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DETERMINANTS OF ADHERENCE TO ANTI-RETROVIRAL THERAPY AMONG DISCORDANT COUPLES IN USIGU DIVISION, BONDO SUB- COUNTY, KENYA

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DETERMINANTS OF ADHERENCE TO ANTI-RETROVIRAL THERAPY AMONG DISCORDANT COUPLES IN USIGU DIVISION, BONDO SUB- COUNTY, KENYA

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ABSTRACT

Objective: To establish the determinants of adherence to ART among discordant couples in Usigu Division, Bondo sub -County.

Design: A descriptive cross- sectional study.

Setting: Comprehensive Care Clinics within Usigu Division, Bondo sub -County.

Subjects: All HIV infected patients in a discordant relationship enrolled in comprehensive care clinics within Usigu Division.

Results: The total number that were tested were 383, 172 (44.96 %) of the respondents were tested for HIV as a couple before learning that they were in a discordant relationship. Of the respondents (295 / 383), 77 % who were satisfied with health information given by healthcare providers, only 26 % adhered to ART therapy.

Conclusion: Key messages to encourage PrEP use by HIV-negative partners need to be developed and refined as a bridge to sustained ART use by the HIV-positive partners.

INTRODUCTION

Anti-retroviral therapy regimens require at least 70–90 % adherence in order to be effective (1). However, sustaining adherence to ART over the long term requires accurate and consistent monitoring and this is a major challenge to countries in sub-Saharan Africa (1). It is further challenged by various social and clinical obstacles, where inadequate suppression of viral replication by ART were resulting due to poor adherence to therapy, low

potency of the anti-retroviral regimens, viral resistance to anti-retroviral medications and pharmacokinetic interactions causing inadequate drug delivery (1,2).

Anti-retroviral therapy (ART) had shown to delay progression to AIDS, resulting in a greater and more sustained viral and immunologic response and improve survival (3,4). There was a dramatic increase in the number of HIV/AIDS patients on anti-retroviral treatment from just 100,000 persons in 2003 to 3.9 million in 2009 in sub-Saharan Africa

involving close to 40% of those in need of treatment (5). Children and adolescents with HIV often face other life stressors that affect their ability to achieve optimum adherence, including parental HIV disease, poverty and limited or inconsistent social support (6).

For many people living with HIV/AIDS, taking highly active antiretroviral therapy (HAART) was difficult due to various individual and social factors, including the side effects of these medications, HIV/AIDS stigma and poor patient-provider relationships (7). Poor adherence to ART regimens results in incomplete suppression of HIV replication and emergence of resistance to ART that increase the potential for treatment failure, compromising future treatment options and leading to increased risk of mortality (8).

According to the Government about 1,192,000 persons were living with HIV in Kenya with national prevalence of 4.2%. Prevalence among women was at 6.9% compared to men at 4.4% (9). In Kenya, approximately 3.2% of HIV patients were discordant couples, only 0.6% of the discordant couples were consistent to ART (10). In Bondo sub County, the discordant couples were approximated at 1300 and out of this, only 400 (30.8%) were consistent to ART. In Usigu Division the discordant couples were approximated at 584 and out of this, only 160 (27.4%) were consistent to ART (11). The discordant couples were adults above 15 years living with HIV were approximated to be 0.28 million by 2016. Out of this population, the adult need of ART (15 plus years) was approximated to be 0.17m. This means that the Adult ART Coverage was at 61%. Out of these discordant couples, 0.17m equivalent to 61% were females while the rest were males. In addition, it was unfortunate that 39% of the discordant couples were still not adhering to the ARVs where females account for 57%.

Globally, rapid expansion and early access to anti-retroviral treatment (ART) services resulted in a dramatic decrease in HIV-related mortality and mobility (12). Due to inadequate adherence, anti-retroviral agents were not at a

sufficient concentration to suppress HIV replication in infected cells and hence lower the plasma viral load.

MATERIALS AND METHODS

Study Design: A descriptive cross-sectional study utilizing both quantitative and qualitative research methods.

