Ethiopian Public Health Association (EPHA)

EPHA Sponsored Master's Theses Extracts on HIV/AIDS

Extract N0.14

May, 2011

Addis Ababa, Ethiopia

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Editors:

Mihret Teclemariam (Msc)

Zewdie Teferra (BED)

Berhanu Legesse (S.Sc, ACCT, BA, MPH)

Contact Address:

Ethiopian Public Health Association (EPHA)

EPHA- CDC Project

Tel: 251 114 16-60-88
**   251 114 16-60-83**
Fax: 251 114 16-60-86

Email: epha@ethionet.et
Web site : www.etpha.org

P O Box: 7117

Addis Ababa, Ethiopia.

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Likewise, EPHA extends its sincere thanks to all professionals and organizations for providing the necessary inputs, devoting; time, expertise and facilities making it possible to successfully accomplish the studies.

Finally, EPHA would like to express its gratitude to the data collectors, supervisors, principal investigators and advisors of the universities of the various regions, who have participated in these studies.

Hailegnaw Eshete (MS, MPH)
Executive Director, EPHA

Acronyms

AAU	Addis Ababa University
AIDS	Acquired Immuno Deficiency Syndrome
AOR	Adjusted Odds Ratio
ART	Anti- Retroviral Therapy
ARV	Anti- Retroviral
CDC	Center for Disease Control and Prevention
CD4	Cluster of Differentiation 4
CI	Confidence Interval
COR	Crude Odds Ratio
EBA	Ethiopian Broadcast Authority
EPHA	Ethiopian Public Health Association
EMA	Ethiopian Medical Association
FDRE	Federal Democratic Republic of Ethiopia
FGAE	Family Guidance Association of Ethiopia
FGDs	Focused Group Discussions
FMoH	Federal Ministry of Health
EPRDF	Ethiopian Peoples Revolution Democratic Front
HAART	Highly Active Antiretroviral Therapy
HAPCO	HIV/AIDS Prevention and Control Office
HCT	HIV Counseling and Testing
HIV	Human Immunodeficiency Virus
ICA	International Code of Advertizing
ICC	International Chamber of Commerce
IEC	Information Education Communication
LTFU	Lost to Follow Up
MDGs	Millennium Development Goals
MoH	Ministry of Health
MPH	Master of Public Health

MTCT	Mother to Child Transmission
MYSC	Ministry of Youth, Sport and Culture
NGO	Non -Governmental Organization
OR	Odds Ratio
PHC	Primary Health Center
PLWHA	People Living With HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission
SD	Standard Deviation
SNNPR	Southern Nations and Nationalities People Region
STDs	Sexually Transmitted Diseases
STIs	Sexually Transmitted Infections
SPSS	Statistical Package for Social Science
SRH	Sexual Reproductive Health
SSA	Sub Saharan Africa
TB	Tuberculosis
TRA	Theory of Reasoned Action
UN	United Nations
UNAIDS	Joint United Nations Program on HIV/AIDS
VCT	Voluntary Counseling and Testing
WHO	World Health Organization
WLHA	Women Living with HIV/AIDS

Message from the EPHA President

As the HIV/AIDS epidemic persist across Ethiopia and the world over the past 25-plus years, those engaged in prevention activities recognized that effective health communication was vital to stemming its progress. Various media are used to convey public health messages about HIV/AIDS, particularly about new opportunities for communication of prevention messages through evidence based data. Given that no cure or vaccine is on the scope, prevention information—from knowledge of HIV transmission routes to behavior-change messages that encourage individuals and communities to reduce sexual and related risk behavior remains a key intervention strategy.

Ethiopian Public Health Association used to convey public health messages about HIV/AIDS and particularly about new opportunities for prevention messages through research. Extending due attention to the research breach between HIV/AIDS, antiretroviral treatment outcomes, reproductive health care needs of people living with HIV/AIDS, fertility desire among women living with HIV and other very crucial related issues such as alcohol drinking practices and tuberculosis case detections are entertained in this extract.

At this mark, I would like to forward my usual admiration to the researchers who have given due attention to the aforementioned concerns. I further am grateful to all contributors of the studies for their vital involvement without which the information for this document could not be gained.

Once more, I encourage readers make the best out of the results and recommendation of those studies and work harder to pass up HIV/AIDS from our scope of concern.

Dr. Tewabech Bishaw

President, Ethiopian Public Health Association (EPHA)

Introduction

The EPHA-CDC Project commenced generating strategic information through MPH theses, since 2003. The major actors of the MPH Theses are the postgraduates, their advisors, data collectors and their supervisors. The role of EPHA is to sponsor and publish the Master's theses summaries in the form of such EXTRACTS, in collaboration with CDC. So far, we have disseminated 4000 copies each to the health professionals and health related organizations in all over the country, publishing 13 Extracts in the form of booklets.

This is the 15th MPH theses Extract published encompassing summaries of seven theses sponsored by the EPHA-CDC Project for their partial fulfillment of (Masters of Public Health) MPH from the School of Public Health, Jimma University.

The objective of the Extract publication was to provide evidence based information to the health sector on HIV/AIDS program which helps to improve decision making. The study summaries are presented in this booklet with brief abstracts, background, objectives, study design, results, conclusions and recommendations.

The **Extract contains** important results on ART outcomes, reproductive health care needs including fertility desire among people living with HIV/AIDS. In addition, factors contributing to tuberculosis case detection to see practical implications are included as part of the Extract. It also assesses public health implications of alcohol advertising practices in Ethiopia.

The **EPHA –CDC Project** trusts that such studies are most useful to program implementers and policy makers to take measures for

improving service delivery in areas of HIV/AIDS prevention, treatment and care.

Therefore, EPHA would like to invite readers of the Extract to apply the recommendations forwarded by the respective principal investigators in order to improve HIV/AIDS program implementations.

EPHA-CDC Project

Thesis -1

Comparison of Antiretroviral Treatment Outcomes for a General Hospital versus that of Health Centers: a Retrospective Cohort Study in South – Central Oromia

Abebe Megersa

Abstract

Background: Antiretroviral treatment (ART) services are being scaled up in Ethiopia since its introduction in 2003. However there is no documented evidence that shows the difference in the treatment outcomes between health centers and hospitals

Objective: To compare the survival rate and antiretroviral treatment outcome among ART patients in a general hospital versus that of health centres, and to assess determinants affecting the outcome in both settings.

Design: A retrospective cohort study was conducted using secondary data from medical records of ART naïve patients collected between October 2006 and January 2010. The study compared the treatment outcome between health centers and a general hospital in the southern central part of the Oromia Regional State. Univariate and multivariate analyses were conducted using Kaplan Meier and Cox proportional hazard models.

Results: A total of 1,895 (1307 hospital and 588 health center) patient records were followed for 27,990 person-months. During the study period 172 (9.1%) deaths and 235 (12.4%) lost to follow up (LTFU) were recorded. The incidence density of death among ART patients was 6.2 per 100 person-months and incidence of LTFU was 8.4 per 1000 person per month of observation. Risks of death and LTFU from ART treatment were the same between health centre and hospital HIV/AIDS patients. Independent predictors of risk of death and LTFU (failure) for both categories of patients included male sex; AHR 1.4 (95%CI 1.1,

1.7), baseline performance scale three/four; adjusted hazard ratio (AHR) 2.4 (95%CI 2.0, 3.0); advanced disease stage; AHR 2.8 (95%CI 2.3, 3.4), baseline WHO stage, AHR 1.3 (95%CI 1.0, 1.6) and fair to poor adherence to ART; AHR 3.4 (95%CI 2.8, 5.2). Other socio-demographic and baseline variables had no association with risks.

Conclusion and Recommendation: - The ART service scaling up in health centres did not compromise the treatment outcomes in adult ART patients. Important predictors of risk of death and failure to follow up among HIV/AIDS patients on ART were having base-line performance scale three/four, being male, having advanced disease and being fair to poor adherent to ART. Therefore, HIV/AIDS patients should be educated and encouraged to start the treatment in either facility as early as possible.

Introduction
Use of ART drugs in developed countries dates back to the mid 1990s while its initial use in Ethiopia was about a decade later in 2003. In Ethiopia, free ARV service was launched in January 2005 and public hospitals started providing it in March 2005. In the scaling-up of ART services in the country, health centers have started to deliver HIV care and ART as of June 2006. As of March 2007, only about 32% of people living with HIV (PLHIV) in need of ART could be reached. This called for more strengthening and decentralization of the HIV care and ART services to the primary health facilities where low and mid level health workers are given new responsibilities of HIV care and ART services at lower levels [1-3].

Over the last four years, there has been a rapid scaling up of HIV/AIDS prevention and control services including ART service in the country [2]. In Oromia, the number of ART sites has reached 165 of which over 76%

are health centers [4]. In general, more than two-thirds of the sites are health centers with less qualified heath workers and less equipped facilities as compared to hospitals [5]. ART service decentralization and task shifting from highly qualified to middle level health workers is ever increasing all over the country since 2005 [6]; but scientific evidences that show what is happening to the treatment outcome as task shifting goes on in the country are scarce.

Methods and Materials

1. Design, Period and Study Area

Retrospective cohort study design was used. Secondary data from medical records of patients on antiretroviral treatment at a general Hospital and three rural health centers in the southern central Oromia were used as the main data sources. The data used in the current study included medical records of the patients which were collected between October 2006 and January 2010 from the selected facilities. The study was conducted involving four public health facilities, which had been providing ART service since October 2006, in the West Arsi Zone of Oromia region. At present there are two hospitals (Public and one NGO) and 16 functional health centers in this zone. The two hospitals and five health centers provide ART service in addition to other comprehensive services. Antiretroviral treatment service was initiated in Shashemene Hospital in February, 2005 and has been expanded to the three health centers since October, 2006.

2. Source and Study Population

All new adult HIV/AIDS patients who have ever started HAART (highly active antiretroviral therapy) regimen in the study area were taken as source population in this study. All adult HIV/AIDS patients who started

receiving the regimen for the first time in the selected health facilities were considered as study population.

3. Inclusion and Exclusion Criteria

For a health facility to be included in this study, it must be a public health facility that has been providing ART service since October, 2006. This study included patients' medical records based on the following inclusion criteria:

- Patients who have been taking the first line regimen for the first time (ART naïve) in the selected facilities,
- Patients categorized as adults in the national treatment protocol (Age 15 years or above),
- Patients who were on treatment for at least three months in raw in a given facility before transferring out,
- For the key informants, being leader of the ART clinic, Pharmacy and Laboratory departments or longer experience of work in the respective departments of each facility.

Patients were excluded from the study based on the following criteria:

- Patients who were alive and on treatment, having less than three months follow up in a given facility, all of them who did not meet the above inclusion criteria were excluded from this study.

4. Sample Size

The sample size was calculated using Epi Enfo version 3.5 statcal formulae for cohort study considering 95% confidence level, 80% power, 3:1 ratio of hospital patients to health center patients and 30% of the estimated outcome variable LTFU to detect relative risk of at least 1.4% for open cohort of over three years. With these criteria, a sample size of 700 was obtained [7]. All the data available that met the inclusion criteria (total of 1895) was used to maximize the strength of the study.

5. Variables of the Study

The dependent variables were:

o   The Survival rate (Patient retention in the treatment follow up),

o   Lost to follow up and death rate,

o   Immunological progress (change in CD4 count),

o   Clinical improvement or prognosis (WHO clinical stages), change in Functional status (WHO performance-scale) and weight gain among the patients in both treatment facilities.

Predictor variables included factors that can potentially determine the treatment outcomes;

o   Level of health care facility (health center or hospital),

o   Socio-demographic factors (age, sex, literacy status, residence, occupation),

o   Baseline patient immunological status (CD4 level) and

o   Baseline patient clinical status (WHO clinical stage, performance scale).

6. Data Quality Management and Analysis

To ensure data quality, the principal investigator (PI) trained all data collectors and supervisors for a day on the tools, overall objectives of the study and data collection procedures. During the data collection, strong supervision was undertaken both by the PI and the supervisors to check for data completeness, consistency and ensure the respect of ethical aspects. EPI-Info version 6 based templates, which are designed based on the coding done by the principal investigator, was used for quantitative data entry. The collected and checked data were entered into computer by the PI and 10% of the entered data were randomly selected and cross checked for reliability with the respective original data. The entered data were cleaned through phase by phase screening

after exporting them to the SPSS version 15. Summary tables were generated using cross-tabulation comparing outcomes with predictor variables. Survival analysis was done by using Kaplan Meier and Cox regression models to compare the survival rate among patients of the two categories of health facilities. Hazard ratios were calculated to measure relative risks and incidence rates for the outcomes of interest. For the data analysis, computer statistical soft-wares (EPI-Info version 6 and SPSS version 15) were used.

Results

Baseline Data

The study analyzed medical records of 1895 ART naïve patients with 1307 (69%) and 588 (31%) from hospital and health centers respectively. Among the studied cases most (75%) were in the age range of 15-39 years while 56% of them were female. Over 70% were urban dwellers and 55% of them were people with in marital union (table 1).

Table 1: Case Registration Characteristics of ART Patients by Facility type, Oct 2006 to January 2010

Variables		HOP, n(%)	HC, n(%)	$X^2_{(df)}$	P-Value
Age	15-29	491 (37.6)	171 (29.1)	$15.4_{(3)}$	0.002
	30-39	519 (39.7)	247 (42.0)		
	40-49	197 (15.1)	116 (19.7)		
	>=50	100 (7.7)	54 (9.2)		
Sex	Male	575 (44.0)	259 (44.0)	$0.0_{(1)}$	0.983
	Female	732 (56.0)	329 (56.0)		
Marital Status					
	Unmarried	226 (17.3)	57 (9.7)	$72.9_{(4)}$	0.001

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	Married	643 (49.2)	400 (68.0)		
	Divorced	90 (6.9)	50 (8.5)		
	Separated	138 (10.6)	31 (5.3)		
	Widowed	210 (16.1)	50 (8.5)		
Residence	Urban	999(76.4)	377 (64.1)	30.2 (1)	0.001
	Rural	308 (23.6)	211 (35.9)		
Functional Status					
	Bed Ridden	104 (8.0)	32 (5.5)	37.9 (2)	0.001
	Ambulatory	421 (32.2)	119 (20.1)		
	Working	782 (59.8)	437 (74.4)		
WHO stage	WHO stage 1	124 (9.5)	64 (10.9)	21.0 (3)	0.001
	WHO stage 2	372 (28.5)	131 (22.3)		
	WHO stage 3	662 (50.7)	352 (59.9)		
	WHO stage 4	149 (11.4)	41 (7.0)		

From the total subjects involved in the study, 1844 (97.3) had baseline weight documented. The median weight was 50 kg with an inter quartile range (IQR) of 12 kg. The mean weight was 50.3 kg with 95% CI (49.8-50.7) kg. Non parametric model (Mann Whitney U test) indicated that there was no significant difference between the mean ranks of the two groups. Furthermore, the median CD4 count was 130 cells/ml with IQR of 118 cells/ml. Mean CD4 count was 144 Cells/ml with 95% CI (136-151) cells/ml. It was indicated that there was no significant difference between the mean ranks of the two groups of patients (Table 2).

Table: 2 Comparison of Base Line Body Weight and CD4 Count between Studied Facility Types, Oct 2006 to January 2010

Variables	Number	Mean Rank	P-value
Base line body weight			
Health center	587	931.3	0.571
Hospital	1268	916.2	
Baseline CD4 count			
Health center	547	897	0.313
Hospital	1285	925	

Patients treated in health centers were followed for a total of 7,951 person months of observation while hospital patients were followed for 20,039 person months. Incidence of death in health center patients was 5.7 per 1000 person month of observation while that of hospital patients was 6.3 per 1000 person month of observation. The incidence of LTFU was 7.9 and 8.6 per 1000 person months for health centers and hospital ART patients respectively. If all LTFU cases were considered as dead, the total failure rate would be 13.6 and 14.9 per 1000 person months of observation for hospital and health centers respectively. There was no true difference in the incidence of death, LTFU and failure rate among patients treated in the hospitals and health centers (Table 3).

Table 3: Incidence of Events per 1000 Person-Months of Observation by Facility Category, Oct 2006 to January 2010

Event by Facility	Person-time in months	Number	Incidence/ 1000 person month	RR (95%CI)
Death				
Health Center	7,951	45	5.7	0.79 (0.6,1.1)
Hospital	20,039	127	6.3	1
Lost to follow up				
Health Center	7,951	63	7.9	0.81 (0.6,1.1)
Hospital	20,039	172	8.6	1
Failure (Death + LTFU)				
Health Center	7951	108	13.6	0.8 (0.7,1.0)
Hospital	20039	299	14.9	1

Clinical and Immunological Outcome Analysis

Among the ART patients treated in the health centres about 73% gained weight while the remaining proportion had either lost weight or remained unchanged during the follow up period. Among these patients, 92.1% (n=511) had improved from being bed ridden or ambulatory (performance scale 3/4) to performance scale 1/2 where they could work while only about 76% of hospital patients showed similar improvement. About 23% (n=214) of the hospital ART patients failed to gain or lost CD4 cells while only about 15% (n=55) of patients treated in health centres failed to gain or lost the cells (Table 4).

Table 4: Comparison of Patient's Risk of Failure to Clinical and Immunological Improvement between the Facility Groups, Oct 2006 to January 2010

Event by Facility	Number Worsened/ Unchanged (%)	Number improved (%)	RR (95%CI)
Body weight			
Health Center	148 (26.8)	405 (73.2)	0.9 (0.8,1.1)
Hospital	346 (28.9)	852 (71.1)	1
WHO clinical stage			
Health Center	170 (30.7)	384 (69.3)	0.8 (0.7,0.9)
Hospital	537 (41.1)	770 (58.9)	1
Performance scale			
Health Center	44 (7.9)	511 (92.1)	0.3 (0.25,0.5)
Hospital	311 (23.9)	992 (76.1)	1
CD4 count			
Health Center	55 (14.9)	315 (84.1)	0.6 (0.5,0.8)
Hospital	214 (23.1)	713 (76.9)	1

Survival and Related Factors

Death and lost to follow up were termed as failure in the current study. These were taken as the events of interest and the Kaplan Meier model was fitted to test for the difference between the mean survival rate (mean treatment retention) of ART patients treated in the two categories of the health facilities. The mean survival rate was 31.3% [95% CI (30, 32.6)] and 30.3% [95% CI (29.4, 31.1)] for health center and hospital patients, respectively. The survival rate was not different for patients of both facilities. The Log Rank test

showed none significant difference (X^2 = 2.6 and P-value 0.108) between the two patient groups.

