# USAID/E, PREVENTIVE CARE PACKAGE FOR HIV and AIDS PROJECT IN ETHIOPIA:

## RESULTS FROM A BASELINE SURVEY

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With support from the American people, the Preventive Care Package (PCP) funded by USAID, is being implemented by a team of three international health organizations: Population Services International (PSI), Intrahealth, and Population Council.

The Preventive Care Package (PCP) is supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), the largest commitment ever by any nation for an international health initiative dedicated to addressing a single disease. PEPFAR is a multi-faceted initiative for combating HIV and AIDS around the world through programs to prevent HIV infection and provide comprehensive care and treatment to those affected and infected by HIV and AIDS.

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**DISCLAIMER**

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development (USAID) or the United States Government.

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**ACRONYMS**

| | |
|---|---|
| AIDS | Acquired Immune Deficiency Syndrome |
| ART | Antiretroviral Therapy |
| EDHS | Ethiopia Demographic and Health Survey |
| FMoH | Federal Ministry of Health |
| HAPCO | HIV/AIDS Prevention and Control Office |
| HIV | Human Immunodeficiency Virus |
| ITN | Insecticide Treated Net |
| NGO | Non-Governmental Organization |
| PCP | Preventive Care Package |
| PEPFAR | President's Emergency Plan for AIDS Relief |
| PLWHA | People Living with HIV and AIDS |
| PSI | Population Services International |
| ORS | Oral Rehydration Salt |
| SNNPR | Southern Nations, Nationalities, and Peoples Region |
| STI | Sexually Transmitted Infection |
| USAID | United States Agency for International Development |

## EXECUTIVE SUMMARY

Preventive Care Package (PCP) for People Living with HIV and AIDS (PLWHA) in Ethiopia is a three-year project, funded by the United States Agency for International Development (USAID)/President's Emergency Plan for AIDS Relief (PEPFAR). The goal of the project is to reduce morbidity and mortality due to opportunistic infections among PLWHA by promoting the use of basic hygiene and disease prevention items provided in a pre-packaged kit: the PCP. Pre-packaged kits that include condoms, insecticide treated bed nets, oral rehydration therapy, and products to purify water are distributed free-of-charge to PLWHA at health facilities. The project is implemented in four major regions of Ethiopia (Amhara; Oromiya; Southern Nations, Nationalities, and Peoples Region (SNNPR); and Tigray) and the Addis Ababa Administrative Region. Population Services International (PSI) leads the project, with partner IntraHealth. Population Council oversees the evaluation of the project.

The PCP initiative was designed to be implemented in 103 health facilities in four regions and 24 health facilities from Addis Ababa. In order to measure changes in knowledge, attitudes, practices, and morbidity associated with the PCP project, the Population Council is undertaking evaluative surveys among PLWHA in the project sites. This report presents findings from a baseline survey, conducted in mid 2009, among female and male PLWHA clients of selected health facilities. The list of facilities where the project was to be implemented served as a sampling frame. Respondents were selected in two stages. First, 33 health facilities were selected for inclusion in the study based on probability proportional to size of ever-enrolled HIV-positive clients and equal allocation of respondents. Second, clients within the catchment area of the facilities were selected systematically until the predetermined sample of 1,173 respondents was reaching (33 from each of 26 regional site and 45 from Addis Ababa sites). Respondents were asked questions related to marriage, family, housing; employment; HIV and STI knowledge; HIV and CD4 testing; morbidity history; utilization of health services; exposure to PCPs; sexual behavior; opportunity, ability, and motivation related to health behavior; and media access and preferences. A total of 1,006 PLWHA were interviewed for the baseline survey.