Study Setting: Usigu Division, Bondo sub-County in Siaya County, approximately 65 kilometers west of Kisumu city. Bondo sub-County is divided into three administrative divisions namely; Nyangoma, Usigu and Maranda.

Study Sample: All HIV infected clients in a discordant relationship enrolled in comprehensive care clinics between May and July 2017 within Usigu Division

Sample Size Determination: The sample size calculation was done using Fisher's exact formula. Although in practice it was employed when sample sizes were small, it was valid for all sample sizes. Being that there was no clear prevalence of HIV/AIDS among discordant couples in Usigu Division, this study used a prevalence of 50% to give maximum sample size. Using the Fisher's formula for calculating the sample size,

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

N= Sample size

Z= Standard accuracy,

P= Prevalence of retesting rates.

d= difference in confidence level. Confidence level was the amount of uncertainty which can be tolerated.

Q= 1-p

Applying the formula above, $N = 1.96^2 \times 0.5 \times (1 - 0.5) / 0.05^2$

N= 384.2

Inclusion Criteria: All HIV infected clients in a discordant relationship enrolled in comprehensive care clinics within Usigu Division and were willing to participate in the study. HIV infected partners who were discordant and resided in Usigu division for

three consecutive months and were willing to stay till the end of our research.

Exclusion Criteria: HIV infected partners in a concordant relationship, infected partners in a discordant relationship aged below 18 years. HIV infected partners in a discordant relationship residing outside Usigu Division and were not willing to participate in the study.

Data Analysis: Before processing the responses, the questionnaires were cleaned for completeness and consistency then entered in the computer for analysis. Analysis was done by using basic descriptive statistics using SPSS (version 22) and presented in form of frequencies, mean and odd ratios.

Ethical Consideration: Ethical approval was obtained from the Ethical Research Committee of Jaramogi Oginga Odinga Teaching and Referral Hospital and NACOSTI. The informed consent was shared fully with the respondents in the study. Confidentiality was enhanced by ensuring anonymity of participants.

RESULTS

The distribution of respondents by age showed that 35.06% of the respondents were in age category of below 19 years at 1.56%, 35.06 were between 20 to 29 years, 34.03% were between 30 to 39 years, 20.26% were between 40 to 49 years, 8.57% were between 50 to 59 years and 0.52% were above 60 years.

Table 1
Socio-demographic characteristics among discordant couples

Variables	Frequency (n)	Percentage (%)
Age category (n=385)		
<=19	6	1.56
20-29	134	35.06
30-39	131	34.03
40-49	78	20.26
50-59	33	8.57
>=60	2	0.52
Gender(n=383)		
Male	148	38.64
Female	235	61.92
Marital Status (386)		
Married (Monogamy)	235	60.88
Married (Polygamy)	110	28.05
Separated(divorced)	41	10.62
Religion (n=386)		
Catholic	84	21.76
ACK	89	23.06
Nomiya	75	19.43
PCEA	91	23.58
Other religion	47	12.18
Main source of income (n=383)		
None	83	21.67
Farming	91	23.76
Business	171	44.65
Salaried	37	9.66
Others	1	0.26
Education Level (n=374)		
Primary Incomplete	73	19.52
Primary Completed	141	37.7
Secondary Completed	129	34.49
Still in Primary	1	0.27
Still in Secondary	7	1.87
Tertiary	23	6.15
Monthly Income(n=383)		
No Income	81	21.15
Less than 500	67	17.49
501 to 1500	149	38.90
Above 1500	86	22.45