A survival function curve was fitted to compare the survival probability of patients treated in both facilities by considering two extreme scenarios. The first extreme scenario was where all LTFU patients were considered as dead. Under this scenario, the survival probability curve pictorially showed higher for health centre patients (Figure 1).
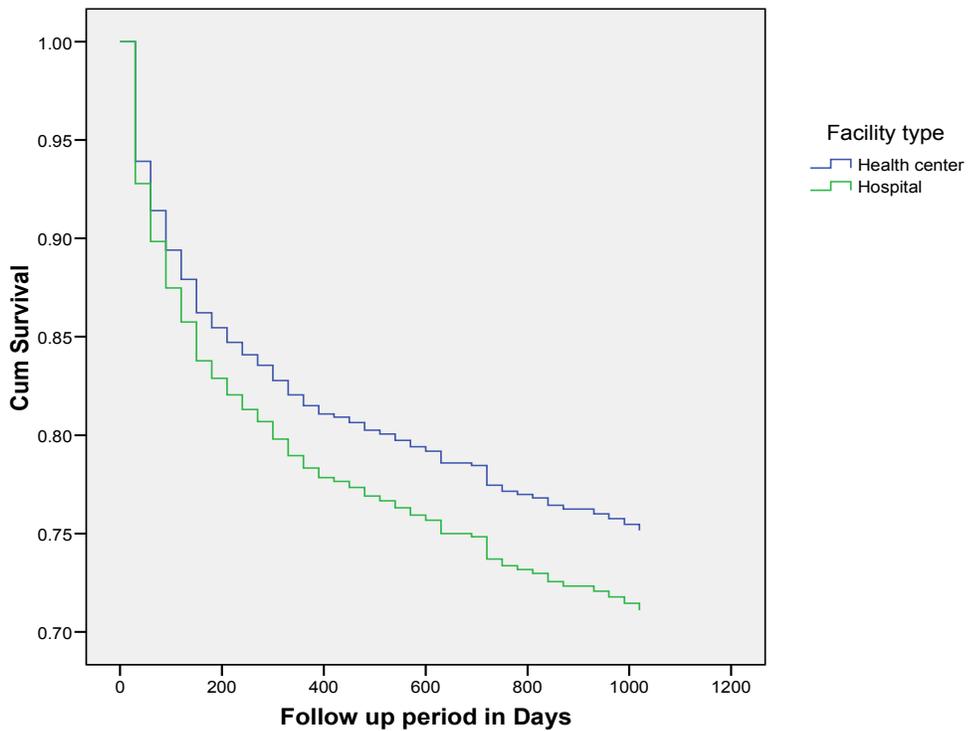

Figure 1: Overall Survival Function Curve Comparing Health Centre and Hospital ART Patients Based on Risk of Failure (Death + lost to follow up), Oct 2006 to January 2010.

The second scenario was where all LTFU patients were considered to be alive after defaulting from the treatment. Similar to that of the first scenario, the survival curve showed pictorially higher for health centre patients as compared to that of hospital patients. However, this finding did not indicate true difference between the two categories of health facilities as depicted in Table 6 above (Figure 2).
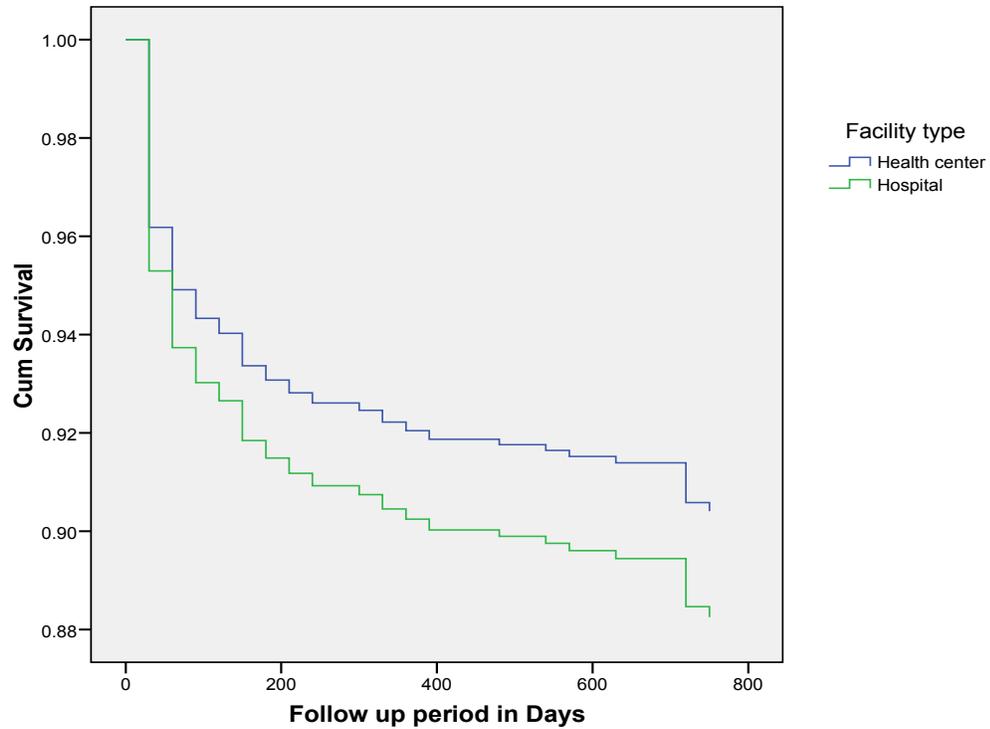

Figure 2: Survival Function Curve Comparing Health Centre and Hospital ART Patients Based on Risk of Death, Oct 2006 to January 2010

Discussion

In this study medical records of 1895 ART naïve patients were included with 1307 (69%) and 588 (31%) from hospital and health centers, respectively. This high case load in hospitals was similar

with that of the recent (2009) Ethiopian national cohort analysis finding; which showed that 87.8% of ART patients receiving the treatment from hospitals [6]. Similar to the findings of the above national study among the studied cases 75% are in the age range of 15-39 years (younger ages) and this higher proportion of the younger age may suggest better treatment seeking behavior in the age group than older. Furthermore, this could also be due to higher HIV prevalence among younger population in the country[8]. Females accounted for 56% and over 70% were from urban residence which matches with HIV prevalence characteristics of the country [9]. Three quarters of the patients started on ART having CD4 count less than 200 Cells/ml. This was lower than the finding of the Ethiopian national ART cohort analysis that reported 81.0% of the patient initiated the treatment with CD4 less than 200 Cells/ml. This difference could be attributed to increasing access to the immunological patient monitoring and the treatment[6]. Median CD4 count was 130 Cells/ml and 140 Cells/ml for HEALTH CENTER and HOSPITAL patients, respectively in the current study. These findings were higher than the finding of other studies conducted in developing countries [7, 10]. This difference could be attributed to the temporal and methodological differences between the two studies. In addition an ever increasing access to ART service in developing countries could contribute for earlier initiation of the treatment before extreme decline in the CD4 count.

Our study showed that there was no true difference between recent mean of CD4 count and body weight for health centre and hospital patients. This result agreed with the Kaplan Meier test for a difference in the treatment outcome for the facilities; that is the outcome for both facilities was not significantly different. Furthermore, the result was in line with the key informant interview summary which indicated not much difference in the facility

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requirements to provide ART service between the health centre and hospital. The survival probability for patients of both facilities was higher than 80% which was higher than that of the Cameroonian patient studies in 2006 (77%)[10]. The difference could be due to time gap between the two studies.

The mortality rate found by this was lower as compared to the finding of the study done in Arba-minch hospital in 2006[11]. The difference could be due to temporal difference between the two studies. Being treated in the health centre did not increase risk of failure (death or lost to follow up). This finding agreed with related study in Malawi which compared the treatment outcome in health centres and hospitals[12]. It also concurs with the recent national study's finding in Ethiopia which concluded that the survival rates of patients in health centres and hospitals as 82% and 72% respectively [6]. This result was also in agreement with the findings of other study in South Africa Lusisiki which reported that task shifting for HIV/AIDS care to relatively new levels of the health system (like health centres) did not compromise quality and it was even associated with significantly better ART outcomes [13]. Absence of a real difference between the treatment outcomes in the two facility types could also be due to the regular mentoring services provided to both facilities by better qualified clinicians both from governmental and nongovernmental organizations. Strong predictors of death and LTFU in patients include being male; AHR 1.4 (95%CI 1.1, 1.7) baseline performance scale three/four; HR 2.4 (95%CI (2.0, 3.0); advanced disease stage; AHR 2.8 (95%CI 2.3, 3.4) and adherence to ART less than 95%; AHR 3.4 (95%CI 2.8, 5.2). This finding agreed with related study in Brazil which showed that the AIDS-case definition was strong predictors of survival; HR 4.5 (95% CI 4.3,5.2) [14].

The incidence of lost to follow up in overall patients in the present study was 5.7 per 100 person year of observation. It was 5.3 and 5.9 per 100 person year of observation for health centre and hospital patients respectively. This finding was lower than that reported from a study in Kenya where the incidence of LTFU was 20.5 per 100 person year[15]. The incidence depicted in our study was higher as compared to the study from Brazil which reported the incidence of LTFU as 3.72 per 100 person-years of follow-up [16].

Conclusion

- o The clinical improvement among HIV/AIDS patients receiving ART in heath centres and hospitals was similar.
- o Immunological improvement (change in CD4 count) among ART patients of both health facility types was not different.
- o Patients started ART in either health facility had similar survival probability.
- o The most important predictors of death and LTFU from treatment among ART patients were being male, having a base line performance scale three/four, having WHO AIDS clinical stage three/four, advanced disease stage and being a poor or fair adherent to ART.

Recommendations

1. Patients with HIV/AIDS and requiring ART should be educated and encouraged to start the service in any closer facility; whether it is health centre or hospital.

2. Antiretroviral treatment service implementers and stake-holders should tailor the service to the identified risk factors: focus on males sex, encourage early health care seeking to minimize late arrival of the patients. Attention should also be paid to improve patients' adherence to ART in order to minimize the incidence of death and lost to follow up.

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Thesis-2

Reproductive Intentions and Reproductive Health Care Needs of Men and Women Living with HIV/AIDS in Nekemte Town, East Wollega, Ethiopia

Tesfaye Regassa (BSc)

Abstract

Background: Most people living with HIV/AIDS are in the childbearing age and face difficult choices concerning their sexuality and childbearing. Fertility desire and reproductive health care needs of HIV positive individuals are changing as their health gets improved and the change in quality of life coupled with reduced vertical transmission.

Objective: The objective of the study was to assess the fertility intentions and reproductive health care needs of men and women living with HIV/AIDS in Nekemte town, East Wollega, Ethiopia.

Methods: A facility-based comparative cross-sectional study was carried out among men and women living with HIV/AIDS from February to March 2010 taking a total sample of 592 people from Nekemte town. Patients who visited the health facility and fulfilled the inclusion criteria were interviewed consecutively. Data was collected using pre-tested structured questionnaires supplemented by an in-depth interview. Quantitative data were entered and cleaned by EPI info, then exported to SPSS version 16 for analysis.

Results: About 36% (n=211) of respondents desired more children. Men were more to desire child than the women: 120 (40.5%) versus 91 (30.7%). Generally people, who desire children are male (AOR: 1.706), younger in age 18-29 years (AOR: 3.49), within the ages 30-

39 years (AOR: 2.975), having no living child (AOR: 13.140), having 1-2 living children (AOR: 4.157,), having a partner who desires child (AOR: 15.402), recent CD_4 count $\geq$ 200 (AOR: 2.014) were positively associated with fertility desire.

Among HIV positive women who desired children were young age of 18-24 years (AOR: 3.508), having no living child (AOR: 6.729), having 1-2 living children (AOR: 2.975), having a partner who desires a child (AOR: 17.430), a family size < 2 (AOR: 3.526) were positively associated with women's fertility desire. Among HIV positive men who desired children were younger in age (18-29 years) (AOR: 3.030), within the ages 30-39 years (AOR: 3.105), having no living child (AOR: 16.435), having 1-2 living children (AOR: 4.652), having a partner who desires a child (AOR: 16.734) were positively associated with men's fertility desire.

Conclusion and Recommendation

Most PMTCT interventions have targeted women. However, men were more likely to desire more children than women, and men are often the decision makers in matters related to reproductive choices. Under those circumstances in which many HIV-infected individuals, intentionally or unintentionally, continue to have children, dealing openly with their fertility desires make it necessary to meet their reproductive health care needs.

Keywords:-fertility desire, HIV/AIDS, family planning, reproductive health care, Nekemte (Oromia Region)

Introduction

Globally, the number of PLWHIVs worldwide continued to grow, reaching an estimated 33.4 million by 2008. This figure is 20% higher than the number in 2000, as new infections occurred each

year, HIV treatments, extending life, and as new infections still outnumber AIDS deaths. Sub-Saharan Africa accounted for 71% of all people living with HIV/AIDS, 2 million people were newly infected with HIV, and 72% of all AIDS deaths in 2008. Ethiopia is among the countries that are on the top list of nations hard hit by the HIV/AIDS pandemic. According to calibrated single point estimates (2007), the national adult HIV prevalence is reported to be 2.1% (7.7% in urban and 0.9% in rural areas) (1-3).

In most places, unprotected intercourse causes most HIV infections in women. Most women living with HIV/AIDS are of childbearing age and face difficult choices concerning their sexuality and childbearing. Women's choices may be limited by direct or indirect social, economic and cultural factors as well as medical factors (4-6).

In Ethiopia, by 2007 about 61% of people in need of ARV treatment lived in urban areas. As access to ART increases, HIV can be experienced as a chronic but treatable disease; PLWHIV are more likely to desire children. Most recently, fertility issues in HIV positive men and women are becoming increasingly important. Many women with HIV who are sexually active want to prevent pregnancy. Despite the desire to avoid having children, many women with HIV experience unintended pregnancies. Family planning services have great potential for leading the way in promoting reproductive health and in efforts to prevent and treat HIV/AIDS. Further, helping women living with HIV/AIDS avoid unintended pregnancies is an important component of programmes to prevent HIV among infants (4, 6-8).

It is estimated that one-fourth of all births in SSA are unintended. Assuming that 25% of HIV-positive births are also unintended, meeting the FP needs of all women with HIV in SSA has the potential to avert 120,000 HIV-positive births each year. In countries like Ethiopia, where high prevalence of HIV infection, low levels of

contraceptive use and high value of childbearing, addressing fertility issues among PLWHIVs is critical for preventing unwanted pregnancies and HIV transmission from mother-to-child (2).

A study from South Africa indicates that both women and men living with HIV/AIDS fear infecting a partner or their baby and are anxious about leaving either living or future children as orphans, their ability to financially support their children, given their illness. While many HIV-infected individuals do not wish to have children, others desire children despite their infected status (8).

People who start antiretroviral therapy may find that, with their improved health status, they become more sexually active, and have an increased fertility desire. However, individuals found it difficult to reconcile safer sex messages with their desire to reproduce (4,6,8).

The extent of the intention and how it varies by individual, social status, health and demographic characteristics is not well understood. The desire of HIV infected persons to have children in the future has significant implication for the transmission of HIV to sexual partners or newborns. To our knowledge, there are no analytic studies done on reproductive intentions and reproductive health care needs of men and women living with HIV/AIDS in Ethiopia.

Objectives:-To assess fertility intentions and reproductive health care needs of men and women living with HIV/AIDS in Nekemte town.

Methods
Study Design, Area and Population
A facility-based Comparative cross-sectional study among men and women living with HIV/AIDS supplemented by a qualitative in-depth interview were employed from February to March 2010 in Nekemte

town, located at 331 km to the west of Addis Ababa. By 2007 Nekemte's total population was estimated at 76,817(9). While the total number of people living with HIV/AIDS on highly active antiretroviral therapy in Oromia region, Nekemte Hospital and Nekemte Health Center were 39,666, 1,528 and 284, respectively (10). The study population was all men and women who had at least one visit to the selected hospital and health center during the study period for ART services.

Inclusion Criteria

Men and women attending ART services at the Nekemte Public health institutions and aged 18 years and above were eligible for participation in the study. The upper age limit applied in the recruitment of women and men was 49 years and 59 years respectively.

Sample Size and Sampling Procedures:-

For the Quantitative data, sample size was determined using the formula for the difference between population proportions. A study conducted in SNNPR indicated that fertility desire of people living with HIV/AIDS was 40.3% and 28.2% among men and women, respectively (11). Male to female ratio was 1:1, SND 95% significance level (1.96), and SND 80% power (0.84). By adding a 15% non-response rate, the total sample size calculated was 592. The study subjects were chosen proportional to the institutions client size. Study subjects were stratified by sex and sample size for each stratum equally allocated. In each of the selected health facilities, participants were consecutively included in the study until the required sample size was achieved. For the qualitative method, purposive sampling was used; at least a month on ART and able to forward necessary information in relation to the objective of the

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study, whether or not they had living children and whether or not they had married. The selection was continued until the point of saturation of the idea achieved.

Data Collection Procedures: - A structured questionnaire was used to collect quantitative data such as socio-demographic characteristics, sexual behavior, fertility history, current fertility desires. The questionnaire for the survey was initially prepared in English, and translated to Afan Oromo, and checked for its consistency by back translation to English by three different individuals. Structured questionnaire was pre-tested in the ARV treatment units of health institutions. The questionnaire was then assessed for its clarity, length and completeness. Some skipped patterns were then corrected, questions difficult to ask were rephrased and the consent form also modified. Additional semi-structured questions were used to probe participants' specific reasons and attitudes regarding future childbearing, sexual activity, pregnancy post HIV diagnosis, and disclosure status.

Data Collectors and Data Quality Management:-For the quantitative data, health care providers working in the ART unit administered structured questionnaire after they took training on the objective, relevance of the study, and technique of interview with demonstration. Supervisors controlled the data collection process closely. Filed questionnaires were checked daily for completeness and errors. To ensure qualitative data quality; privacy, confidentiality of the respondents, good interaction between respondent and interviewer were maintained.

Data Processing and Analysis: Data were entered in to EPI info and cleaned. Data exported to SPSS for analysis and descriptive

statistics were calculated. Association of the independent variables with the dichotomized dependent variables was tested using binary logistic regression. All variables, found to be associated with the main outcome variable by having odds ratios that reached statistical significance in the bi-variate model, were included in the multivariate model at 95% C.I (P-value<0.05).

Responses to open-ended questions were collapsed into dominant thematic areas to facilitate analysis; representative quotes are presented here which were typical of selected themes.

Ethical Considerations: Ethical approval was obtained from the Institutional Review Board of the Medical Faculty of Addis Ababa University. A formal letter for permission and support was written to the respective administrator is office. The purpose of the study was clearly explained to the concerned bodies. In order to keep confidentiality of Patient's information, only those personnel who were working in the ART units were involved in the data collection and supervision processes. The purpose and processes of the study were explained to all participants, and it was made clear that participation should be taken differently from routine clinical care. Before informed consent was obtained, the respondents were told that they have the right to be or not to be involved in the study. More over they were informed that no involvement in the study would not affect the clinical care they receive. An interview was conducted in a private room at the hospital and health center by a trained interviewer.

Results

Socio-demographic Characteristics of the Study Participants

A total of 592 HIV-positive men and women on ART were interviewed between February and March 2010 in Nekemte town. An equal

number of women and men were interviewed. The overall study response rate was 100%. The overall mean age was 33.05 years. The women were younger than the men (mean age were 30.83 years and 35.26 years, respectively). Of all the respondents, 282(47.6%) were Orthodox and 268 (45.3%) were Protestant Christians. About 66% of the men were married/living with partner while only 53% of the women were married/living with a partner. 9% of the respondents reported that they had never married (12.2% men versus 6.1% women). More women than men were not attended schools (36.8% and 29.1% respectively), women were less attended secondary and above education than men (126 (42.6%) and 164 (55.4%, respectively). Men were nearly twice to be engaged in government/private employment than women (104 (35.1%) and 56 (18.9%), respectively), while women were nearly threefold of men to be unemployed (26 (8.8%) and 82 (27.7%) respectively). About 88% of the respondents interviewed were from urban. Study participants predominantly, were from the lower economic background. Only about 28% of the respondents earned a family income of more than 300 ETB per month (35.5% men versus 20.3% women).

Sexual Behavior and Condom Use

With respect to their history of sexual behavior prior to HIV diagnosis, more women than men had sex with regular/one partner (68.2% and 41.6%, respectively), 216 (36.5%) of the respondents (137 (46.3%) among men versus 79 (26.7%) among women) had risky sexual practice with inconsistent/no condom use, 234 (39.5%) (51.0% among men versus 28.0% among women) had multiple sexual partners. About 47% of the non-married participants had sexual partners.

Concerning current sexual practice, nearly three-fourth (72.0%) of the total respondents were found to have current sexual practice with regular/one partner, while 34 (5.7%), 19 (3.2%), and 8(1.3%) had multiple sexual partners, inconsistent/no condom use, respectively.

More men than women had a sex with regular sexual partner (76.0% versus 67.9%). About 2.7% of the women and 3.7% of men the reported unprotected sex. Nearly half of men and women reported changes in sexual feeling and experience since knowing their sero-status. Nearly an equal proportion of women and men experienced reduced sexual desire (93 (31.4%) and 87 (28.4%), respectively), while others have either resumed or increased sexual desire.

