FACTORS ASSOCIATED WITH THE ADHERENCE TO ANTI-RETROVIRAL THERAPY AMONG PREGNANT MOTHERS ATTENDING THE ART CLINIC AT CHINA-UGANDA FRIENDSHIP HOSPITAL, NAGURU. A DESCRIPTIVE CROSS-SECTIONAL STUDY.

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Abstract

The purpose of the study:

was to assess the factors associated with adherence to Anti-Retroviral Therapy among pregnant mothers attending the ART clinic at China Uganda Friendship Hospital, Naguru. To assess the knowledge, demographic factors, and socio-economic factors associated with the adherence to Anti-retroviral therapy among pregnant mothers attending the ART clinic at China-Uganda Friendship Hospital, Naguru.

Method:

The descriptive cross-sectional study was carried out from November 2022 to January 2023 where study data was collected at once and there were no follow-ups of respondents after the study. The participants in the study were selected using a purposive sampling method. Open and close-ended questionnaires were used in data collection.

Results:

Many (55.9%) of the well-adherent mothers were 30 years and above. The majority (97%) of the well-adherent mothers were urban dwellers. The majority (60%) of the respondents earned less than Ush500,000 per month while the minority (7%) earned above Ush300,000 per month. Mothers with a relatively high monthly income were found to adhere better than those with a low monthly income. The majority (96.8%) of the well-adherent respondents had good social support.

Conclusion:

Knowledge about ART adherence and PMTCT is associated with the level of adherence to ART among pregnant mothers attending the ART clinic at China-Uganda Friendship Hospital, Naguru. Demographic factors such as the respondent's age, place of residence, and level of education were found to be associated with ART adherence. The mother's financial status, social support, and HIV- associated stigma were some of the socioeconomic factors found to be associated with the adherence to ART.

Recommendations :

Consistent attendance of routine health education and counselling, prescription of drugs for quite a long duration, male partner involvement, and starting up of small scale income generating projects should be advocated for to improve medication adherence.

Keywords: Adherence to anti-retroviral therapy, Pregnant mothers, ART clinic, Knowledge, Demographic factors, level of education, Submitted: 2023-04-25 Accepted: 2023-05-18

1. Background:

Treatment adherence is defined as the extent to which a person's behavior of taking medica- tion, following a diet, and/or executing lifestyle changes corresponds with the agreed recommen- dations from a healthcare provider. A variety of methods have been proposed to measure ART adherence, including reviews of pharmacy refill records, self-reported adherence questionnaires, ART drug blood level monitoring, electronic mon- itoring devices, and pill counts (Zied and Mo- hammed, 2019). Most HIV treatment guidelines currently recommend routine assessment of ART adherence in each HIV-infected patient encounter (WHO, 2016).

Globally, 74.9 million people have become in- fected with HIV since the start of the epidemic with the transmission of HIV from mother to her child accounting for over 90% of all HIV infections in children aged below 15 years (WHO, MOH Tanzania 2015). PMTCTs are strategies aimed at preventing the spread of HIV from a mother to her child during pregnancy, labor, and deliv- ery, or by breastfeeding. The current global goal is to accelerate progress toward the elimination of new infections from mother to child by 2015 and keep HIV-infected mothers healthy (Avert, 2015). The global ART coverage for all people living with HIV had reached approximately 41% or 15 million people by March 2015 (WHO, 2016).

However, studies have revealed various gaps in the implementation of PMTCT programs. A sys- tematic review and meta-analysis study carried out in China, showed that 71% of HIV-positive women had initiated Option B+ but uptake var- ied between income levels. Further, a system- atic assessment in low and middle-income coun- tries revealed that nearly half of the HIV-positive expectant women neither received ART prophy- laxis during antenatal care (ANC) nor delivered in health facilities (Huang and Jin, 2015).

In Africa, HIV infection rates in pregnant women range from 15 to 40% with the highest

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global HIV prevalence in women of reproductive age, representing more than 55% of adults in- fected with the virus (Naburi *et al*, 2017). In Sub- Saharan Africa, a systematic review study on medication adherence in pregnant women with Human Immunodeficiency Virus receiving an- tiretroviral therapy demonstrated that stigma, cost of transportation, food deprivation, and a woman's disclosure or non-disclosure of her HIV status to a partner, family, and the community, could limit or define the extent of her adherence to prescribed antiretroviral drugs during pregnancy. Furthermore, the review indicated that knowledge of HIV status, either before or during pregnancy, was significantly associated with medication ad- herence (Olumuyiwa *et al*, 2018).

