

Determinants of Non-Disclosure to Sexual Partner among Human immune virus Infected Adults on Anti-Retroviral Therapy Follow-Up Care at North Shewa Zone public Hospitals in Oromia Region, Ethiopia, 2020.

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Research

Keywords: HIV positive patients, Non-disclosure, HIV positive status, Sexual partner

Posted Date: February 19th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-209710/v1>

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Abstract

Background

HIV positive status non-disclosure to sexual partner remains challenging for the prevention and control of Human Immune Virus infection as it results in poor antiretroviral treatment adherence, high risk of transmission and limits women's ability in the prevention of mother to child transmission.

Objective

The study tried to identify determinants of non-disclosure to sexual partner/s among Human immune virus infected Adult on Anti-Retroviral Therapy Follow-Up Care at North Shewa zone public Hospitals in Oromia Region, Ethiopia, 2020.

Methods

A hospital based unmake case control study was conducted from December 1 to February 30/2020 among 378 (94 cases and 284 controls) Human immune virus infected adults on Anti-Retroviral Therapy Follow-Up Care at North Shewa zone public Hospitals in Oromia Region, Ethiopia, 2020. Epi data version 3.1 for data entry and SPSS version 25 for analysis were used. To find factors significantly associated with non-disclosure to sexual partner/s, Bivariable and Multivariable logistic regression analysis were done.

Result

Of a total of 378 sampled study respondents, 369 were interviewed (92 cases and 277 controls) giving response rate of 97.5%. Among the study participants 39.3% (36 cases and 109 controls) were in the age group of 31-40 years and more than half of the respondents, 53.4% (61 cases and 136 controls) were females. Regarding educational and marital status, 39.3% (100 controls and 45 cases) were unable to read and write and 69.6% (211 controls and 46 cases) were married. Variables that showed significant association with non-disclosure to sexual partner were male sex (AOR: 0.25, 95% CI: 0.13-0.47), ART duration <36 months (AOR:2.13, 95% CI: 1.14-4.01), Being on WHO clinical staging one (AOR: 3.00, 95% CI: 1.26-7.12), Having more than one lifetime sexual partner (AOR: 0.46, 95% CI: 0.22-0.95) and not seeing person/s publically disclosed HIV status (AOR: 3.12, 95% CI: 1.47-6.65).

Conclusions

This study endorsed that promoting public HIV disclosure and having one sexual partner helps disclosure to sexual partner/s. Deep and continuous HIV disclosure counseling service is needed for Female, for those being in WHO clinical staging one and ART duration <36 months.

Introduction

Despite progress in our scientific knowledge towards its prevention, human immune virus infection remains one of the world's most severe community health challenges (1). In the perspective of HIV/AIDS control, "disclosure" is defined as the process of telling HIV-positive status to a sexual partner(s), family members, or others in their close contact(2). World health organization gives a recommendation that all HIV positive persons should disclose their HIV positive status immediately to a prospective sexual partner (3). HIV positive status disclosure to sexual partners provides a gateway for prevention and treatment efforts, allow couples to make informed reproductive health choices to reducing undesirable pregnancies and the risk of maternal to child transmission(4). In countries such as Ethiopia, where sexual contact is a common means of HIV infection transmission, disclosure has substantial roles in the prevention and management efforts by reducing onward transmission, facilitating greater social support, and improve antiretroviral treatment adherence(5). However, despite these potential benefits, incidences, and determinants of non-disclosure have not been fully reported, particularly in hyper-endemic settings (2). Higher HIV infection spread risk is reported in the region with poor partner disclosure status compared to lower spread in the region with better disclosure status to a sexual partner(6). Studies in Ethiopia revealed that non-disclosure to a sexual partner had shown to limit women`s ability to participate in the prevention of mother to child HIV transmission programs(7) and a higher proportion of poor HAART adherence was reported among those who did not disclose to their sexual partner(8). Different levels of HIV positive status non-disclosure status to sexual partner/s ranged from 6.9%-47.4% were reported in Ethiopia (9–13). Scholars had shown that variables such as age, sex, education, residence, marital status, living with partner/s, having children, antiretroviral therapy duration and adherence status, type HIV testing, knowledge of sexual partner/s, use of alcohol, prior discussion about HIV testing, relationship status, see person publically disclosure HIV status are associated with HIV positive disclosure status of the person (9, 11, 12, 14–21).