Seventy percent of respondents (78.4% among men versus 61.8% among women) were sexually active in the 6 months prior to the interview. Nearly an equal proportion of men and women had used condoms within the six months prior to data collection (91.8% and 90.2 % respectively). Among those who used, 182 (85.5%) of the men who were currently on ARVs did use a condom all the time practicing sex with their female partners. Among women, 152 (93.1%) reported consistent condom use when having sex with their male partners (Table 1).

A result from the qualitative data indicated, that six out of ten respondents had regular partner, while the remaining reported no sexual partners. Six of the respondents who had sexual partners reported that they regularly used condom during sexual intercourse. Reasons why they were using condom were to prevent themselves from acquiring new strain, to prevent from STI, unwanted pregnancy, and to protect their partner.

A respondent explained about sexual desire and condom use as,*" --- my sexual desire is good. The one [sexual partner] I previously had was HIV negative and we separated. After him, I started a relationship with another person who was on ART. He did not*

wanted to use condom… but I wanted to use a condom and we disagreed. Due to this we are separated. Now I am alone but I want to have a sexual partner." (22 years old woman who has never married).

Disclosure Status of Men and Women Living with HIV/AIDS

Men respondents were more than women respondents to have disclosed their HIV status to their partners (241(81.4%) and 229 (77.4%) respectively). Among those who didn't disclose their status to their partners, their main reasons among men were fear of divorce 16(36%), followed by fear of stigma and discrimination 11 (24%). The main reasons not to disclose among women were fear of stigma and discrimination 7 (14%) followed by fear of divorce 4 (13%).

For both men and women, disclosure of HIV sero-status to family and friends is higher. Among men, disclosure to family and friends was 237 (80.1%) and 192 (64.9%), respectively. Also among women disclosure to family and friend were 263 (88.9%) and 189 (63.9%) respectively. Among 71% of men's partners who were tested, 161 (77%) were positive. Among women, 187 (63.2%) of their partners who were tested , 142 (76%) of them were positive.

Table 1: - **Sexual Behavior and Condom use of Men and Women Living with HIV/AIDS Attending ART Service in Nekemte Town, East Wollega, Ethiopia, February 2010**

Characteristics	Men (%)	Women(%)	Total (%)
Have sexual partner (non married)(male=101, female=139, total=240)	61 (60.4)	44 (31.7)	105(43.75)
Current sexual behavior			
Only one sexual partner	225(76.0)	201 (67.9)	426(72.0)
Multiple sexual partners	22 (7.4)	12 (4.1)	34 (5.7)

No/Inconsistent condom use	11 (3.7)	8 (2.7)	19 (3.2)
Sell/buy sex	1 (.3)	7 (2.3)	8 (1.3)
Sex with whom?	n=232	n=183	n=415
Regular partner	189(81.5)	153 (83.6)	342 (82.4)
Non regular partner(casual)	39 (16.8)	26 (14.2)	65 (15.7)
No response	4(1.7)	4(2.2)	8(1.9)
Sexual desire	n=296	n=296	n=592
Normal	135(45.6)	165(55.7)	300 (50.7)
Decreased	99 (33.4)	93 (31.4)	192 (32.4)
Increased	62 (20.9)	27 (9.1)	89 (15.0)
No response	0 (.0)	11 (3.7)	11 (1.9)
Condom use in the last six months	n=232	n=183	n=415
Yes	213(91.8)	165(90.2)	378(91.1)
No	19 (8.2)	18 (9.8)	37(8.9)
Frequency of condom use (last six months)	n=213	n=165	n=378
Always	182(85.5)	152 (92.1)	334 (88.4)
Almost always	19 (8.9)	8 (4.8)	27 (7.1)
Sometimes	12 (6.8)	5(3)	13 (3.4)
Reason for condom use	n=213	n=165	n=378
Dual protection (pregnancy/STI/HIV)	142 (67)	90 (55)	232 (61)
To protect a negative partner	11 (5)	12 (7)	23 (6)
Advice by health worker	15 (7)	3 (2)	18 (5)
Fear of re-infection with new strain	130 (61)	93 (18)	223 (59)
Fear of other STDs	9 (4)	0 (.0)	9 (1.5)
No response	0 (.0)	1 (.3)	1 (.2)
Reason not to use condom	n=18	n=18	n=36
Feeling it's not comfortable or reduction of sexual pleasure	8(56)	5(28)	14(39)
Partner objection	10 (11)	10(56)	20 (56)
Desire to conceive	2(11)	1(6)	3(8)

Others	2(11)	3(17)	5(14)

Pregnancies Post-HIV Diagnosis

Nearly three-fourth of men and women living with HIV/AIDS had one or more living children (77.7%). 25(69.4%) of the women were intentionally pregnant among 12% of the men's partners living with HIV/AIDS . Also twelve percent of women become pregnant of whom 20 (55.6 %) were intentional (Table 2).

Fertility Desire of Men and Women

About 41% of men and 30.7% of women were open to the possibility of having a child. Among men, who want to have a child within one year, within one to three years, those who want to do so with after three years and those who were undecided were 12 (10%), 21 (18%), 2 (2%), 85 (71%), respectively. While among women who desire child, who want to have a child within one year, within one to three years, those with after three years and those who were undecided were 9 (10%), 15 (16%), 5 (5%), 62 (62%), respectively. For both women and men, the desire to have at least one child was the most commonly cited reason to desire to have a child 48 (40%) and 41 (45%) respectively) followed to desire for more children (56 (47%) and 45 (49%), respectively). Partner's /family influence to have children was (10 (51%) and 3 (3%) respectively).

The most common reason deterring men from having children was having enough children already 89 (51%), insufficient financial means 31 (18%), followed by fear of mother to child AIDS transmission 24 (14%). Women's reasons not to have a child was attributed to having already achieved desired number of children 107 (52%), followed by not having adequate income 29 (14 %) and fear of mother to child transmission 25 (7%). More men preferred having a boy than a girl (20 (17%) and 10 (11%) respectively) while 81% of men and 82% of women did not have sex preferences (table 2).

The qualitative result indicated that, out of 10 respondents, 7 individuals had children. Discussion of their fertility desire and intention elicited multiple fears: that the child would be born HIV-positive, and that there was a risk of re-infection with a new strain of HIV or transmission of HIV to partner, while trying to conceive. However, two out of those with children and all of those without children expressed their desire to have a child despite their fears, as justified by reasons like, not having any child, availability of prevention of mother to child transmission, improvements of health status, and get care & support from their children in old age.

One respondent explained the reason why she does not desire a child and the impact of HIV as, "**I *have two children, the first- 10 years old female, not tested, the second- 3 years old male, and HIV positive, --- I took medication to prevent mother to child transmission for second birth. When I was in labour during the night, gone on my knee and took drug. Then I gave a breast fed for 6 months then I started replacement feeding. But my child is positive. If I knew my status before the pregnancy I would not have had the child, to avoid HIV transmission to my child.* "**(30 years old woman, married, with two living children)

*Another respondent who desired to have a child explained**," I don't have any child. If I have a child I will become very happy and having a child is very important--- If I get a child, I consider myself as I am in heaven. --- I have not decided how many children I can have but I have a great desire to have a child. "***
(24 years old man, never married, without a living child, grade 9)

*One respondent who had a desire to have a child but had fear of having a child explained**," I have a desire to have a child ---my partner understands, I am positive and she is negative, I think it is difficult to have a child. If there is any possibility of***

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having a child, I want a girl. --- My present child also needs a sibling, and complains that she is alone and cries to me all the time. My partner also has a desire to have a child." (40 years old man, married, with one living child, grade 7 complete)

Table 2:-Pregnancy History and Current Fertility Intention of Men and Women Living with HIV/AIDS in Nekemte town, East Wollega, Ethiopia, February 2010

Characteristics	Men (%) n=296	Women (%) n=296	Total (%) n=592
Number of alive children			
No living child	73 (24.7)	68(23.0)	141(23.8)
1-2	139(47.0)	128(43.2)	267(45.1)
> 2	84(28.4)	100(33.8)	184 (31.1)
Pregnancy since HIV diagnosis			
Yes	36 (12.2)	36 (12.2)	72 (12.2)
No	260(87.8)	260 (87.8)	520 (87.8)
Was it intentional pregnancy?	n=36	n=36	n=72
Yes	25 (69.4)	20(55.6)	45 (62.5)
No	11 (30.6)	16 (44.4)	27 (37.5)
Open to the possibility of having a child			
Yes	120(40.5)	91 (30.7)	211 (35.6)
No	176(59.5)	205 (70.3)	381 (64.4)
When desired to have a	n=120	n=91	n=211

child			
Within next 12 months	12(10)	9(10)	21(10)
within one to three years	21(18)	15(16)	36(17)
after three years	2(2)	5(5)	7(3)
Not decided when to have a child	85(71)	62(68)	147(70)
Reason for their current fertility intention	n=120	n=91	n=211
Want at least one child	48(40)	41 (45)	89 (42)
I don't have a desired number	56 (47)	45 (49)	101 (48)
My partner desired to have children, pressure from family	10(8)	3 (3)	12 (6)
Others*	12(10)	5(5)	17(8)
Reason not to desire a child	n=176	n=206	n=381
Already achieved desired number of children	89 (51)	107 (52)	196 (51)
Fear of mother to child transmission	24 (14)	25 (12)	49 (13)
Don't have adequate income	31 (18)	29 (14)	60 (16)
Child bearing may further compromise my health	16 (9)	27 (13)	43 (11)
May not be healthy in future to care for child	8 (5)	14 (7)	22 (6)
Fear of orphaning/problems in caring	11 (6)	15 (7)	26 (7)
Fear of infecting partner while try to conceive	12 (7)	2 (1)	14 (4)
Preferred sex	n=120	n=91	n=211
Male	20 (17)	10 (11)	30 (14)

Female	3 (3)	7 (8)	10 (5)
No preference(God knows)	97 (81)	74 (82)	171 (81)
Desire of a partner to have a child	n=296	n=296	n=296
Yes	105 (35.5)	80 (27.0)	185 (31.3)
No	146 (49.3)	143 (48.3)	289 (48.8)
Don't have a partner	45 (15.2)	73 (24.7)	118 (19.9)

* For substitution, children are an important part of marriage; current child needs sibling, original desires for childbearing unchanged

Family Planning Use

Two hundred eighteen of the PLWHA (36.8%) had ever used at least one method of contraception before their HIV diagnosis; injectables and oral contraceptive pills were the most commonly used contraceptives before HIV diagnosis (57% and 26% respectively). Among men/men's partner the commonly used method HIV diagnosis among who used contraceptive were injectables followed by condom (46 % and 42 % respectively), while among women commonly used methods were also injectables and pills but with higher proportion (65% versus 57% respectively).

At the time of the study, 512 respondents (86.5%) were using at least one method of contraceptive; of these 387 (76%) were using condoms, while 116 (23%) practiced abstinence. Eighty four percent of men and 67 % of women were using condom while 14 % of men and 31% of women were abstained from sex. About 83% wanted to use family planning in the future; these individuals most preferred to use condoms 439 (89%) followed by injectables 38 (8%) (Table 3).

Table 31:-**Contraceptive Method used ever, during Time of Interview, to be used by Men and Women Living with HIV/AIDS in Nekemte town, East Wollega, Ethiopia, February 2010**

	Ever use before diagnosis			Current use of Family planning			Desired family planning in future		
	Men (%) n=296	Wo (%) n=296	Total (%) n=592	Men (%) n=296	Wo* (%) n=296	Total (%) n=592	Men (%) n=296	Wo (%) n=296	To* (%) n=592
Contraceptive use									
Yes	97(32.8)	121(40.9)	218(36.8)	250(84.5)	262(88.5)	512(86.5)	243(82.1)	250(84.5)	493(83.3)
No	199(67.2)	175(59.1)	373(63.2)	46(15.45)	34(11.5)	79(13.3)	53(17.9)	46(15.5)	99(16.7)
FP method	n=97	n=121	n=218	n=250	n=262	n=512	n=243	n=250	n=493
Abstained	2 (2)	3 (2)	5 (2)	34(14)	82(31)	116(23)	8 (3)	29 (12)	37 (8)
Condom	40 (41)	20 (17)	60 (28)	211 (84)	176 (67)	387(76)	229 (94)	210(84)	439 (89)
Pills	19 (20)	37 (31)	56 (26)	2 (1)	3 (1)	5 (1)	0 (.0)	3 (1.0)	3 (1)
Injectable	45 (46)	79 (65)	124(57)	18 (7)	14 (5)	32 (6)	17(7)	21(8)	38 (8)
IUD	2	2 (2)	4 (2)	0	1	1	1	3 (1)	4

	(2)			(.0)	(.3)	(0.3)	(.3)		(1)
Impl ants	5 (5)	2 (2)	7 (3)	4 (2)	1 (.3)	5 (1)	0 (.0)	1 (.3)	1 (.2)

*wo= women

*To= Total

At the time of interview, among men the main reasons for not using contraceptive method were not having a sexual partner 25 (47%), the desire to have a child 9 (17%), fear of reaction with ART drugs 7 (13%). Also among women, the main reason for not using was not having sexual partner 23 (50%) followed by fear of reaction with ART drugs 15 (33%), wanting to have a child 4(9%).

The result from qualitative data indicated that all of six respondents, who were in union used condom and one respondent used injection in addition to condom.

One respondent explained why he preferred condom as, **"My partner and I are positive, to prevent pregnancy which may end up positive is through using a contraceptive method, --- also it prevents acquiring a new strain."** *(42 years old man, married, with no education)

One respondent, who has been using injection for three years since HIV diagnosis and switched to condom after three years since diagnosis explained her reason as, **" Now we are using condom only. I was afraid to tell my husband about my status for three years and were not using condom. I was using injection only. I told my partner after three years of knowing my status. Then, we started to use condom because of its dual protection."** *(30 years old woman, married, with no education)

Nine of the respondents explained their intention to use condom. Inddition to condom, four of them want to use injection while one wanted tubal ligation. Tubal ligation was considered as the best

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method by one respondent, if he wanted another child first, ***"I want to add another child first, then after I want to be sterilized. But until I have another child I continue to use condom. "*** *(*40 years old man, married, grade 7 complete)

Knowledge and Attitude toward MTCT and PMTCT

Knowledge was high regarding the possibility of HIV transmission from mother-to-baby (574(97.0%)) (99.0% among men and 94.9%among women). Equal proportion of women and men knew about presence of drugs that reduce transmission of virus from mother to child (97%) and 97% respectively). In addition, nearly an equal proportion of women and men think that HIV-infected women, who take medication actually reduce HIV transmission to child (273 (96%) and 258 (95%) respectively) (Table 4)

Table 4:- knowledge and Attitude toward MTCT and PMTCT among Men and Women Living with HIV/AIDS in Nekemte town, East Wollega, Ethiopia, February, 2010

Characteristics	Total (%)	Men (%)	Women (%)	P value
HIV transmitted from mother to child	n=592	n=296	n=296	
Yes	574(97.0)	281(94.9)	293(99.0)	.010
No	18(3.0)	15 (5.1)	3 (1.0)	
Time of HIV transmission	n=574	n=281	n=293	
During breastfeeding	490(85)	230(82)	260(89)	
During labour	423(74)	209(74)	214(73)	
During pregnancy	380(66)	188(67)	192(66)	
Heard of drug that	n=574	n=281	n=293	

prevent MTCT				
Yes	558 (97)	273(97)	285(97)	.038
No	8 (1)	5 (2)	3 (1)	
Don't know	9 (1)	4 (1)	5 (2)	
Attitude toward drugs given to reduce MTCT actually reduces transmission	n=558	n=273	n=285	
Yes	534 (96)	260 (95)	274 (96)	
No	22 (3.7)	12 (4)	10 (4)	
Don't know	3 (.5)	1 (.7)	1 (.3)	
Sources of information on MTCT	n=574	n=281	n=293	
Health care providers	483 (84)	226 (80)	257 (88)	
Mass media	166 (29)	100 (36)	66 (23)	
From friends/peers	20 (3)	10 (4)	10 (3)	

HIV diagnosis, treatment, care and support

One hundred seventy two (58.1%) of the men had known their HIV status within the past two years, while 153 (51.7%) for the women it had less than or equal to 2 years since they were diagnosed for HIV. 192 (64.9%) of the men had started ART less than or equal to two years, while 177 (59.8%) of the women done so for the same length of time.

About 95 % of men and women reported improvement in their health status after ARV treatment. Nearly three fourths of both men and women had CD4 count of greater than or equal to 200 (75.3% and 73.3%) respectively (Table 5).

Table 5: Information on HIV/AIDS Treatment, Support Conditions among men and Women Living with HIV/AIDS in Nekemte town, East Wollega, Ethiopia, February 2010

Characteristics	Men (%)	Women (%)	Total (%)
Duration of time since diagnosis(years)	n=296	n=296	n=592
≤ 2 yrs	172(58.1)	153(51.7)	325(54.9)
>2yrs	124 (41.9)	143(48.3)	267(45.1)
Duration of time on ART(in years)			
≤ 2 yrs	192(64.9)	177 (59.8)	369(62.3)
>2yrs	104(35.1)	119(40.2)	223(37.7)
Self reported changes in health status			
Improved	279 (94.3)	281 (94.9)	560 (94.6)
Not improved	17 (5.7)	15 (5.1)	32 (5.4)
Recent CD4 count			
<200	73 (24.7%)	79(26.7%)	152 (25.7%)
≥ 200	223 (75.3%)	217 (73.3%)	440 (74.3%)
Did you get any Support			

Yes	*145(49.0)*	*185(62.5)*	*330(55.7)*
No	*151 (51.0)*	*111 (37.5)*	*262 (44.3)*
Type of support received	*n=145*	*n=185*	*n=330*
Food	*90 (62)*	*119 (64)*	*209 (63)*
psychosocial support	*48 (33)*	*52 (28)*	*100 (30)*
Money	*8 (6)*	*16 (9)*	*24 (7)*
Home Based Care	*13 (9)*	*6 (3)*	*19 (6)*
Source of support	*n=145*	*n=185*	*n=330*
NGO's	*99 (68)*	*127 (69)*	*226 (68)*
Government	*47 (32)*	*59 (32)*	*106 (32)*
*Others**	*1 (1)*	*1 (1)*	*3(1)*

Others*friends, family, peer

Factors Associated with Fertility Desire of Men and Women on ART

In a multivariate model (shown in Table 6), among HIV positive women and men, who desired children, the male respondents were nearly two fold more likely to desire children compared to the women respondents (Adjusted Odds Ratio(AOR): 1.706, 95%CI: 1.045-2.784). Younger age (18-29 years) was nearly threefold (AOR: 3.493, 95%CI: 1.644-7.424), age group 30-39 years were also nearly threefold (AOR: 2.975, 95%CI: 1.477-5.991), more likely to desire child than respondents ≥ 40 years. Having no living child had nearly thirteen times (AOR: 13.140, 95%CI: 5.347- 32.289), having 1-2 living children nearly four times (AOR: 4.157, 95%CI: 2.166-

7.975) more likely to desire child than those who have > 2 living children. Having a partner, who desire a child, was nearly fifteen fold more likely to desire child than having partner who did not desire having a child (AOR: 15.402, 95%CI: 9.198-25.789). Having a recent CD4 count ≥ 200 was nearly two fold more likely to desire child than who had recent CD4 < 200(AOR: 2.014, 95%CI: 1.158-3.502).

