



**Journal of  
AIDS and HIV Research**

**Volume 9 Number 3 March 2017**

**ISSN 2141-2359**



*Academic  
Journals*

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### ARTICLES

- Determinant factors of HIV positive status disclosure among adults in Axum Health Facilities, Northern Ethiopia: Implication on treatment adherence** 52  
Haileselasie Berhane Alema, Kebede Haile Misgina and Meresa Gebremedhin Weldu
- Cross border migration enhancing reproductive vulnerability of the left behind women and their coping mechanism through self help groups: A study of Bangladesh** 60  
S. K. Singh and A. Siddhanta
- Factors affecting adherence to antiretroviral treatment among patients living with HIV/AIDS, in Bale zone, south eastern Ethiopia** 67  
Muktar Beshir and Adamu Tesfaye

*Full Length Research Paper*

## Determinant factors of HIV positive status disclosure among adults in Axum Health Facilities, Northern Ethiopia: Implication on treatment adherence

Haileselasie Berhane Alema<sup>1\*</sup>, Kebede Haile Misgina<sup>2</sup> and Meresa Gebremedhin Weldu<sup>2</sup>

<sup>1</sup>Department of Public Health, Health Education and Promotion Team, College of Health of Sciences, Aksum University, Axum, Ethiopia.

<sup>2</sup>Department of Public Health, Health Service Management and Health Policy Team, College of Health of Sciences, Aksum University, Axum, Ethiopia.

Received 1 November, 2016; Accepted 28 December, 2016

Disclosure of HIV positive status to sexual partners, friends or relatives is crucial for HIV prevention and care implementation strategies. Hence, it is important to explore factors determining individuals to disclose their HIV positive status in order to achieve a goal of zero new HIV infection. Facility based mixed cross-sectional study was conducted from July to August, 2013 among 361 HIV positive adults attending Axum Health Facilities. They were selected through systematic random sampling. Data were collected by trained counselors and ART nurses and then entered into SPSS version 20 databases. Bivariate and multivariable logistic regression models were used to identify predictors of HIV positive status disclosure at 95% confidence intervals and p-value of less than 0.05. Among 361 respondents, 289 disclosed their HIV status to someone and 151(41.8%) to intimate partners. In the multivariate logistic regression analysis, variables significantly associated at p-value <0.05 were married; knowing partner's HIV status and membership in an HIV-Support Group were positive predictors of disclosure. These findings were supported by qualitative study in which fear of discrimination, fear of breaking confidentiality and fear of families make them to conceal their status. The rate of HIV positive status disclosure among HIV positive adults has remained low. Marital status of respondents, knowledge of partners' HIV status and being member in Anti- HIV/AIDS Association were identified as predictors of HIV positive status disclosure. Addressing the issues of disclosure was recommended to encourage free disclosure and coping with negative reactions, which is a crucial way for adherence to treatment.

**Key words:** Adult, Axum health facilities, Ethiopia, HIV positive disclosure.

### INTRODUCTION

Disclosing one's HIV status to a sexual partner means talking honestly about sexual orientation, possible drug

use and results of tests. These are often taboo subjects that are difficult to talk about openly and honestly in most

\*Corresponding author. E-mail: haileselasieb@yahoo.com. Tel: +251)914006933.

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societies (Mbonu et al., 2011).

Disclosure is something that every person living with HIV experiences and struggles with. The process is complex and fraught with mixed emotions and the outcomes can be unpredictable and difficult to handle. Despite the difficulty disclosure might pose, non-disclosure has detrimental impacts on the person living with HIV and is associated with personal distress, loneliness and social isolation (Rapid Response Service, 2013).

Self-disclosure of sensitive information is generally thought to have beneficial effects on an individual's health, by lowering stress, and leading to better psychological health. Disclosure may motivate sexual partners to seek testing, change behavior and ultimately decrease transmission of HIV. The exchange of information about one's HIV status with a prospective partner is associated with safer sexual practices (Legason, 2012). Failure to disclose HIV positive status could lead to unsafe sexual practice which in turn increases the risk of infecting a sexual partner, and may lead to couples re-infection with new strains and transmission to child. This may result in lack of getting access to care and support, loss of opportunities to prevent new infections (Kassaye et al., 2005).

Disclosure offers a number of important benefits to the infected individual and to the general public. Disclosure of HIV test results to sexual partners leads to less anxiety and increased social support among many women. Disclosure is also crucial to the individual's health in today's context of accelerated highly active anti-retroviral treatment use, to gain social and emotional support, to ensure proper adherence to treatment and better therapeutic efficacy (WHO, 2012).

The outcomes of HIV disclosure can be stressful but also rewarding. There is not a 'rule of thumb' for when outcomes or consequences might be positive or negative. But overall, evidence suggests positive reactions to disclosure outweigh negative ones. For instant studies in Hawasa reveals that following disclosure, partner reaction was positive for 40.7% and for 33.3% of the women with regular partner and non-regular partner respectively. It was negative for 59.3% of the women with regular partner and for 66.7% of the women with non-regular partner (Gari et al., 2010).

In most studies from both developing and developed country settings, HIV status disclosure to sexual partners was associated with positive outcomes including increased social support, acceptance, kindness, decreased anxiety and depression, and strengthening of relationships. While fear of negative outcomes was a major reported barrier to HIV status disclosure, most individuals who chose to disclose reported experiencing positive social outcomes as a result of their disclosure including support and understanding from partners (WHO document summary, 2012).

Though information pertaining to HIV positive status disclosure is needed, there is little knowledge is known in

Ethiopia and the study conducted in the study area lacks qualitative information from disclosed & non disclosed adults (Haileselesie et al., 2015).

Therefore, this study aims to explore determinants of HIV positive status disclosure and associated factors among HIV positive adults which will help to examine relevant information that decision makers and managers can use to address the problem and in turn will contribute a lot toward achieving a goal "zero new infection".

## MATERIALS AND METHODS

### Study setting

Institution based mixed cross-sectional study was carried out in Axum Health Facilities. Axum is located in the Central zone of Tigray, Northern part of Ethiopia. It is located 235 km away from Mekelle, the capital of Tigray and 1030 km north of Addis Ababa, the Federal Capital of Ethiopia. Aksum is situated in the highlands of Northern Ethiopia; it symbolizes the wealth and importance of the civilization of the ancient Aksumite kingdom, which lasted from the 1st to the 8th centuries AD. It was the original capital of the kingdom of Axum which dates back some 2,000 years to when it was the hub of the Axumite Empire. In the town there are one General Hospital (Axum St. Marry Hospital) and two Health Centers (Millennium and Axum Health Centers). The hospital provides medical, surgical, gynecological obstetrics and pediatrics care. Currently above 3558 people living with HIV/AIDS (PHAs) are routinely utilizing the hospital services with 2560 Pre Art and 998 ART. The Axum Health Center has commenced ART service in 2007 and provides a service for 156 pre ART and 142 ART clients (Axum woreda health office, 2012).

### Sample size and sampling techniques

Sample size was determined by using a single population proportion formula which considers the proportion of HIV positive status result disclosure to sexual partner is 69% (Deribe, 2005), with marginal error of 5% at 95% confidence interval. Then by adding 10% non-response rate, the final sample size was calculated to be 362. A systematic random sampling procedure was used to select eligible participants from each ART unit. Every "5<sup>th</sup>" HIV positive adults who came for the ART follow-up was selected. Hence, every 5<sup>th</sup> individuals who came to receive pre ART or ART service was selected for the interview until the required sample size was obtained.

Qualitative in-depth interviews were conducted among 12 HIV positive individuals to explore personal live experiences on HIV positive status disclosure.

### Operational definitions

HIV positive status disclosure: The act of informing HIV positive status to any one (sexual partner, parents, families or friends).

Positive outcome of disclosure: are outcomes which facilitate or encourage an individual to disclose HIV positive status.

Negative outcomes of disclosure: are those outcomes (such as stigma and rejection, divorce, economic dependence) which lead an individual to conceal HIV positive status.

### Data collection and analysis

Data were collected by structured and pre-tested interviewer

administered questionnaire which was adopted after reviewing literature relevant to the objective of the research. The questionnaire was prepared in English first, translated into the local language (Tigreña) and back to English to assure consistency. The data were collected by trained counselor and ART nurses.

Data were entered into SPSS version 20 statistical software for analysis. Descriptive statistics were used to determine the magnitude of HIV positive status disclosure and reasons for disclosing HIV positive status. Odds ratios at 95% confidence intervals and P- value 0.05 were used to determine the significance and degree of association between dependent and independent variables. Multiple logistic regression analysis was carried out to see independent effect of each variable on the outcome.

### Qualitative study

Participants were explained about the overall objective of the study prior to interview. Interviewees who participated in the qualitative component of the study were asked a series of broad, open-ended questions related to their experiences of disclosure by unstructured interviewing techniques such as probing. The interviewer encouraged respondents to explore what the experience was like for them. For example, particular attention was paid to discussions of how they told their partners of their positive status, what their concerns were, exactly how the partner responded, and how their relationship changed following disclosure.

In-depth interviews were audio recorded and then transcribed and then translated from Tigreña to English by verbatim. The transcript information was coded by investigators using thematic codes consistent with the study objective. Specific codes related to the object of interest were then selected and to find illustrative quotes to triangulate on specific findings from the quantitative findings.