Methods

Study area and design

An institution-based unmatched case-control study was conducted from December 1 up to February 30/2020 among 378 (94 cases and 284 controls) adult Human immune virus-infected Adult on Anti-Retroviral Therapy Follow-Up Care at North Shewa zone public Hospitals in Oromia Region, Ethiopia, 2020. According to a 2007 Central Statics Agency (CSA) report, the zone had a total population of 1431 305 (22). Currently, the zone has four government hospitals that have been provided antiretroviral treatment service for a total of 4025 adult HIV positive patients.

Sample Size Determination

The sample size was computed using Epi-info Stat Calc program by making assumptions of the 95% confidence level, four controls for each case, 80% power, and 4.16 OR of knowing sexual partner's HIV status from a study conducted in Bale Hospital, Oromia region(12), gives a total of 344 samples. By adding a 10% non-respondent rate the total sample size was 378 (94 cases and 284 controls). The

sample size was calculated using the double population proportion formula in Epi-info TM version 7.2.0.1.

$$n_{cases-Fleiss} = \frac{\left[z_{\alpha/2} \sqrt{(r+1) * p * (1-p)} + z_{1-\beta} \sqrt{r * p_0 * (1-p_0) + p_1 * (1-p_1)} \right]^2}{r * (p_0 - p_1)^2}$$

$$P_0 = \frac{(OR)P_1}{(OR)P_1 + (1 - P_1)} \quad p = \frac{p_0 + r * p_1}{r + 1}$$

Sampling Technique and procedures

First proportional allocation of sample size was made to each hospital based on the total number of HIV positive patients on follow-up care. Then data from the cases were collected by consecutive sampling methods whereas data from the controls were collected by using systematic random sampling techniques.

Source Population

All adult Human immune virus-infected Adults on Anti-Retroviral Therapy Follow-Up Care at North Shewa zone public Hospitals in Oromia Region, Ethiopia, 2020.

Study Population

All adult Human immune virus-infected Adult on Anti-Retroviral Therapy Follow-Up Care at and had a sexual partner during their HIV diagnosis at North Shewa zone public Hospitals in Oromia Region, Ethiopia, 2020

Inclusion and Exclusion Criteria

This study includes HIV positive patients age ≥ 18 years, had a sexual partner during HIV diagnosis and, had at least one month of ART follow up care. It excludes couple tested HIV positive patients.

Operational Definition

Sexual partner: In this study, it is defined as someone's husband/wife if married and girl or boyfriend if single.

Current sexual partner: In this study, it is defined as a person's sexual partner during an HIV diagnosis.

Lifetime sexual partner: is defined as the total number of sexual partner a person had in his/her lifetime

Delayed disclosure: it is defined as disclosure of HIV positive status to sexual partner/s after one month of HIV positive diagnosis.

Risky sexual practice: Sex without a condom with a sexual partner before disclosure of HIV positive status.

Data Collection Tools

The data collection tool was developed from reviewing a similar study conducted previously in Ethiopia (8, 11, and 12). The tool was prepared in English first and translated into Afaan Oromo and Amharic then back to the English language.

Data Collection technique and Procedure

After screened for eligibility, taken written informed consent, and given information about the purpose of the study data was gathered from the medical record and the patients by interviewing while they come for their medical appointments.

Data Collectors and supervisors

Eight BSc degree nurses, two assigned in each ART clinic from other work units were recruited and trained about tools and ways of the data collection procedure. Similarly, two MSc Nurses from other working units were recruited for supervision.

Data Quality Control

A pretest was conducted on 5% of the sample size at Sheno primary Hospital one week before the actual data collection. Then training of data collectors and supervisors on objectives, questionnaires, and ways of collecting the data was given for one day before the actual data collection time. To keep study participants' confidentiality private room free from interruption for interviewing was prepared. Before entry, data were checked for completeness.

Data Processing and Analysis

The data were checked for completeness and entered into Epi Data Version 3.1 and exported into SPSS version 25 for analysis. Descriptive statistics such as frequency and percentage has been presented using graphs and tables. A binary logistic regression model was used to identify the potential predictor variables for HIV positive status non-disclosure. Those independent variables which had a p-value of less than 0.25 during binary logistic regression analysis were entered into multivariable logistic regression analysis. Then Adjusted Odds Ratio (AOR) with 95% CI and p-value < 0.05 were used to identify factors significantly associated with HIV positive status non-disclosure to sexual partner/s.