Eighty-seven percent of male and 83 percent of female respondents were on antiretroviral therapy (ART). The mean age of respondents was 36 years for males and 32 for females. There were significant differences between male and female respondents. A significantly greater proportion of females (26 percent) could not read and write compared to males (11 percent). A significantly greater proportion of females (53 percent) were widowed or divorced and attributed their marital status to HIV and HIV-related issues, compared to males (24 percent). Twenty-eight percent of male respondents and 12 percent of female respondents intended to have children in the next 12 months. Female respondents were mainly involved in domestic work (41 percent), petty trade (28 percent), daily labor (24 percent) and waitressing (10 percent). The main work activities for males were: daily labor (29 percent), police or solider (22 percent), petty trade (20 percent), security (12 percent), and construction work (10 percent). Respondents demonstrated a high level of knowledge related to HIV transmission from mother-to-child. However, one quarter of respondents' children born in the last ten years had not been tested for HIV. A significantly higher proportion of males (90 percent) knew of sexually transmitted infections (STIs) other than HIV, compared to females (72 percent).

Among those who had sex in the last year, 92 percent had regular partner(s) only, 5 percent had both regular and non-regular or commercial partners, and 3 percent had only non-regular or commercial partners. A considerable proportion of female (60 percent) and male (34 percent) respondents had no

sex in the previous 12 months. Among respondents who had sex in the last year, 96 percent of females and 88 percent of males had sex with a regular partner only. Twenty-six percent of male and 35 percent of female respondents did not use condom consistently in the last year and only 53 percent disclosed their HIV status to their partner(s). Condoms were available in 51 percent of male and 28 percent of female households.

Over one third of the respondents had received information on the importance of preventive care practices for PLWHA and their main source of information was government health facilities. Ninety-one percent of respondents reported having soap in their households; however, only 79 percent reported using soap regularly for washing hands. Prevalence of diarrhea was high among respondents who used only water to wash their hands, compared to those who used water and soap.

A quarter of respondents had the water purifier product, WuhaAgar, at the time of the survey, while only 18 percent reported that any household member had used it for treating drinking water in the last week. Water treatment vessels were less available in households. Self-efficacious respondents with the ability to treat their drinking water and those who were socially supported by friends, neighbors, and PLWHA associations were more likely to use drinking water treated with WuhaAgar. Female respondents and those who expected positive outcomes from WuhaAgar use were also more likely to use drinking water treated with WuhaAgar.

Only 13 percent of respondents had ORS at home. Three out of ten respondents had not used ORS or sugar-salt solution to prevent dehydration during the last episode of diarrhea. About one out of ten did not know what ORS is at all. A quarter had done nothing or used fluids such as soup, milk, soft drinks or holy water during their last episode of diarrhea. Overall, though ever-use of PCP items was high, consistent use was low, suggesting the need to aggressively communicate the importance of consistent use of PCP items.

The association of measures of self-efficacy with increased use of PCP items suggests that project implementers should continue strategies to promote self-efficacy of PLWHA. Communication through health facilities where beneficiaries usually present for ART services and other media outlets will likely increase their knowledge of PCP items and their benefits.

# I. BACKGROUND

Sub-Saharan Africa accounts for only 11 to 12 percent of the world's population (UNAIDS, 2008; PRB, 2007) yet is the region with the majority of people living with HIV and AIDS (67 percent), the majority of new HIV infections (70 percent), and the greatest number of deaths related to AIDS (75 percent). In Ethiopia alone, it is estimated that more than one million people are living with HIV. In 2009, there were an estimated 44,750 deaths related to AIDS, 84,190 pregnancies among HIV-positive women, 14,140 HIV-positive births to women living with the virus, and 336,160 PLWHA requiring antiretroviral therapy (ART) (FMoH, 2007).

In less developed countries such as Ethiopia, opportunistic infections are the leading causes of morbidity and mortality among PLWHA—ART alone is insufficient for a healthy life. Diarrhea, one of the most common opportunistic infections, affects 90 percent of PLWHA and results in significant morbidity and mortality, particularly among children with HIV and AIDS (Katabira, 1999). The World Health Organization estimates that 85 to 90 percent of diarrheal illnesses in developing countries can be attributed to unsafe water and inadequate sanitation and hygiene practices. Improvement of hygiene is a key approach to reducing diarrheal disease by promoting practices such as hand-washing with soap, and treatment and safe storage of water. Introducing household-based safe water systems (SWS) —through treatment of water with sodium hypochlorite solution and safe water storage—can also reduce diarrheal disease including among PLWHA (Quick et al., 2002, Lule et al., 2005).