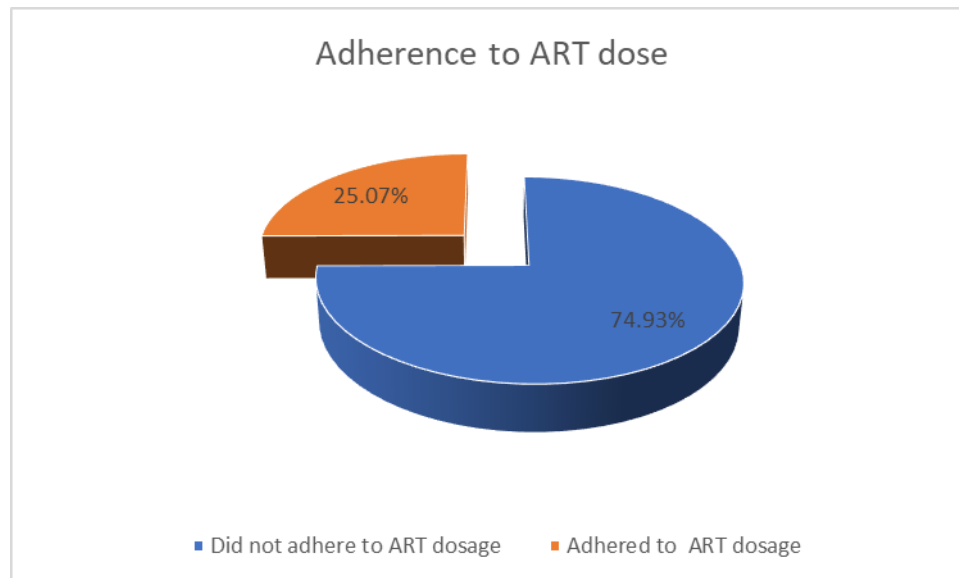


Figure 1: Missed ART dosage

Figure 1 above showed that 25.07% (n=96/383) had never missed ART dose and 74.93% (n=287/383) have ever missed. This showed that only 25.07% had adhered to the ART therapy

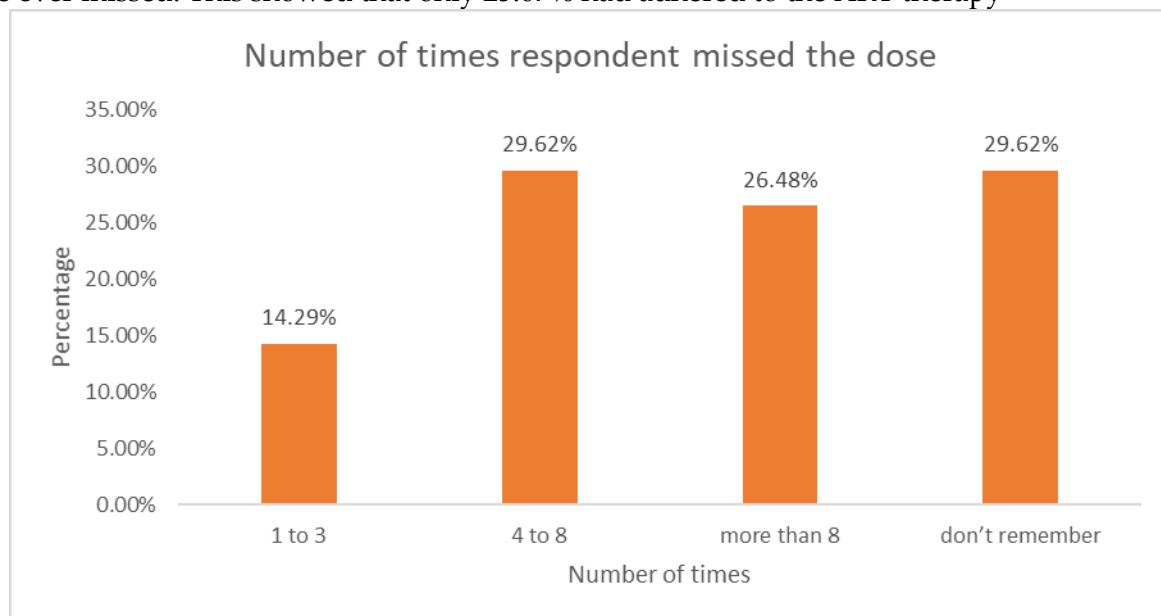


Figure 2: Number of times missed ART dose

Figure 2 above showed the number of times those who reported they have ever missed a dose missed their dosage. It showed that 14.29% (n=41/383) had missed the dose 1 to 3 times, 29.62% (n=85/383) 4 to 8 times, 26.48% (n=76/383) more than 8 times and 29.62% (n=85/383) did not remember the number of times they had missed their ART dose.