Ethical Approval Statement

Ethical clearance was obtained from the Ethical Review Committee of Salale University. Permission letter also was obtained from Oromia Health Bureau and the respective hospitals. Written informed consent was taken from each study participant and explained the importance and purpose of the study. Any potential identifiers were eliminated to ascertain confidentiality.

Results

Socio-demographic characteristics

Of a total of 378 sampled respondents, 369 were interviewed (92 cases and 277 controls) with an overall response rate of 97.5%. Among the study participants, 39.3% (36 cases and 109 controls) belonged to the age group of 31-40 years. The majority of the respondents were 53.4% (61 cases and 136 controls) were females. Those who were unable to read and write accounted for 39.3% (100 controls and 45 cases). Regarding occupation, 29.0% (74 controls and 33 cases) were day laborers and 69.6% (211 controls and 46 cases) were married. 65.6% (203 controls and 39 cases) of respondents were living with their sexual partner/s (**Table1**).

Clinically related factors

About 34.1% of respondents (93 controls and 33 cases) were on clinical stage three of the World Health Organization. Regarding their antiretroviral treatment follow up care, 41.7% of respondents (123 controls and 31 cases) had greater than 60 months duration. Similarly, 52.8 % (141 controls and 54 cases) of respondents had poor antiretroviral treatment adherence. The type of testing was provider initiative for 62.1% (166 controls and 63 cases) of respondents (**Table2**).

Partner related factors

Of the respondents, 81% (274 controls and 25 cases) were aware of their sexual partner's HIV status. The majority of respondents 90% (252 controls and 19 cases) had a sexual partner with HIV positive status. Concerning the number of sexual partner/s during HIV diagnosis, most of them 75.3% (202 controls and 76 cases) had a one-lifetime sexual partner and the majority 99.2% (276 controls and 90 cases) had one current sexual partner (**Table3**).

Social related factors

The majority of the respondents 86.4% (238 controls and 81 cases) were not a member of Anti-HIV/ADIS club whereas most of the respondents 77.0% (203 controls and 81 cases) have not ever seen public HIV status disclosed (**Table 4**).

Justification for non-disclosure

Fear of divorcing 45(12.2%) and fear of stigma 24(6.5%) were the most common reason for non-disclosed their HIV status to sexual partner/s (**Figure 1**).

Determinants of Non-disclosure to sexual partners

A binary logistic regression model was performed to detect determinants of non-disclosure to a sexual partner. Thus variables in binary logistic regression analysis with p-value < 0.25 were entered into the multivariable logistic regression analysis model. Variables that showed associations with non-disclosure were sex, antiretroviral treatment duration, WHO clinical stage one, number of lifetimes sexual partner/s, see public disclosure. Regarding HIV positive status non-disclosure, males were 75% less likely as compared to females (AOR: 0.25, 95%: CI=0.13-0.47). HIV positive patients having less than 36 months of antiretroviral follow-up care were 2.13 times more likely to not disclosed than those patients having 36 months and above antiretroviral follow-up care (AOR:2.13,95%:CI=1.14-4.01). The odds of non-disclosure were 3 times more likely among HIV positive patients who had WHO clinical stage one as compared to their counterparts (AOR:3.00, 95%: CI=1.26-7.12). Likewise, HIV positive patients who had more than two-lifetime sexual partners during their diagnosis were 59% less likely to not disclosed as compared to their counterparts (AOR:0.46,95%:CI=0.22-0.95). In addition, the odds of non-disclosure were 3.12 times more likely among HIV positive patients who had seen a person publically disclosed HIV status(AOR:3.12,95%:CI=1.47-6.65)(Table 5).

Discussion

There is a wide range of discrepancies and inconsistencies in the reported rates of HIV disclosure from different studies done worldwide. Non-disclosure to sexual partners is a barrier to make informed reproductive health choices and increases the risk of HIV transmission from mother to child. In this study fear of divorcing was the major reason for non-disclosure to sexual partners which accounts 12.2%. The study result revealed that the odd of non-disclosure were 75% times less likely to occur among males as compared to females. This idea is agreed with the study finding in South Africa and in Tanzania (15, 23). This might be due to that males are not more vulnerable to negative outcomes of disclosure such as blame and physical violence from family or society. It also showed that HIV-positive Patients who had less than 36 months on antiretroviral treatment follow-up care were 2.13 times more likely to not disclosed to sexual partners as compared to their counterparts (AOR:2.13, 95% CI:1.14-4.01). This finding is consistent with a study finding in Ethiopia Michelle Referral Hospital (11), in France, and in Nigeria (21, 24).