Other basic preventive care interventions can also reduce illness, prolong life, and prevent HIV transmission for PLWHA in Africa. These include provision of cotrimoxazole prophylaxis, de-worming agents, insecticide-treated bed nets (ITNs), oral rehydration salts (ORS), and condoms. Cotrimoxazole prophylaxis has been recommended for daily use among PLWHA by the Joint United Nations Program on HIV/AIDS (UNAIDS) and the World Health Organization. Utilization of de-worming agents on a daily basis was found to be associated with reduced morbidity and mortality, and had beneficial effects on CD4 cell count and viral load among PLWHA in rural Uganda (Mermin et al., 2004). ITN use was also found to reduce the risk of malaria infection, which is associated with reductions in CD4 cell counts (Mermin et al., 2006b). Finally, the provision of condoms to HIV-discordant couples has been associated with a more than 80 percent reduction in HIV transmission (Allen et al., 2003) and is highly likely to prevent HIV re-infection among PLWHA.

To reduce morbidity and mortality due to opportunistic infections among adults and children living with HIV, Population Services International (PSI), with support from USAID, is developing and distributing a basic preventive care package (PCP) for PLWHA. The package includes Water Guard ("WuhaAgar") for water treatment, a vessel for safe storage of drinking water, soap for hand-washing and sanitation, ITNs for prevention of malaria infection, ORS for prevention of dehydration resulting from diarrhea, condoms for prevention of HIV/STI transmission and re-infection, and de-worming agents for treatment of parasitic infections.

The package will be distributed through public health facilities. Health care providers are trained to implement the intervention at target sites; and all ART and pre-ART clients receive the package with appropriate instructions on use. Communication through various media channels (radio, TV, leaflet and manuals) will promote use of the package, and convey the importance of appropriate dietary practices and adherence to clinical services and preventive practices.

The program aims to distribute more than 60,000 packages in its first year— and more than 200,000 packages over three years—to PLWHA free-of-charge. In the first year the intervention will be implemented in 136 health facilities serving PLWHA in four regions (Amhara, Oromiya, SNNPR, and Tigray), and Addis Ababa Administrative Region.

There is some evidence from Uganda that the use of some PCP items yield beneficial health outcomes for PLWHA (Colindress et al., 2007). The outcome of using the preventive care items among PLWHA in the Ethiopian context, however, is unknown. This report describes findings from a baseline assessment, conducted by the Population Council, to inform the development and delivery of the PCP intervention. A follow-up survey will take place in 2010, after the intervention has been implemented for a period of one year. Changes in health-seeking behaviors and morbidity will be measured and analyzed to determine associations with utilization of the PCP. The baseline report not only serves as a benchmark against which to measure programmatic impact, but it provides valuable information for programmers on the situation of PLWHA, including gender differences between males and females living with the virus.

## II. OBJECTIVES

The results of this baseline survey will guide development and implementation of the basic PCP, and serve as basis for evaluating changes in knowledge, attitudes, behaviors, and practices associated with the PCP program at the end of the project period.

The objectives of this study are to:

- Assess levels and determinants of use of each item in the PCP among PLWHA;
- Identify and assess behavioral variation among subgroups, or segments, of the target population (PLWHA) related to each item in the intervention package;
- Examine the morbidity status of the target population;
- Produce baseline information that will be used to measure changes in attitudes and behaviors related to utilization of the preventive care items in the package;
- Provide descriptive information about the target population, contributing to this and other initiatives targeted at PLWHA.