Table 6:-Factors Associated With Fertility Desire of Men and Women Living with HIV/AIDS under Follow up Care in Nekemte town, East Wollega, Ethiopia, February 2010

Characteristics	Desired child (N)	Not desired child (N)	Crude OR(95 % CI)	Adjusted OR(95% CI)
Sex				
Female	91	205	1	1
Male	120	176	1.536 (1.095, 2.155)*	1.706(1.045, 2.784)*
Age				
18-29	101	105	5.523(3.158, 9.662)*	3.493(1.644, 7.424)*
30-39	91	169	2.981(1.719, 5.172)*	2.975(1.477, 5.991)*
≥ 40	19	107	1	1
Family size				

≤ 2	104	73	3.685(2.548, 5.329)*	1.540(.798 , 2.971)
> 2	107	308	1	1
Disclosure to family				
Yes	165	335	1	1
No	46	46	2.030(1.296, 3.182)*	1.603(.876 , 2.935)
Number of living children				
No living child	93	48	10.979(6.414, 18.793)*	13.140(5.347,32.289)*
1-2	96	171	4.170(2.590, 6.713)*	4.157(2.166, 7.975)*
> 2	22	162	1	1
Partner's desire				
Yes	136	49	12.286 (8.141,18.543)*	15.402(9.198, 25.789)*
No	75	332	1	1
Recent CD4 count				
<200	39	113	1	1

≥200	172	268	1.860(1.232, 2.806)*	2.014(1.158, 3.502)*
Time since diagnosis				
≤ 2 years	128	197	1	1
> 2 years	83	184	.569(.397 , .814)*	1.283(.550 , 2.994)
Time since on ART				
≤ 2years	149	220	1	1
> 2 years	62	161	.694(.493 , .977)*	.569(.235, 1.374)

*has significant association at p-value < .05

In a multivariate model, among HIV positive women who desired children; younger age (18-24) were nearly fourfold more likely to desire child than those with ages ≥ 35 years (AOR: 3.508, 95%CI: (1.099-11.201). Having no living child was nearly seven times (AOR: 6.729, 95%CI: 1.958- 23.132), having 1-2 living children was nearly threefold (AOR: 2.975, 95%CI: 1.139-7.767) more likely to desire child than those who had > 2 living children. Having partner who desire child (AOR: 17.430, 95%CI: 8.051-37.734) was nearly seventeen times more likely to affect the desire for having a child than having a partner, who did not desire a child. A family size < 2 (AOR: 3.526, 95%CI: 1.469-8.459) was positively and significantly associated with women's fertility desire.

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In a multivariate model, among HIV positive men who desired children were the younger ages of 18-29 years (AOR: 3.030, 95%CI: 1.218-7.537). This was nearly threefold, those within age 30-39 years (AOR: 3.105, 95%CI: 1.408-6.847) were also nearly threefold more likely to desire child than those ≥ 40 years. Having no living child (AOR: 16.435, 95%CI: 4.281-63.093) was nearly sixteen fold, having 1-2 living children (AOR: 4.652, 95%CI: 1.943-11.134) nearly fivefold more likely to drive the desire for a child than those who had > 2 children. Having a partner who desired a child (AOR: 16.734, 95%CI: 8.200-34.150) was nearly seventeen fold more likely to desire a child than having a partner who did not desire a child.

Discussion

These findings showed that about one third of women and men living with HIV in Nekemte town were open to the possibility of having children (30.7% and 40.5% respectively). Overall this proportion is consistent to previous Addis Ababa reports (40.2%). However, there is a difference in the proportion from that found in Addis Ababa by sex (44.7% among women and 35.2% of men). This may be due to sample inclusion differences (12). This indicates the need for reproductive planning counseling for clients in HIV care settings in order to meet the PLWHIV's diverse reproductive intentions—for those wishing to have children and those wishing to avoid having children.

In Uganda, 16% of HIV-infected men and women desired more children and of these, men were almost four times more likely to want more children than the women (27% vs. 7% respectively) (13). Fertility desire among women was consistent with the result from a cross-sectional study from South Africa (29%) (14). A similar pattern of fertility desire was observed in (2005) in the Ethiopian Demographic and Health Survey except that a relatively higher

proportion in both among male and female (65.1% and 58.1 % respectively) and it was for general population and limited to those who were married only (15).Men's greater intentions to have children than women may be due to a desire to leave something of themselves, their 'name' and lineage behind when they die, as reported in other studies of HIV-infected men in South Africa (8).

In this study, 70% of respondents (78.4% among men versus 61.8% among women) were sexually active in the 6 months prior to data collection. Nearly an equal proportion of men and women had used condoms within the 6 months prior to data collection (91.8% and 90.2% respectively). In Uganda, overall, (455) 42% of participants were sexually active within the preceding three months and 135 (33%) were engaged in a pregnancy risking behavior (13). At the same time, many PLWHIVs continued to be sexually active and some had strong desires for biological children (14, 16) which entails unprotected sexual intercourse. That carries risks for sexual transmission and vertical transmission of HIV. Women living with HIV may also face increased risks during childbirths.

In the present study, 23% (23 % among male and 24% among female) respondent's partner were negative. If the woman was infected and the man is not, artificial insemination would avoid the risk of transmitting HIV to him. When a man has HIV and his partner does not, achieving pregnancy safely is more difficult. The only way to avoid the risk of transmitting HIV is artificial insemination using semen from a donor who has been tested and does not have HIV (4). This finding indicated that among 12% of men, their partners became pregnant since they knew their sero-status of which 25 (69.4%) was intentional. Also 12% of women became pregnant of which 20 (55.6 %) were intentional. This was consistent with report from South Africa (9%). Of these 30% of the pregnancies were reportedly unintentional which while was slightly lower than the

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study result found in Uganda among women on ART (16.9%) (16, 17). This indicates unintended pregnancy after being diagnosed for HIV is worrying. Thus interventions to address these gaps are needed both in the broader reproductive health services and within HIV care settings. Hence, it is critically important to enhance reproductive services provision to assist PLWHIV in both preventing unwanted pregnancies and giving birth as safely as possible.

Preventing unwanted pregnancies avoids many births of HIV-infected infants. A study using mathematical modeling estimated that, if there had been no contraceptive use in the world in 2006, an additional 2,940 infants would have been infected with HIV each day, thus tripling the number of infants with HIV. In sub-Saharan Africa, with relatively low levels of contraceptive use, in 2006 there would have been about one-third more HIV-positive births if there had been no contraception at all (4, 18).

Policy-makers and health care providers need to anticipate these potentially increasing fertility intentions, while developing specific reproductive counseling messaging for those at different stages of HIV care. Preventing unintended pregnancies among women with HIV will substantially reduce the number of infants with HIV infection. Thus, it is a major element in the world strategy to prevent mother-to-child transmission of HIV (16). It also provides insights into the fertility intentions and associated health care needs of men living with HIV that SRH services must target men too.

For both women and men, the desire to have at least one child was the most commonly cited reason for their desire to have a child: 48 (40%) and 41 (45%) respectively) followed by desiring more children: 56 (47%) and 45 (49%) respectively), partner /family influence to have children: (10 (51%) and 3 (3%) respectively). These figures identify some of the common reasons for PLWHIV's

fertility intentions that individual HIV care client counselor should focus on them.

Prior to anything else, work in the area of HIV a service provider has to focus on pregnancy and not on the pre-conception pregnancy planning stage. It is important for clinicians to recognize that many HIV-positive men and women desire to have children and to discuss pregnancy plans with their patients and partners prior to conception. Clinicians should be prepared to provide information on general pre-conception guidelines, methods to increase pregnancy success and decrease horizontal HIV transmission as well as general information on prenatal care and the appropriate use of ART during pregnancy(4).

At the time of the study, 512 respondents (86.5%) were using at least one method of family planning; of these 387 (76%) were using condoms, while 116 (23%) practiced abstinence. In sub-Saharan Africa, where rates of HIV prevalence among women are the world's highest, meeting the family planning needs of women with HIV has a great potential to reduce further the number of HIV-positive births. It is estimated that one-fourth of all births in sub-Saharan Africa are unintended. Assuming that 25% of HIV-positive births are also unintended, meeting the family planning needs of all women with HIV in sub-Saharan Africa has the potential to avert 120,000 HIV-positive births each year (18).

Furthermore, preventing unintended pregnancies is a cost-effective strategy to prevent new HIV infections. Models show that for the same expenditure, increasing contraceptive use averts more HIV positive births than a traditional preventing mother-to-child transmission (PMTCT) strategy of ARV prophylaxis. Combined, interventions such as ARV medications, cesarean section delivery, and avoidance of breastfeeding have been able to reduce the risk of

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mother-to-child transmission of HIV in developed countries to below 2%. 25% to 50% of the women who breastfeed typically practiced as it is without these measures. So far, however, few women in developing countries have access to the necessary services and to safe infant formulas due to economic constraints (4, 19).

Among HIV positive women and men who desired children being male, younger in an age groups of 18-29 and 30-39, having no living child, having 1-2 living children, Partners' desire, recent CD_4 count ≥ 200 were positively and significantly associated with both men's and women's fertility desire.

Among HIV positive women who desired children younger ages (18-24), having no living child, having 1-2 living children, partners' desire, and family size < 2 were positively and significantly associated with women's fertility desire. Among HIV positive men, who desired children are younger age (18-29), age 30-39, having no living child, having 1-2 living children, partners' desire were positively and significantly associated with men's fertility desire.

An important factor associated with fertility desire identified in this study is the age of the respondents. This study showed that fertility desires decrease with increasing age of the patients. This may be attributed to the expected Age specific fertility of Ethiopia (15). Among women HIV's peak prevalence is in the ages 20-29 where fertility desire is high, which requires greater attention to the reproductive needs of this age group.

Younger age has consistently associated with fertility desire in studies of HIV-positive people in Nigeria, South Africa and Ethiopia (8, 11, 12, 16, 20, 21). Many people with HIV are diagnosed during their reproductive years; they inevitably face decisions about their reproductive future. Addressing the sexual and reproductive health needs of all young people, including those with HIV, is important to ensure their health and longevity (4). This has a public health

importance as many new HIV infections in Ethiopia are occurring in younger women and men.

In this study, among both men and women fertility desire is associated with partners desire to have a child/children. A report from South Africa and Addis Ababa also indicated that both women and men were strongly influenced by partners' attitudes towards childbearing (8, 12). This indicated that family planning information should focus on partners as well.

Despite the fact that about 76% of the respondents already had one or more children, 36% (30.7% among female and 40.5% among male) of the study subjects desired children. This is a cause for concern considering its implication for controlling vertical as well as heterosexual transmission.

Patients with higher CD4 count (≥ 200 cells/mm3) desired to have more children. Having CD4 cell count>500, being sexually active in the previous 3 months, and contraceptive use also in the previous 3 months, having a BMI>18.5 were all significantly associated with an increased odds of pregnancy in Uganda . It may be that the conditions of an improvement of health status increased the commitment of these patients to achieve their reproductive desires. This suggests that health care professionals and counselors providing services for HIV-infected men and women could further support them by ensuring availability of family planning and to reduce HIV transmission risk to uninfected partners, dual methods (using condoms in addition to any other family planning method)(13).

The result of the qualitative study also elaborated that fertility desire elicited multiple fears: that the child would be born HIV-positive, that pregnancy could have negative consequences on their own health and that there was a risk of re-infection with a new strain of HIV or transmission of HIV to partner while trying to conceive. However, some who had children and all of those without any expressed desire

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to have a child despite their fears, justified by reasons like not having any child, the possibility of preventing mother-to-child transmission, improvements of health status, and the prospect of getting care & support from their children, at old age.

Strengths and Limitations of the Study

The strengths of this study include: further insights gained into the range and magnitude of factors influencing fertility desire of women and men in a very high HIV prevalence area; It provided new insights into the fertility desire and associate health care needs of men living with HIV that SRH services must target men too. Other strengths of the study were; qualitative method was used to supplement the result and to explore factors that were not addressed by the quantitative survey. The study being cross-sectional rather than longitudinal which, therefore, would have made it ineffective in capturing the potentially changing fertility intentions of men and women in this setting. Self-reported data were difficult to validate, and may be influenced by perception of socially desirable responses; however, we minimized this by training interviewers to build strong rapport and care was taken to ask questions without bias.

Conclusions and Recommendations

In conclusion, under the circumstances in which many HIV-infected individuals, intentionally or unintentionally, continue to have children, not dealing openly with their fertility desires and intentions makes it difficult to optimally meet their reproductive health care needs.

First, with improved quality and length of life, men and women may anticipate living long enough to raise children, and thus desire more children. Second, an improved health status may renew interest in sex, as well as strengthen woman's biological ability to conceive and carry a pregnancy to term.

It is important to recognize that many HIV-positive women and men desire and intend to have children. Patients who do not want to have a child require effective contraception. Those who desire children and are open to pregnancy risking behavior need education and counseling on the efficacy of PMTCT interventions. Those who desire children but are not engaging in a pregnancy-risking behavior, need an on-going counseling on strategies for minimizing transmission risks while attempting conception. Moreover, on the efficacy of PMTCT interventions they will be able to make informed choices about their pregnancy risk behavior. Temporary abstainers, who do not desire children need ongoing support and access to family planning in case they resume sexual activity in the future.

Service providers need to help manage reproductive health of HIV-infected individuals in a more upfront and structured manner, to probe into their reproductive desires and intentions so as to explain reproductive choices.

HIV care and treatment could provide an important opportunity for providing information and counseling to men that would encourage their involvement in reproductive health services more generally.

Advice is needed from health care workers on how to balance safer sex practices and the desire to reproduce. This should include including information on the safest ways for HIV-infected individuals to conceive and have a healthy pregnancy for those who desire to have a child and effective contraceptive method for those not desiring a child, without focusing on condom only, but also on condom plus other contraceptives.

Acknowledgments

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Thesis-3

Assessment of Factors Contributing to Tuberculosis Case Detection in Desie Town Administration, North Ethiopia

Mulu Tesfa

Abstract

Problem Statement: Detection of new smear positive tuberculosis cases in Ethiopia in general, Amhara Region and South Wollo zone in particular is far below the global target, compromising the efficacy of TB control efforts.

Objective: To assess current tuberculosis case detection methods and factors contributing to tuberculosis case detection in Desie town administration, North Ethiopia.

Methods: Both qualitative and quantitative study designs were used. For the quantitative method, a descriptive cross-sectional design was used. All health facilities implementing both diagnostic and treatment of TB service were included and all new sputum smear positive pulmonary tuberculosis patients in the intensive phase of treatment were interviewed using a structured questionnaire. The qualitative design involved key informant interviews and focus group discussions. The key informant interviews were conducted with South Wollo Zonal Health Department TBL/HIV officers, health care providers at outpatient and TB units in health facilities and health extension workers. The focus group discussions were conducted with clients attending the facilities adjusted by interview guides. Purposive sampling method was used for the qualitative techniques. In addition, records and reports were reviewed using checklists. Descriptive statistics, bivariate and multivariate analyses were done

using SPSS 13.0 Statistical Package. The qualitative data were analyzed manually by appealing thematic areas analysis approach.

Result: The method of case detection is passive (98.3%) and the main diagnostic tool is AFB microscopy. Educational status, marital status, family size, monthly income, knowledge about TB, modern health care seeking behavior, distance and accessibility to health facility, cultural practices, stigma and discrimination against TB patients/suspects, absence of contact tracing, health workers' approach, and the adequacy of human resource and setup were found to be factors in tuberculosis case detection. Underreporting of already detected TB cases was also observed.

Conclusion: The study confirmed that the method of TB case detection is passive and the main diagnostic tool is AFB microscopy. An educational level of grade 1-12, smaller family size and higher monthly income were found to be preventive factors for TB case detection while being married or widowed, lack of knowledge of the communities and of health workers on TB, absence of modern health care seeking behavior, far distance, lack of access to and non-availability of health care facility were risk factors. Cultural practices, discrimination and stigma towards TB patients, absence of contact tracing, negligence and approach of health workers, and inadequate human resources and setup were also found to be factors in TB case detection.

Recommendation: Strong advocacy, communication and social mobilization interventions, strengthening the diagnostic capacity of the health facilities, tuberculosis service coverage expansion, combined passive and active case finding interventions, and strong monitoring and evaluation are key recommendations of this study.

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Introduction:

Tuberculosis (TB) is a major public health problem throughout the world. One-third of the world's population (about 2 billion) are infected with mycobacterium tuberculosis and **at risk of developing TB.** Currently, TB is the leading cause of mortality from infectious diseases worldwide. However, 95% of TB cases and 98% of deaths due to TB occur in developing countries (1- 5).

In Ethiopia, tuberculosis is the leading cause of morbidity, the third cause of hospital admissions and the second cause of death. Ethiopia is among countries with the highest TB burden which places the country the seventh among the top twenty two high burden countries in the world and the third in Africa. The estimated annual incidence of all forms of new TB is 378 per 100,000 populations, of which 163 per 100,000 populations are new smear positive TB cases (1, 2, 4). Even though the effort to control tuberculosis in Ethiopia began in the early 1960s, case detection rate has been very far below the global target, ranging between 32% in 1998 EFY (Ethiopia Fiscal Year) and 38% in 1996. The TB case detection was even lower in Amhara region ranging between 18% & 24% for the previous 5 years. The case detection rate in South Wollo zone and Dessie town, respectively, was 22% and 40.7% in 2001 EFY.

Most of the expected new smear positive tuberculosis cases are not being detected by the system due to many factors, and hence transmitting TB to the community with the adverse impact not only on health but also on the socioeconomic development which leads to poverty (7, 8).This is compromising the efficacy of the TB control program. Existing studies didn't address factors

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contributing to TB case detection. This study aims to reveal factors contributing to tuberculosis case detection. It would be a good input for strengthening TB control and prevention program.

Objectives

General Objective

- To assess the current tuberculosis case detection methods and factors contributing to tuberculosis case detection in Dessie town administration, North Ethiopia.

Specific Objectives

- To assess methods used for tuberculosis case detection.
- To assess factors contributing to tuberculosis case detection.

Methods

Study Setting: This study was conducted in Dessie town administration whose population in the Ethiopian Fiscal Year 2002 is estimated at 168,642 which is provided health services by a total of 15 public health facilities (2 hospitals, 3 health centres, 4 nucleus health centres and 6 health posts). The study was done in 5 public health facilities: 2 hospitals and 3 health centers which were providing both diagnostic and treatment TB services.

Study Design: Both qualitative and quantitative study designs were used. The qualitative design involved key informant interviews and Focus group discussions (FGDs). The quantitative design was descriptive cross-sectional. Records were also reviewed to supplement the findings.

Source Population: The Population of Dessie town.

Study Population: Patients visiting public health facilities and health workers at all levels in the zone.

Sample Population: TB patients and outpatient attendants in the 5 health facilities, and health workers at all levels of the zone

Sample Size: For the qualitative study, 30 informants participated: 24 for the Focus Group Discussions and 6 for the key informant interviews. The sample size for the quantitative study was calculated to be 422, which was determined using single population proportion considering: 50% TB case detection rate and factors contributing to TB case detection could be concluded from such percent of cases, level of significance = 0.05, marginal of error (d) = 5% and non-response rate = 10%.

Sampling Procedures: Two different procedures were used for the two study design: Purposive sampling was used to select participants for key informant interviews and FGDs; for the quantitative design, all new sputum smear positive pulmonary tuberculosis patients in the intensive phase of treatment attending the health facilities, between February and March, 2002 E.C, were interviewed using a structured questionnaire.

Variables of the Study:

Dependent Variable: TB case detection

Independent Variables:

- **Socio-demographic Variables:** Age, sex, educational status, marital status, family size, religion, occupation and monthly income;

- **Detection Method:** contact tracing, presenting symptoms, reason for not visiting modern health care.

- **Health Facility and Environmental Factors:** Accessibility of health facility (distance), availability of health facility and time to reach to nearest health facility

- **Health Care Provider Factors:** Health workers' knowledge and approach

- **Patient/Personal Factors**: Knowledge about TB symptoms, knowledge on curability of TB, modern health care seeking behavior and places visited by TB suspects/patients.

- **Community Factors**: Stigma and isolation, and use of traditional medicines.

Operational Definitions:

- **Detected Early:** Smear positive pulmonary tuberculosis cases detected within less than or equal to four weeks of the onset of the illness.