Similarly, the finding of the study revealed that HIV positive patients who had not ever seen a person publically disclosed HIV status was 3.12 times more likely to not disclosed as compared to those who had ever seen a person publically disclosed HIV positive status (AOR:3.12, 95% CI: 1.47-6.65). This finding correlated with the study conducted in Woldia Hospital, Ethiopia (9). The possible explanation for this might be experiencing public disclosure will reduce the fear of disclosure. Inanition, baseline WHO clinical staging of the disease and numbers of lifetime sexual partners have shown an association in this study which had not shown an association in studies previously conducted. The odd of non-disclosure was 54% times less likely to occur among patients who had lifetime sexual partners more than one as compared to those who had a one-lifetime sexual partner. This could be due to the fact that the person

will fear the blames from each of the partners. And also the odds of non-disclosure were 3 times more likely to occur to those who had baseline WHO clinical-stage one as compared to those who had baseline WHO clinical stage four (AOR: 3.00, 95% CI: 1.26-7.12). This could be due to the fact that clinical-stage one patient could not be experiencing physical symptoms as compared with clinical-stage four. Due to this reason, they may not be disclosed to sexual partners.

Conclusions

In this study variables such as sex, baseline WHO clinical staging one, Number of lifetime sexual partners, Duration on ART follow-up care and see a person publically disclosed HIV status were found independent determinant factors of non-disclosure to sexual partners. This study recommends that health care providers working in the area of HIV/AIDS should give deep and continuous disclosure counseling service for those in WHO clinical staging one and those having multiple sexual partners, and short antiretroviral follow up care. Furthermore, it better to promote public HIV disclosure to reduce fear and anxiety.

Abbreviations

AIDS: Acquired Immune Deficiency Syndrome, ART: Antiretroviral Therapy, HAART: Highly Active Antiretroviral Treatment, HIV: Human Immune Deficiency Virus, PITC: provider-initiated HIV testing and counseling, PLWAHIV: People Living with HIV AIDS, PMTCT: Prevention of Mother to Child Transmission.

Declarations

Ethics Approval and Consent to Participate

First, the ethical clearance letter was obtained from the Ethical Review Committee of the Salale University, College of health science. A permission letter was obtained from each health facility administrative body and given to the respective ART unit. The Data collection was made after written consent was taken from each study participant. The privacy and confidentiality of the respondents were ensured by excluding the name on the questionnaire and interviewed them in a private space that is free from interruption and cannot be observed or heard by other people within the facility environment.

Consent to Publication

Not applicable.

Data availability: Data cannot available at present time. However, it will be accessed from the cross-ponding author on reasonable request.

Competing interests

Authors of this paper state that they have any competing interests.

Funding:

Salale University had funded this research work. But, has no role in the decision to publish.

Authors' contributions

All the authors have equally participated in this paperwork starting from the beginning to the final work in conceptualization, design, and statistical analysis, interpretation of results, critical interpretation, critical revision, and manuscript preparation. All authors have read and approved this manuscript to be published.

Acknowledgments

First of all, we would like to thank Selale University for funding this study. Our acknowledgement goes to the Oromia Health Bureau and managers of North Shewa Zone Hospitals for giving us all the necessary data. We would also like to thank friends for those who provided us constructive comments, suggestions, and encouragement from proposal development to the final paperwork.