### Data quality assurance

The questionnaire was pre-tested in 20 HIV positive adults at Adwa Hospital two weeks before the actual data collection. Training was given for data collectors, supervisors and for three consecutive days. The training mainly dealt with the purpose of the study, handling ethical issues during data collection, and the method of data collection using the structured questionnaire. Data collectors were instructed to check the completeness of each questionnaire at the end of each interview. Supervisors rechecked for completeness of the questionnaire on daily basis of submission. Qualitative interviews were conducted in comfortable and sound proof place which sound records make clear. Deep insight of live experiences was probed using unstructured questionnaire.

### Ethical consideration

Ethical clearance was obtained from Aksum University, College of Medicine and Health Science Institutional Ethical Review Committee. Official letter of support was also written to Tigray Region Health Bureau then letter of co-operation was obtained from the bureau to respected hospital and woreda health offices.

Verbal informed consent was obtained from each participant after by explaining the purpose of the study and reading out the consent form before the interview. All information provided will be kept confidential and there was no link to their identity as no names appeared on any form to assure the confidentiality of the participants.

## RESULTS

A total of 361 HIV positive adults were interviewed and the response rate was 99.7%. More than half (57%) of the respondents were females. A majority of the respondents were Orthodox Christian 316 (87.5%) and great majority 352 (97.5%) of them were Tigrian in Ethnicity. The age of respondents ranged from 19 – 67 years with mean (SD) age of 36 ( $\pm$  8.97) years. Three hundred twenty eight (90.9%) were residences of urban area and 177(49%) of them were married. (Table 1)

### HIV positive status disclosure

Among the 361 participants, 289 (80.1%) of them disclosed their HIV positive status to somebody; while 151(41.8%) disclosed to their sexual partner and 127 (35.2%) disclosed to their parents. Among HIV positive adults who have a sexual partner, 169 (90.8%) disclosed their HIV positive status to their sexual partner (Figure 1).

Out of 289 respondents who disclosed their HIV positive status; 202 (67%) disclosed within one month, 39 (13.4%) disclosed between 1 and 6 months and 48 (16.6%) disclosed after 6 months of being notified their HIV positive result. The common reasons to disclose their HIV positive status was not to transmit HIV to partners (233), to make adherence of ART therapy (206) and to get psychological and financial support from partner or families (153).

This result was supported by qualitative interviewed respondents developed into two themes. The in-depth interview was conducted among 12 HIV positive individuals who were disclosed. The identified themes were developed under which others are included:

#### *Medical illness related*

The qualitative interviews shed light on these experiences: Most respondents were shy and anxious after the diagnosis of their illness. Several said they were constantly depressed that people would find out and in some instances this led to self-imposed isolation.

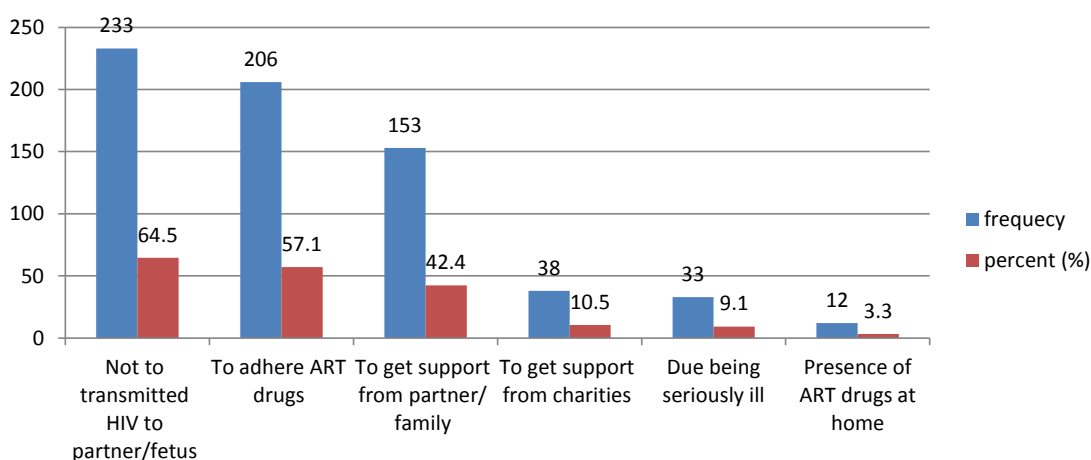
*A 32 years old male who disclosed his status claimed: "I was diagnosed first with HIV in the ward but was treated for Tuberculosis. I was shy and feared my wife would blame and leave me alone. But she gave me support and care and lastly was willing to be tested. The result was similar. We are now living together..."*

*Another 35 years old male expressed: "I have had cough and fever; I lost my energy and weight. My mother took me to hospital and the nurse asked me to do HIV test and then the result was positive. After getting treatment I then told to my partner that I am HIV positive and she also tested and found that she is HIV positive. She decided to stay away and left without making any divorce process..."*



**Table 1.** Socio-demographic characteristics of respondents (N=361) among HIV positive adults in Axum Health Facilities, Tigray, Ethiopia, August 2013.

| Variable                          | Categories               | Frequency (Percent) |
|-----------------------------------|--------------------------|---------------------|
| Sex                               | Male                     | 153(42.4)           |
|                                   | Female                   | 208(57.6)           |
| Religious status                  | Orthodox                 | 316(87.5)           |
|                                   | Muslim                   | 39(10.8)            |
|                                   | Protestant               | 6(1.7)              |
| Educational status of respondents | Unable to read and write | 104(28.8)           |
|                                   | Primary                  | 162(44.9)           |
|                                   | Secondary                | 66(18.3)            |
|                                   | Higher education         | 29(8.0)             |
| Ethnic group of respondents       | Tigre                    | 352(97.5)           |
|                                   | Amhara                   | 9(2.5)              |
| Residence of respondents          | Urban                    | 328(90.5)           |
|                                   | Rural                    | 33(9.1)             |
| Marital status of respondents     | Single                   | 51(14.1)            |
|                                   | Married                  | 177(49.0)           |
|                                   | Divorced                 | 83(23.0)            |
|                                   | Widowed                  | 50(13.9)            |

**Figure 1.** Reasons of HIV positive status disclosure to partner/parent/families among HIV positive adults in Axum health facilities, Tigray, Ethiopia 2013.

### Pregnancy condition

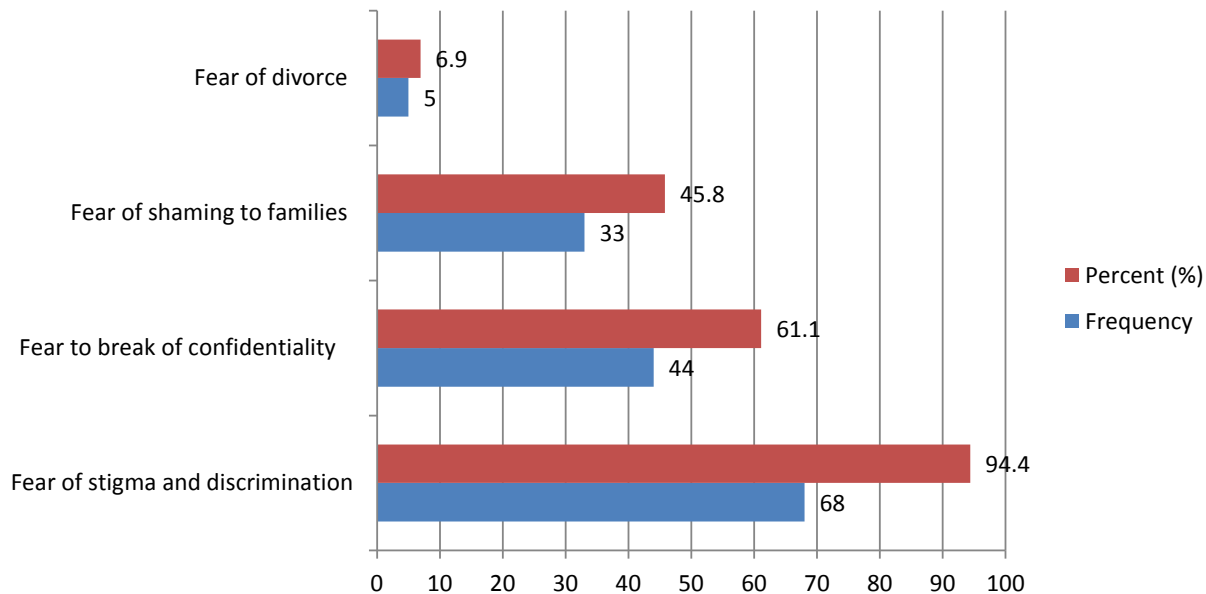
Some women found out they were HIV positive during ante natal programme.

*A 34 years old female stated "I was pregnant and came to the hospital for ANC follow up. The nurse asked me to do HIV test; the result was positive. I did not reveal my result to my husband because he might get annoyed and beat me. He can divorce me while I am pregnant, leaving all the responsibilities for me."*

### Reasons for not disclosing their HIV positive status

Reasons for non-disclosure among those respondents who did not disclose their HIV positive results to their partner/parents/family (n = 72) were "fear of stigma and discrimination (94.4%), fear of breaching confidentiality (61.1%), being shy of families (45.8%) (Figure 2).

This finding was supported by qualitative findings on the reasons that make them not to disclose their HIV positive status, which included fear of partner's negative reaction and other consequences.