Individual factors on HIV testing among discordant couples: Table 2 below showed that 44.96% of the respondents were tested for HIV as a couple before learning that they are in a discordant relationship.

Table 2
Individual factors on HIV testing among discordant couples

Variables	Frequency	
	(n)	Percentage (%)
Tested as couple		
yes	173	44.94
No	212	55.06
where you first tested for HIV		
VCT	44	25.58
Door to door	66	38.37
Health facility	51	29.65
From a health worker	11	6.40
Offered repeat HIV test		
yes	273	70.91
No	112	29.09
Times visited health facility as couple to confirm discordant relationship		
Once	29	10.62
Twice	105	38.46
Thrice	107	39.19
more than 3 times	32	11.72
Opinion on repeat HIV test(n=373)		
Important	288	77.21
not important	85	22.79

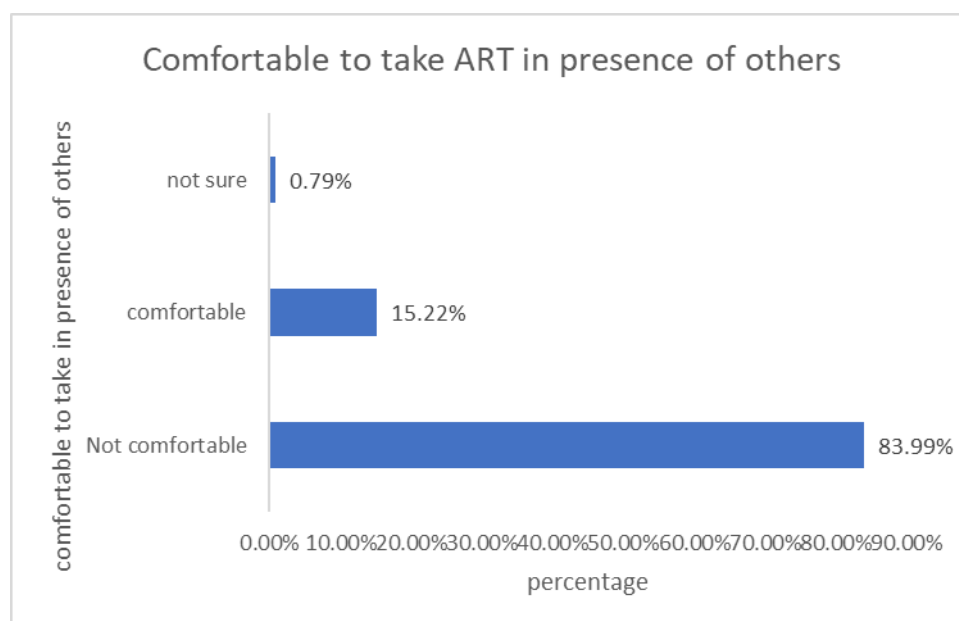


Figure 3 Comfortable to take ART in presence of others

Figure 3 above showed that Respondents who were comfortable taking ART in the presence of other people accounted for 15.22% as compared to 83.99% who were uncomfortable and 0.79% were not sure.

Health provider factors: **Table 3** below showed that out of the 383 respondents 295 (77.0%) said they were satisfied with the health information given by the health providers.

Table 3
Health provider factors

Variables	N	Adhering n (%)	COR (95% CI)	p-value
Satisfied with health information given				
Satisfied	295	78(26.44)	1.47(0.72-2.999)	0.286
Not satisfied	56	11(19.64)	1	
Satisfied with health workers confidentiality of information				
Satisfied	227	52(22.91)	1.43(0.89-2.32)	0.145
Not satisfied	134	40(29.85)	1	
Staff friendliness				
Good	226	59(26.11)	0.97(0.41-2.30)	0.948
Fair	127	29(22.83)	0.81(0.32-2.01)	0.657
Bad	30	8(26.67)	1	
Able to communicate with provider well based on language				
Yes	341	84(24.63)	0.82(0.40-1.67)	0.579
No	42	12(28.57)	1	

Facility-based factors: Results in Table 4 below showed that out of the 383 respondents who participated in the survey 56 walk for more

than 1 hour to the health facility and among these 17.86% adhered to ART therapy.