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Tables

Table 1:- Sociodemographic characteristics of adult Human immune virus infected Adult on Anti-Retroviral Therapy Follow-Up Care at North Shewa zone public Hospitals in Oromia Region, Ethiopia, 2020 (N=92 cases and 277controls)

Variables	Response	Frequency		
		Controls N(%) n=277	Cases N(%) n=92	Total
Age of the respondent	20-30 years	87(31.4%)	19 (20.7%)	106 (28.7%)
	31-40 years	109(39.4%)	36 (39.1%)	145 (39.3%)
	40-50 years	68 (24.5%)	28 (30.4%)	96 (26.0%)
	50 and above	13 (4.7%)	9 (9.8%)	22 (6.0%)
Sex of the respondent	Male	141(50.9%)	31(33.7%)	172(46.6%)
	Female	136(49.1%)	61(66.3%)	197(53.4%)
Marital status	Married	211(76.2%)	46(50.0%)	257(69.6%)
	Unmarried	23(8.3%)	5(5.4%)	28(7.6%)
	Divorced	26(9.4%)	19(20.7%)	45(12.2%)
	widowed	17(6.1%)	22(23.9%)	39(10.6%)
Religion	Orthodox	237(85.6%)	81(88.0%)	318(86.2%)
	Protestant	22(7.9%)	7(7.6%)	29(7.9%)
	Muslim	18(6.5%)	4(4.3%)	22(6%)
	Others	0(0.0%)	0(0.0%)	0(0%)
Ethnicity	Amhara	76(27.4%)	24(26.1%)	100(27.1%)
	Oromo	181(65.3%)	68(73.9)	249(67.5%)
	Tigre	11(4.0%)	0(0.0%)	11(3.0%)
	Others	9(3.2%)	0(0.0%)	9(2.4%)
Residence	Urban	197(71.1%)	67(72.8%)	264(71.5%)
	Rural	80(28.9%)	25(27.2%)	105(28.5%)
Occupation	Government employ	59(21.3%)	7(7.6%)	66(17.9%)
	Merchant	79(28.5%)	22(23.9%)	101(27.4%)
	Day laborer	74(26.7%)	33(35.9%)	107(29.0%)
	Farmer	61(22.0))	22(23.9%)	83(22.5%)

	Other	4(1.4%)	8(8.7%)	12(3.3%)
Level of education	Unable to read and write	100(36.1%)	45(48.9%)	145(39.3%)
	Read and write only	50(18.1%)	17(18.5%)	67(18.2%)
	Primary school (1-8G)	51(18.4%)	19(20.7%)	70(19.0%)
	Secondary school (9-12G) and above	76(27.4%)	11(12.0%)	87(23.6%)
Living with sexual partner	Yes	203(73.3%)	39(42.4%)	242(65.6%)
	No	74(26.7%)	53(57.6%)	127(34.4%)
Has children	Yes	206(74.4%)	49(53.3%)	255(69.1%)
	No	71(25.6%)	43(46.7%)	114(30.9%)
Number of children	< 3	143(69.4%)	39(79.6%)	182(71.4%)
	>or equal to 3	63(30.6%)	10(20.4%)	73(28.6%)

Table 2 Clinical related factors of adult Human immune virus infected Adult on Anti-Retroviral Therapy Follow-Up Care at North Shewa zone public Hospitals in Oromia Region, Ethiopia, 2020 (N=92 cases and 277controls)

	Response	Frequency		
		control	case	Total
Base line WHO staging during diagnosis	Stage I	59(21.3%)	26(28.3%)	85(23.1%)
	Stage II	63(22.7%)	19(20.7%)	82(22.2%)
	Stage III	93(33.6%)	33(35.9%)	126(34.1%)
	Stage IV	62(22.4%)	14(15.2%)	76(20.6%)
Duration of ART follow up care	<36 month	78(28.2%)	35(38.0%)	113(30.6%)
	36-59	76(27.4%)	26(28.3%)	102(27.6%)
	>60 and above	123(44.4%)	31(33.7%)	154(41.7%)
ART Adherence status	Good	136(49.1%)	38(41.3%)	174(47.2%)
	Poor	141(50.9%)	54(58.7%)	195(52.8%)
Health status during diagnosis	Well	134(48.4%)	37(40.2%)	171(46.3%)
	sick	143(51.6%)	55(59.8%)	198(53.7%)
Type of HIV test	VCT	111(40.1%)	29(31.5%)	140(37.9%)
	PIHTC	166(59.9%)	63(68.5%)	229(62.1%)

Table 3 Partner related factors of adult Human immune virus infected Adult on Anti-Retroviral Therapy Follow-Up Care at North Shewa zone public Hospitals in Oromia Region, Ethiopia, 2020 (N=92 cases and 277controls)