**Figure 2.** Reasons not to disclose HIV positive status to partner/parent/families among HIV positive adults in Axum health facilities, Tigray, Ethiopia 2013

**Table 2.** The outcomes of HIV positive status disclosure among HIV positive adults in Axum Health Facilities, Tigray, Ethiopia, 2013.

| Variable                    | Categories           | Frequency (Percent) |
|-----------------------------|----------------------|---------------------|
| Positive outcomes ( n= 270) | Reassurance          | 216(59.8)           |
|                             | Increase support     | 48(13.3)            |
|                             | Neutral              | 4(1.1)              |
|                             | Decided to test      | 2(0.6)              |
| Negative outcomes (n= 19)   | Stigma and rejection | 9(2.5)              |
|                             | Abandonments         | 7(1.9)              |
|                             | Blame                | 2(0.6)              |
|                             | Anger                | 1(0.3)              |
|                             |                      |                     |

A 26 year young female says, " I was not expecting positive result and confused when the nurse told me. The first thing that came to my mind was anxiety and humiliation, what will be my husband reaction if I disclose my result? So I prefer to conceal my result for long time....."

Similarly a 20 years lady claimed, "I did not disclose my HIV status to my husband and families because I'm afraid he will beat and divorce me, even my families will discriminate and reject me .I am economically dependent on my husband. So if I disclose my HIV positive result my life will be complicated. ..."

#### Outcomes of HIV positive status disclosure

Following disclosure of HIV positive result, partner,

family, or parent reaction was positive for 270/361 (74.7%) where as it was negative reaction for 19 (5.3%). Of 459 individuals who anticipated supportive outcomes, 96.3% (442/ 459) received support and reassurance from their partner after disclosure. However there was paradox response between anticipated and actual outcomes of disclosure. Of 127 respondents who anticipated a negative reaction from their partners, only 17 (13.4%) faced negative reaction of disclosure but the rest (86.6%) received positive reaction such as support and understanding from their partner (Table 2).

#### Factors associated with HIV positive status disclosure

On bivariate analysis marital status of respondents, type of sexual partner, ART started, educational status of

**Table 3.** Factors independently associated with HIV-positive result disclosure among HIV-positive adults in Axum Health Facilities, Tigray, Ethiopia, 2013.

| Variable                          | Categories                 | Disclosure status |    | COR (95%, CI)       | AOR (95%, CI)         |
|-----------------------------------|----------------------------|-------------------|----|---------------------|-----------------------|
|                                   |                            | Yes               | No |                     |                       |
| Marital status                    | Unmarried                  | 235               | 44 | 2.77 (1.58 - 4.84)  | 3.71(1.21 - 11.39) ** |
|                                   | Married                    | 54                | 28 | 1.00                | 1.00                  |
| Use of condom                     | Yes                        | 143               | 15 | 3.72(2.02- 6.88)    | 0.40 (0.06 - 2.60)    |
|                                   | No                         | 146               | 57 | 1.00                | 1.00                  |
| ART started                       | Yes                        | 270               | 61 | 2.56 (1.16 - 5.66)  | 2.81 (0.59 - 13.42)   |
|                                   | No                         | 19                | 11 | 1.00                | 1.00                  |
| Discussion about HIV before test  | Yes                        | 76                | 6  | 3.93(1.64 - 9.42)   | 1.42 (0.38 - 5.33)    |
|                                   | No                         | 213               | 66 | 1.00                | 1.00                  |
| Types of partnership              | Regular sexual partner     | 128               | 9  | 2.77(1.01 – 7.66)   | 0.92 (0.13 -6.62)     |
|                                   | Non regular sexual partner | 41                | 8  | 1.00                | 1.00                  |
| Knowledge of partner's HIV status | Yes                        | 152               | 11 | 4.87 (1.60 - 14.85) | 3.43 (1.02 - 11.54)** |
|                                   | No                         | 17                | 6  | 1.00                | 1.00                  |
| Sexual Partner's HIV status       | Positive                   | 125               | 8  | 3.2 (1.16 – 8.796)  | 1.31(0.30 – 5.77)     |
|                                   | Negative                   | 44                | 9  | 1.00                | 1.00                  |
| Membership of HIV association     | Yes                        | 109               | 7  | 5.62 (2.49 - 12.71) | 4.81 (1.01 - 23.05)** |
|                                   | No                         | 180               | 65 | 1.00                | 1.00                  |

\*\* Variables associated with  $p < 0.05$ .

sexual partner, knowledge of partner's HIV status, sexual partner's HIV status, discussion about HIV/AIDS prior test, being membership in Anti-HIV Association and use of condom were significantly associated with HIV positive status disclosure. After adjusting variables in the multivariate logistic regression analysis variables significant at  $p$ -value  $< 0.05$  were being married, knowing partner's HIV status and membership in an HIV Support Group.

Unmarried respondents were 3.7 times more likely to disclose their HIV positive status compared to the married (AOR = 3.70; 95% CI; 1.21 – 11.39). Respondents who knew their sexual partner's HIV status were 3.4 times more

likely to disclose their HIV positive status as compared to those who did not know their partner's HIV status (AOR= 3.43; 95% CI: 1.02–11.54). Participants who were members in Anti-AIDS association were 4.8 times more likely to disclose their HIV positive result compared to those not in the Anti- AIDS Association (AOR = 4.81; 95% CI, 1.01 - 23.05) (Table 3).

## DISCUSSION

HIV positive result disclosure also prevents HIV infection of the sexual partner with a discordant sero-status. For instance, the sexual partners of

30 (16.1%) of the respondents in this study were HIV negative.

The rate of HIV positive status disclosure to at least one person was 80.1%. The finding is lower than that found in the study done in Hawasa Referral Hospital, Ethiopia, which was 92.2% (Gari et al., 2010); in Jimma University Referral Hospital, Ethiopia, it was 94.5% (Deribe et al., 2008) and in Kemissie District, north east Ethiopia, it was 93.1% (Seid et al., 2012). The reason could be the study subjects from Jimma and Hawasa University Hospitals might get adequate HIV related information more easily than those in Axum Health Facilities as they are teaching hospitals which are equipped with skilled

man power. Besides, it might be due to socio - demographic difference of the study subjects.

On other hand, the rate of HIV positive status disclosure in this study was higher than that reported in Mettu and Gore towns (69%) (Kassaye et al., 2005). The possible explanation for this could be due to the reason that ART service provision was not fully implemented national wide and the patients were highly stigmatized and discriminated due to the disease. So they prefer to conceal their status. Seventy two (19.9%) of the respondents did not disclose their HIV positive status to anyone. Some of the reasons for non - disclosure based on this study were fear of stigma and rejection, fear of breach of confidentiality, shyness, and fear of divorce. These results were consistent with studies carried out elsewhere in Ethiopia (Erku et al., 2012; Gari et al., 2010; Seid et al., 2012; Erku et al., 2012). These reasons were also similar to studies done in different developing countries like Uganda, South Africa, Tanzania and Djibouti (Antelman et al., 2001; Kadowa and Nuwaha, 2009; Makin et al., 2008; Kajura, 2010).

In this study, it was observed that marital status of the respondents, knowledge of partners HIV status and membership in the Anti- HIV/AIDS Association were independently associated with disclosure of HIV positive Status. This result is consistent with studies done elsewhere (WHO, 2012; Deribe et al., 2008; Seid et al., 2012).

Unmarried respondents were more likely to disclose their HIV positive status compared to the married ones. This finding was contrary with other studies done in Hawasa (Gari et al., 2010). This might be due to the fact that unmarried individuals relatively feel free from parental control.

Knowledge of partner's HIV status was found to be a predictor of HIV positive status disclosure, which is 3.43 times more likely to disclose their HIV status compared to those who did not know their partners' HIV status. This agrees with what others reported (Gari et al., 2010; Seid et al., 2012). A majority of the respondents (81.6%) had similar HIV positive status with their partner. This might encourage them to have open communication and freedom to disclose. Partner's communication among themselves concerning their HIV status is beneficial. Health service providers can address sexual partners on the benefits of disclosing their HIV positive status to one another.

Respondents who were members in Anti- HIV/AIDS Association were more likely to disclose their HIV status as compared to non-members. This finding was in line with the study done in Kemissie District (Seid et al., 2012), suggesting that individuals who are members have frequent discussion related to HIV and they are the first to bring behavioral changes. As a result individuals were able to overcome feelings of shame which facilitated disclosure of HIV positive status.

Most of the study participants (74.7%) experienced

positive outcomes after disclosure. This shows that helping individuals to disclose will help them get important services to improve their quality of life contrary to its negative outcomes. In this study, 19 (5.3%) of the respondents reported negative outcome after disclosure, which is similar to studies conducted in Jimma (5.2%) (Deribe et al., 2008), but lower than studies in Mettu and Gore towns, which reported 24.1% (Kassaye et al., 2005).

The qualitative part of the information revealed that most respondents disclose their HIV status due to serious medical illness that make them to visit health facility for diagnosis and get admitted after being counseled by health workers. Meanwhile pregnancy was also an event to HIV positive status determined and disclosure is facilitated for the fetus' survival. Some respondents did not disclose their HIV status due to fear of the future consequence such as fear of being beating, divorce, discrimination and rejection.

## Conclusion

The extent of HIV positive status disclosure among HIV positive adults has remained low. Moreover factors that predictors of disclosure of HIV positive status were marital status of respondents, knowledge of partner's HIV status, and membership in an Anti- AIDS Association. Most of the participants experienced positive outcomes of HIV positive status disclosure. Adherence and ART nurse counselors should give due attention to married people. Couples' counseling should be encouraged for them to disclose without fear and anxiety. Participation of HIV positive individuals in Anti - HIV/AIDS Associations should be strengthened in societies.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

## ACKNOWLEDGEMENTS

We would like to thank Bahir Dar University for its financial aid and Aksum University for providing ethical issue for this research. Our gratitude goes to supervisors, data collectors, and respondents who participated in this study. Finally our gratitude goes to Professor Elizabeth A. Fisher for her kindly editing of the manuscript.