- **Detected Late:** Smear positive pulmonary tuberculosis cases detected four weeks after the onset of the illness.

Data Collection: The qualitative data were collected by key informant interviews and focus group discussions using semi-structured interviews and FGD guides with probing questions prepared in Amharic, moderated by the principal investigator with the help of an assistant; each discussion was tape recorded not to miss any of the issues discussed. The quantitative data were gathered from new sputum smear positive pulmonary tuberculosis patients in the intensive phase of treatment attending the health facilities using anonymous, structured, pre-tested, interviewer administered questionnaire prepared in Amharic language; five trained data collectors and two supervisors participated in the collection. Records of TB case detection activities performed during the previous one year and six months were also reviewed using checklists. Data collectors were closely monitored by the supervisors and the principal investigator. The following were undertaken as quality control measures: Training which included practical sessions, pre-testing (all instruments were pre-tested and correction was done accordingly); data collection was closely supervised; each questionnaire was checked for completeness and consistency; interviews and FGDs were held in quiet halls, tape recording was used; and notes were taken.

Data Processing: The qualitative data were first transcribed then translated into English language, and the quantitative ones were coded, entered, and cleaned before analysis.

Data Analysis:

Analysis of qualitative data: The analysis was done manually using the thematic area analysis approach.

Analysis of quantitative data: The analysis in this case was using SPSS 13.0 software package, summarized by descriptive statistics and presented with frequency tables, while presence and strength of associations were measured using crude and adjusted odds ratio, 95% confidence interval was used to measure statistical significance as well as a logistic regression model.

Results

Twenty four clients participated in the FGDs and six health professionals used for the Key informant interviews. For the quantitative method, 351 new sputum smear positive pulmonary tuberculosis patients in the intensive phase of treatment attending the public health facilities during the study period were involved, with a response rate of 83.2%.

Tuberculosis Case Detection Method: The method of TB case detection is passive where patients present themselves on their own initiative to the health facilities to seek care. Almost all of the patients involved in the study (98.3%) sought health care for their illness by themselves (they were detected passively). Similarly, contacts (family members and neighbors) of almost all of the respondents (98%) were not traced for TB. Active cases finding activities are non-existent. Sputum microscopy is the primary tool used for diagnosing tuberculosis.

Socio-demographic Characteristics of Newly Diagnosed Smear Positive Pulmonary Tuberculosis Patients

Among the total respondents, 90 (25.6%) , 124 (35.3%), and 76 (21.7%) were in the age group between 18-24 years , 25-34 years and 35-44 years, respectively, of whom were 192 (54.7%) males and 159 (45.3%) females. One hundred twenty six (35.9%) were not able to read and write while 98 (27.9%) were grade 7-12, 78 (22.2%) grades 1-6, 44 (12.5%) were able to read & write and 5 (1.4%) had a higher level of education. One hundred ninety two (54.7%) were married, 114 (32.5%) single, 32 (9.1%) widowed and 13 (3.7%) divorced. One hundred eighty six (53.0%) had a family of more than 4 and 156 (44.4%) had of 2-4 households. Two hundred forty five (69.8%) were Muslims and 105 (29.9%) Christians. Occupation wise, 107 (30.5%) were farmers, 60 (17.1%) merchants, 58 (16.5%) daily laborers and 47 (13.4%) students. One hundred fifty five (44.2%) had a monthly income between, 201-400 birr, 115 (32.5%) less than 200 birr, and 66 (18.8%) between 401-600 birr (See Table 1).

Table 1:   Frequency Distribution of Socio-demographic characteristics of Newly Diagnosed Smear Positive Pulmonary Tuberculosis Patients in Hospitals and Health Centers, Dessie town Administration, April 2002 E.C.

Variable		Smear positive pulmonary Tuberculosis Cases	
		Number	**Percent**
Age in years	18 - 24	90	25.6
	25 - 34	124	35.3
	35 – 44	76	21.7
	45 – 54	33	9.4
	55- 64	16	4.6
	$\geq$ 65	12	3.4
Sex	Male	192	54.7
	Female	159	45.3
Educational status	Not able to read and write	126	35.9
	Able to read and write	44	12.5
	Grade 1-6	78	22.2
	Grade 7-12	98	27.9
	Higher level of education	5	1.4
Marital status	Single	114	32.5
	Married	192	54.7
	Divorced	13	3.7
	Widowed	32	9.1
Family size	1	9	2.6
	2 – 4	156	44.4
	> 4	186	53.0
Religion	Christian	105	29.9
	Muslim	245	69.8
	*Others	1	0.3
Occupation	Farmer	107	30.5
	Government employee	10	2.8
	Merchant	60	17.1
	Daily laborer	58	16.5
	Private business	20	5.7
	Student	47	13.4

	Unemployed	24	6.8
	Others	25	7.1
Monthly Income in ETH	≤200 birr	115	32.5
	201 – 400 birr	155	44.2
	401 – 600 birr	66	18.8
	601 – 800 birr	15	4.3
	>800 birr	1	0.3

Factors Contributing to Tuberculosis Case Detection

TB case detection was compared with socio-demographic conditions, patients and health facility factors to see what associations and differences exist. Both quantitative and qualitative methods were used to triangulate the associations.

Association could be detected between case detection and age, educational status, marital status, family size, monthly income, knowledge of TB symptoms, modern health care seeking behavior, fear of stigma, accessibility and time to reach health facility in the crude analysis. This association was maintained in multiple logistic regression except for age and fear of stigma (see Table 2). Educational levels of grades 1-12, smaller family size and higher monthly income were found to be factors contributing to early detection. Inadequate knowledge about TB symptoms, absence of contact tracing, low modern health care seeking behavior, far distance, inaccessibility to health facility, being married or widowed, cultural practices, discrimination and stigma towards TB patients, negligence and approach of health workers, and inadequate human resources and setup were factors contributing to late detection.

Sputum smear positive pulmonary tuberculosis patients, who were grade levels 7-12 (43.9%) were found more likely to be detected

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early for their illness compared to those who were not able to read and write (14.3%) with AOR (95%CI): 0.3 (0.2, 0.6). Married patients were less likely to be detected early compared to those who were single with AOR (95%CI): 2.6(1.5, 4.3). The odds of being detected for sputum smear positive PTB patients having a family size of 2-4 was higher than those having a family size of greater than 4 with AOR (95%CI): 0.5(0.3,0.8). Tuberculosis patients who had a monthly income ranging between 401 and 600 ETH (30-50 USD) were more likely to be detected earlier compared to those having an income of less than 200 birr with AOR (95%CI): 0.5(0.2,0.9). The patients who had no knowledge on TB symptoms were less likely to be diagnosed early compared to those who had the knowledge, AOR (95%CI): 2.5(1.5, 4.2). Concerning health care seeking behavior those who had no modern health care seeking behavior were also less likely to be detected early compared to those who had the behavior with AOR (95%CI): 2.4(1.3,4.4). Patients who came from far (>2 hours walking distance) were less likely to be detected in less than 4 weeks for their illness, compared to those who lived nearer to health facility, AOR (95%CI): 6.4(1.7, 24.7). The longer the distance of the health facility, the less likely the TB patients to be seen early. Patients, who did not have access to health facilities, were less likely to seek health care for their illness early compared to those who had better access with AOR (95%CI): 5.7(1.7, 19.9).

Table 2: **Association of Factors related with Tuberculosis Patients in Hospitals and Health centers, Dessie Town Administration, April 2002 E.C. (Multiple Logistic Regression)**

Variable		Smear Positive Pulmonary Tuberculosis Cases			
		Detected early (with in ≤4 weeks) No (%)	Detected late (>4 weeks) No (%)	Crude OR (95% CI)	Adjusted OR(95%)
Age in years	18 - 24	36(40.0)	54(60.0)	1.0	1.0
	25 - 34	48(38.7)	76(61.3)	1.1(0.6, 1.8)	0.8(O.4,1.4)
	35 – 44	16(21.1)	60(78.9)	2.5(1.2, 5.0)	1.5(0.7,3.1)
	45 – 54	4(12.1)	29(87.9)	4.8(1.6, 14.9)	2.7(0.8,8.8)
	55- 64	1(6.3)	15(93.7)	10.0(1.3, 79.1)	3.5(0.4,29.4)
Educational status	Not able to read and write	18(14.3)	108(85.7)	1.0	1.0
	Able to read and write	6(13.6)	38(86.4)	1.1 (0.4,2.9)	1.2(0.4,3.3)
	Grade 1-6	36(46.2)	42(53.8)	0.2(0.1,0.4)	**0.3(0.1,0.6)**

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	Grade 7-12	43(43.9)	55(56.1)	0.2 (0.1,0.4)	**0.3(0.2,0.6)**
	Higher level of education	2(40.0)	3(60.0)	0.3 (0.0,1.6)	0.4(0.1,2.4)
Marital status	Single	49(43.0)	65(57.0)	1.0	1.0
	Married	47(24.5)	145(75.5)	2.3(1.4,3.8)	**2.6(1.5,4.3)**
	Divorced	3(23.1)	10(76.9)	2.5(0.7,9.6)	2.4(0.6,9.4)
	Widowed	6 (18.8)	26(81.3)	3.3(1.2, 8.5)	**2.9(1.1,7.9)**
Family size	1	2(22.2)	7(77.8)	0.9(0.2, 4.8)	1.5(0.3,7.8)
	2 – 4	63(40.4)	93(59.6)	0.4(0.3, 0.7)	**0.5(0.3,0.8)**
	> 4	40(21.5)	146(78.5)	1.0	
Monthly Income in ETH	≤200	27(23.7)	87(76.3)	1.0	1.0
	201 – 400	44(28.4)	111(71.6)	0.8(0.4, 1.4)	0.9(0.5,1.7)
	401 – 600	27(40.9)	39(59.1)	0.4(0.2, 0.9)	**0.5(0.2,0.9)**
	601 – 800	7(46.7)	8(53	0.4(0.1,	0.5(0.

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			.3)	1.1)	2,1.7)
Knowledge on TB symptoms	Yes	43(48.3)	46(51.7)	1.0	1.0
	No	62(23.7)	200(76.3)	3.0(1.8, 4.9)	**2.5(1.5,4.2)**
Modern health care seeking behavior	Yes	89(35.7)	160(64.3)	1.0	1.0
	No	16(15.7)	86(84.3)	2.9(1.7, 5.4)	**2.4(1.3,4.4)**
Fear of stigma	Yes	62(24.5)	191(75.5)	1.0	1.0
	No	17(43.6)	22(56.4)	0.4(0.2, 0.8)	3.7(0.5,25.4)
Time to reach health facility	Minutes	47(50.5)	46(49.5)	1.0	1.0
	1 hour	34(26.8)	93(73.2)	2.8(1.6,4.9)	**2.8(1.6,4.9)**
	2 hours	21(20.8)	80(79.2)	3.9(2.1,7.3)	**3.9(2.1,7.3)**
	>2 hours	3(10.0)	27(90.0)	9.2(2.6,32.4)	**9.2(2.6,32.4)**
Accessibility	Yes	41(50.6)	40(49.4)	1.0	1.0
	No	64(23.7)	206(76.	3.3 (1.9, 5.5)	**1.7(0.9,3.**

Key: *Time to reach: The time taken to reach the health facility.

*In minutes: less than an hour. *Accessibility: (Reachability) of the health facility.

Discussions

As almost all of the patients involved in the study were detected passively and most had sought health care late, this indicates that so many infectious cases stay in the community for a long time without being detected. This call for considering to include active case detection methods. Combining active and passive case findings can help detect substantially more cases of TB than passive case finding alone, as reported in several other studies (1, 10, 13,14). Passive case finding also depends much on the patient's interest and knowledge, financial capability, degree of suspiciousness of health workers, and the accuracy and effectiveness of diagnostic services.

The majority of the patients presented with a combination of symptoms, similar to an observation made in a previous study in Addis Ababa (17). The occurrence of combination of TB symptoms in a TB patient appeared to be a factor for TB case detection indicating the importance of looking for a combination of TB symptoms when finding TB cases.

Knowledge and attitude are predictors of health care seeking behaviors and also TB case detection, particularly in countries where passive case detection is the main method, as stated in other similar studies (17, 25). Being ignorant of the important aspects of PTB might cause delays in detection, persistent

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infectiousness, increased TB transmission in the community, and high risk of death (25).

Misconceptions about TB, stigma and discrimination against TB patients were recognized as factors for late TB case detection, demonstrated also in studies conducted in Ethiopia (Gamo-goffa Zone) and in Tanzania (24, 25).

_*"wodaja/dua", "drinking some roots of plant, drinking kosso, drinking honey and other traditional treatment"* (*"ስር ቀጥቀጠ ማጠጣት"# "ኮሶ ማጠጣት"# "ማዝማ ማር" ወዘተ*) are common practices. *"Jeja, Tenquay, checher, Dem, and the like"* are also practiced. Discrimination and stigma against TB patients/suspects is influencing modern health care service utilization. "Our blood relations become disfunctional when someone gets TB *(የህመም ዝምድና የለዉም)". "Television with the deck"*), *"ቴሌቪዥሩን እሰከ እነ ዲኩ"* is the expression to describe the association of TB with HIV and a practice of discrimination and stigma towards TB patients/suspects*. Since people associate TB and HIV/AIDS, they do not want to visit health facilities fearing stigma and discrimination.

Lack of access to and non-availability of health care facilities were also observed are being significant as factors for TB case detection. Tuberculosis patients, who did not have access to health facilities, were less likely to seek health care early for their illness compared to those who were accessible. This finding was also revealed in a systematic review of 58 studies, at the University of Oslo, Norway (22). Patients who came from far distance (>2 hours walking distance) were less likely

to be detected for their illness compared to those who lived in a distance taking below an hour. A consistent finding was observed in related studies in Ethiopia and Kenya (17, 18), where distance between patients' home to the health care had contributed to TB diagnosis delay. This should be a major concern of the tuberculosis control program; if a patient has a problem to reach the health care for the first time, he or she might also face difficulties to attend treatment (17).

Negligence and approach of health workers and unnecessary delay of clients in getting attention were mentioned as factors working against visiting modern health care facilities and TB case detection. These may be explained by several factors, including lack of commitment of health care providers, shortage of trained health workers and work load, inadequate supportive supervision and inadequate monitoring and evaluation.

Married or widowed tuberculosis patients were less likely to be detected compared to those who were single. This might be explained by the fact that married and widowed ones having multiple responsibilities for the family that might cause them not to seek health care for themselves. A comparable finding was shown in a related study in Western Kenya (18).

TB patients who had schooling in grades 1-12 were more likely to be detected for their illness compared to those who were not able to read and write. This is expected: as the educational status of a person increases, he/she is likely to demand for services and to be detected. A similar finding was

observed in related studies conducted in Bangladesh and Tanzania; and in a systematic review of 58 studies, at the University of Oslo, Norway (19, 22, 23).

Tuberculosis patients, who had a monthly income ranging between ETB 401 and 600 were more likely to be detected compared to those with an income of less than ETB 200. An association between the level of income and health care seeking behavior was shown in several studies (18, 19, 22). The financial capability of communities is one of the crucial factors affecting TB case detection. While a smaller family size was found to be a preventive factor. This may be explained in such a way that a large family could prevent patients from seeking health care primarily for economical reasons.

Health workers' approach and work load were mentioned by FGD discussants to be barriers to TB case detection. High workload was stated to influence the quality of the diagnostic process in Indonesia (11).

Underreporting of already detected TB cases was seen to indicate the importance of improving data quality, quality data system is a crucial factor for a successful TB control program.

Strengths of the Study

- Mix of methods.
- Involvement of different category of respondents: TB patients, other clients visiting health facilities for any service and health professionals.
- Selection bias was minimized in the quantitative study as all the consecutive smear positive PTB patients, in intensive phase of treatment were included.
- Inclusion of all public health facilities implementing both diagnostic and treatment service in Dessie town, hence selection bias was avoided.
- The principal investigator collected all the qualitative data.

Limitations of the Study

- Being cross-sectional and facility-based, the study might have overvalued findings and thus might not show subsequent patterns of factors.
- Covered only clients who came to the health facilities, hence might not represent those who didn't come to the facilities.
- Recall bias and social desirability bias.

Conclusions

The method of TB case detection is passive and the main diagnostic tool was AFB microscopy of sputum. An educational level of graded 1-12, smaller family size and higher monthly income were found to be factors for early TB case detection. Being married or widowed, lack of knowledge about TB symptoms, absence of modern health care seeking behavior, far distance, lack of access to and non-availability of health

care facilities, cultural practices, discrimination and stigma against TB patients, absence of contact tracing, negligence and approach of health workers were found to be factors contributing for late TB case detection. Underreporting of already detected TB cases was noticed indicating the importance of improving data quality, quality data system is a crucial factor for a successful TB control program.

Recommendations

For Policy Makers

- Culture specific and effective advocacy, communication and social mobilization policy strategies need to be set. Communities do show lack of awareness/knowledge and misconception about Tuberculosis. Cultural practices are highly valued than modern health care services. Discrimination and stigma towards TB patients/suspects influenced modern health care service utilization. These findings suggest the need of strong advocacy, communication and social mobilization interventions on tuberculosis to create awareness, narrow the knowledge gap, clear misconceptions and avoid stigma and discrimination to improve the utilization of modern health care services. Health service extension program is the golden opportunity in this regard and have to be utilized to the maximum to improve TB program in general and case detection in particular.
- A system of finding TB cases beyond the health facilities need to be established.

For Program Managers and Health Facility Implementers

- Strengthen diagnostic capacity of the health facilities (adequate and motivated human resource, quality assured adequate supplies)
- Expansion of tuberculosis service coverage and making available the services close to the communities in order to get around the accessibility factor and hence improve service utilization.
- Strengthen the monitoring and evaluation system of the program.
- Conduct regular and frequent supportive supervision.
- Strengthen recording and reporting, and ensure quality of data. Registers/records and reports should be complete and correct. A system of auditing/cross-checking of reports has to be established to ensure/confirm the quality of reports received from the lower levels.
- Hold regular review meeting.
- Active case finding interventions combined with strong passive detection, such as tracing of contacts of TB patients and TB screening in congregate settings like prisons, refugees, military camps, homeless shelters, and other high risk groups and Situations.

For Researchers: A large-scale study is also recommended to strengthen the findings of this study and to have a broader view of the study objectives.

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Thesis 4

Magnitude and Factors Affecting Fertility Desire among Women Living with HIV in Addis Ababa City Administration, Ethiopia

Almaz Hadgu

Abstract:

Background: Effective linkages between sexual, reproductive health and HIV interventions are essential to ensuring the reproductive rights of women living with HIV. The sexual and reproductive decisions faced by women with HIV involve their desire for pregnancy, their contraceptive practices, their choices about an unintended pregnancy, and their prenatal and postnatal options to reduce prenatal HIV transmission.

Objective: The aim of the study was to assess the magnitude and factors affecting desire for children of women living with HIV in the food distribution sites of four sub cities of Addis Ababa.

Methods: A quantitative cross sectional survey on 414 HIV-positive women at four sub-cities of Addis Ababa was conducted from February to April 2010. Data on socio-demographic characteristics and fertility needs were collected using structured and pre-tested interviewer administered questionnaire. This was supplemented by a qualitative study (FGD). Descriptive analysis followed by binary and multivariate logistic regression was made to assess predictors of their desire to have children in the future.