In Nigeria, a study was carried out about adher- ence by pregnant women accessing the Antenatal clinic at the University of Port Harcourt Teach- ing Hospital, a Tertiary institution in River State where out of the 236 respondents that were used for the study, 16.1% reported ART adherence problems while 83.9% reported 100% adherence, which is considered good. Socio-demographic variables found to be significantly associated with adherence were marital status 59.1% and age 63%, with married women and younger women more likely to adhere to ART instructions (Augustina *et al*, 2022).

In a study conducted in East African coun- tries where the 14 articles included in this study were published between 2015 and 2019, a total of 4883 study participants were included in this sys- tematic review and meta-analysis. Three stud- ies were cohort studies while the remaining all were cross-sectional studies. Published studies conducted in Eastern African countries (Tanza- nia, Uganda, Ethiopia, Zambia, Zimbabwe, and Malawi) have been included. This systematic re- view and meta-analysis have identified that the magnitude of adherence to option B plus PMTCT program in Eastern African countries ranges from 31.9% (from a study conducted in Malawi) to 95.97% (a study conducted in Uganda) (Tsegaye *et al*, 2020).

A study done in Central Uganda among HIV- positive pregnant mothers attending care at six

health facilities in Luwero, Mityana, and Masaka revealed that optimal adherence to ART was achieved by 76.8% (315/410). Facilitators of ART uptake from qualitative findings included adequate counseling, willingness to start, and knowing the benefits of ART. Reasons for refusal to start ART included being unready to start ART, fear to take ART for life, doubt of HIV-positive results, and preference for local herbs. Reasons for non-adherence were travelling far away from health facilities, fear of side effects, non-disclosure of HIV results to anyone, and perception that the baby is safe from HIV infection post-delivery (Mukose *et al*, 2021). This study was there- fore conducted to assess the factors associated with adherence to antiretroviral therapy among HIV-positive pregnant women attending care at CUFHN, in Kampala district, Central Uganda.

2. Methodology:

2.1. Study Design:

The study was a descriptive cross-sectional one in nature. In this study, data was collected at once and there was no follow-up of respondents after the study. This helped ease the work and minimize the expenditure that can be incurred during follow-ups.

2.2. Study area:

This study was conducted in China Uganda Friendship Hospital, Naguru, a government hospital located in Naguru, Nakawa division, Kampala district. The health facility is at the level of a National referral hospital and serves a population of over three million inhabitants most of which are from the central region of the country while some come in as referrals from other regions. The health facility was chosen because it covers a large population hence sample data could be easily obtained. The study was carried out during the period from December 2022 to January 2023.

2.3. Study population:

The study involved pregnant women who are infected with HIV/AIDs attending the maternal and child health clinic and those who were admitted in the maternity wards for at least 48 hours prior to selection. This was because HIV infection spread in mothers is also prevalent among children and newborns.

2.4. Sample size determination:

The sample size was obtained using the Kish Leslie formula.

$$N = \frac{(Z)^2 - PQ}{d^2}$$

Where; n=sample size
Z=score corresponding to 95%
Confidence interval=1.96
According to the UNAIDS (2019), the prevalence is 27%,

P (prevalence) =27%=0.27
Q = 1 - P
d^2 = precision/sampling error (9.8%)
Therefore; n= $\frac{(1.96)^2(0.27)(1-0.27)}{(0.098)^2}$

n= 79 respondents
Therefore, 79 pregnant mothers were considered to take part in the study.

2.5. Sampling technique:

The participants in the study were selected using a purposive sampling method. All HIV- infected pregnant mothers who met the inclusion criteria were enrolled in the study. This is be- cause it is the most appropriate and time-saving technique.

2.6. Sampling Procedure:

Purposive sampling was used to select the pregnant mothers for enrollment in the study. All HIV-infected pregnant mothers who attend care at CUFHN and met the inclusion criteria were enrolled in the study. This method was found the most appropriate due to the relatively small number of HIV-infected pregnant mothers who attend care daily.

2.7. Data collection method:

The study employed a self-administered questionnaire technique in the collection of data. This is because the questionnaires are a safe and easy way of collecting organized data as well as saving time.

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2.7.1. Data collection tool:

Open and close-ended questionnaires were used.

2.7.2. Data collection procedure:

Data collection proceeded after obtaining the research introductory letter to permit data collection. Questionnaires were administered to patients who were asked to tick in the box with the appropriate answer (e.g. Yes or No) and to fill the gaps where necessary. Those respondents who were unable to read and write were helped to read and interpret questions and also guided when answering by research assistants.

2.8. Study variables:

2.8.1. Independent variable:

The independent variable was factors associated with adherence to ART among pregnant mothers and these included knowledge about ART adherence and PMTCT, demographic fac- tors, and socioeconomic factors.