Table 4
Facility-based factors

Facility-based factors	N	Adhering n (%)	COR (95% CI)	p-value
How long do you take to walk to health facility				
Less than 30 minutes	102	27(26.47)	1	
30 minutes to 1hour	221	58(26.24)	0.98(0.58-1.68)	0.966
More than 1hour	56	10(17.86)	0.60(0.27-1.36)	0.224
satisfied with room privacy				
Satisfied	226	57(25.22)	1.01(0.63-1.61)	0.982
Dissatisfied	154	39(25.32)	1	
Satisfied with no. of hours comprehensive care clinic is open				
Satisfied	204	50(24.51)	1.07(0.67-1.70)	0.786
Dissatisfied	171	44(25.73)	1	
Cleanliness of health facility				
Clean	268	72(26.87)	1.33(0.79-2.25)	0.286
not clean	111	24(21.62)	1	
waiting time before receiving clinic services				
Less than 30 minutes	58	17(29.31)	1	
30 minutes to 1hour	242	57(23.55)	0.74(0.39-1.41)	0.362
More than 1hour	82	21(25.61)	0.83(0.39-1.76)	0.628

Information on ART dose uptake: Results in **Table 5** below showed that out of 381 discordant couples who answered the question have you ever experience side effect when using ART? , 161 had experienced side effects when using ART drugs.

Table 5
Information on ART dose uptake

Variables	n	Adhering n (%)	COR (95% CI)	P value
How long have you been on ART (n=382)				
less than 6 months	36	8(22.22)	1	
6-12 months	136	32(23.53)	1.08(0.45-2.60)	0.869
1 to 3 years	134	31(23.13)	1.05(0.44-2.55)	0.908
more than 3 years	76	25(32.89)	1.72(0.68-4.31)	0.25
Experienced side effects when using ART(n=381)				
yes	161	25(15.53)	0.36(0.23-0.64)	<0.0001*
No	220	7(32.27)	1	