Result:-Subjects had a median age of 31 years and had been diagnosed with HIV for a mean of 55 months. 39.9% of the women in the food program have future child desire. Among those desiring children 90.6% of them were not having children during the study period. Majority of the women living with HIV and their partners have similar desire to have children in the future. As many as 63% of the

HIV positive women who desire children had a partner who were in favor of children . Generally, women living with HIV who desire children are younger, not educated, have no children, having partner who have child desire and CD4 count >200 cell/mm^3. Moreover lack of health professional's discussion about reproductive health increases future child desire of women. Respondents in the age group of 40 years and above had less likely to desire future children (AOR: 0.06, 95% CI:)[0.01-0.58] than the other age groups. Having primary and secondary education were less likely to desire children (AOR: 0.14, 95%CI: [0.04-0.52] & AOR: 0.16, 95% CI: [0.05-0.47] respectively. Respondents having one or more children were less likely to desire children. Respondents with partners not having future child desire were less likely to have children in the future (AOR: 0.27,95% CI:[0.01-0.78] and those whose CD4 count is >200 cell/mm^3 and had not discussed about reproductive health with the health professionals were more likely to have future child (AOR:4.48,95% CI:1.27-15.7 and AOR:6.2,95% CI:2.08,18.5) respectively.

Conclusion: Younger age, not educated, not having presently alive children, partner's future child desire, having current CD4 count of >200 cells/mm^3 and lack of discussion about sexuality with their counselors are factors associated with child desire for women living with HIV.

Recommendations: Women living with HIV and who desire children have numerous service needs in addition to a future closely linked to medical care. The issues of mothers with HIV need to be emphasized at all levels including policy, programmatic and service level.

Key words: Fertility desire and women living with HIV.

Introduction

AIDS is the major health, social and political problem worldwide which has taken a distressing effect in many societies. It ranks fourth among the leading causes of death worldwide and first in sub-Saharan Africa. Available data indicated that the percentage of women among people living with HIV has remained stable at 50% for several years. Globally, there were an estimated 33 million people living with HIV in 2007[1]. HIV/AIDS still pose a threat against achieving MDGs and the successful addressing of HIV/AIDS prevention and control program, in general [2].

Sub-Saharan Africa still remains most heavily affected by HIV, accounting for 67% of all people living with HIC/AIDS. HIV infections are higher among women than men[3]. Regardless of HIV status the ability to express oneself regarding sex and the desire to experience parenthood are essential for many people[4].The intersection between HIV status and child birth becomes complicated now. On one hand, HIV-positive men and women reported that they face strong pressure from family members, people in their community and health care providers to give up the idea of having children, either because of the risk of prenatal HIV transmission or out of concern for the welfare of children raised by parents who may die prematurely, due to AIDS. On the other hand, childbearing in most societies play a central role in the social identity of both men and women, and couples are expected to have children[5]. However, there is limited understanding of the reproductive healthcare needs and the impact of infection on fertility desires of the women living with HIV/AIDS. Therefore, acknowledging these needs and aspirations are essential to maintain the basic human rights of HIV-positive women[4].

Presently available researches on the relationship between fertility and HIV in Ethiopia are scanty, and mainly facility based. In these studies, counselors (health providers) were recruited as dates collectors and both sexes were addressed which might be liable to sample and social desirability biases. Therefore this research will try to focus on women living with HIV who were in food support program in the sub cities of Addis Ababa. Through this study the need to have a child/children and factors affecting fertility need of women living with HIV would be assessed. This study will serve as a guide to design possible intervention for women living with HIV in Addis Ababa city administration. Besides, it would help to contribute the ongoing intervention to strengthen informed decision making of women living with HIV on reproductive health programs in the study area.

Objectives

General Objective

- To determine the magnitude and factors affecting fertility desire of women living with HIV in Addis Ababa city administration,

Specific Objectives

- To assess the magnitude of fertility need among women living with HIV AIDS (WLHA) in A.A
- To identify factors affecting fertility desire of women living with HIV AIDS in Addis Ababa
- To assess the knowledge about MTCT of HIV, and fertility planning among WLHA in A.A

Methodology

Study area: The study was conducted in the food distribution sites of four sub-cities of   A.A city administration

Study Design: A cross-sectional quantitative study was conducted between January and April 2010, using interviewer administered questionnaire at Addis Ababa city administration and supported by qualitative study (FGD)

Study population: The eligible source population of the study was women in the age group (18-49 years old) and living with HIV who was registered for food support in the sub-cities during the study period.

Sample Size Determination: The sample size was determined using single population proportion determination formula. A previous study conducted in Addis Ababa revealed the proportion of fertility desire of women living with an HIV would be 44.7%, with expected margin of error (d) 5%, 95% confidence level ($Z_{\alpha/2}$) and non-response rate of 10%.

 Adding the non response rate of 10%, the Total Sample was 418.

$$n = \frac{(Z_{\alpha/2})^2 \, P \, (1-P)}{d^2} = \frac{(1.96)^2 \, (0.45) \, (0.55)}{(0.05)^2} = 380$$

Where n= the required sample size, Z= 1.96, p= 0.45, d = 5% and none response rate =10%,

 Sampling Procedure

The study was conducted in four sub cities. To determine the study subjects to be included into the study, at first stages , four out of 10 sub cities were selected by simple random sampling. Secondly, the sampling frame (lists of HIV positive mothers) was obtained from food distribution sites of the respective sub cities. Third, the number of mothers to be included in to the study (sample) was determined proportionally in accordance with the total number of mothers in the

sampling frame of the selected sub cities. Finally, the respondents were selected by simple random sampling from the framed list.

Data Collection

A standardized and structured questionnaire and FGD topics were developed based on previously available information, and adapted to local situation with certain modifications.

The questionnaire was prepared initially in English, and then translated into Amharic for interview.

Data collection in the field was conducted by 8 trained data collectors and 2 supervisors.

The Independent Variables:-Socio demographic characteristics, partner's HIV status, Number of children alive, partners desire for children, duration time since HIV diagnosis, long and short term family planning use before and after HIV diagnosis, Availability and utilization of HAART, knowledge about MTCT and utilization of PMTCT service.

Dependent/outcome/ variable: Fertility desire**.**

Data Quality Assurance

Training of data collectors and supervisors were undertaken and 10% of the sample size was pretested in non study area. The questionnaire was assessed for its clarity, consistency and completeness.

Data Analysis

Data were entered; cleaned and explored using statistical software of EPI_INFO version 6.Then, it was exported for analysis to SPSS version 11. The descriptive analysis such as proportions, percentages, frequency distribution and measure of central tendency mean and median were used. Logistic regression model was also employed to control confounding effect and measured strength of

association. The thematic approach analysis was utilized for the qualitative data.

Ethical Consideration

Ethical approval was obtained from the Institutional Review Board of the Addis Ababa University, Faculty of Medicine and School of Public Health. A formal letter asking permission was written to Addis Ababa HAPCO, Addis Ababa Health Bureau and Addis Ababa City Administration.

Dissemination of Results: Study results will be published and shared with the School of Public Health, Addis Ababa University, Ethiopian Public Health Association, Addis Ababa HAPCO, Addis Ababa Health Bureau and other concerned stakeholders.

Results

Socio-demographic Characteristics of the Study Population

A total of 418 women of aged 18-49 years were included from four sub-cities of Addis Ababa. 414 women were interviewed making the response rate of 99%. One hundred forty (33.5%), 130 (31.1%), 74 (17.7%) and 70 (16.7%) of the respondents were from Arada, Addis ketama, Kolfe and Ledata sub cities, respectively.

Two hundred thirty eight (57.5%) and one hundred twenty nine (31.2%) of the participants were in the age group of 25-34 and 35-44 years old respectively, with a median age of 31 years. Three hundred forty one (82.4%) of the participants were followers of the Orthodox Christianity followed by Muslims and Protestant with the frequency of 9.9% and 7.7% respectively. Out of the respondents, 119 (28.7%) had never been to school, 74 (17.9%) could read and write only while 87 (21%) had primary education and 134 (32.4%) had secondary education. One hundred ninety one (46.1%) of the respondents were either married or had sexual partners, while 181

(47.3%) were either divorced or widowed and 42 (10.1%) were single.

Table1.Socio-demographic characteristics of Women Living with HIV; in Food Distribution Sites of Four sub cities of Addis Ababa city Administration, Ethiopia, June 2010

Characteristics/variables	Frequency n=414	Percent
Age (years)		
15-24	20	4.8
25-34	238	57.5
35-44	129	31.2
45 & above	27	6.5
Mean± SD	**31±(6)**	
Religion		
Orthodox	341	82.4
Muslim	41	9.9
Protestant	32	7.7
Ethnicity		
Amhara	202	48.8
Gurage	101	24.4
Oromo	83	20.0
Others(Tigray, Dorsea and Siltee)	28	6.8

Educational status

Illiterate	119	28.7
Read and write only	74	17.9
Grade 1-7	87	21.0
Grade 8-12	134	32.4

Marital status

Single	42	10.1
Married/Cohabitation	181	46.1
Divorced/Widowed	191	47.3

Fertility desire of women living with HIV

Two hundred twenty (53.2%) of the study population had 1-2 and 145 (35%) had 3-4 live births, while 49 (11.8%) had no live birth in their life. Two hundred thirty two (56%) had 1-2 and 115 (27.8%) had ≥ 3 children who are alive, where as 67 (16.2%) didn't. One hundred sixty five (39.9%) had a desire to have children in the future but the rest didn't. Out of those who desired to have children, 135 (81.8%) wanted to have ≤ 2 children, while 26 (15.8%) desired to have >2 children and 4 (2.4%) of them were not clear about it.

Eighty four (50.9%) of the study subjects who desired to have children planned to have a child within less than two years, 34 (20.6%) of the mothers desired to have children two years later and 47 (28.5%) didn't know the exact time when to have a child.

Of those married and those having sexual relationship, 103 (53.9%) reported that their partners want to have children in the future, while 67 (35.1%) reported that their partners didn't want to have and 21 (11.0%) didn't know their partner's desire.

Reasons Mentioned for not Having Children in the Future

Two hundred forty nine (60.1%) of the respondents had no future child desire. Reasons given for not having future child desire were, 103 (41.4%) don't have adequate income, 52 (20.9%) already attained the desired number of children, 47 (18.9%) believed that their health condition would be compromised by childbearing, 39 (15.6%) reported due to fear of MTCT of HIV and 8 (3.2%) gave advice from health worker were the reasons.
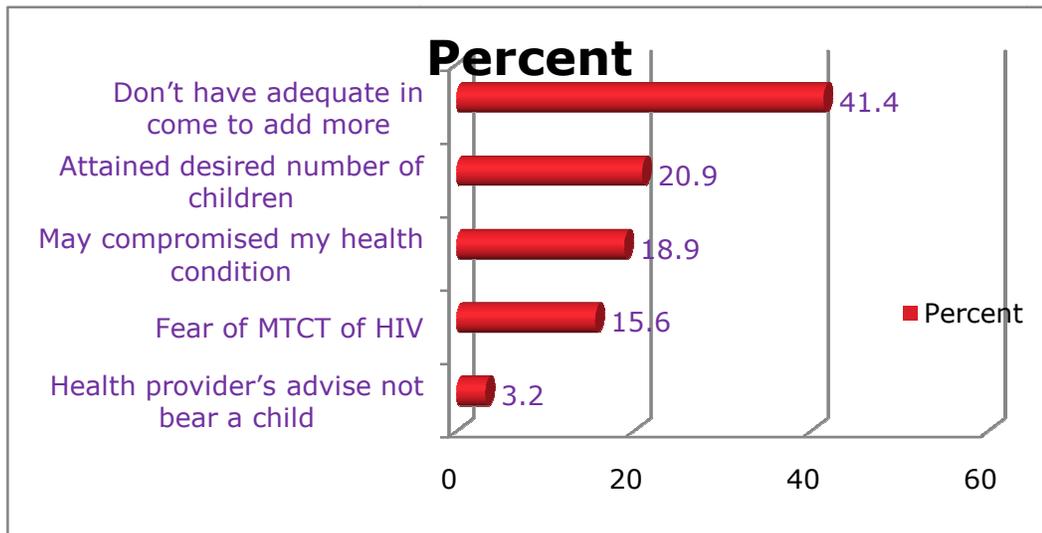

Fig 1: Reasons mentioned for not having children in the future.

Family Planning Demand, Choice and Use among Women Living with HIV

Three hundred seventy nine (91.5%) respondents had knowledge about family planning. Out of whom, 255 (67.3%) and 165 (43.5%) of the respondents had ever used at least one type of contraceptive method before and after HIV diagnosis, respectively. Currently 129 (34%) of the respondents had reported that they were using

different methods of contraception's. Reasons spelled for the current choices were health professional advice and suitability of the methods to their health 49.6% and 41% respectively. Two hundred fifty (66%) of the respondents were not using contraception. Out of the 66 % not using contraceptive currently, 51 (20.4%) of them want to use family planning in the future, while 192 (76.8%) of the respondent didn't want to use any method even for the future

Table2. Distribution of Women Living with HIV Contraceptive Use by Method and Time; at Food Distribution Site of Four Sub cities of Addis Ababa city Administration, Ethiopia, 2010.

	Contraceptive use/Need							
Method choice	**Use prior to Dx***		**Use after Dx***		**Current users***		**Future need***	
	N (n=255)	%	N (n=165)	%	N (n=129)	%	N (51)	%
Abstained from sex	1	0.4	1	0.6	3	2.3	1	1.3
Condoms	17	6.6	80	47.3	76	58.0	37	48.1
Pills	147	57.4	24	14.2	13	9.9	6	7.8
Injectable	132	51.6	65	38.7	35	26.5	22	28.6
IUD	7	2.7	3	1.8	4	3.1	3	3.9
Implants	3	1.2	10	6	11	8.4	4	5.2
Tubalegation/va	1	0.	2	1.	4	3.	0	-

sectomy	4	2	1

* Variables having multiple answers.

* DX Diagnosis

Knowledge about mother to child transmission of HIV

Three hundred ninety six (95%) of the respondents had ever heard about MTCT and the common source of information was from health workers (91.2%) and mass media (37.4%). One hundred sixty four (41.8%) of the respondents answered mother to child transmission occurred during pregnancy, 269 (68.1%) labor and 294 (74.2%) breast feeding. Three hundred fifty six (89.9%) and 304 (85.9%) of the study subjects knew and had positive attitude about PMTCT.

One hundred ninety (53.7%) of the mothers had the perception of all children who were born from affected mothers would acquire the virus if the mothers were not taking PMTCT during their pregnancy. Seventy (19.7%) of the mothers had the perception of MTCT were 50% without PMTCT and 96 (27%) respondents didn't know the exact figure. Forty (11.2%) of the respondent did not believe that PMTCT prevents mother to child HIV transmission.

HIV/AIDS Diagnosis, Treatment, Care and Support

Three hundred seventy eight (91.3%) of the respondents reported that it had been more than two years since HIV diagnosis and (6.5%) had less than two years since diagnosis and 9 (2.2%) didn't remember the exact time of HIV diagnosis. 373 (90.1%) of them started ART and 41 (9.9%) have not yet started. Out of those who started ART, 282 (75.6%) had been in it for more than two years since they started ART. Mean interval of HIV diagnosis and receiving ART was 55 and 32 months, respectively. Two hundred twenty (54.8%) and 75 (14.7%) of the respondents reported a recent CD4

100

count of >200 cells/mm^3 and less than 200 cells/mm^3 respectively, with mean CD4 count of 350 cells/mm^3.

Sexual behavior and condom use

One hundred fifty two (36.7 %) of the participants were sexually active within the preceding six months, of whom 111 (73%) had used condom while 41 (27%) had not. Out of those who reported condom use, 85 (76.6%) did so regularly, while 26 (23.4%) reported irregular use. The reason for condom use was advice from health professionals, having HIV negative partner, to prevent pregnancy and others; with the frequencies of 64.9%, 13.5%, 9.9% and 11.7% respectively. The most common reasons for not using condoms were 19 (46.3%) need to have children and 22 (53.7%) husbands did not want to use.

Factors associated with fertility need among women living with HIV

In this survey respondents were asked different questions to assess factors that determine their future fertility desire based on their socio-demographic, reproductive and selected HIV/AIDs characteristics.

Uni-variate results showed significant association between ages, religion, educational status, number of alive children, partner's future child desire. When we come to see the specifics, respondents with ages 30-39 and ≥40 years had significantly lower desire to have children in the future than those of the younger ages (18-29 years). (COR: 0.37, 95% CI = [0.24, 0.58] for the ages 30-39 years and COR: 0.034, 95% CI = [0.01, 0.13] were for the ages ≥ 40 years). Similarly, respondent with elementary and secondary school were less likely to desire for children than those who were illiterate and able to read and write (Elementary education; COR: 0.33, 95% CI =

[0.19, 0.56] and (Secondary education; COR: 0.17, 95% CI= [0.13,0.32].Characteristics `having one and above currently alive children;(COR:0.06 95% CI= [0.03,0.15] for those having 1-2 children and COR:0.02,95% CI=0.01,0.06 for those having three and more children), having partner who would not like to have children; (COR:0.16,95% CI=[0.84,0.34]and lack of respondents knowledge about their husband's future child desire (COR:0.26, 95% CI=[0.11,0.68] were less likely to desire children in the future. But characteristic like marital status, knowledge and utilization of family planning methods and intention to use family planning methods, in the future had showed no association with the future child desire of women living with HIV/AIDs

Table3: The Relationship between Selected Socio-demographic, Reproductive Characteristic and Fertility Desire of HIV positives Women in the Food Distribution site of Four Sub cites of A.A, Ethiopia, June 2010.

Variables	Yes	No	COR (95% CI)
	Freq (%)	Freq (%)	
Age(years)			
30-39	71(34.6)	134(65.4)	**0.37(0.24,0.58)***
40 & above	7(11.5)	54(88.5)	**0.034(0.01,0.13)***
18-29	87(58.8)	61(41.2)	1
Religion			
Muslim	18(43.9)	23(56.1)	1.30(0.68,2.51)
Protestant	19(59.4)	13(40.6)	**2.43(1.16,5.11)***
Orthodox	128(37.5)	213(62.5)	1
Educational status			
Elementary	27(31)	60(69)	**0.33(0.19,0.56)***
Secondary	26(19.4)	108(80.6)	**0.17(0.13,0.32)***

Illiterate/able to read &write only	112(58)	81(42)	1
Marital status			
Married /cohabitating	89(46.6)	102(53.4)	1.57(0.79,3.14)
Divorced/ widowed	61(33.7)	120(66.3)	0.92(0.45,1.85)
Single married	15(37.7)	27(64.3)	1
Number of children presently alive			
1-2 children	85(37.6)	141(62.4)	**0.06(0.03,0.15)***
3 and more children	22(17.7)	102(82.3)	**0.02(0.01,0.06)***
None	58(90.6)	6(9.4)	1
Partners future child desire			
No	15(22.4)	52(77.6)	**0.16(0.84,0.34)***
Don't know	7(30.4)	16(69.6)	**0.26(0.11,0.68)***
Yes	65(63.1)	38(36.9)	1
Knowing about family planning			
No	11(31.4)	24(68.4)	(0.32,1.41)
Yes	154(40.6)	225(59.4)	1
Current contraceptive users			
Yes	101(40.9)	146(59.1)	1.02(0.66,1.57)
No	53(40.5)	78(59.5)	1

In a univariate analysis of HIV/AIDs related characteristics, respondent's knowledge about mother to child transmission rate of HIV without medical intervention, current CD4 count, and discussion about RH issue with counselors, having adequate discussion and women who were sexually active in the previous six months showed significant association with future child desire. Hence, respondents who believed that mother-to-child HIV transmission constituted about 50% without PMTCT, (COR: 2.01, 95% CI= [1.16, 3.5] respondents with current CD4 count >200 mm^3 with (COR: 4.07, 95% CI= [2.3, 7.2] and participants not having discussion about reproductive health issue with their health providers/counselors with (COR: 2.6, 95% CI= [1.7, 3.94] had positive and significant association with future child desire.

Table 4. The Relationship between Selected HIV/AIDS Related Characteristics and Fertility Desire among HIV Positive Women in Food Distribution Sites of Four sub cities of Addis Ababa City Administration, Ethiopia, June 2010.