2.8.2. Dependent variable:

The dependent variable was the adherence to ART among pregnant mothers and this was measured in terms of daily swallowing of pills as evidenced basically by self-reported adherence questionnaires.

2.9. Quality Control:

The research assistants were trained on how to correctly fill questionnaires to enhance data validity. The study was carried out for three weeks to ensure ample time was given to all the respondents to express and give relevant information. Pretesting of the study was be done three days prior to the initial day of the onset of data collection. Then, any inclusions and exclusions in the data collection tools were cleared after pretesting of the study had been done.

2.9.1. Inclusion criteria:

HIV-infected pregnant women found in the ART clinic enrolled on ART for at least three months mothers who had stayed in the maternity ward for at least 48 hours before data collection were considered to participate in the study.

2.9.2. Exclusion Criteria:

HIV-infected women who had spent less than three months on ART; mothers who had spent less than 48 hours in the maternity ward; and those in labor at the time of data collection were not considered to be part of the study.

2.10. Data analysis and presentation:

Data was sorted, analyzed manually, and presented in tables, pie charts, and bar graphs in the report.

3. Results:

3.1. The Demographic characteristics of the respondents who participated in the study:

From Table 1, the majority of the respondents (48%) were between 30-45 years while the minority (2%) were above 45 years, most of the respondents (83%) were married and the least (2%) were widows. The majority of the respondents (36%) were Baganda and the minority (3%) were Banyarwanda. Most of them (36%) were Anglicans while the least (2%) were seventh day Adven- tists. Regarding their education level, the ma- jority (59%) had reached the primary level while the minority (2%) had not attained any formal education. Most (57%) of the respondents were urban dwellers while the others 34(43%) were rural dwellers.

3.2. Level of adherence to ART among pregnant mothers attending China-Uganda Friendship Hospital, Naguru.

From Figure 1, 52(65.8%) of the respondents had never missed taking their ARV drug, 6(7.6%) missed 1-2 times, 10 (12.7%) missed 3-5 times while 11(13.9%) of the respondents missed more than five times.

From Figure 2, the majority of the respondents 68(86%) had good adherence while the minority 11(14%) had poor adherence. This implies that the level of adherence to ART among pregnant mothers attending care at China-Uganda Friendship Hospital, Naguru is 86%.

Table 1: Demographic characteristic factors based on the ART adherence among the HIV positive pregnant women (n=79)