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*Full Length Research Paper*

# Cross border migration enhancing reproductive vulnerability of the left behind women and their coping mechanism through self help groups: A study of Bangladesh

S. K. Singh<sup>1</sup> and A. Siddhanta<sup>2\*</sup>

<sup>1</sup>Department of Mathematical Demography and Statistics International Institute for Population Sciences Govandi Station Road, Deonar, Mumbai-400088 India.

<sup>2</sup>International Institute for Population Sciences Govandi Station Road, Deonar, Mumbai-400088 India.

Received 12 August, 2016; Accepted 10 November, 2016

This study analyzes the range of vulnerabilities among the left behind women (LBW) and their coping strategies primarily focusing on Self Help Groups (SHGs). The basic data used in this paper were collected as part of the Mid Term Review of a cross country intervention on Enhancing Mobile Populations' Access to HIV&AIDS Services, Information and Support (EMPHASIS) in South Asia in 2012. The reproductive vulnerabilities of the left behind women like sexually transmitted infections (STIs), reproductive tract infections (RTIs), human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) are primarily due to the risky sexual behaviour of husbands at destination. The other vulnerabilities faced by the left behind women are the lack of capacity in treatment seeking, physical harassments and social vulnerabilities with the blind administrative response. The self-help groups have proved to be a boon in the life of these left behind women in Bangladesh and have also moulded their lives for beneficence. Compared to their previous lives without the association of self-help groups, left behind women can now address their vulnerability to HIV/AIDS and impart this knowledge to their husband and ask them to abstain from sex in India or to have safe sex with female sex workers (FSWs). Self help groups also have impacted their social and financial positions reducing social harassment. The mobility of the left behind women has increased in and outside community improving their treatment seeking behaviour. They have now become literate about their sexual and reproductive rights and negotiate with their husbands to use condoms when they come back.

**Key words:** Left behind women, cross border migration, Bangladesh, reproductive vulnerability, HIV & AIDS.

## INTRODUCTION

Men crossing borders for employment, business, and better opportunities is a natural phenomenon witnessed

across developed and developing countries all over the world, much beyond documented and legal migration.

\*Corresponding author. E-mail: [ankita.siddhanta@gmail.com](mailto:ankita.siddhanta@gmail.com). Tel: 9869902449/8108725707.

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Being the most developed of all South Asian countries; India has been the most sought destination by immigrants from neighbouring countries. India has a 4097 km border with Bangladesh along West Bengal, Assam, Meghalaya, and Tripura. Of this, only around 1500 km is fenced, leaving a major portion of the border porous and easy for in-migration. A large influx of undocumented migration occurs from Bangladesh to India, leaving behind their wives and families. Migrant Bangladeshis are more concentrated in West Bengal and Assam. Geographical contiguity, socio-cultural affinity, the kinship factor and historical reasons have left the Indo-Bangladesh and Indo-Nepal borders vulnerable to migration (Behera, 2011). Nepal and India have an 'open-border' policy adopted by both Governments through the 1950 Bilateral Peace and Friendship Treaty allowing free movement of people and goods between the two nations, but for Bangladeshis, however, official migration to India is fraught with problems and most migrants to India are unauthorised since there is no such treaty between India and Bangladesh (Samuels and Wagle, 2011).

Census (2001) reported that 5.1 million persons in India as migrant by last residence from across the International border. Approximately 3 million out of the total immigrants in India comprises of Bangladeshi Migrants. The exodus from Bangladesh into India has, for the first time, been termed by the United Nations as "the single largest bilateral stock of international migrants" in the eastern hemisphere and, in the developing world (Sinha, 2013). Crossing borders has been central to the lives of many Nepalese and Bangladeshis as they move to and fro between their countries and India in the hope of better opportunities for themselves and their families (Samuels et al., 2011). These migrants generally find work in the informal sector, often as domestic workers, construction labourers, rickshaw pullers and rag pickers (Naujoks, 2009). These people become socially vulnerable and start living in an unhygienic environment. Along with other health related issues, the migrant population group especially is vulnerable to HIV and AIDS due to risk behaviours and alternate support at the destination (Azim et al., 2008; Samuels et al., 2011).

Migrants commonly have multiple sexual encounters, change partners and use condom infrequently both in India and back home with their left behind women. Several factors including peer pressure, cheaper sex, lack of family restraint, alcoholism and low perceived vulnerability to HIV/STIs influence migrants to practice high-risk sexual behaviour at the destination. They also play possible roles in increasing HIV/AIDS vulnerability of their women and home country (Poundel et al., 2003). Back home their lefts behind women also are vulnerable and exposed to harassments, illness and fail to run their family. Those left at home may face loneliness and exclusion and also may engage in risky behaviours for livelihood and survival purposes (Samuels and Wagle, 2011).

Young migrant workers away from their friends, spouse, families and communities often experience feelings of isolation and loneliness that can lead to drug use and sexual activity that puts them at increased risk for HIV/AIDS (UNAIDS, 2001). Studies conducted in other countries show that economic mobility and migration can make people more vulnerable to HIV/STI infections (Decosas et al., 1995; Wolfers and Fernandez, 1995; UNAIDS, 2001). High prevalence of sexual risk behaviour has been found among work migrants, and mobile workers in many countries and the major role of this in HIV transmission is well established (as cited in Mercer et al., 2007). Pison et al. (1993) also showed that men contract HIV through HIV-positive women while they are away from home and then transmit it to their wives when they come back. Women and wives are in a passive and vulnerable position to contract HIV from migrant husbands (Nguyen, 2005).

Migration-related changes can also negatively impact women's status. This is particularly true if male out-migration results in an increased work burden for the women left behind, if the women are unable to access or mobilize resources in the absence of their husband, or if the women are abandoned or do not receive enough remittance money to cover basic household needs (McEvoy, 2008). The problem of the left-behind woman has attracted growing concern from society with ever increasing numbers of male labourers leaving the countryside for work in the city. As a vulnerable group, these left-behind women face security issues and bear a heavy physical and psychological burden back home (as cited in Jacka, 2014). When the husband of a family leaves, the woman who is left behind has to independently shoulder the responsibility for agricultural production, raising the children and supporting the elderly. They are therefore weighed down with the double pressures of additional work and psychological burdens (Jingzhong, 2008). Left-behind women, children and the elderly are often depicted as "vulnerable groups" who suffer insecurity, stress, loneliness, depression, and ill-health as a result of their abandonment (Jacka, 2014). Across rural India, the phenomenon of migration creates an entire class of women left behind to fend for themselves in the face of increased vulnerability to neglect, discrimination and psychological as well as physical abuse (Awasthi, 2014).

In reducing women's vulnerability in all streams be it in reducing poverty, to induce education or to socially uplift their position, self help groups are a well known concept in Bangladesh which now has evolved as a movement. That is why; the key question to be addressed in this paper is the supportiveness of SHGs in reducing the reproductive vulnerabilities of left behind women (LBW). It has been proved in literature that self help groups have been a boon to the life of women in many low-income countries and helped in their empowerment (Anand, 2002; Manimekalai and Rajeswari, 2002; Tirupal, 2016,



**Table 1.** Interviews conducted across various sites of EMPHASIS.

| Location/Type and number of interviews | IID with functionaries | KII with SSH | FGDs |     |       |    |           |     | Interaction with IP | Total Interviews |
|--|------------------------|--------------|------|-----|-------|----|-----------|-----|---------------------|------------------|
|  |                        |              | ORWs | PEs | PLHIV | IP | CBOs/SHGs | LBW |                     |                  |
| Bangladesh                             | 7                      | 6            | 2    | 2   | 0     | 2  | 6         | 6   | 14                  | 45               |
| Transit India-Bangladesh               | 3                      | 5            | 2    | 2   | 0     | 0  | 0         | 0   | 16                  | 28               |
| Transit Bangladesh                     | 3                      | 4            | 1    | 1   | 0     | 0  | 0         | 0   | 0                   | 9                |
| Delhi                                  | 6                      | 4            | 2    | 2   | 0     | 2  | 1         | 0   | 12                  | 29               |
| Kolkata                                | 3                      | 4            | 2    | 2   | 0     | 2  | 2         | 0   | 18                  | 33               |
| Mumbai                                 | 4                      | 5            | 2    | 2   | 2     | 3  | 4         | 0   | 14                  | 36               |
| Total                                  | 26                     | 28           | 11   | 11  | 2     | 9  | 13        | 6   | 74                  | 180              |

IID- Individual level In-depth Interview; KII-Key Informant Interview; SSH- Secondary Stakeholders; ORW- Out-reached Workers; PEs- Peer Educators; PLHIV- People living with HIV; CBO- Community Based Organization; SHG-Self-help Group.

Chatterjee, 2014). Self-help groups (SHGs) are considered as one of the most significant tools to adopt a participatory approach to the empowerment of women. SHGs help in the empowerment of women both social and economically (Gupta and Gupta, 2006).

Khandker et al. (1995) traced the origin of Grameen Bank, which was started in 1983 in Bangladesh by Prof. Mohammed Yunus, where the role of micro credit in facilitating women's potential was observed. In another study on Bangladesh, Sultana (1988) concluded that women's group formation, regular savings and income, new knowledge, consciousness raising and group mobilisation can together create an alternative to women's traditional condition and contribute to women's ability to speak out and earn a relatively higher status in the family and in the village. Study on the group empowerment process confirms that participation in community and self-development programmes through organisation is the only way out for voiceless women (Vijayanthi, 2002).