Variables	Fertility desire		COR:95% CI
	Yes	**No**	
Know about MTCT of HIV			
No	3(16.7)	15(83.3)	0.29(0.08,1.01)
Yes	162(40.9)	234(59.1)	1
know about PMTCT			
No	17(42.5)	23(57.5)	1.08(0.56,2.08)
Yes	145(40.7)	211(59.3)	1

Degree of MTCT without PMTCT			
50%	37(52.9)	33(47.1)	**2.012(1.16,3.51)***
Don't know	40(41.7)	56(58.3)	1.28(0.78,2.12)
the exact figure	68(35.8)	122(64.2)	1
100%			
Attitude towards PMTCT			
Negative	16(32.0)	34(68.0)	0.65(0.34,1.22)
Positive	129(42.9)	177(57.8)	1
Length of time since HIV Diagnosis			
> 24 months	149(39.4)	229(60.6)	0.81(0.37,1.79)
Didn't	4(44.4)	5(55.6)	1.00(0.22,4.56)
remember	12(44.4)	15(55.6)	1
≤ 24 months			
Started ART			
No	19(46.3)	22(53.7)	1.34(0.68,2.57)
Yes	146(39.1)	227(60.9)	1
Time since treatment started			
> 24 months	111(39.4)	172(60.6)	0.94(0.57,1.54)
Didn't	1(12.5)	7(87.5)	0.21(0.24,1.75)
remember the exact time			
≤ 24 months	34(41)	49(59)	1

Health condition after treatment			
Not changed	3(30.0)	7(70.0)	0.66(0.17,2.58)
Deteriorated	2(50.0)	2(50.0)	1.55(0.22,11.12)
Improved	141(39.3)	218(60.7)	1
Current CD4 count			
>200cell/mm^3	120(56.3)	93(43.7)	**4.07(2.3,7.20)***
Didn't remember	25(21.2)	93(78.8)	0.85(0.43,1.65)
≤ 200cell/mm^3	20(24.1)	63(75.9)	1
Discussed RH issue with counselors			
No	88(53.7)	76(46.3)	**2.6(1.7,3.94)***
Yes	77(30.8)	173(69.2)	1
Adequate discussion			
No	44(51.2)	42(48.8)	**1.733(1.04,2.88)***
Yes	78(37.7)	129(62.3)	1
Sexually activities within 6 moths			
No	88(33.6)	174(66.4)	**0.49(0.33,0.74)***
Yes	77(50.7)	75(49.3)	1

In a multivariate analysis, variables which were having significant association in univariate analysis, were fitted to the multivariate model to determine independent predictors of the future child desire. Hence: respondents aged ≥40 years were less likely to desire

children in the future (AOR: 0.064, 95% CI =[0.007, 0.58].The study subjects with elementary and secondary school education, were less likely to desire children in the future than those who were illiterate/informal education. (AOR: 0.14, 95% CI: [0.04, 0.52] and AOR: 0.16, 95% CI: [0.05, 0.47]. As the number of present alive children increases, future desire of women to have more children decreases significantly and therefore, women having 1 or 2 children and those having three and more children showed (AOR: 0.27, 95% CI: [0.09, 0.78] and AOR: 0.04, 95% CI: [0.005, 0.324] respectively. Respondents whose partner didn't want to have children were less likely to desire children in the future (AOR: 0.27, 95% CI: [0.09, 0.78]. Respondents with current CD4 count >200 mm^3 were more likely to desire children in the future (AOR: 4.48, 95% CI: [1.27, 15.77].

Table5: Multivariate analysis of Future Child Desire among Women Living with HIV in Food Distribution Sites of Four Sub Cities of Addis Ababa City Administration, Ethiopia 2010.

Characteristics	Frequency/percent		Adjusted OR 95% CI
	Yes	No	
Age (years)			
18-29	58.5	41.2	1
30-39	34.6	65.4	0.41(0.15,1.13)
≥40	11.5	88.5	**0.064(0.01,0.58)***
Religion			
Orthodox	37.5	62.5	1
Muslim	43.9	56.1	1.7(0.36,8.10)
Protestant	59.4	40.6	3.67(0.58,23.12)

Educational status			
Illiterate/read &write only	58.0	42.0	1
Elementary	31.0	69.0	**0.14(0.04,0.52)***
Secondary	19.4	80.6	**0.16(0.05,0.47)***
Currently alive children			
None	90.6	9.4	1
1-2 children	37.6	62.4	**0.09(0.012,0.62)***
≥3	17.7	82.3	**0.04(0.01,0.32)***
Partner's need to have children			
Yes	63.1	36.9	**1**
No	22.4	77.6	**0.27(0.09,0.78)***
Don't know	30.4	69.6	0.27(0.06,1.14)
Degree of MTCT without Rx			
100% the child was infected	35.8	64.2	1
50% the child was infected	52.9	47.1	3.34(0.98,11.57)
Didn't know the exact %	41.7	58.3	2.36(0.76,7.37)
Current CD4 count(cell/mm$^{3)}$)			
≤ 200	24.1	75.9	1
>200	56.3	43.7	**4.48(1.27,15.77)***
Didn't remember the	21.2	78.8	1.69(0.37,7.63)

exact number

Discussion with counselor

Yes	30.8	69.2	1
No	53.7	46.3	**6.2(2.08,18.5)***

Having sex in the past 6 months

Yes	50.7	49.3	1
No	33.6	66.0	10.386(0.11,1.424)

Discussion

The study population, women living with HIV in the food support program areas, of Addis Ababa, expected to have reproductive needs and plan similar to HIV-negative mothers in the general population. This study found that among the study subjects, (39.9%) expressed a desire to have children in the future. This will have a considerable potential risk for mother-to-child transmission of HIV.

Factors associated with child desire in the future were: younger age, not being educated, not having alive children at present, partner's future child desire, having current CD4 count of >200cell/mm^3 and lack of discussion about sexuality with their counselors. These factors reflect cultural, social and personal as well as HIV specific issues for women considering when planning future pregnancy [11].The proportion of respondents who had future desire to have a child (39.9%) is similar to the findings of Lesotho (38.7%) and Brazil (40%) [6,16]. However, this study is lower than those reported in Northern Nigeria (64.4%), Addis Ababa (44.7%) and the SNNPR (43.5%) [11,7,8,] but it was higher than the proportion of women living with HIV that were desired of future child in Bair Dar (18.2%) and USA (29%) [10,17].The lower proportion in the present study compared with the Addis Ababa, SNNPR and Nigeria study findings might be attributed to increased awareness of women. It is because of comprehensive HIV/AIDS interventions going on in the country in the past 5 years and behavioral change through time [14] besides, cultural differences with Nigeria.

The higher proportion of child desire in the present studies compared to USA, can be explained by their socioeconomic differences. But the difference with the findings of Bahir Dar may be due to the fact that, the present study conducted in organizations with a setting providing only food support without other HIV/AIDS interventions.

In the present study among the socio-demographic variables, age and educational status of respondents are important factors significantly associated with child desire. As age increases the desire to have children in the future declines. This is similar to studies done in Addis Ababa, SNNPR, Bahir Dar and USA [7,8,10,17]. This might be attributed to the expected norms of most mothers that they would prefer and finish child births at earlier ages of their reproductive time or respondents might already have attained their family size at the age they are older.

Educational status was also significantly affecting future child desire of HIV positive women. Women with primary and secondary levels of education were less likely to have child desire in the future than mothers who were illiterate and with no formal education. This result is in line with the Ethiopian Demographic and Health Survey (EDHS); education influences the health seeking behavior of women positively because of an increased awareness which contributes and empowers women's decision making capacity for their health [9].

Women living with HIV, not having a child was significantly associated to the desire for the child. EDHS also revealed that 72% of women who were not having children had a strong desire to have children. The qualitative result of this study supports the same idea [9].as well as other studies also supports this evidence [7,8,10,11,12]. It shows that being HIV positive did not remove women's reproductive desires and diversities. The reasons attributed may be strong desire to experience parenthood mediated by prevailing social and cultural norms besides raising children is considered as a way to give purpose to life and to regain their sense of womanhood and sexuality. In spite of these findings, in the present study, from mothers with one or more children, 55.3% of them desired to have more children for the

future. This finding is supported by the qualitative results and is also in line with a study done in N.Nigeria [11].

This is due to the fact that mothers want to enhance sisterhood or brotherhood of their children and having more children is considered as a big asset for a family.

Women with partners who showing interest to have a child are also associated with desire to do so in the future. Among women who were married or had a heterosexual partner and desiring a child, 63.1% of the respondents also had partners who desire children in the future. This result is higher than the study done in U.S, and it is in agreement with the result of the qualitative study, women having future child desire were to satisfy their partner's need, to become biological fathers [12]. This may be due to lack of decision making power and reduce power of women to challenge their partner in the Ethiopian setup.   53 % of the respondents whose CD4 count > than 200cells/mm^3 were more likely to have future child desire than those with CD4 counts ≤ 200cell/mm^3. This is similar to a study done in USA (57.9%) [11]. HIV positive women who had improved their health condition, felt more comfortable paying attention to their physical and emotional challenges of pregnancy and new motherhood.

This study also indicated that 66% of the participants were not using family planning currently. Out of whom 79.5 % had reported they would not be using family planning even in the future. Individuals in such situation are less likely to take the necessary care to protect their partners or themselves from HIV infection and re-infection, or to prevent vertical transmission of HIV as well as to prevent unintended pregnancy. Surprisingly, 20.6% of the women who showed a desire to have children, explained they wanted to have them two years later. This indicates that they want to space their

births. The most commonly preferred method of family planning before HIV diagnosis was condoms, pills and injectable constituting 6.6%, 57.4% and 51.6 %, respectively.

After diagnosis, condom utilization had dramatically increased to 47.3%. This might be due to the promotion of condom by different actors such as religious leaders and behavioral change on condom utilization as a dual method to protect from unwanted pregnancy and HIV/STI transmission. This was in line with other studies in Ethiopia and Nigeria [10,11].

Conclusion

The result of this study revealed important findings with regard to sexual and reproductive health need of women living with HIV/AIDS. The most important factors affecting future child desire of women includes age, education, having children, partner's future child desire, current CD4 count of >200cells/mm^3 and discussion about sexuality with their counselors. This reflects that reproductive decisions of HIV positive women are not only affected by their HIV status but also by cultural, social and personal factors in planning future pregnancy.

Quite a large number of HIV positive individuals had shown a desire to have children. Moreover, there are also quite large proportions who don't use contraception and who don't intend to use it even in the future, indicates that there are the unmet needs for reproductive health and family planning.

Recommendations

- Empowering women and enabling them demand reproductive health is very essential element in reaching informed decisions.
- Creating linkage between reproductive health service with HIV/AIDS intervention programmes
- Reproductive services at the ART units need to fulfill the needs and demands of women living with HIV,

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Thesis-5

Assessment of Alcohol Advertising Practices in Ethiopia:
Public Health Implications.

Abstract

Background: Alcohol advertising should be prepared with a sense of social responsibility to the consumer and society. Nevertheless, observed alcohol advertising practices in Ethiopia are in contravention to established principles.

Objectives: to document alcohol advertising and explore perceptions about alcohol advertising practices in Ethiopia among selected stakeholders.

Methods: A qualitative study was carried out among stakeholders in Addis Ababa. Initially, stakeholders; organizations based on their interests in alcohol advertising (public health, legislature) were selected purposively followed by "Snow ball" technique. Accordingly, data were generated using semi-structured in-depth interviews with 17 professionals from different disciplines; Law, Psychology, Journalism, Public Health and Medicine as well as advertising. In addition to a slightly differing questions based on the type of organization visual stimuli in the form of pictures were also used. Thematic analysis was performed on the transcribed interviews to describe the data.

Results: Alcohol advertising depicts drinking as a problem free practice. Uses misleading messages; portray health benefits of drinking, alcohol as free from unavoidable adverse effects such as hangovers and as brewed without sugar, which encourages excessive drinking. Advertising does have a strong potential to influence the

youth as it employs them, their desirable lifestyle, music, dancing and blatant sex appeals as advertising themes.

Conclusion and Recommendation: There is a compelling reason for separate alcohol advertising and sponsorship policies in Ethiopia by bodies with strong public health mandate. Policies should be considered for the regulated use of health warning labels on advertising. Avoiding advertising in primetime TV and radio hours is one logical way to preclude the young people from exposure to alcohol advertising. The alcohol and advertising industries themselves should be encouraged to establish clear advertising, sponsorship guidelines.

Introduction

Alcohol has, for a long time, formed an intricate part of social life. However, it is not an ordinary commodity[1]. Put another way, though alcohol is considered as an effective social lubricant carrying connotations of pleasure and sociability in the minds of many, alcohol abuse has diverse health and socio-economic ramifications. In this regard, the World Health Organization (WHO) estimates that there are about 2 billion people worldwide who consume alcoholic beverages and 76.3 million with diagnosable alcohol use disorders. It is implicated in over 60 diseases, accidents and injuries; harm to those in the drinker's surrounding environment, and poverty. In the work place, it is associated with absenteeism, decreased efficiency and performance. The health and well being of young people around the world is increasingly being threatened by dangerous patterns of alcohol consumption[1, 2, 3]. The use and abuse of alcohol in society is complex. In today's globalised world of very high competition and intense search for new markets, an enormous amount of money is

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annually spent by the alcohol industry on marketing[4, 5]. Advertising is believed to be a cause (though one of many) linked to the age of the onset of drinking alcohol in young people and the amount they may drink thus has to be carefully regulated[3, 5]. Accordingly, the basis for regulation is based on principles embedded in the International Code of Advertising (ICA) issued by the International Chamber of Commerce (ICC) which states advertising *inter alia*, should be legal, decent, honest, truthful and prepared with a due sense of social responsibility and respect for the principles of fair competition[6]. Nevertheless, alcohol advertising and sponsorship practices in Ethiopia contravene these fundamental principles. And, it could be boldly argued, the Ethiopian public including young people are less protected from unfair alcohol advertising strategies. One reason for this may be lack of clear regulations governing how information about the beverage alcohol is communicated to the public via advertisements in the various media. Correspondingly, there is a need for an all inclusive research in this regard to come up with a clear picture of the state of affairs.

This study, therefore, takes into account the views of the main stakeholders who could affect or be affected by policies vis-à-vis alcohol advertising and sponsorship practices. The study aims to assess and document alcohol advertising practices in Ethiopia. More specifically, it is designed to: 1) describe existing alcohol advertising and sponsorship practices, 2) describe perceptions of selected stakeholders about alcohol advertising and 3) explore possible mechanisms for the regulation of alcohol advertising and sponsorship in the future. It is hoped that lessons drawn from the study will be useful in pointing to possible directions for future policy formulation attempts in the Ethiopian context.

Methods

The focal point of the study was Addis Ababa. The reason was, it is the largest area where stakeholders; producers, advertising agencies, national and international institutions, legislators and interest groups necessary for the study objectives are located. A qualitative approach was considered appropriate for this study based on the merits it has in describing people's perceptions of media alcohol imagery.

Interviews

Organizations with public health, market and legislatorial interests in alcohol advertising participated in the study. These included the Federal Ministry of Health (FMoH), Ethiopian Public Health Association (EPHA), Ethiopian Medical Association (EMA), the Ethiopian Youth and Sports Ministry (MYS), two Universities, the Ethiopian Broadcast Authority (EBA) and private media and advertising agencies. Interviews were semi-structured and occurred face-to-face. To capture relevance, a set of questions was used that differed slightly depending on the type of organization or association with the Issue. *Initially, general questions relevant to different categories of stakeholders were asked. This was followed by interview questions designed to elicit perceptions about existing alcohol advertising practices in Ethiopia. Then, questions about perceptions regarding sponsorships, by alcoholic beverage producing companies, of TV and radio programs, and events which may involve underage youths followed. Further, respondents were asked to suggest ways for future regulation of alcohol advertising in Ethiopia. Subsequently, respondents viewed pictures of outdoor advertisements and radio sponsorship messages and magazine articles on alcoholic drinks in Ethiopia. These were selected for a variety from those used during*

the years 2008/09. The same question was asked for each example before viewing the next, to describe: what do you understand from this advertisement.

Definition of Terms

Alcoholic beverage: refers to beers, wines and spirits containing one-half of one percent or more of alcohol by volume. It includes fermented beverages brewed or produced from malt, wholly or in part or from any substitute thereof, including all dilutions and mixtures thereof from whatever process produced.

Alcohol advertisement: refers to any form of advertising for alcoholic beverages with alcoholic content above 1.5% per volume advertised on television, radio and outdoor (print) that promotes the interests of; imparts information, educates or advocates an idea, logo, belief, opportunity or viewpoint regarding alcoholic beverage/s, product/s or brand/s.

Stakeholders: refers to persons, group/s, organizations that have, or claim, ownership, rights, concerns or interests; market, health, legislator etc in alcohol advertising/sponsorship practices in Ethiopia; present and future.

Results

In this section findings of the study are presented. First, a brief overview of the history of advertising in Ethiopia is presented. This will be followed by the main themes that emerged from the interviews. Finally, participants' perceptions of alcohol advertising on the visual stimuli provided. Eight stakeholder organizations were identified for the study. Out of these, a total of 17 professionals participated in the interviews. Fourteen (82.4%) were males and 3 (17.6%) females. The highest age group was for those above forty

years 11 (64.8%). Regarding their educational status 7 (41.2%) had bachelor's degrees; in psychology, pharmacy, journalism, public health, medicine, law, microbiology and brewery and 9 (52.9%) had Master's degrees; in Journalism, public health and medical sciences. Eleven of the respondents were married while the remaining 6(35.2%) were not married. The majority were Orthodox Christians 15 (88.2%).

Advertising Practices in Ethiopia: a Brief Historical Overview

In Ethiopia, advertising in general is said to have begun in the 19th century; during the reign of Emperor Menellik-II. Advertising for different products used to be announced to the public at the main squares and streets using the *"Negarit"* a traditional trumpet. Although during the then regime of Emperor Haileselassie I, activities of advertising the private sector's economic products and services for consumers through radio, television and magazines started sprouting; both the advertising organizations as well as the activity itself disappeared with the fall of the Haileseilassie regime and emergence of the *"Derg"* (the regime of military government). During this period, with the exception of a few censored government announcements, a limited number of advertisements, court orders and inheritance issues, other forms of product advertising ceased to exist altogether. However, after the ousting of the "Derg" regime and the coming to power of the Ethiopian Peoples Revolution Democratic Front (EPRDF) in 1991, and following a policy environment conducive to trade and investment, advertising practices started to flourish once again[7]. Nevertheless, during this new period, though the media of advertising coverage could be said to have increased, it did not develop as it should have. Accordingly, the need for regulation of advertising was recognized in 2010; a draft advertising

proclamation was issued by the Ethiopian Broadcasting Authority[7, 8]. The principles that advertisements for any product must follow are described (Table 1).

However, throughout the history of advertising practices in Ethiopia, alcoholic drinks were considered, little, if any, different from other general merchandise. For example, documentation from earlier periods[2], indicate there are no definitions for an alcoholic drink in Ethiopia. And, for the purposes of advertising restrictions was considered to be those with alcoholic content above 12% per volume were considered are thus, banned from advertising in the electronic media; only to be advertised in magazines, newspapers and as outdoor advertisements or prints media such as billboards. Similarly, in the new proclamation, drinks with alcoholic content above 12% per volume appear to be prohibited from advertising in the electronic media[7, 8]. On the other hand, a number of restrictions appear to be placed on outdoor advertisements. Among others, descriptions of health benefits; therapeutic properties, social and sexual success, and descriptions; implied or expressed, that abstinence is a sign of weakness are not allowed. In addition, advertisements must not target underage children and involve persons below the age of 25 years in their advertising (Table 2).

1. Main Themes

Television was the most common source in which respondents viewed alcohol advertisements, followed by radio, newspapers and magazines. From alcoholic drinks, the various locally produced brands of beer appear to be the most widely advertised products in the media followed by wine. However, advertisements for strong

alcoholic drinks (e.g. spirits) are not much observed. In relation to perceptions of alcohol advertising practices in Ethiopia, six themes emerged from the interviews and will be presented separately.