| Variable	Respondents	Frequency(f)	Percentage (%)
	Less than 18	0	0
	18-22	6	7.59
Age	23-29	34	43
	30-45	37	46.83
	Above 45	2	2.53
	Total	79	100
	Single	28	35.4
	Married	39	49.4
Marital status	Separated	10	12.7
	Widow	2	2.5
	Total	79	100
	Muganda	28	35.44
	Mukiga	8	10.13
Tribe	Munyarwanda	6	7.59
	Acholi	9	11.39
	Others	28	35.44
	Total	79	100
	Catholics	26	32.91
	Anglicans	28	35.44
Religion	Seventh day Adventist	2	2.53
	Moslems	8	10.13
	Born Again Christian	15	18.99
	Total	79	100
	No formal education	2	2.53
Level of Education	Primary	46	58.23
	Secondary	25	31.65
	Tertiary	6	7.59
	Total	79	100
	Urban	68	86.1
Place of residence	Rural	11	13.9
	Total	79	100
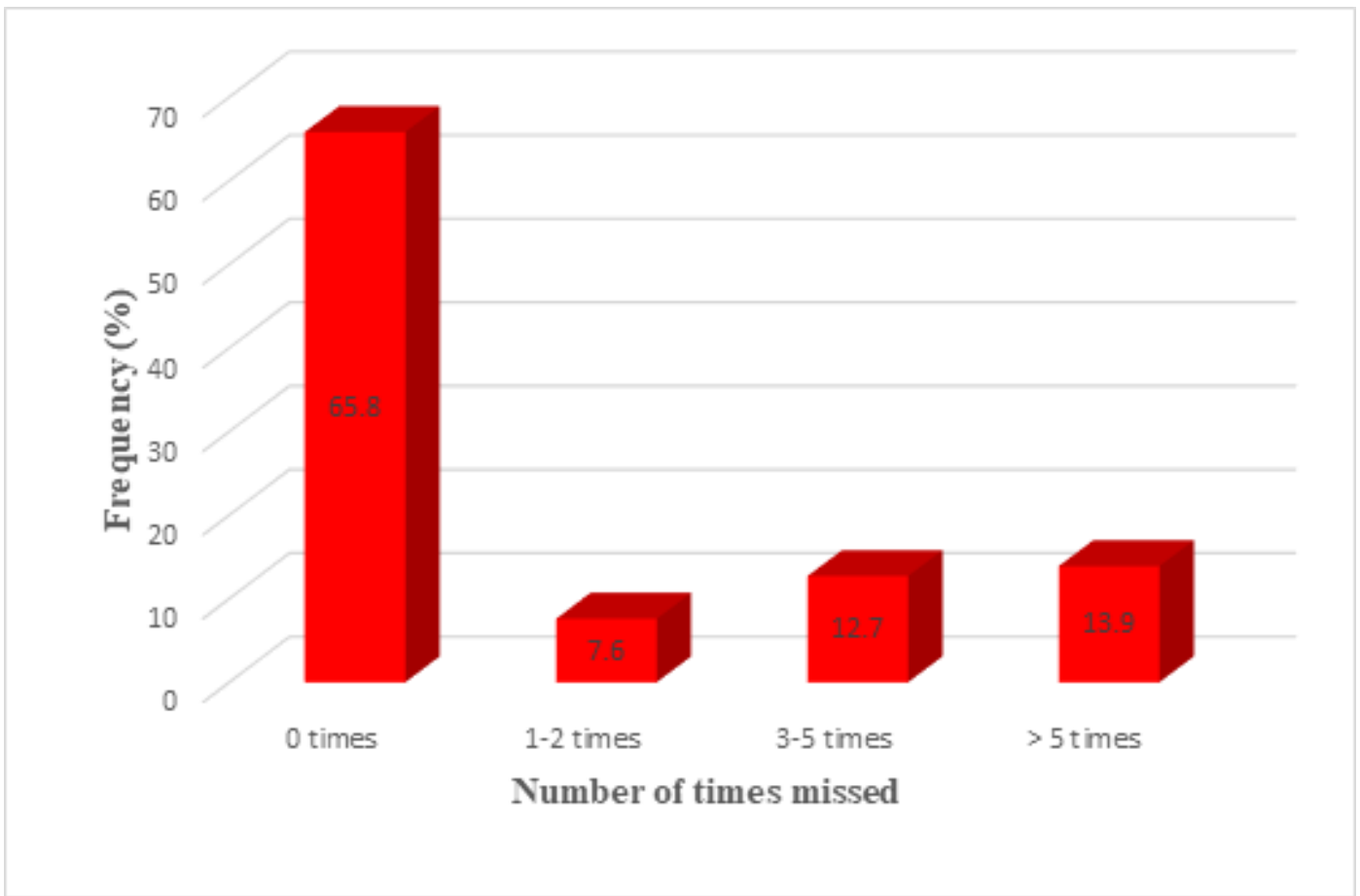
Figure 1: Distribution of respondents according to number of times the respondents missed to take ARV drug in the last 100 days (n=79)
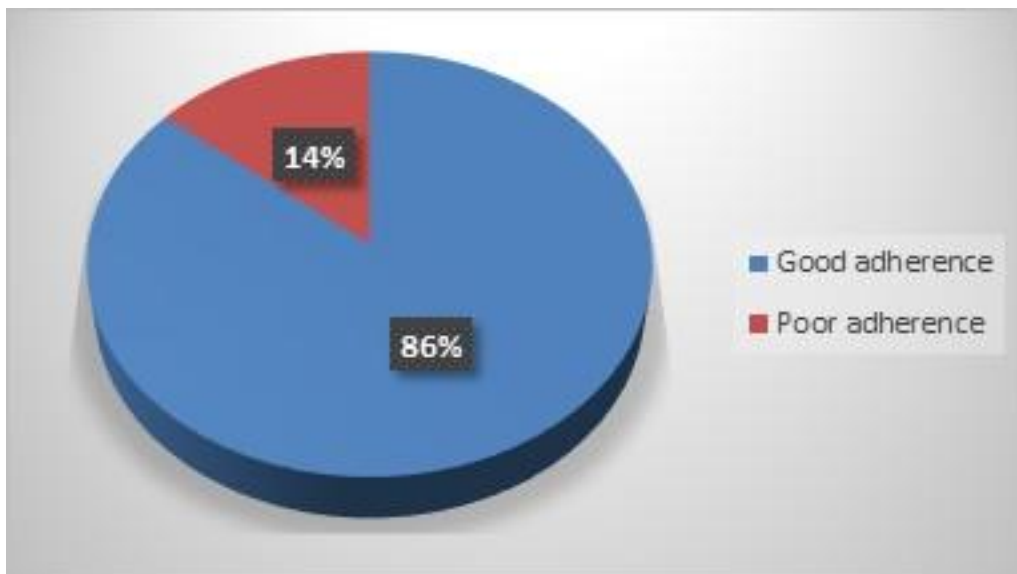

Figure 2: **Distribution of respondents according to their level of ART adherence**

3.3. Knowledge of HIV infected pregnant about ART adherence and PMTCT:

From Table 2, the majority of the respondents generally showed good knowledge about ART adherence and PMTCT. Out of the 79 respon- dents, 72(91.1%) knew that a pregnant mother can transmit HIV to their unborn child while the others didn't know. Out of the 72, the majority 68(94.4%) of them had good adherence. All the other 4(5.6%) who didn't know about the possibility of MTCT had poor adherence.