## III. RESEARCH DESIGN & METHODOLOGY

The survey is cross-sectional by design and implemented in four regions (Amhara, Oromiya, Southern Nations, Nationalities, and Peoples Region (SNNPR) and Tigray), as well as Addis Ababa Administrative Region. PCP interventions are being implemented in 103 health facilities from four regions and 24 health facilities from Addis Ababa during the first year of the program. These facilities were identified by the Federal Ministry of Health (FMoH) and HIV/AIDS Prevention and Control Office. Facilities with at least 100 ever-enrolled HIV-positive clients and where the program will be operational in the first year served as the sampling frame for the baseline survey.

Those eligible for survey were female PLWHA aged 15-49 and male PLWHA aged 15-59 who were enrolled as clients in selected health facilities at the time of survey. The eligibility of females and males in the specified age range was to maintain compatibility and comparison with other major surveys like the Ethiopia Demographic and Health Survey (EDHS). Survey respondents were selected in two stages. First, 26 health facilities were selected from the four regions and seven health facilities

from Addis Ababa, based on probability proportional to the size of ever-enrolled HIV-positive clients. In the second stage, respondents in each selected facility who resided in the catchment area of that facility were selected systematically, until the required sample size was achieved based on equal allocation for each health facility. The systematic selection was based on the consecutive appearance of clients at the health facility, and the sampling interval varied according to the average daily client flow in each facility. The minimum sampling interval was three people.

The sample size was determined using the following formula and assumptions:

$$n = \frac{D\left(z_{1-\alpha}\sqrt{2\overline{P}\left(1-\overline{P}\right)} + z_{1-\beta}\sqrt{P_1\left(1-P_1\right)+P_2\left(1-P_2\right)}\right)^2}{\left(P_1-P_2\right)^2};$$

Where n is the minimum sample size per group, $\alpha$= 0.05 (one-tailed test of significance), $\beta$= 0.20 (or 1-$\beta$ power = 0.80), $P_1$ is the assumed proportion for baseline group, $P_2$ is the assumed proportion for the endline group, and $\overline{P}$ is the average of the two proportions. The sample is calculated for the four regions together and for Addis Ababa separately assuming differences in the behaviors promoted by the project. It is also assumed that the intervention will bring about an 8 percent increase in WuhaAgar utilization, and $P_1$ is assumed 0.5 for respondents from regions to achieve optimal sample size for lack of information and 7 percent for Addis Ababa based on a survey in Uganda (Colindress et al., 2007). Including a 20 percent adjustment for non-response, the sample size was calculated to be 858 for the regions and 301 for Addis Ababa. The sample size of respondents from each health facility was determined as 33 for the regional sites and 43 for Addis Ababa.

The questionnaire was close-ended and included questions on demographic characteristics; knowledge about sexually transmitted infections (STIs), HIV and AIDS; sexual behavior and partnerships; utilization of program items such as condoms, WuhaAgar, bed nets, ORS and safe water systems, as well as hygiene practices. The questionnaire was drafted in English, translated into Amharic, and pretested through two rounds in Addis Ababa. In cases where the respondent did not speak Amharic or English, interviewers used other regional languages, Tigrigna and Oromiffa. Interviewers had a minimum 12$^{th}$ grade education and previous experience with survey research. Interviewers and supervisors took part in four-day training provided by Population Council staff.

Selection and interviewing of respondents was undertaken in mid-2009. All respondents provided informed consent to participate in the study. The study received ethical approval from the responsible authority in Ethiopia. The data was entered in Microsoft Access and converted to SPSS for analysis. Descriptive statistics and bivariate and multivariate analysis were performed. Respondents were read a series of assets that households may own and asked if their household possessed the asset. Principle components analysis was used to determine the socioeconomic status of the respondent. All analysis was disaggregated by sex. With the assumption that the preventive care practice of respondents from region varies from Addis Ababa, respondents from Addis Ababa were analyzed separately.

The study has limitations. PLWHAs served by private health facilities and those who did not know their status were not included, suggesting that our sample may not be representative of all PLWHA in Ethiopia. Our sample was limited to PLWHA who are beneficiaries of government health facilities, possibly biasing our information toward respondents who attend government health facilities.