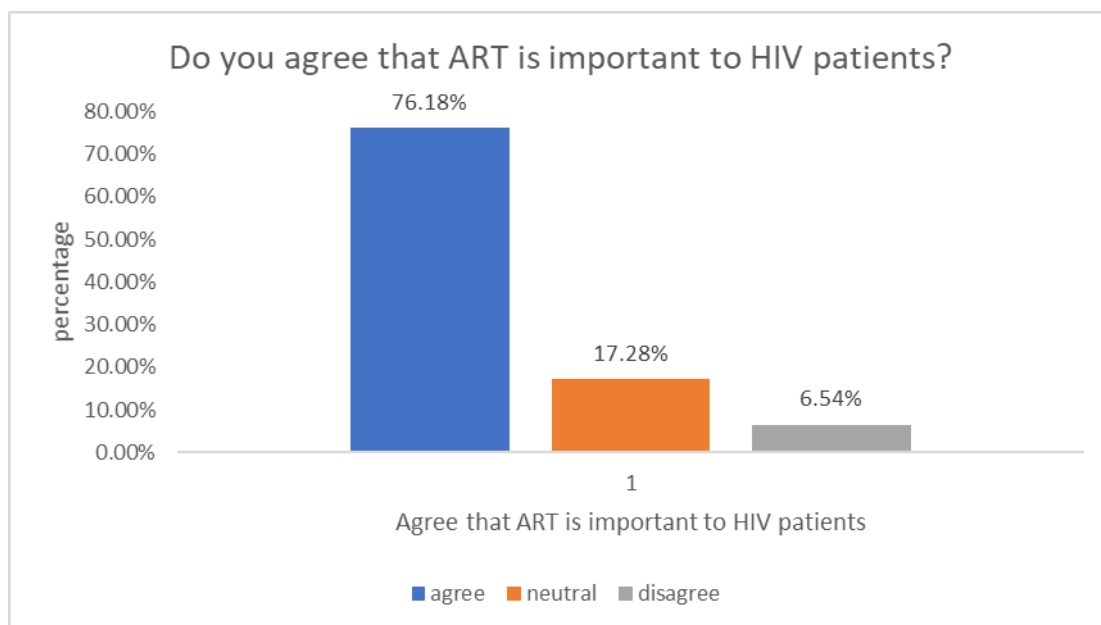


Figure 4: Agree that ART is important

Figure 4 shows that out of the total respondents who participated in the survey 56.44% were accompanied by their partner during their ART session, 76.18% of the respondents agree that ART is important for people infected with HIV while 6.54% disagree.

Adherence sessions on ART therapy: Out of 384 respondents who participated in the study 88.77% (n=340) were taken through adherence sessions before initiating to ART (Table 6).

Table 6
Adherence sessions on ART therapy among discordant couple

Variables	Frequency n	Percentage (%)
Taken through adherence session		
Yes	340	88.77
No	25	6.53
Don't remember	18	4.7
Number of adherence sessions made		
Once to twice	96	28.24
Thrice	152	44.71
Four times or more	91	26.76
Don't Remember	1	0.29
Did partner accompany during ART session		
yes	206	56.44
No	159	43.56

Table 7 below showed that Out of the 383 respondents 235 were female and among them 29.79% adhered to ART therapy as compared to 17.69% from the total 147 males in the study.

Table 7

Individual-level determinants of adherence to ART among discordant couples

Individual factors					
Variables	N	Adhering (%)	n	COR (95% CI)	P VALUE
Age category					
25 years and below	74	15(20.27)		0.72(0.37-1.42)	0.347
26 to 35 years	146	39(26.71)		1.04(0.63-1.73)	0.876
36 years and above	162	42(25.93)		1	
Gender					
Male	147	26(17.69)		1	
Female	235	70(29.79)		1.97(1.19-3.28)	0.009*
Marital status					
Divorced/separated	41	12(29.27)		1	
Married	341	84(24.63)		0.79(0.39-1.62)	0.519
Education level					
Primary and below	215	50(23.26)		1	
Secondary and above	158	46(29.11)		1.35(0.84-2.16)	0.202
Main source of income					
No Income	82	15(18.29)		1	
Farming	91	21(23.08)		1.34(0.63-2.81)	0.440
Business	171	41(23.98)		1.41(0.73-2.73)	0.309
Employment	37	19(51.35)		4.71(2.01-11.07)	<0.0001
Monthly Income					
No Income	80	15(18.75)		1	
Less than 1500	216	48(22.22)		1.23(0.65-2.36)	0.517
Above 1500	86	33(38.37)		2.70(1.33-5.49)	0.006

DISCUSSION

Since the emergence of HIV epidemic various methods have been put in place to help prevent and control the spread. Strict adherence to ART therapy is a key method of reducing HIV risk and improved health status of the infected. A study done in India on ART adherence indicated that most patients (74.3%) adhered to ART and minority did not (13). This however differs with our study which reported minority 25.07% adhered to ART therapy and the majority 74.93% did not. In our study the

researcher found out that most patients 83.99% found it uncomfortable taking ARV in presence of other people, having experienced side effects was an added concern as to why most discordant couples did not adhere to ART therapy. The researcher found out that of 161 patients who had experienced side effects when using the drugs only 15.53% adhered to ART therapy and were 0.36 times less likely to adhere to ART therapy than those who did not experience side effects (COR=0.36,95%CI=0.23-0.64),p-value=<0.0001). A study by Hardon *et al.*, on challenges to ART therapy showed

similar results stating that patients found it difficult taking drugs in presence of people whom they had not disclosed their HIV status to and that side effect was a concern on lack of proper adherence to ART(14). The majority of the respondents in this study reported that they had missed taking their ART dose more than 8 times and only 14.29% had missed taking their ART dose 1 to 3 times. These results were similar to a study which reported that patients who took <80% of their doses were 40% which was equivalent to the majority of patients missing some of their doses (15).