Regarding the prevention of MTCT, the majority 66(83.5%) of respondents knew that the best way is by taking ARV drugs properly while the other 13(16.5%) reported other ways. The majority, 65(98.5%) of the 66 respondents who knew the right way of PMTCT had good adherence. Majority of the respondents who didn't know the right way of PMTCT had poor adherence.

The majority 68(86.1%) of the respondents knew that adhering to ARV drugs can reduce the risk of opportunistic infections, many 65(95.6%) of whom had good adherence. Most of the respondents who didn't know whether adhering to ARV drugs can reduce the risk of opportunistic infections had poor adherence.

3.4. Demographic factors influencing adherence to ART among HIV positive pregnant women:

From Table 2, 6 (7.6%) of the respondents were between 18-22 years and 2(33.3%) of these had good adherence. 34(43.03%) were between 23- 29 years and 28(82.4%) of them had good adherence.37(46.84%) of the respondents were between the age bracket of 30-45 years and 36 (94.6%) of them had good adherence.2(2.53%) of the respondents were above the age of 45years and both (100%) of them had good adherence.

From Table 3, both respondents with no formal education had poor adherence while 30 (76.9%) out of the 39 respondents with primary education had good adherence. All respondents with either secondary or tertiary education had good adherence.

From Table 4, 68(86%) of the respondents were urban dwellers while 11(14%) were rural dwellers.

The majority 66(97%) of the urban dwellers had good adherence while the majority 9(81.8%) of the rural dwellers had poor adherence.

3.5. Socioeconomic factors associated with adherence to ART among pregnant mothers:

From Table 6, the majority 47(59.5%) of the respondents earned less than Ush 50,000. 8(17%) of these 47 respondents had poor adherence. 13(16.5%) of the respondents earned between Ush 50,000-150,000. 2(15.4%) of these 13 respondents had poor adherence. 11(13.9%) of the respon- dents earned between Ush150,00 to 300,000. Only 1(9.1%) of the 10 respondents had poor adher- ence. 1% of the respondents earned Ush300,000 and above all of whom had good adherence

From Table 7, the majority 63(80%) of the respondents had good social support and many 61(96.8%) of them had good adherence. 16(20%) of the respondents lacked good social support and many 9(56%) of them had poor adherence.

From Table 8, the minority 15(19%) of the respondents reported having had HIV stigma. Many 8(53.3%) of the 15 respondents who had stigma had poor adherence. On the other hand, the majority of the respondents 64(81%) reported not having had a stigma and many 61(95.5%) of these had good adherence while the other 3(4.7%) had poor adherence.

4. Discussion:

4.1. Knowledge about adherence to ART adherence and PMTCT among pregnant mothers attending the ART clinic at CUFHN :

The study revealed that the majority of the respondents generally had good knowledge about ART adherence and PMTCT. Out of the 79 respondents, the majority 72(91.1%) knew that a pregnant mother can transmit HIV to their unborn child while the other 7(8.9%) didn't know. This is probably attributed to routine health education sessions provided by the health workers. Out of the 72, the majority 68(94.4%) had good adherence. All 7 respondents who didn't know about the possibility of vertical transmission of

Table 2: Distribution of respondents according to the association of their Knowledge about ART adherence and PMTCT with their adherence to ART (n=79)

Variable	Category	Frequency (%)	Level of adherence	
			Good adherence	Poor adherence
Can a pregnant woman transmit the virus to the unborn child	Yes	72 (91.1%)	68 (94.4%)	4 (5.6%)
	No	7 (8.9%)	0 (0.0%)	7 (100%)
	Total	79 (100%)	68 (86%)	11 (14%)
How to prevent MTCT of the virus	By taking ART drugs properly	66 (83.5%)	65 (98.5%)	1 (1.5%)
	Taking ART drugs only you become pregnant	7 (8.9%)	2 (28.6%)	5 (71.4%)
	Giving ART for the child properly	4 (5.1%)	1 (25%)	3 (75%)
	Follow proper child feeding	2 (2.5%)	0 (0.0%)	2 (100%)
	Total	79 (100%)	68 (86%)	11 (14%)
Adhering to ARV drugs can reduce the risk of opportunistic infections	Yes	68 (86.1%)	65 (95.6%)	3 (4.4%)
	No	3 (3.8%)	1 (33.3%)	2 (66.7%)
	Don't know	8 (10.1%)	2 (25%)	6 (75%)
	Total	79 (100%)	68 (86%)	11 (14%)