As the cross border migration has implications on both destination and source countries, this paper is motivated against the grain of discourse

on the vulnerability of the left behind focussing on the Bangladeshi women whose husbands have migrated to India for better opportunities and employment. The main aim of this paper is to analyse the reproductive vulnerabilities among the LBW due to the migratory status of their husbands and to explore the potential role of self-help groups as coping mechanism of LBW.

#### DATA AND METHODOLOGY

The basic data used in this paper were collected as part of the Mid Term Review of a cross country intervention on Enhancing Mobile Populations' Access to HIV&AIDS Services, Information and Support (EMPHASIS) in South Asia in 2012. The mid-term review focuses at the progress made so far in achieving the project's goals and objectives by analyzing its relevance, effectiveness and efficiency. The key issues and challenges for the reproductive vulnerabilities of LBW are based on a total of 180 interviews conducted across various sites of EMPHASIS (Table 1). It covers the perception and experience of beneficiaries. Qualitative insight into the process through which cross border migration affects the life of LBW, was primarily based on a set of qualitative interactions with key stakeholders, by conducting focus group discussions, in-depth interviews and key-informant interviews.

EMPHASIS has been implementing comprehensive

programs and services at source for reducing the impact population's (especially women's) vulnerability, to HIV/AIDS, by raising awareness of HIV/AIDS, capacity building, improving the use of health care services by developing a range of support structures, and creating an enabling environment for behaviour change.

The checklists developed for the FGDs among LBW covered their problems before and after their husband's migration, social harassment, sexual harassment, reproductive morbidities, treatment seeking behaviour and the type of support structure by the SHGs. On the other hand, the major contents of the check list for the FGDs among SHGs contained various components and strategies of SHGs to enhance community mobilization for effective functioning, capacity building efforts among the LBW as well as strategies to strengthen support system by networking. These information have been helpful in accessing the situation of LBW in the context of cross border migration and the potential role of SHGs as a coping mechanism for the women.

Insights have also been obtained from Health Belief Model and Risk Reduction Model and Behaviour Change Models for Reducing HIV/STD Risk. The Health Belief Model is the most commonly used theory in health education and health promotion and can explain the health behaviour. Perceived susceptibility and perceived severity determines the perceived threat and gradually the likelihood of behaviour. The health behaviour also gets influenced by perceived benefits and other modifying factors (Janz and Becker, 1984). Here the SHGs are acting



as benefits and Cues to action for the LBW and influencing their perception and behaviour and indirectly their husband's behaviour also. AIDS risk reduction model which characterizes people's efforts to change sexual behaviour related to HIV transmission has also aided in the conceptualization of this study. This model comprises of three stages: (a) recognition and labelling of one's sexual behaviours as high risk for contracting HIV, (b) making a commitment to reduce high risk sexual contacts and increase low risk activities, and (c) seeking and enacting strategies to obtain these goals (RCAP, 1995).

In the present study the SHGs are helping the LBW in the first stage and the last stage actively and in the second phase passively. Thus based on the data and the aforesaid frameworks and model the study was accomplished.

## RESULTS AND DISCUSSION

### Vulnerability among LBW in Bangladesh

Cross border undocumented migration of the male Bangladeshi migrants is involved with manifold vulnerabilities in the lives of the migrants (at destination) as well as in the lives of their wives and families who are left behind in the source countries. The major kinds of vulnerabilities they face are often associated with health, social and economic vulnerabilities. Human Rights get threatened at a macro level, and deprivation of social entitlements, ownerships, access to the social infrastructures, all or certain social rights can be placed under the framework of the social vulnerability at a micro level. At the destination, the migrants consider themselves to be socially excluded as they are generally not welcome in the mainstream of the population and they also have the fear to mix up with the other local population.

On the other hand without the spousal support and in the absence of their husbands the left behind women face social vulnerabilities at the source countries. Health problems like dengue, dysentery and fevers are often seen among the migrants commonly due to low hygienic conditions and poor sanitation in the areas where they live thus bringing the crisis to their lives. Back home, the women find it difficult to run the family and are unable to provide treatment to themselves or children when they fall sick.

Though primarily the LBW of Bangladesh are left behind due to poverty and unemployment but sometimes the reason changes and they are left behind forever over lucrative jobs and extra-marital relations by their husbands at the destination places. The age long vulnerability that these left behind women face are STIs, RTIs, HIV/AIDS, social and physical harassment from family and local people as well as the blind response from the local administration. These vulnerabilities get doubled due to illness, poverty, lack of spousal support and communication. They really get left behind from all arenas of life starting from self-esteem to healthy social life. The vulnerabilities of the LBW have been discussed below.

### *Reproductive vulnerabilities among LBW*

LBW in Bangladesh become more vulnerable towards sexual harassment by family members, relatives, and outsiders since their husbands are away from home. Teasing and taunting by men in the locality is an everyday phenomenon in the lives of these women. Societal and familial isolation forbids them to take any step, and they bear the sexual harassment silently thus increasing their reproductive vulnerability.

A Large majority of LBW are becoming vulnerable due to the behaviour of migrants at the destination, which is virtually a function of risk environment at metropolitan cities of India, having liberalized sexual norms, plenty of sexual opportunity and higher incidences of paid and casual sex. Despite program implementation at transit areas, many of the returnee migrants are getting HIV but not disclosing it to their wives thus increasing their reproductive vulnerability. At the destination, their husbands indulge in sex with other women and female sex workers (FSWs) at the destination. After returning home, the husbands force their wives for sex, and the women cannot deny for sex even after knowing their vulnerability to HIV/AIDS. Moreover, condom use by their husbands is also very inconsistent and often they have unsafe sex. The study by Cruz (2000) noted that many migrants particularly single or those leaving their families behind tend to seek comfort in intimate relationships developed while away from families or relax and enjoy by engaging themselves in casual or paid sex.

The incidence of condom use among the migrant workers is low because of poor accessibility, hesitation in buying condoms, uncertainty about the protection they provide, and reluctance to use them in intimate or steady relationships. The husband-wife communication among the Bangladeshi migrants and their wives is also very limited, increasing the reproductive vulnerability of the LBW of Bangladesh. Bose (2001) also pointed out that left behind women in the state of Himachal Pradesh in India live an isolated life and hardly have any communication with their husbands. Samuels et al. (2014b) found that those women left at home may also face loneliness and exclusion and may engage in risky behaviours for livelihood and survival purposes - particularly if the hoped-for remittances from migrants do not materialise and can also be exposed to HIV infection by returning spouses or partners who may not be aware of their own HIV infection. Roy (2011) found that other than migration factors, extra marital relation and other habits of husbands and marital duration emerged as the significant determinants of STIs/RTIs among the left behind women of rural Bihar, India. Of course, the likelihood of reporting any symptoms of reproductive morbidity was found higher among those left behind women as compared to wives of non migrants.

Migration appears as the stimulant factor for the risky sexual behaviour among migrants, which further result in the transmission of STIs to their wives as the place of

origin. There was a consensus among the left behind women during focus group discussions that they are innocent victims of the extramarital sexual behaviour of their husbands at the place of destination.

### ***Other vulnerabilities of the LBW***

Jety's study (1987) on internal migration found that after migration of males, in most cases left behind wives shoulder the responsibility of taking care of children and manage several major and minor crisis in the family single-handedly. Many of the women experience heightened psychological stress, and there is hardly any increase in their status in the family and society. Most of the left behind women in Bangladesh highlighted during their FGDs that adjustment in the family without husbands and the spousal support is very challenging and thus makes a woman at a high risk of isolation, a similar finding as reported by Roy (2011) in the case of rural Bihar. Roy (2011) has also noted that instead of providing help, relatives of the left behind women try to snatch away their resources and takes undue advantage of their situation. The livelihood of the left behind women and their children in Bangladesh mainly depends on the remittance sent by their husbands from the destination. The remittances sent by the male migrants are not regular and most of the times are not sufficient for the LBW to manage household expenses. The LBW face problem during their illness or when their children and other family members are ill since they remain with very little or no money for the treatment. The LBW's mobility to any place like the market is often restricted and questioned as their husbands are not living with them. Since their husbands have migrated to India, the local administration often does not address any of their problems, and they are often deprived of governmental facilities.

### **Role of SHGs as coping mechanism to various vulnerabilities of the left behind women**

Self-help groups (SHGs) not only play a hastening role in the life of women in Bangladesh but also have a role in the country's economic development. A well known concept in Bangladesh, the self help groups have achieved fair success in reducing women's vulnerability in all streams be it in reducing poverty, to induce education or to socially uplift their position. The left behind women who face many problems after their husbands' migration have coped with problems and empowered themselves by getting involved with self-help groups.

The SHGs have moulded the lives of these left behind women for their beneficence. They have empowered the women from within by creating conditions to facilitate the real development. SHGs have been capacitated enough

to make the women left behind capable of addressing their vulnerability towards HIV/AIDS and protecting themselves from any form of harassment. SHGs are also working on enhancing women's awareness to STI and HIV/AIDS related issues with the active support of Peer Educators and Out Reached Workers of ongoing projects. Focus group discussions (FGDs) with SHG members have encouraged the community to visit the clinics for their STI/HIV related problems. This has facilitated early diagnosis and treatment of STI/HIV. SHGs have also capacitated women for seeking treatment for themselves and their children and have also developed linkages with the health care providers at these clinics and encourage their members to visit the clinics for the utilization of available services. The Left behind women are now able to address their vulnerability to HIV/AIDS and have started protecting themselves. Self help groups are emerging as a positive approach to promoting women's empowerment, allowing left behind women to raise their voices against HIV, stigma and discrimination and violence.