Variables	Response	Frequency		
		Control	Case	Total
Knowing HIV status of sexual partner	Yes	274(98.9%)	25(27.2%)	299(81.0%)
	No	3(1.1%)	67(72.8%)	70(19.0%)
Sexual partners HIV result	Positive	252(92.0%)	19(76.0%)	271(90.6%)
	Negative	22(8.0%)	6(24.0%)	28(9.4%)
Prior discussion about HIV testing	Yes	96(34.7%)	9(9.8%)	105(28.5%)
	No	181(65.3%)	83(90.2%)	264(71.5%)
Relationship status before testing of sexual partner	Smooth	240(86.6%)	51(55.4%)	291(78.9%)
	Disagreement	37(13.4%)	41(44.6%)	78(21.1%)
No of life time sexual partner	one	202(72.9)	76(82.6%)	278(75.3%)
	More than one	75(27.1%)	16(17.4%)	91(24.7%)
No of current sexual partner	one	276 (99.6%)	90(97.8)	366(99.2%)
	More than one	1 (0.4%)	2(2.2%)	3(0.8%)
Relationship dominancy	You	41(14.8%)	18(19.6%)	59(16.0%)
	Your sexual partner	53(19.1%)	41(44.6%)	94(25.5%)
	No domination	183(66.1%)	33(35.9%)	216(58.5%)

Table 4 Social related factors of adult Human immune virus infected Adult on Anti-Retroviral Therapy Follow-Up Care at North Shewa zone public Hospitals in Oromia Region, Ethiopia, 2020 (N=92 cases and 277controls)

Variables	Response	Frequency		
		Controls	Cases	Total
Being a member of HIV/ADIS	Yes	39(14.1%)	11(12.0%)	50(13.6%)
	No	238(85.9%)	81(88.0%)	319(86.4%)
Ever seen person publically disclosed HIV status	Yes	74(26.7%)	11(12.0%)	85(23.0%)
	No	203(73.3%)	81(88.0%)	284(77.0%)
Drinking alcohol during HIV diagnosis	Yes	67(24.2%)	33(35.9%)	100(27.1%)
	No	210(75.8%)	59(64.1%)	269(72.9%)
Chewing chat during HIV diagnosis	Yes	22(7.9%)	6(6.5%)	28(7.6%)
	No	255(92.1%)	86(93.5%)	341(92.4%)
Smoking cigarette during HIV diagnosis	Yes	22(7.9%)	9(9.8%)	31(8.4%)
	No	255(92.1%)	83(90.2%)	338(91.6%)

Table 5 Bi-variable and multivariable logistic regression analysis between explanatory and dependent variables in North Shewa zone pubic hospitals, Oromia Region, Ethiopia, 2020 (N=92 cases and 277controls)

Variables	Responses	Disclosure status		Odds Ratio with 95% CI		P-value
		Control	Case	COR	AOR	
Age of respondents	20-30 years	87	19	0.32(0.12-0.84)		
	31-40 years	109	36	0.48(0.19-1.20)		
	40-50 years	68	28	0.6(0.23-1.55)		
	50 and above	13	9	1.00		
Sex	Male	141	31	0.49(0.30-0.80)	0.25(0.13-0.47)	0.001*
	Female	136	61	1.00	1.00	
Base line WHO clinical staging	Stage I	59	26	1.95(0.93-4.01)	3.00(1.26-7.12)	0.013*
	Stage II	63	19	1.34(0.62-2.89)	2.29(0.94-5.57)	0.067
	Stage III	93	33	1.57(0.79-3.17)	1.42(0.66-3.06)	0.368
	Stage IV	62	14	1.00	1.00	
Duration on ART Follow up care	<36 month	78	35	1.78(1.02-3.12)	2.13(1.14-4.01)	0.018*
	36-59 month	76	26	1.36(0.75-2.46)	1.92(0.98-3.787)	0.061
	>60 month	123	31	1.00	1.00	
Adherence status	Good	136	38	0.73(0.45-1.12)		
	Poor	141	54	1.00		
Health status during diagnosis	Well	134	37	0.72(0.45-1.16)		
	Sick	143	55	1.00		
Type of HIV testing	VCT	111	29	1.00		
	PIHTC	166	63	1.45(0.88-2.40)		
Lifetime sexual partner	one	202	76	1.00		