Table 3: Distribution of respondents according to association of their age with their adherence of ART (n=79)

Variable	Category	Frequency (%)	Adherence	
			Good adherence	Poor adherence
Age	18-22	6 (7.6%)	2 (33.3%)	4 (66.7%)
	23-29	34 (43.03%)	28 (82.4%)	5 (14.7%)
	30-45	37 (46.84%)	36 (94.6%)	2 (5.4%)
	>45	2 (2.53%)	2 (100%)	0 (0.0%)
	Total	79 (100%)	68 (86%)	11 (14%)

the virus had poor adherence. These findings indicate that mothers who were aware of the possibility of vertical transmission of the virus were more likely to adhere to ART compared to those that weren't. These findings are in agreement with the findings of a study in Ethiopia by Eyosiyas et al (2018) where the majority (80.6%) of the respondents knew that a pregnant mother can transmit the virus to her unborn child while the rest did not know. The majority (82.9%) of those who knew that a pregnant mother can transmit the virus to

her unborn child had good adherence. This finding indicates that knowledge of the possibility of vertical transmission is associated with good adherence to ART among Pregnant women.

In regards to PMTCT, the majority 66 (83.5%) of the respondents knew taking ARV drugs properly was the right way while the other 13 (16.5%) didn't know. The majority, 65 (98.5%) of the 66 respondents who knew the right way of PMTCT had good adherence. Majority of the respondents who didn't know the right way of PMTCT

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Table 4: Distribution of respondents according to association of their level of education with their adherence to ART (n=79)

Variable	Category	Frequency (%)	Adherence Good adherence	Poor adherence
	No formal education	2 (2.5%)	0 (0.0%)	2 (100%)
Level of education	Primary education	39(49.4%)	30(76.9%)	9(23.1%)
	Secondary education	32(40.5%)	32(100%)	0 (0.0%)
	Tertiary education	6 (7.6%)	6 (100%)	0 (0.0%)
	Total	79 (100%)	68 (86%)	11 (14%)

Table 5: Table 5: Distribution of respondents according to association of their place of residence with adherence to ART (n=79)

Variable	Category	Frequency (%)	Adherence Good adherence	Poor adherence
	Urban	68 (86%)	66 (97%)	2 (3%)
Place of residence	Rural	11 (14%)	2 (18.2%)	9 (81.8%)
	Total	79 (100%)	68 (86%)	11 (14%)

Table 6: Distribution of respondents according to association of their monthly income with their adherence to ART (n=79)

Variable	Category (Ush)	Frequency (%)	Adherence Good adherence	Poor adherence
	<50,000	47 (59.5%)	39 (83%)	8 (17%)
	50,000‑<150,000	13 (16.5%	11 (84.6%)	2 (15.4%)
Monthly income	150,000-<300,000	11 (13.9%)	10 (90.9%)	1 (9.1%)
	>300,000	8 (10.1%)	8 (100%)	0 (0.0%)
	Total	79 (100%)	68 (86%)	11 (14%)

Table 7: Distribution of respondents according to the association of social support with adherence to ART (n=79)

Variable	Category	Frequency (%)	Adherence Good adherence	Poor adherence
	Yes	63 (80%)	61 (96.8%)	2 (3.2%)
Have social support	No	16 (20%)	7 (44%)	9 (56%)
	Total	79 (100%)	68 (86%)	11 (14%)

Table 8: Distribution of respondents according to association of HIV-stigma with their adherence to ART (n=79)

Variable	Category	Frequency (%)	Adherence	
			Good adherence	Poor adherence
	Yes	15 (19%)	7 (46.7%)	8 (53.3%)
Have had HIV-stigma	No	64 (81%)	61 (95.5%)	3 (4.7%)
	Total	79 (100%)	68 (86%)	11 (14%)

had poor adherence. These findings indicate that knowledge of PMTCT is associated with adher- ence to ART among pregnant mothers. The good adherence scores among knowledgeable mothers are probably because they desired to have their babies safe from HIV. This finding is not any dif- ferent from the finding of the study in Tanzania by Sebastian (2020) who stated that the major- ity (95%) of the respondents had high knowledge about PMTCT and this positively influenced ad- herence level. This finding indicates that knowl- edge of PMTCT among pregnant mothers is as- sociated with good adherence.