The LBW are now well aware of their sexual and reproductive rights. As a result, when their husbands return to their native places, the wives negotiate the use of condoms during intercourse. LBW also refrain from sex with their husbands when they come back. They also persuade their husbands to go to Integrated Counselling and Testing Centre (ICTC) for HIV tests. The SHGs have made a significant change in the mindset of these women, simply by empowering them and making them understand their vulnerability to STI/HIV. In source communities, pre and extra-marital sex among the Bangladeshi male migrants and spouse have been prevalent and an accepted practice (Emphasis, 2011). Living away from family often impels mobile population to seek alternative support systems to satisfy needs which may lead to engagement in risky, unhealthy behaviours (Samuels and Wagle, 2011). Nowadays, with the contribution of the SHGs, inter spousal communication has increased among the LBW. Almost every second woman from the impact population mentioned that the knowledge they have gained through SHGs is also being transferred to their husbands. The women have started discussing safe sex over the phone with their husbands. LBW also impart the knowledge of various STIs and HIV/AIDS to their husband and also sometimes ask them to abstain from sex in India or to use condoms when they are engaged in sex with female sex workers.

Promoting more open dialogue and communications between spouses can also empower women and lead to more equitable conjugal relationships and engaging in less risky sexual behaviours (Samuels et al., 2014b). The collective voice of the LBW had also resulted in the decline of their men's second marriage at the destination on the pretext of their wives' extramarital affairs.

SHGs are being considered as a community based resource for dealing with various community based

issues and conflicts, especially those relating to women. SHGs also have impacted their social position and reduced the social harassments which used to occur daily in the life of the LBW. Among the LBW, the cases of torture by in-laws, harassment by neighbours and others have been reduced significantly, and women's capacity to deal with their problems has increased manifold. The left behind women used to face severe opposition and restriction from family and society and were not allowed to go to the market or any other places, as their husbands were working elsewhere and not staying with them. SHGs have enhanced their participation in decision making and also their mobility to the market, health facilities, and other nearby areas. The stigma associated with the mobility of LBW has been eliminated. The LBW now interact freely with anybody meeting them and do not accept the norms to cover the faces in front of strangers and visitors. The SHGs have also helped these LBW in financial crisis. Several women beneficiaries reported that with the active support of SHGs, they are able to take loans or arrange money from other sources with a minimum rate of interest.

Previously, the local administration did not address the problems of LBW and often they were deprived of governmental facilities since there was no spousal support. But after becoming members of SHGs, they are now conscious of their rights and are capable of negotiating their rights with local elected bodies and government officials. Another area where SHGs have contributed is to curtail the number of marriages of minor girls, which has been a major cause of women's vulnerabilities to trafficking, sexual exploitation, and HIV/AIDS infections. They have made the women understand the risks that are associated with early marriage.

Part of SHGs success among the LBW has been possible through establishing linkages with existing public and/or private service providers to strengthen the referral system for the mobile population as well as their spouses, as part of the regional strategy of EMPHASIS irrespective of source, transit or destination.

## Conclusion

In a nutshell, it can be said that migration of men provides some economic relief to the left behind women in Bangladesh, but the women very often pay a heavy price due to their husband's migration. This paper throws light on the crux of the issue that migration does not always improve the socio-economic status of the left behind women in the society; rather it puts them at a greater threat of manifold vulnerabilities. In spite of that, there are a number of success stories that are associated with the capacity building of LBW through establishing SHGs in the migration dominated communities in Bangladesh. LBW's vulnerability to STI/HIV has reduced

significantly due to increased knowledge, capacity building and negotiating skills for condom use with their husbands, whenever they visit the place of origin. Existing interventions in the area have been focusing on health-seeking behaviour in a larger context rather than HIV/AIDS services, especially among left behind women (LBW) of the migrants, and also providing essential services to PLHIV. That is why women's participation in the program and association with SHGs has increased significantly and has been visible during interaction with the impact population.

From reducing the LBW's reproductive vulnerability to looking after their financial crisis, from helping them to exercise their rights in local administrative bodies to imparting knowledge of HIV/AIDS vulnerability to their husbands, SHGs have achieved a fair success. The women are now not any more 'Left Behind' in their lives. They have proceeded towards an empowered and enlightened future leaving behind all vulnerabilities. Their development is not superficial and has occurred from within. The SHGs have nurtured their lives and gave freedom to the left behind women. One major setback to the proper functioning of the SHGs in reducing the vulnerabilities of the LBW is less access of the husbands to empowered health and nutrition services at the destinations.

Thus addressing the vulnerability of reproductive morbidity including HIV becomes difficult among the husbands of the LBW, which on the other hand enhances their wives' vulnerability at the source. However, SHGs have to work for and form groups within another vulnerable group of return migrants at the source. They need to be addressed more effectively by adopting a dual approach of sending them to ICTC and also linking services for them from source and destinations. As Samuels et al. (2014a) found that working in source, transit and destination sites, while challenging, is critical for achieving positive policy results. It helps migrants living with HIV to continue accessing treatment as they cross borders and also improves communication and dialogue around HIV and AIDS among migrants at the destination and between spouses by providing information, services and raising awareness about HIV and AIDS. This can, in turn also lead to less risky behaviours.

With their indispensable and influential role, the SHGs have proved to be a blessing in the lives of the LBW of Bangladesh. It has been manifested that when a single woman fails to fight, the whole group will stand and fight for her. It can be hoped that the SHGs will very soon be able to further reduce the vulnerabilities of the left behind women by targeting the return migrants at the source and transit areas.

## Conflict of Interests

The authors have not declared any conflict of interests.

## ACKNOWLEDGEMENTS

Authors acknowledge the contribution of EMPHASIS Team working in India and Bangladesh for their cooperation and support in interacting with primary and secondary stakeholders. We are also thankful to the impact population for sparing their valuable time.

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Full Length Research Paper

## Factors affecting adherence to antiretroviral treatment among patients living with HIV/AIDS, in Bale zone, south eastern Ethiopia

Muktar Beshir<sup>1\*</sup> and Adamu Tesfaye<sup>2</sup>

<sup>1</sup>Department of Health sciences, College of Medicine and Health Sciences, Madda Walabu University, Robe, Ethiopia.

<sup>2</sup>Department of Medicine, College of Medicine and Health Sciences, Madda Walabu University, Robe, Ethiopia.

Received 17 November, 2016; Accepted 22 December, 2016

Adherence to antiretroviral therapy is of critical importance because even minor deviations from the prescribed regimen can result in viral resistance. Multiple factors influence adherence among people living with human immune virus. But at present little is known about the patient's experience and adherence when taking such complex regimens. The major aim of the study was to assess factors associated with antiretroviral treatment adherence among people living with human immune virus. A facility based cross-sectional study design was used, with systematic sampling technique on 300 adult patients on antiretroviral therapy. Factors associated with adherence to antiretroviral drugs were analyzed with bivariate and multivariate logistic regression. A total of 300 patients on antiretroviral therapy involved in this research and despite requirement of complete or near complete adherence to antiretroviral therapy only 205(68.3%) were found to be adherent. The bivariate and multivariate logistic regression showed that factors like mild depression (AOR=3.24) 95% CI(2.04-8.67), moderate depression (AOR=3.06) 95%CI(1.61-5.67), alcohol abuse (COR=2.562) p=0.049, current khat chewing (COR=2.85) p=0.025, disclosure status (COR=0.426) p=0.004, presence of opportunistic infection (AOR=5.44) 95%CI(1.833-16.10), and presence of comorbid disease (COR=4.256) p=0.002 showed association to adherence to antiretroviral therapy. Generally about three out ten patients on antiretroviral therapy were found to be non-adherent to antiretroviral regimen in Bale zone. Depression and the presence of opportunistic infection are adversely linked to adherence status of these patients.

**Key words:** Adherence, highly active antiretroviral therapy (HAART), ART Clinic, Bale.

### INTRODUCTION

One point eight million people died of Human Immune Virus (HIV) in the year 2010, of whom those living in sub Saharan Africa were 1.2 million. Major improvement has

been made in delivering lifesaving treatment for people living with HIV. There are now 6.6 million people globally on the treatment of anti-retroviral therapy (ART), of which

\*Corresponding author. E-mail: p.adamutesfish@gmail.com.

more than 5 million are in Africa (UNAIDS, 2010).

The adjusted HIV prevalence for Ethiopia in 2005 was 3.5% (urban 10.5% and rural 1.9%). The situation of HIV epidemic in Amhara, Oromia, Addis Ababa, and SNNPR is worse than other regions. Together these regions accounted for 86.6% of all PLWHA in Ethiopia. The HIV epidemic continues to pose a threat to the development of Ethiopia where 1.3 million people are living with the virus, 744,100 are orphaned due to Acquired Immune Deficiency Syndrome (AIDS). AIDS accounted for an estimated 34% of all young adult deaths (15-49 years) in Ethiopia and 66.3% of all young adult deaths (15-49 years) in urban Ethiopia (EDHS, 2005; MOH, 2008).

Adherence to antiretroviral therapy (ART) is of critical importance because even minor deviations from the prescribed regimen can result in viral resistance (APA, 2000; Bangsberg et al., 2000). Studies of ART continue to indicate that a near-perfect adherence is required to adequately repress viral replication (Demasi et al., 2001; Gibb et al., 2003).

Adherence can be measured in several ways such as counting prescriptions filled (pill counting), care givers' reports, and drug-blood level monitoring and self-report by patients. Multiple factors influence adherence among patients with HIV/AIDS. Such factors include patients' age, regimen complexity, drug side-effects, advanced HIV disease and patients' mental health (Donenberg and Pao, 2005). Other factors include unfamiliarity with the implications of having a chronic, potentially deadly disease, the complex impact of ART on interpersonal relationships, depression and hopelessness, lack of accurate information, and issues related to local cultural frameworks (e.g. illness ideology) (Murray et al., 2009).

