 Km

14. Do you wait a long time before seeing a doctor for treatment?

A. Yes

B. No

15. Do you get proper information in the hospital on how to take a drug?

A. Yes

B. No

16. Is Counselling done on refill?

A. Yes

B. No