The majority 68 (86.1%) of the respondents knew that adhering to ARV drugs reduces the risk of opportunistic infections. Many 65(95.6%) of those 68 respondents who knew that adhering can reduce the risk of opportunistic infections had good adherence while many of those who did not have an idea had poor adherence. This finding indicates that respondents who had this knowl- edge were more likely to have good adherence scores as compared to their non-knowledgeable counterparts. This is probably because they de- sired to have a good state of health during preg- nancy and thereafter. This finding is similar to the finding of the study in Ethiopia by Eyosiyas et al (2018) where the majority (70%) of the respon- dents knew that adhering to ARV can reduce the risk of opportunistic infections. At the same time, the majority (77%) of the good adherent mothers had this knowledge. This finding indicates that knowledge of ARV adherence reducing the risk of opportunistic infections is associated with good adherence to ART among pregnant mothers.

4.2. Demographic factors associated with the adherence to antiretroviral ther- apy among pregnant mothers attending care at CUFHN:

Analysis of the respondents' ages in relation to their treatment adherence revealed that 33.3% of the respondents between 18 and 22 years had good adherence while 82.4% of the respondents be- tween 23 and 29 years had good adherence. 94.6% of the respondents between 30 and 45 years had good adherence and all those above 45 years had good adherence. Out of the 68 respondents with good adherence, many 38(55.9%) were 30 years and above. These findings indicate that older women were more likely to adhere to ART. This is probably because older women are more re- sponsible adults compared to their younger coun- terparts. The study revealed that all mothers who had no formal education had poor adherence. 30(76.9%) of mothers who had primary educa- tion had good adherence. All the mothers who had either secondary education or tertiary edu- cation had good adherence. Out of the 68 re- spondents with good adherence, the majority 38 (55.9%) had obtained a secondary education and above while the others had obtained primary ed- ucation or less. This finding indicates that preg- nant mothers with a high level of education are more likely to adhere to ART than those with a low level of education. This is probably be- cause those who had a higher level of education were more informed of the repercussions of non- adherence to ART as compared to their less edu- cated counterparts. This finding is not so differ- ent from the findings of a study in Tanzania by Sebastian (2020) where the majority (98.1%) of the well- adherent respondents were found to be

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educated up to at least a secondary level while 1.9% had primary education and below. These findings imply that a higher level of education is associated with good adherence to ART among pregnant mothers.

The majority 68(86%) of the respondents were urban dwellers while the minority 11(14%) were rural dwellers and many of the urban dwellers were staying relatively near the hospital. The majority 66 (97%) of the respondents with good adherence were urban dwellers which implies that urban dwellers were more likely to adhere to medication than rural dwellers. This is probably because urban dwellers could easily obtain effective transport means to access the hospital. This finding indicates that the place of residence is associated with the level of ART adherence among pregnant mothers. However, these findings are in disagreement with the findings of a study in Tanzania by Sebastian (2020) which revealed that place of residence was significantly associated with adherence where those who reside in rural areas were 4.86 times more likely to have good adherence as compared to those lived in urban. These findings indicate that the place of residence of pregnant mothers is associated with their level of medication adherence.

4.3. Socioeconomic factors associated with adherence to ART among pregnant mothers attending care at CUFHN:

It revealed that the majority (60%) of the respondents earned less than Ush 500,000 per month while the minority (7%) earned above Ush 300,000 per month. Out of the 11 respondents with poor adherence, many 10(90.9%) earned less than Ush 150,000 per month while the other 2(9.1%) earned Ush 150,000 and above. Data analysis showed that respondents who earned a relatively higher income were more likely to adhere to treatment as compared to those who earned little. This is probably because respondents with a low monthly income lacked enough food to consume interfering with the time to take the pills as per health workers' instructions and perhaps they could not afford transportation costs from their places of residence to the hospital. This was made evident when one respondent reported that one day she had to miss the pill because she lacked supper. The findings indicate that financial status is associated with adherence to ART among pregnant mothers. These findings are in agreement with the findings of a study by Olumuyiwa et al (2018) who reported that the poor financial state of women proved to be a major obstacle to ART adherence in terms of consuming enough food to take their medication at the required time, and in terms of inhibiting transportation to scheduled ART refill appointments. It, therefore, implies that poor financial status is associated with poor adherence to ART.

The study revealed that the majority 63(80%) of the respondents had good social support most of whom reported that they obtained support from partners, friends, and relatives. Most 61 (96.8%) of the respondents who had good social support had good adherence while the majority 9 (56%) of the 16 respondents who lacked good social support had poor adherence. Thus mothers with good social support were more likely to adhere to treatment. This is probably because the support provided psychological comfort and included continuous reminding of the mothers to take their pills thus resulting in good compliance. These findings are in agreement with the findings of a study by Eyosiyas et al (2018) who stated that women who received Social and financial support were 5 times more likely to be adherent with PMTCT option B+ than their counterparts. It, therefore, implies that social support rendered to pregnant mothers is significantly associated with their level of adherence to ART.