As the world gears toward increasing access to antiretroviral treatment in the developing world it is critical to understand factors (motivators and barriers) that influence adherence to antiretroviral and apply the lessons learnt in improving existing and new programs. Available research in Ethiopia has shown that our understanding of factors associated with ART adherence is limited, and related literature in the study area is remarkably scarce. Understanding the predictors of adherence in the local context is a forefront agenda in Ethiopia, where little is known and scaling up of ART program is in progress.

## MATERIALS AND METHODS

### Study area and period

The research was conducted in all hospitals and selected health centers in Bale Zone. Bale Zone is one of the administrative zones found in Oromia regional state. Based on the 2007 Census conducted by the CSA, this Zone has a total population of 1,402,492, an increase of 15.16% over the 1994 census, of whom 713,517 are men and 688,975 women; with an area of 43,690.56 km<sup>2</sup>, Bale has a population density of 32.10/km<sup>2</sup>. While 166,758 or 26.20% are urban inhabitants, a further 44,610 or 3.18% are

pastoralists. A total of 297,081 households were counted in this Zone, which results in an average of 4.72 persons to a household, and 287,188 housing units. Robe, the capital of the zone is found 430 km south East of Addis Ababa. Bale is bordered on the south by the Ganale Dorya River which separates it from Guji, on the west by the West Arsi Zone, on the north by Arsi, on the northeast by the Shebelle River which separates it from East Hararghe and West Hararghe, and on the east by the Somali Region. The study was conducted starting from January 2015 to February 2015.

### Study design

Facility based cross sectional study was conducted at ART clinics in hospitals and health centers in Bale Zone. Patients' cards were reviewed and the patients were interviewed during data collection.

### Population

#### Source population

All patients on HAART at ART clinics in hospitals and health centers in Bale Zone.

#### Study population

A sample of patients on HAART at ART clinics in all four hospitals and health centers in Bale zone at the period of data collection.

### Inclusion and exclusion criteria

#### Inclusion criteria

All adult patients on ART. Patients who attended ART are at least for 6 months.

#### Exclusion criteria

Patients who are critically ill or unable to communicate due to cognitive impairment.

### Sampling and sample size determination

#### Sample size determination

The required sample size was determined by considering the following assumptions for interview questionnaires: Since similar literatures done in the same or similar place were not available for using proportion. The percentage of adherent patients at Yirgalem hospital, that is, 74.2% (Amberbir et al., 2008). So the proportion = 74.2%. Confidence interval = 95%; Margin of error = 5%, and Non-response rate = 10%

The formula for calculating the sample size is:

$$n = \frac{(Z \alpha/2)^2 P (1-P)}{d^2} = \frac{(1.96)^2 0.742 (1-0.742)}{(0.05)^2} = 294.16$$

Since total population of patients on ART in hospitals and health centers of Bale zone are 3816,  $n_f = n/1+n/N = 294.16/1+2944.16/3816 = 273$

Finally 10% non-response rate was added which resulted in final

sample size of 300. The number of samples that were withdrawn from respective hospitals was determined proportionally.

### Data collection procedures

Structured questionnaires and interview was used in the study. In addition to the questionnaire, data collection format was developed by the principal investigator to collect data from patient card in respective study participants. The questionnaire was developed first in English and translated to Afan Oromo with the help of language expert. The questionnaire contains both close ended and open ended questions. It had parts that assess socio demographic, social drug use, adherence and Patient health questionnaire 9 (PHQ9). PHQ9 was used to assess depression. Four items Validated Morisky Scale was used to judge the adherence status of the study participants. The local languages version questionnaire was back translated to English to proof consistency. The data collection was carried out by three nurses and two health officers at four hospitals and one health center. They were trained for one day by the principal investigators prior to data collection.

### Data quality assurance

The questionnaire was pre-tested with 10 patients of Dodola hospital before the actual data collection. Training was given for data collectors and questionnaire was prepared by English and local languages (Afan Oromo and Amharic languages). Data collectors were instructed to check the completeness of each questionnaire at the end of each interview. The principal investigators rechecked completeness of the questionnaire and prepared the questionnaire for data entry.

### Methods of data analysis

The data were cleaned, coded, entered to Epi info 7 before analysis. The data were exported to SPSS version 20 and analyzed. Factors associated with adherence to ART were analyzed with bivariate and multivariate logistic regression. All factors with a p-value <0.25 in the bivariate logistic regression analysis were further entered into the multivariate model to control confounding effects.  $P < 0.05$  was used as statistically significant.

### Ethical considerations

The study was conducted after approval is secured from Madaa Walabu University Research and technology transfer directorate bureau. This bureau also wrote formal letter of permission to the four hospitals to permit access of data and cooperate. Finally oral consent was obtained from each study participants before making interview and confidentiality was secured. In addition all the responses were kept confidential and anonymous and participants were be able withdraw from the study at any time during interview.

## RESULTS

### Socio-demographic characteristics

#### Participants

A total of 300 eligible clients were included in the chronic follow up unit during the study period, with the response

rate of 100%. The study consisted of 191(63.7%) females. By ethnic classification, 197(65.7%) respondents were Oromos, 93(31.0%) were Amharas, 7(2.3%) were Tigrians, 1(0.3%) was Somali and the remaining 0.7% are others by ethnicity. Majority of the respondents, 199(66.3%) were orthodox Christianity followers and 81(27.0%) were Muslims. Regarding the residence place of the study participants, 122(40.7%) are residents of Robe town, whereas 72(24%) are residents of Goba town, 72(14%) are residents of Ginnir town. Regarding educational status of the study participants, 115(38.3%) have attended only primary school, 85(28.3%) have attended only secondary school, 82(27.3%) cannot read and write, whereas 18(6.0%) of the study participants have at least college diploma. The job category of the study participants show that 78(26.0%) were house wives, 76(25.3%) were jobless, 52(17.3%) were merchants, 37(12.3%) were government employees, 12(4.0%) were engaged in other jobs. The marital status analyses showed that 139(46.3%) were married, 55(18.3%) were divorced, 4(1.3%) were separated, 82(27.3%) were widowed, and 20(6.7%) were singles (Table 1).

### Psychosocial description of the study participants

A total of 77 (25.7%) of the study participants were found to be depressed at different magnitude; 48(16.0%) were found to be mildly depressed, 24(8.0%) were moderately depressed, 5(1.7%) were moderate severely depressed. Regarding stigma status of the study participants 168 (56.0%) were moderately stigmatized, 124(41.3%) were mildly stigmatized whereas 8(2.7%) were severely. The disclosure status analyses showed that, 241(80.3%) of the study participants have disclosed their HIV infection status at least to their closest person, whereas 59(19.7%) of the study participants have not disclosed their HIV infection status even to their closest person. Regarding substance abuse, 19(6.3%) reported that they were abusers of alcohol during the data collection, 281(93.7%) reported that they were not abusers of alcohol (Table 2).

### Factors associated with adherence

Despite requirement of complete or near complete adherence to HAART only 205(68.3%) were found to be adherent. The bivariate and multivariate logistic regression showed that factors like mild depression (AOR=3.24) 95% CI(2.04-8.67), moderate depression (AOR=3.06)95%CI(1.61-5.67), alcohol abuse (COR=2.562)  $p=0.049$ , current khat (fresh leaf of *Catha edulis* containing cathinone, amphetamine like compound) chewing (COR=2.85) $p=0.025$ , disclosure status (COR=0.426)  $p=0.004$ , presence of opportunistic infection (AOR=5.44) 95%CI(1.833-16.10), presence of comorbid disease (COR=4.256)  $p=0.002$  showed



**Table 1.** Socio demographic characteristics of patients on HAART in Bale zone south west Ethiopia: March, 2015

| Socio demographic characteristics |                       | Frequency | Percent |
|-----------------------------------|-----------------------|-----------|---------|
| Sex                               | Male                  | 109       | 36.3    |
|                                   | Female                | 191       | 63.7    |
| Age                               | 18-29                 | 71        | 23.7    |
|                                   | 30-39                 | 122       | 40.7    |
|                                   | 40-49                 | 67        | 22.3    |
|                                   | 50 and above          | 40        | 13.3    |
| Ethnicity                         | Oromo                 | 197       | 65.7    |
|                                   | Amhara                | 93        | 31.0    |
|                                   | Tigræ                 | 7         | 2.3     |
|                                   | Others*               | 3         | 1.0     |
| Religion                          | Orthodox              | 199       | 66.3    |
|                                   | Muslim                | 81        | 27.0    |
|                                   | Protestant            | 18        | 6.0     |
|                                   | Catholic              | 2         | .7      |
| Educational status                | Cannot read and write | 82        | 27.3    |
|                                   | Primary School only   | 115       | 38.3    |
|                                   | Secondary School only | 85        | 28.3    |
|                                   | diploma and above     | 18        | 6.0     |
| Employment                        | House wife            | 78        | 26.0    |
|                                   | Merchant              | 52        | 17.3    |
|                                   | Farmer                | 45        | 15.0    |
|                                   | Government employees  | 37        | 12.3    |
|                                   | Jobless               | 76        | 25.3    |
|                                   | Others                | 12        | 4.0     |
| Marital status                    | Single                | 20        | 6.7     |
|                                   | Married               | 139       | 46.3    |
|                                   | Divorced              | 55        | 18.3    |
|                                   | Separated             | 4         | 1.3     |
|                                   | Widowed               | 82        | 27.3    |

association to adherence to HAART. Whereas factors like age, sex, educational status, employment status, marital status, stigma, cigarette smoking, social support and duration on the HAART failed to show significant association with adherence to HAART.