1.1. Alcohol Advertising in the Ethiopian Media

Participants thought media advertising in Ethiopia lack creativity, are repetitive, boring, lengthy, overly dramatized, unprofessional and unethical. Television advertising for alcoholic drinks does not take into consideration the profile of audiences.

1.2. The Hidden Side of Alcohol Advertisements

Advertisements for alcoholic drinks in general appear to focus on sales of their products; messages are unscientific and mostly hiding adverse effects of drinking alcohol do not pay attention to some cultural values considered very important for the Ethiopian people describing a 'beer' as better than a thousand greetings[1]. "When all of them are taken, they show drinking as beneficial, only talk about the benefit side of drinking beer or wine, they mention nothing about the consequences of drinking too much or the consequences of drinking by young people. There are no occasions where the negative consequences of alcohol will be mentioned" [A 29 year old Public Health expert]. Another participant adds..."They don't talk about the alcoholic content, but mention names of some standard agencies, for example, it is ISO certified, and is of high quality, but, they don't say anything about its negative sides".

1.3. Alcohol Advertising and Sexual Attraction

In advertisements observed by participants of the study, it appears that use of alcohol was perceived as a means of attracting the opposite sex. This can lure young people towards drinking, but there

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[1] ከሺ ሰላምታ አንድ ሜታ

is also the issue of advertising messages that contradict with existing measures being taken with problems such as HIV/AIDS. "I think this will highly endanger our efforts at controlling and managing HIV/AIDS and other related problems".

1.4. Age and Gender of Persons in Alcohol Advertisements

The age of persons involved in alcohol advertising are of mixed age groups based on the settings the messages are desired to be transmitted..."In some, you see elderly people attired in the Ethiopian culture, heads of families sitting in cultural traditions, this is one setting. There is another setting in which young people perform; where there will be a pretty girl sitting with a man and drinking beer, things which are attractive and can take young audiences" [A 39 year old Public Health expert]. In addition, there are adults who act like adolescents..."Certainly, there are those who are beyond being young, but in addition to their style of clothes, they act like youngsters and children" [A 43 year old Youth expert]. However, for the most part participants described the age of persons in alcohol advertising in the Ethiopian media as very young; using music and youths or boys and girls dancing..."Mostly it is by young people, they present advertisements in relation to youths as they dance and things like that. They use attractive young people..."It is either a pretty young woman or a handsome young man; especially the women are very young, because they can quickly attract the eye" [A 21 year old advertiser]. In extreme cases, even very young children could be seen involved in alcohol advertising..."There is an advertisement in which a child is having Harrar Sofi in the middle of adults drinking Harrar beer, and this can have a negative impact, it

can send the message that it is ok for children to drink beer" [A 29 year old Public Health expert].

The other aspect relates to the social image media beer advertising accord women. Participants appear to be concerned that women in Ethiopia are exploited by alcohol advertisers..."Most of the time, you can see that the guy that comes as a husband is an old man, who could be her father, the one presented as a wife or girlfriend is a little girl and the situation of its being presented together with alcohol gives women, clearly a lower status, a dependent kind of thing; these alcoholic drink advertisements use women as objects" [A 29 year old Public Health expert]. Another participant said..."I see those using women as an advertising object" [A 43 year old Participant].

1.5. Reasons for Youthful Drinking

There appears to be a widely held belief among participants that drinking alcohol by young people in Ethiopia could be considered as a major Public health and society problem. Lack of laws, easy accessibility of alcoholic drinks, modeling, and drinking taken as sign of modernity are among the reasons mentioned for the young people for taking alcohol. Alcohol advertisement especially on television may encourage young people as it uses young people themselves ..."Advertisements you see, especially on TV show when youths are dancing in nightclubs, they see people of their own ages; they could also be teenagers, for that matter, I think it will initiate them to go there" [A 31 year old Physician]. It also uses music and dancing, sexual attraction, images and desirable lifestyle personality young people may aspire to have in their lives in advertisements. Similarly, alcohol sponsorships in different events; sports, television and radio programs, the booming entertainment industry (music and cinema)

whose clientele may be underage youths, also expose even the very young to alcohol advertising...."Without being forced, they add alcoholic drinks into music video clips, for example, there are two lovers having fun and a singer is singing; then they go to a certain park and drink alcohol, this is linking recreation with drinking, to associate happiness and love with drinking" [A 45 year old Participant].

1.6. Protecting Young People from Exposure to Alcohol Advertising

Timing of ads on the media should be revised in such a way it avoids primetime television and radio hours and shifted to late nights. In addition, participants view avoiding places frequented by young people to film story lines for alcohol advertising. On the other hand, if alcohol advertising cannot be prohibited altogether, health warning labels should be included to deter young people. Moreover, alcohol should be advertised only by adults, outdoor advertisements should not be overly ornamental and should show only the brand names. On the other hand, creating awareness about the harms of drinking alcohol, decoding messages as well as resisting the persuasiveness and veracity of alcohol advertising among the society in general and specifically young people is crucial. Finally, concerning sponsorships, event organizers should take the responsibility of protecting the underage youths from exposure to alcohol advertising. To this end, having a comprehensive regulation designed to address all the issues, via a separate alcohol policy, is of paramount importance.

2. Participant's Perceptions of Alcohol Advertising: Visual Stimuli

Participants were asked the same set of questions for all the visual stimuli used in the study. The first question required participants to describe the characters and to analyze perceived message(s) of the advertisement and intent of the advertiser. The second elicited participant's opinion as to the effects the advertisement may have on viewers.

2.1. Beer as Digestive and Thirst Quencher

In the Hakim Stout draught beer advertisement there is a glass full of the draught and a message describing the digestive and thirst quenching[2] properties of the beer. The majority of the participants agreed that it is misleading and encouraged unlimited drinking.

2.2. Beer as Suitable for Health

We have started the pasteurised Meta draught beer that is suitable to health'[3]. It is misleading; people will take it as saying it will have no harm. May encourage excessive consumption as it may lead to drinking large amounts, as it claims that it is agreeable to health.

2.3. Beer, Physical Strength and Sports Championships

In this advertisement a cartoon images of beer glass can be seen used for the depiction of a human body and a visibly flexed muscular arm. The imagery is standing on a platform used to award champions of sports competitions; as number one. Participants view this as

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[2] *ምግብ ለማንሽራሽሪያነትና ጥምን ለማርካት*
[3] *ለጤንነት ተስማሚ የሆነውን ሜታ ፓስቸራይዝድ ድራፍት ቢራ ጀምረናል*

linking alcoholic drinks with sports. ..."There are things they have used here for athletics and competitions" [A 35 year old male]. In addition, there are suggestions that drinking alcohol is linked with physical strength..."Meaning if people take it, they will be strong like this". The stereotypically masculine theme emphasises manhood and physical strength, and this is an advertisement made to be attractive to children.

2.4. Beer 'Brewed Without Sugar'

In this advertisement there is a young woman alongside a bottled Dashen beer. At the top of the picture, is written 'Brewed without sugar'[4]. The message is targeted to encourage diabetic patients to start drinking the brand. The intent may also be to attract women to drink the brand. This is misleading as well as unfair trading, as beer can be brewed from inputs that have sugar content and are carbohydrate rich. In addition, it is commercialization as well as sexualisation of the product. Such ads will create consumer mistrust as they are deceiving. Participants estimated the age of the person in the advertisement to be in the range of 16-20.

2.5. Beer Brewed to be 'Free from Hangovers'

On the top of the picture, used as for the advertisement of Dashen beer is written..."Free from Hangover"[5]. The person in the advertisement has got a desirable lifestyle that young people may want to emirate in their lives as young people. To some this is an expression of modernity, modelling and elegance, a drink that is drunk by "best members of society". A brewer has the following to

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[4] ያለ ስኳር የተጠመቀ
[5] ከሀንጎቨር ነፃ

say in this regard... "When people see this advertising, they can possibly drink a lot of beer and their chance of being free from hangover will be very little".

2.6. Beer as 'Liquid Bread'

In the article entitled 'Vabene...the liquid bread'[6]. The Italian word 'Vabene' roughly stands for 'very good' in English. In the article the writer compares Chinese beer brand with its Ethiopian counterpart, following an occasion to sample the former by participating in an international beer festival. Firstly, all participants perceived the message as alcohol is food..."When it is said liquid bread what it is, is food". And, "This is totally denying that it is an alcohol, period". Children will also understand it not differently..."That it is like milk". Another participant adds..."Alcohol is alcohol and again bread can't be liquid. The statement is not accurate and is an ethical failure, end of story".

2.7. Beer in a Radio Program Sponsorship Message

This is a radio sponsorship message transmitted on Sheger FM 102.1. It appears to link drinking with happiness..."Forever thirst quenching, forever happiness[7] means having drunk this you will be always happy". Participants think it a good poetry..."It might be a good poem, but, it is not a good advertisement". These kinds of messages may encourage excessive drinking. This will be attractive..."Even to people who do not drink alcohol" and "this is to attract young people and those concerned for children's rights and

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[6] ቫቤኔ...ፈሳሹ ዳቦ

[7] ዘላለም ጥም ቆራጭ ዘላለም ፍስሀ
 ቅዱስ ጊዮርጊስ ቢራ የነፍስ እህል ውሃ

professionals from the Ministry of Health; physicians and professionals of nutrition should comment before any such advertisements are aired".

Discussion

Responses of participants to alcohol advertisements gave an indication of the potential role it can play in terms of setting the context for drinking by the youth in Ethiopia. Although it could be thought that alcohol advertisements are not generally aimed at young people, they may 'inadvertently' be appealing to them. The attractiveness of it; popular music, the dancing and party scenes such as partying at beaches, sex appeals, and scenes which may be liked by young people were especially mentioned as capable of influencing youth. Although the advertising proclamation orchestrated by the EBA is an encouraging effort, there appears to be some questions of rather sensitive public health nature. Among others, concerns about advertisements appearing to encourage excessive consumption, sexual aspects of advertising for alcoholic drinks, other aspects of promotion such as naming and labelling of products, providing information in advertisements and their possible impact. Although a general advertising proclamation is well-suited to laying broad principles such as advertising must not being misleading, it is a disproportionate instrument when it comes to complaints about and subtleties of individual advertisements. Firstly, the public may not have the knowledge on complaints submission procedures which may require a great deal of work in terms of raising the awareness of the society in general. Secondly, even if complaints are submitted, it may generally be too late to prevent public harm. That is, once the advertisement is in public view, the damage may have already been done[9].

Accordingly, emerging trends in alcohol advertising in Ethiopia could be said to be shifting gears from product and service advertising towards the sexual angel, desirable lifestyle and provision of information in the form of no-sugar, no-hangover and health benefits. It is not informing about the low sugar content of beer *per se* that is alarming, but the resulting possible immoderate consumption; pertaining to misinterpreting beer as having overall health or athletic benefits. Specifically, for people who may be worried by their state of health in relation to blood sugar levels. Low-carb claims are not approved in other countries as they conceal commercial intent[10]. Similarly, countries such as France effectively outlaw 'lifestyle' advertising of alcohol products, advertisements only being allowed to refer to the actual characteristics of the product such as its brand name, ingredients, provenance, how to prepare and serve the drink[11]. On the other hand, certainly, marketing beer as free from hangover is in contravention with one of the most basic rules of advertising for alcoholic drinks in many countries; encouraging immoderate drinking. The same may be true for using themes that are stereotypically macho; as they are likely to appeal to young people and encourage immoderation. Generally, experiences of different countries in relation to restrictions on alcohol advertising practices revolve around avoiding messages: that could be viewed as encouraging excessive consumption, aimed at and/ or targeting children, health and therapeutic properties and age of persons in advertisements[4, 5, 6].

On top of this, there is the possibility for contradicting effects between messages seen in alcohol advertising and those aimed at HIV/AIDS prevention and control in the form using blatant sex appeals in soliciting consumers to initiate drinking and thereby engage in risky sexual behaviors. More alarming is the influences

these may have on young people. The implication for public health in Ethiopia is that, efforts at regulating the sexual content of alcohol advertising, specifically for beers and wines should come under close scrutiny. In view of all this, it appears to be time for alcoholic drink producers in Ethiopia to show their responsibility to society by playing the game by the rules as their counterparts in other countries do. Commitment to responsible marketing communication in addition to providing an increased level of consumer protection and trust, in other countries it also helped decrease the pressure to further regulate the sector[9, 11, 12, 13]. This may particularly be important as the alcohol industry in Ethiopia appears to be booming; as more breweries are being contemplated domestically[14] and foreign investment in the sector may likely be attracted. To sum up, the present study touched only the tip of the iceberg. That is, marketing communications for alcoholic drinks is only one aspect of determinants of alcohol consumption and alcohol related harm. It may be that alcohol and its advertising are probably a topic that may bring about lots of discussions in the years to come, as it is a controversial product. However, the question still remains, would it not be necessary to consider whether the means of our policies are efficient and effective enough to meet the challenges ahead of us? Thus, a more in-depth research is called for to shed more light on the various dimensions of the issue in question.

Conclusions

In closing, this study was a modest attempt to assess alcohol advertising practices in the Ethiopian context. Alcohol advertising specially television may have a strong potential to attract young people in Ethiopia. In addition to portraying alcohol using music and dancing, sexual appeals, happiness, enjoyment and lifestyles young

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people may aspire to engage in and enjoy, it is transmitted at times when youths may be audiences. Alcohol advertising in Ethiopia, specifically for beers and wines emphasise only on the desirable aspects of drinking, portray alcohol consumption as a problem free practice and ignoring the potential risk and negative consequences to the consumer. Participants viewed media alcohol advertising messages as misleading, encouraging excessive consumption, using themes and imagery linking alcohol with sports and involve people with questionable legal age in advertising. On top of this, there is the possibility for contradicting effects between messages seen in alcohol advertising and those aimed at HIV/AIDS prevention and control. The implication for public health groups is that, efforts at regulating the sexual content of alcohol advertising, specifically for beers and wines should be seriously examined.

On the other hand, sponsorships by alcoholic drinks producing companies have consequences of exposing young people to alcohol advertising. Placement of outdoor alcohol ads in places frequented by the youth potential exposures. The responsibility of protecting youth should be shared by all concerned; a combination of firm advertising regulations as well as a moral obligation of producers and advertisers.

The findings of this study suggest the initiative taken by the Ethiopian Broadcasting Authority (EBA) to streamline advertising practices in general is quite heartening, though the complaints procedure for alcohol advertising may pose a public health threat; as important areas appear to be overlooked; sexual appeals and encouraging excessive drinking, attract youth and provision of factual information on alcohol products and their advertisements. Accordingly, a separate alcohol advertising and sponsorship policy in Ethiopia; bodies with strong public health mandate in the driving seat

may curb the problem. More importantly, further research on the state of affairs is imperative.

Acknowledgment

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Annexes

1. **List of Tables**

Table 1: Draft Advertising Proclamation: General Code for Product Advertising in Ethiopia. Ethiopian Broadcast Authority, Addis Ababa, Ethiopia 2002 E.C.

- Must not be misleading.
- Must be free from anything that could harm the society, and must be free from any presentation that opposes the law and acceptable behaviours.
- Must not expose/ endanger the society's psychological and physical health.
- Must respect societal and cultural values.
- Must ensure consumers' rights and benefits.
- Must respect the principles of fair competition.
- Must ensure respect and benefits for the nation.
- Advertisements in the mass media must clearly be shown to be different from other programs, and must not unduly influence other media programs.
- Must be presented with proper respect to professional ethics and other obligations stated in the proclamation.

Source: The Ethiopian Broadcast Authority: Draft Advertising Proclamation. FDRE, Addis Ababa, Ethiopia, 2010, (investigator's translation).

Table 2: Draft Advertising Proclamation. The Ethiopian Broadcast Authority (EBA), Addis Ababa, Ethiopia, 2002 E.C

Restrictions	Beverage Categories (Alc.% Vol.)		
		Below12%	**Above 12%**
Sales	Hours of sale	NA	NA
Restrictions off-	Days of sale	NA	NA
premise and on	Places of sale	NA	NA
premise			
Age limit for	On- premise:	Underage	underage
purchasing	Off- premise:		
alcoholic		NA	NA
beverages			
Restrictions on	National television*	NO	BAN
advertising	National radio	NO	BAN
	Print media	NO	NO
	Billboards	NO	NO
	Internet, postal, video, sound recordings, cinema	NO	BAN
Restriction on	Sports events	NO	BAN
sponsorship of	Youth events	NO	BAN
Restrictions on	Health care	BAN	BAN
advertisements	establishments	BAN	BAN
for alcoholic	Kindergartens,	BAN	BAN

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beverage in public domains	schools		
	Historical Places		
	Government offices	NO	NO
	Public transport	NO	NO
	Parks, streets etc.	NO	NO
	Sporting events	NO	NO
	Leisure events (concerts etc.)	NO	NO
	Workplaces	NA	
Restrictions on messages in Advertisements for alcoholic drinks	Implying drinking good personal & social success	NO	BAN
	Psychological/physical fitness	-*	BAN
	Therapeutic properties health benefits of alcohol	BAN	BAN
	Present abstinence/ moderation in a negative light	-	BAN
	Targeting Children	BAN	BAN
	Age of Persons in ads. below 25	NO	BAN
	Clearly state not for sale for children	YES	YES

*No clear information is given on drinks with alcohol content below 12% per volume.

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1. Extract of MPH Theses works on HIV/AIDS/STI/TB (Extract No, 1 (September 2004);
2. Identifying HIV/AIDS, Sexually Transmitted Infections and Tuberculosis Research Gaps and Priority Setting Agenda in Ethiopia (December 2005);
3. Young People's HIV/AIDS & Reproductive Health Needs and Utilization of Services in Selected Regions of Ethiopia (December 2005);
4. The Role of Indigenous Practice in Assisting HIV/AIDS Orphans at Community Level in Selected Localities of Ethiopia (December 2005);
5. Determinants of Behavioral Change in HIV/AIDS and IEC-BCC Approach for Rural Ethiopia (December 2005);
6. Extracts from EPHA Research Awards and Master's Theses in HIV/AIDS (Extract No.2 (December 2005);
7. National HIV/AIDS Advocacy Framework and Guideline (In Collaboration with HAPCO (March 2005);
8. Research Training Modules (7) (In collaboration with ESTA-June 2005);
9. Factors Affecting Acceptance of VCT in North and South Gondar Administrative zones (June 2006);
10. Intention to Use Condoms and Remaining Faithful in Students at Gondar University (June 2006).
11. Masters Theses Extracts on HIV/AIDS- (Extract No.3 (Aug. 2007);
12. HIV/AIDS Sexually Transmitted Infections and Tuberculosis Training Needs Identification and Priority Agenda Setting Study (March 2008);

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13. **Masters Theses Extracts on HIV/AIDS- (Extract No.4 – May. 2008);**

14. **Masters Theses Extracts on HIV/AIDS- (Extract No.5 - Sept. 2008);**

15. **Masters Theses Extracts on HIV/AIDS- (Extract No.6 -May 2009);**

16. **Masters Theses Extracts on HIV/AIDS- (Extract No.7 - Aug. 2009);**

17. **Research Methodology and Ethics Training Proceedings- Sep 2009);**

18. **Masters Theses Extracts on HIV/AIDS- (Extract No.8 -Dec. 2009);**

19. **Masters Theses Extracts on HIV/AIDS- (Extract No.9 –Jan. 2010)**

20. **Masters Theses Extracts on HIV/AIDS- (Extract No.10– May, 2010);**

21. **Masters Theses Extracts on HIV/AIDS- (Extract No.11– July, 2010);**

22. **Masters Theses Extracts on HIV/AIDS- (Extract No.12– Sep, 2010);**

23. **Masters Theses Extracts on HIV/AIDS- (Extract No.13– Dec, 2010);**

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Wro. Hiwot mengstu Member

Dr. Alemayehu Mekonnen Member

Ato Seyifu Hagos Member