	More than one	75	16	0.57(0.31-1.03)	0.46(0.22-0.95)	0.001*
Current sexual partner	one	276	90	1.00		
	More than one	1	2	6.12(0.55-8.44)		
See a person publically disclosed HIV status	Yes	74	11	1.00	1.00	
	No	203	81	2.68(1.35-5.38)	3.12(1.47-6.65)	0.003*

Figures

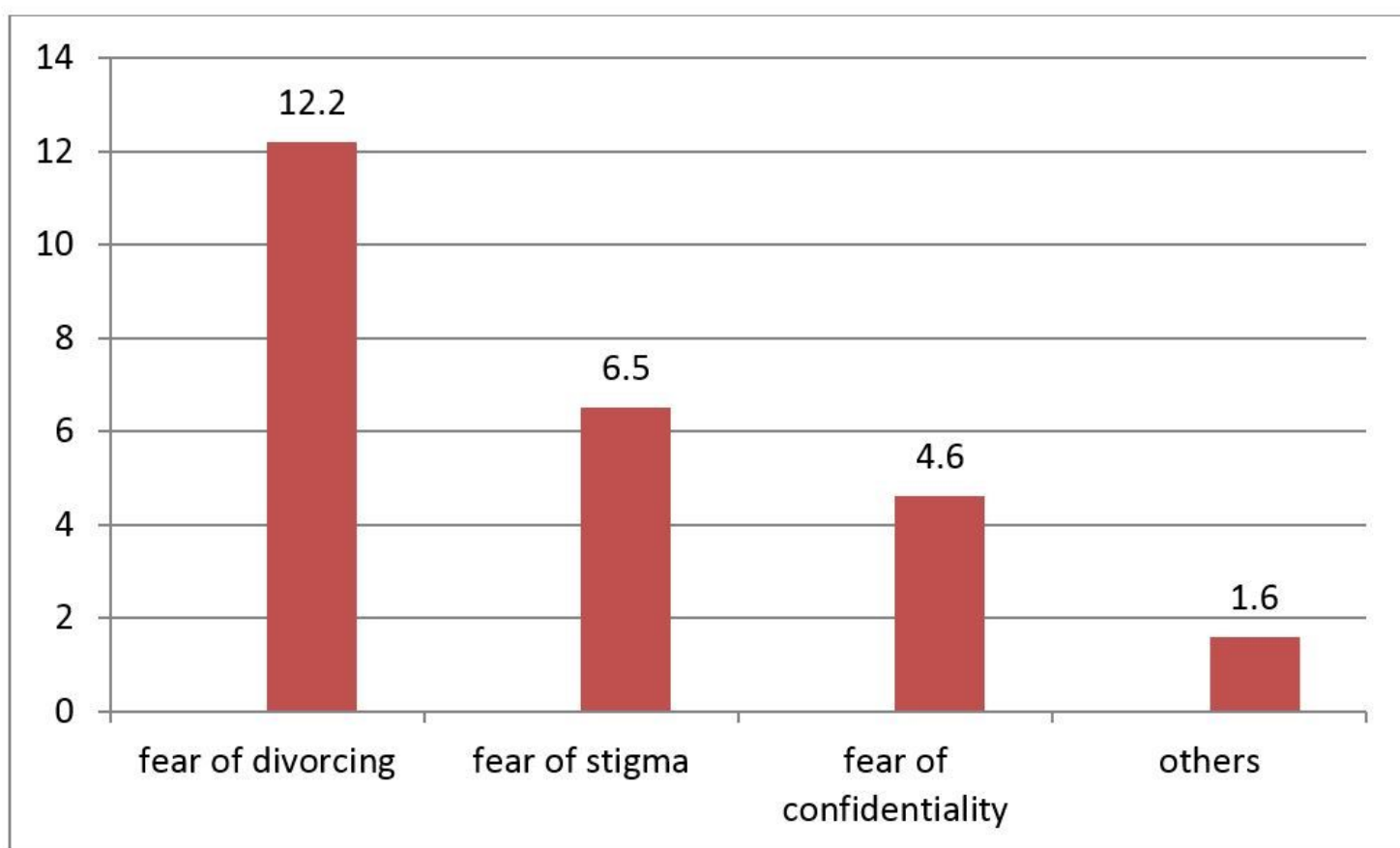


Figure 1

Bar graph showed reasons of respondents for non-disclosure in North Shewa zone public hospitals, Oromia Region, Ethiopia, 2020 (N=92 cases and 277controls).