## DISCUSSION

Literatures state that the non-adherence to HAART ranges from 10 to 92% (Bartelett, 2002); in this study the prevalence of adherence was found to be 68.3%. It agrees with findings of Bartelett et al. (2002). Our finding showed worse adherence status compared to findings from Atlanta and Spain where the adherence where adherence was found to be 80 and 90%, respectively. But the level of adherence to HAART in Bale Zone was

found to be slightly better than the prevalence of adherence in Cape Town, South Africa where the prevalence of adherence was found to be 63%. Coming to findings from different parts of Ethiopia the study conducted in Jimma University specialized hospital showed self-reported adherence to be 94.3% which is far better than our finding but we doubt about the tool they have utilized to assess adherence as they have used self-reported adherence measuring style which is more prone to recall bias than Validated Morisky Scale. Prevalence of adherence to HAART in Yirgalem Hospital was found to be 74.2% which is not by far better than our finding.

Regarding the factors associated with adherence to HAART, studies in Addis Ababa showed that factors like travels, depression and drug adverse effects showed association to non-adherence to HAART. In our study,



**Table 2.** Factors associated with adherence to HAART among patients on HAART in Bale zone, south west Ethiopia: March, 2015.

| Variable                | Adherence status |     |             |    |      | P     | COR   | AOR and 95% CI |       |       |
|-------------------------|------------------|-----|-------------|----|------|-------|-------|----------------|-------|-------|
|                         | Adherent         |     | In adherent |    | AOR  |       |       | 95% CI         |       |       |
|                         | N                | %   | N           | %  |      |       |       |                |       |       |
| Sex                     | Male             | 71  | 34.6        | 38 | 40.0 | 0.369 | 1.258 | 1.28           | 0.423 | 3.897 |
|                         | Female           | 134 | 65.4        | 57 | 60.0 |       |       |                |       |       |
| Age                     | 18-29            | 49  | 23.9        | 22 | 23.2 | 0.888 | 0.956 | 0.494          | 0.193 | 1.265 |
|                         | 30-39            | 83  | 40.5        | 39 | 41.1 |       |       |                |       |       |
|                         | 40-49            | 46  | 22.4        | 21 | 22.1 |       |       |                |       |       |
|                         | ≥50              | 27  | 13.2        | 13 | 13.7 |       |       |                |       |       |
| Educational Status      | Illiterate       | 53  | 25.9        | 29 | 30.5 | 0.260 | 1.419 | 2.18           | 0.864 | 5.490 |
|                         | Primary          | 83  | 40.5        | 32 | 33.7 |       |       |                |       |       |
|                         | Secondary        | 58  | 28.3        | 27 | 28.4 |       |       |                |       |       |
|                         | College          | 11  | 5.4         | 7  | 7.4  |       |       |                |       |       |
| Marital status          | Single           | 15  | 7.3         | 5  | 5.3  | 0.548 | .720  | 1.13           | .251  | 5.052 |
|                         | Married          | 95  | 46.3        | 44 | 46.3 |       |       |                |       |       |
|                         | Divorced         | 35  | 17.1        | 20 | 21.1 |       |       |                |       |       |
|                         | Separated        | 3   | 1.5         | 1  | 1.1  |       |       |                |       |       |
| Depression              | widowed          | 57  | 27.8        | 25 | 26.3 | 0.630 | 0.760 | 0.919          | 0.182 | 4.65  |
|                         | No               | 179 | 87.3        | 44 | 46.3 |       |       |                |       |       |
|                         | Mild             | 24  | 11.7        | 24 | 25.3 |       |       |                |       |       |
|                         | Moderate         | 2   | 1.0         | 22 | 23.2 |       |       |                |       |       |
| Stigma                  | Moderate sever   | 0   | 0.0         | 5  | 5.3  | 0.001 | 6.304 | 13.6           | 5.01  | 26.7  |
|                         | Mild             | 91  | 44.4        | 33 | 34.7 |       |       |                |       |       |
|                         | Moderate         | 108 | 52.7        | 60 | 63.2 |       |       |                |       |       |
|                         | High             | 6   | 2.9         | 2  | 2.1  |       |       |                |       |       |
| Alcohol abuse           | Abuse            | 9   | 4.4         | 10 | 10.5 | 0.049 | 2.562 | 1.18           | 0.218 | 6.458 |
|                         | Not abuse        | 196 | 95.6        | 85 | 89.5 |       |       |                |       |       |
| Ever chewed             | Yes              | 41  | 20.0        | 27 | 28.4 | 0.107 | 1.588 | 0.892          | .290  | 2.743 |
|                         | No               | 164 | 80.0        | 68 | 71.6 |       |       |                |       |       |
| Current chewing         | Khat Yes         | 9   | 4.4         | 11 | 11.6 | 0.025 | 2.852 | 1.45           | 0.258 | 8.105 |
|                         | No               | 196 | 95.6        | 84 | 88.4 |       |       |                |       |       |
| Disclosure status       | Yes              | 174 | 84.9        | 67 | 70.5 | 0.004 | 2.34  | 3.45           | 0.189 | 1.543 |
|                         | No               | 31  | 15.1        | 28 | 29.5 |       |       |                |       |       |
| Recent CD4              | < 200            | 11  | 5.4         | 7  | 7.4  | 0.628 | 1.293 | 0.411          | 0.063 | 2.684 |
|                         | 200-400          | 65  | 31.7        | 32 | 33.7 |       |       |                |       |       |
|                         | > 400            | 129 | 62.9        | 56 | 58.9 |       |       |                |       |       |
| Opportunistic infection | Yes              | 10  | 4.9         | 18 | 18.9 | .453  | 1.466 | .328           | .051  | 2.112 |
|                         | No               | 195 | 95.1        | 77 | 81.1 |       |       |                |       |       |

depression and presence of opportunistic infection is linked to non-adherence, but drug adverse effect showed no significant association with adherence in both bivariate and multivariate logistic regression, this may be because of overlapping of symptoms of HIV/AIDS and adverse effects of HAART which will make identification of adverse effects more difficult in health facilities with relatively low infrastructure and experts like Bale Zone. As only two cases of adverse effect were reported out of total 300 respondents, this may be due to underreporting of adverse effects. Studies from India have shown that oxidative stress is linked to Non-Nucleosid reverse transcriptase Inhibitors (NNRTI) and Nucleosid reverse transcriptase Inhibitors (NRTI) use (Sharma, 2014). Despite high utilization of NNRTIs and NRTIs in Ethiopia, our study has not revealed much adverse effects; may be due to the above mentioned reason.

The study in Yirgalem showed that the prevalence of all types of depression among patients on HAART to be 98.28% which is far more our finding which is 25.7%. This may be due to failure of utilization of validated tool to measure depression; the study assessed depression by asking the respondents whether they have ever witnessed depression. But our finding is almost similar with study taken by Jimma university specialized hospital which reported the prevalence of depression among patients on HAART to be 28.65%. Study in Ahmadu Bello University Teaching Hospital, Zaria, Nigeria also revealed depression 21.3% of patients on HAART (Olisah et al., 2010). The finding of this study also agrees with our finding.

Factors like gender, race, age, ethnicity and literacy have showed inconsistent results in predicting adherence according to Ammassari et al. (2002) study; this is similar with our finding which showed no significant association between adherence and factors like sex, age, ethnic group, educational status and marital status.

The binary logistic regression depicted that alcohol abuse, current chat chewing status are adversely linked with adherence to HAART, this finding is partly supported by the findings of Stephen Magura which linked alcohol abuse to adherence to HAART adversely (Magura et al., 2011). But these factors failed to show significant association in multivariate logistic regression in our case, this may be due to lower level of substance abuse in Bale Zone compared to Bronx, New York City

Generally in this study we have tried to assess the variables with standardized tools like validated Morisky scale for adherence, PHQ 9 for depression and Stigma scale for stigma determination this could be taken as main strength of the study. But intermittent service from health centers and stopping of giving ART service by some health centers forced as to get data from sites of referral of the patients. Some of the variables like adverse effects are difficult to measure because of the overlapping of the symptoms of HIV/AIDS and adverse effect of HAART. It also requires prolonged follow up

and expert utilization which is not accomplished by our study.

## Conclusion

Generally about three out ten patients on HAART were found to non-adherent to HAART in Bale zone. Depression was detected in about one patient in every for patients on HAART. Depression and the presence of opportunistic infection are adversely linked to adherence status of these patients. Other factors like substance use and disclosure status showed association in binary logistic regression but failed to show significant association in multivariate logistic regression. Factors like age, sex, educational status, occupation, marital status, duration on HAART, recent CD4 count and presence of adverse effect failed show any significant association with adherence to HAART.

## Conflict of Interests

All the authors declare there is no conflict of interest. All the authors participated and contributed equally.

## ACKNOWLEDGEMENTS

The authors express their thanks for Madda Walabu University research and technology transfer bureau for sponsorship of the whole study. The cooperation of all study participants in this specific research also deserves maximal appreciation. Next the author would also like to extend their appreciation for Bale zone health bureau for cooperating with the investigators starting from proposal development. Lastly they would also want to extend our gratitude to data collectors and the managers of all the hospitals and health centers from which data are collected.

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The background of the entire page is a circular image showing a microscopic view of biological structures, possibly a network of fibers or cells, in shades of green and black. The image is slightly blurred and has a dark, moody atmosphere.

# Journal of AIDS and HIV Research

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