## IV. RESULTS

### A. Sample characteristics

A total of 1,106 respondents living with HIV were interviewed from 33 health facilities in four major regions and Addis Ababa, with a response rate of 95 percent. Over two-thirds of respondents were female. Eighty-seven percent of males and 83 percent of females were on ART at the time of survey. Addis Ababa respondents appeared to be more likely to be on ART compared to those from other regions (Table 1). About 80 percent of respondents were aged 25-44 years, with a mean age of 36 for males and 32 for females. Roughly one quarter of females (23 percent) and 10 percent of males had never been to school, while more than 23 percent of females and 40 percent of males had completed nine or more years of education. A higher proportion of respondents from the regions were illiterate, compared to respondents from Addis Ababa. For example, 12 percent of males and 27 percent of females from the regions were illiterate compared to 4 percent of males and 14 percent of females from Addis Ababa. Similarly, more than a quarter of females and 11 percent of male respondents could not read or understand a letter or newspaper. Seventy percent of males and 58 percent of females were migrants to their current place of residence, with about 5 percent of males and 7 percent of females having migrated within the year prior to the survey. The main reported reasons for migration were to search for employment (52 percent of males and 36 percent of females) and health care (13 percent of males; 15 percent of females). There was a statistically significant difference in socioeconomic status of respondents between the four regions and Addis Ababa and between females and males. Women were significantly more likely to measure as "poor" on the socioeconomic scale (46 percent) compared to males (30 percent).

**Table 1: Demographic characteristics of people living with HIV and AIDS, by site, and sex**

| Background characteristics | Four Regions | | Addis Ababa | | All | |
|---|---|---|---|---|---|---|
| | Males (n=283) | Females (n=534) | Males (n=73) | Females (n=216) | Males (n=356) | Females (n=750) |
| **Current treatment status** | | | | | | |
| Pre-ART | 13.6 | 18.6 | 10.6 | 13.3 | 12.8 | 17.1 |
| ART | 86.4 | 81.4 | 89.4 | 86.7 | 87.2 | 82.9 |
| **Age of the Respondent*** | | | | | | |
| 15-24 | 2.5 | 11.5 | 6.0 | 11.8 | 3.3 | 11.6 |
| 25-29 | 20.4 | 33.1 | 2.4 | 26.6 | 16.4 | 31.3 |
| 30-34 | 22.1 | 22.7 | 19.3 | 22.7 | 21.3 | 22.6 |
| 35-44 | 35.7 | 25.5 | 55.4 | 28.1 | 40.2 | 26.3 |
| 45+ | 19.3 | 7.1 | 16.9 | 10.8 | 18.9 | 8.2 |
| **Mean age of respondents*** ** | 36.1 | 31.5 | 37.1 | 33.3 | 36.3 | 32.0 |
| **Highest schooling completed*** ** | | | | | | |
| None | 11.7 | 26.6 | 3.5 | 13.8 | 9.8 | 23.1 |
| Grade 1-6 | 31.3 | 31.7 | 28.2 | 39.9 | 30.9 | 33.9 |
| Grade 7-8 | 19.9 | 19.9 | 15.3 | 21.7 | 18.9 | 20.4 |
| Grade 9-10 | 19.9 | 10.4 | 11.8 | 9.4 | 18.0 | 10.1 |
| Grade 11+ | 17.1 | 11.4 | 41.2 | 15.3 | 22.4 | 12.6 |
| **Read & understand letter/newspaper*** ** | | | | | | |
| Easily | 70.0 | 50.1 | 81.2 | 68.0 | 72.4 | 54.9 |
| With difficulty | 17.1 | 21.1 | 16.5 | 14.3 | 16.9 | 19.3 |
| Not at all | 12.9 | 28.8 | 2.4 | 17.7 | 10.7 | 25.7 |
| **Migration to current place** | | | | | | |
| Migrant | 71.8 | 57.9 | 64.7 | 59.6 | 70.1 | 58.4 |
| Residence since birth | 28.2 | 42.1 | 35.3 | 40.4 | 29.9 | 41.6 |
| **Socioeconomic status*** ** | | | | | | |
| Poor | 35.3 | 57.5 | 11.9 | 14.9 | 29.6 | 45.8 |
| Middle | 24.8 | 18.6 | 9.5 | 19.3 | 21.3 | 18.8 |
| Rich | 39.9 | 23.9 | 78.6 | 65.8 | 49.2 | 35.4 |