Minority 15 (19%) of all the 79 respondents reported having had HIV stigma either at the time of the interview or earlier before while the others didn't. Many 8(53.3%) of those who were stigmatized had poor adherence scores. These findings indicate that HIV stigma among pregnant mothers is associated with poor ART adherence. This is probably because they feared being known that they are on ART and thus missed taking their pills in the long run. This finding is similar to the findings of a study in South Eastern Nigeria by Opara et al (2022) where some re-

spondents reported that some psychological factors such as feeling depression about HIV sta- tus, non-disclosure to partner or family member (which made patients hide or avoid drugs), fear of stigmatization and having to take the drug for a lifetime had some effects on their adherence behavior. These findings therefore imply that HIV-associated stigma among other psychological factors is associated with the level of adherence to ART among pregnant mothers.

5. Study Limitations:

The data was to be collected over a short duration of time that is three weeks and this was not enough time to obtain ample data from the respondents.

6. Conclusions:

This study specifically sought to assess the knowledge about ART adherence and PMTCT among pregnant mothers attending the ART clinic at CUFHN. The study established that mothers with good knowledge about ART adher- ence and PMTCT had generally better adherence scores as compared to those with poor knowledge. Given these findings, knowledge about ART ad- herence and PMTCT is associated with the level of adherence to ART among pregnant mothers.

The study also sought to determine the demographic factors associated with adherence to ART among pregnant mothers attending the ART clinic at CUFHN. Relatively older mothers were more likely to adhere as compared to their younger counterparts. Urban dwellers generally had better adherence scores than rural dwellers. Respondents who had attained secondary educa- tion and above were found to adhere better than those who had obtained primary education and less. Given the above findings, demographic fac- tors such as the respondent's age, place of resi- dence, and level of education are associated with adherence to ART among mothers attending the ART clinic at CUFHN.

The study aimed at identifying the socioeconomic factors associated with adherence to ART among pregnant mothers attending the ART clinic at CUFHN. Mothers with relatively high financial status were more likely to adhere to ART as compared to those with a low financial status. Most of the respondents who had HIV stigma had generally poor adherence scores. Respondents with good social support generally had better adherence scores as compared to those who lacked good social support. Given these findings, therefore mother's financial status, HIV stigma, and social support were some of the socioeconomic factors found to be associated with the adherence to ART among pregnant mothers attending the ART clinic at CUFHN.

7. Recommendations:

To the HIV-infected pregnant mothers in care at CUFHN, I recommend that they always and consistently attend the routine health education and counseling sessions about medication adherence so as they stay acquainted with knowledge concerning ART adherence, its benefits, and the complications of poor adherence. This knowledge among these mothers will highly and positively influence their levels of medication adherence.

For clients who reside in rural areas, quite far away from the hospital, and cannot afford transport costs to the hospital, I recommend to the Ministry of Health that drugs for a longer duration be given to the clients for example a six-month package after assessment and excluding any other risks. However, in case any symptoms arise, they should report immediately to the hos- pital. The provision of a package for a longer du- ration will help improve adherence among these mothers. I also recommend male partner involvement in support of their spouses who are HIV-infected in their adherence to ART. Male part- ners should remind their spouses to take their pills on a daily basis. Male partners should also offer psychological comfort to these mothers so as to alleviate the problem of HIV-associated stigma. The government should support these mothers to start up small-scale income-generating projects so as to improve their financial status which can in the long run enhance their adherence to ART.

8. Acknowledgement:

8.1. *List of Abbreviations:*

AIDS: acquired Immune Deficiency Syndrome

ANC:Antenatal Care

ART:Antiretroviral Therapy

CDC:Centers for Disease Control

CME:Continuous Medical Education

CUFHN:China-Uganda Friendship Hospital, Naguru

HAART:Highly Active Antiretroviral Therapy

HCT:HIV Counseling and Testing

HIV: Human Immune Virus

MOH:Ministry of Health

NAFOPHANU National Forum of People Living with HIV/AIDS Networks in Uganda

PEPFAR:Presidential Emergency Plan for AIDS Relief

PMTCT:Prevention of Mother To Child Transmission of HIV

RCT:Routine Counseling and Testing

UDHS:Uganda Demographic Health Survey

UNAIDS:United Nations on Acquired Immune Deficiency Syndrome

UNICEF:United Nations Children's Fund (United Nations International Children's Emergency Funds)

WH: World Health Organization

Ush: Uganda shillings

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