From our study out of 235 females who participated in the study, 29.79% adhered to ART therapy, women were found to be 1.97 times more likely to adhere to ART therapy as compared to males (COR=1.97,95% CI=1.19-3.28, p value=0.009). In another study on gender differences in factors associated to ART adherence it was reported that men had worse adherence to ART therapy uptake which accounted for 27% lower than female (16). Gordillo, *et al* reported that in regards to age category patients with ages between 32 to 35 years had better adherence to ART than other age groups, these results relate to our study which found that among discordant couples who took part in this study, those aged between 32 to 36 years had better adherence (17).

Among the participants in our study majority with the main source of income being salaried jobs, 51.35% adhered to ART therapy. In a study conducted in rural Uganda, poverty was one of the barriers to adherence to ART therapy (18).

System level-factors include both health provider factors and facility-based factors. The health provider factors include, the attitude of the health facility staff and how they relate with the discordant couple. All discordant couples were expected to visit the health facility frequently for the ARV dosage. We sought to find how the system-level factors affect how discordant couples adhere to the ART. Previous literature on effects of system-level factors indicated that factors like lack of confidentiality

and privacy of rooms at the health facility, poor relationship between health facility staff and the HIV infected patients influence (19).

According to Roberts, relationship between HIV infected patients and their health care providers was important and should be an absolute priority (20). The attitude of health providers towards HIV infected patients was reported to be a barrier to adherence on ART therapy Abel and Painter, (21).

Under facility-based factors, this study's results concurs with Hodgson *et al.*, who reported that access to health facility services was a barrier to adherence to ART therapy among people infected with HIV, this includes long waiting hours at the facility and distance to the health facility(22). Joining of support groups was for unifying and strengthening discordant couples both financially and emotionally was found to be an effective way and of great importance in association to ART adherence according to a study carried out in Zambia on barriers to adherence to ART (23). In our study similar results were reported whereby out of 142 respondents who were members of discordant couple support groups 38.73% adhered to ART therapy and these were 3.08 times more likely to adhere to ART therapy.(COR=3.08,95% CI=1.91-4.96,p value<0.0001).Also from the study it was reported that those who think these support groups help were 2.01 times more likely to adhere to ART therapy(COR= 2.01,95% CI=1.25-3.21,p value= 0.004). 32.02% of those who think these support groups help adhered to ART therapy.

In a study on association of stigma to adherence to ART conducted by Sayles *et al* found that those who reported the association of stigma to adherence to ART therapy (OR=2.45, 95% CI=1.23-4.91), stigma was not statistically significant to ART adherence (24). This study's results concur with other findings stating that stigma and fear of disclosure of HIV status was not statistically significant (p value> 0.05) to adherence to ART among discordant couples. Out of 225 respondents

who said that stigma was a barrier to joining support groups 27.11% adhered to ART therapy (COR=0.64,95% CI=0.40-1.02).

CONCLUSION

In this study the process for couples to understand and accept their HIV sero-discordant status was complex, requiring time and message repetition during multiple counselling sessions. When couples learned that they were in a sero-discordant relationship, they were often confused and unsure if their relationship was sustainable. Client-centered counseling supports the couple by giving them a non-stigmatizing space to understand HIV sero-discordance, explore how their different HIV status affected their commitment to each other and the future of their relationship, and identify barriers and facilitators to adopting HIV prevention behaviors.

Couples-based counselling incorporating both partners proved beneficial for HIV prevention discussions, including conversations about ART use by the positive partner and PrEP use by the HIV-negative partner.

RECOMMENDATION

We recommend capacity building for health workers on how to effectively counsel couples who are in discordant relationship. Develop counselling framework and accompanying messages in all patient support centers to be adopted during counselling sessions of discordant couples.

Adopt reminders of phone calls to all comprehensive HIV care facilities to boost adherence.

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