** Differences between groups significance at <0.05, ** at <0.01 and *** at <0.001; economic status was calculated based on ownership of assets (radio, TV, telephone, kerosene lamp, chair, table and the house they live in) and analyzed using Principal Component Analysis (PCA) Method*

## B. Marriage, family, and housing

Over 83 percent of males and 84 percent of females were ever-married. Median age at first marriage for males was 25, and 18 years for females. However, the marital status at the time of survey differed considerably between males and females. Sixty percent of males and 31 percent of female were married at the time of survey. Multiple marriages were also fairly common: 30 percent of males and 37 percent of females had been married more than once. Among ever-married respondents, 61 percent of the first marriages were chosen by the bride and groom, while 35 percent were arranged by families. Among the 35 percent of respondents who had ever been widowed, over half (56 percent) reported that their partner had died of AIDS-related circumstances. Among the 35 percent of respondents who were divorced, 26 percent reported that HIV and AIDS-related issues contributed to the divorce.

The average family size was 3.7. Fifty-four percent of male and female respondents had had a child within 10 years prior to the survey. Among those with children less than 10 years of age, 89 percent of the children of male respondents and 92 percent of the children of females were alive. Overall, 74 percent of children of respondents who were less than age 10 had been tested for HIV. Twenty-eight percent of males and 12 percent of females reported their intention to have children in the coming 12 months.

**Table 2: Marriage, family and housing of people living with HIV and AIDS, by site**

| Marital status | Four Regions | | Addis Ababa | | All | |
|---|---|---|---|---|---|---|
| | Males (n=283) | Females (n=534) | Males (n=73) | Females (n=216) | Males (n=356) | Females (n=750) |
| **Marital Status** | | | | | | |
| Never married/single | 16.7 | 14.7 | 16.6 | 18.2 | 16.5 | 15.7 |
| Currently married/cohabiting | 57.8 | 32.1 | 65.5 | 27.6 | 59.8 | 30.9 |
| Widowed | 9.2 | 22.9 | 3.6 | 33.0 | 7.9 | 25.8 |
| Divorced/separated | 16.3 | 30.3 | 14.3 | 21.2 | 15.8 | 27.6 |
| **Average family size** | 3.7 | 3.7 | 4.0 | 3.9 | 3.8 | 3.7 |
| **Had at least one child in the last ten years** | 56.8 | 57.3 | 43.5 | 43.9 | 53.7 | 53.7 |
| **Alive children among born in the last 10 years** | 87.9 | 91.5 | 90.7 | 93.3 | 88.6 | 92.1 |
| **Intend to have children in the next 12 months** | 23.7 | 11.8 | 42.4 | 11.8 | 28.0 | 11.8 |
| **Current accommodation not adequate** | 53.2 | 47.9 | 72.6 | 60.1 | 57.7 | 51.2 |
| **Reasons for inadequacy of accommodation** | | | | | | |
| Too small | 58.7 | 66.9 | 86.9 | 58.0 | 66.8 | 64.1 |
| Poor condition of the house | 59.1 | 36.7 | 35.5 | 43.7 | 52.1 | 38.8 |
| Too expensive | 19.3 | 16.4 | 34.4 | 23.5 | 23.7 | 18.6 |
| Lack clean water | 18.1 | 13.7 | 1.6 | 15.0 | 13.3 | 14.1 |
| Lack of toilet | 16.8 | 14.0 | 1.6 | 14.3 | 12.3 | 14.1 |
| **Changed accommodation in the last 2 years** | 25.0 | 21.9 | 16.7 | 28.3 | 23.2 | 23.6 |
| **Reasons for changing accommodation*** | | | | | | |
| To move to cheaper housing | 48.6 | 37.4 | 7.1 | 48.3 | 41.7 | 41.0 |
| To avoid harassment | 8.6 | 12.1 | 6.7 | 8.9 | 8.2 | 11.0 |
| Illness | 8.5 | 12.9 | 0.0 | 1.8 | 7.1 | 9.3 |
| To live close to health facility | 2.8 | 10.3 | 0.0 | 0.0 | 2.4 | 7.0 |
| To move to quieter location | 9.9 | 8.6 | 0.0 | 1.8 | 8.2 | 5.8 |
| To live with family | 2.9 | 3.4 | 0.0 | 10.7 | 2.4 | 5.8 |
| To live close to work place | 10.0 | 1.7 | 33.3 | 0.0 | 14.1 | 1.7 |

*among who changed their accommodation

Sixty-eight percent of respondents lived in a rented house with either private owners (46 percent) or that was government-owned (22 percent); 24 percent owned their house. The majority of respondents (57 percent) lived in a single room, or two rooms (25 percent). Overall, an average of 2.1 people lived in each room, with an average of 2.9 persons in single-room dwellings. Fifty-seven percent of males and 51 percent of females considered their current accommodations inadequate, with the main reasons being inadequate size (67 percent of males and 64 percent of females), poor condition (52 percent of males and 39 percent of females), high expense (24 percent of males and 19 percent of females), and lack of access to clean water (13 percent of males and 14 percent of females). Twenty-three percent of males and 24 percent of females had changed their place of accommodation within the last two years. Main reasons for moving were less expensive housing (41 percent), to be closer to work (among males, 14 percent) or to avoid harassment (among females, 11 percent).

## C. Employment and earnings

Ninety-six percent of males and 85 percent of females had ever done any work paid by cash or in-kind. The main paid work of female respondents included domestic work (41 percent), petty trade (28 percent), daily labor (24 percent), waitressing (10 percent), care and support for PLWHA (8 percent) , selling local alcoholic drinks/brew (6 percent) and commercial sex work (4 percent). The main type of paid work among male respondents was daily labor (29 percent), police/solider (22 percent), petty trade (20 percent), guards (12 percent), mason/carpenter or plumber (10 percent), and assistance to long distance truck/bus driver/teacher or office work (7 percent each). Seventy-four percent of males and 65 percent of females had worked for pay in the past month. On average, respondents worked 41.5 hours per week and earned 1100 Birr (US$88) per month. One-third had experienced HIV-related illness in the last six months, and, on the average, respondents who were sick were absent 10 days in the past month. Thirty-eight percent of respondents were fully or partially supporting family members such as children or parents, while 34 percent received support from other family members.

## D. HIV and AIDS Knowledge

Respondents were read a series of questions to assess their knowledge related to mother-to-child transmission of HIV (Table 3). A very high proportion of respondents know that HIV can be transmitted from mother-to-child (95 percent of males; 93 percent of females). Respondents' had significantly higher knowledge levels than the general population, with 87 percent of male and 88 percent of female respondents knowing that HIV can be transmitted from mother-to-child during breastfeeding[1]. Respondents also had a good level of knowledge as to when HIV can be transmitted from mother-to-child, including during delivery (84 percent), and pregnancy (78 percent). In addition, 90 percent of males and 88 percent of females knew that something can be done to prevent transmission, and 87 percent of all respondents knew where to obtain services to prevent HIV transmission from mother-to-child.

**Table 3: Knowledge related to mother-to-child transmission of HIV, by sex (n=1,106)**

| | Percentage (%) | | |
|---|---|---|---|
| | Males | Females | All |
| Know that HIV virus that causes AIDS can be transmitted from mother-to-child | 95.1 | 93.3 | 94.0 |
| Know that something can be done to prevent HIV transmission from mother-to-child | 90.4 | 88.2 | 88.9 |
| Know that HIV can be transmitted from a mother-to-child during breastfeeding | 86.6 | 87.6 | 87.3 |

[1] The 2005 EDHS showed that only 75 percent of men and 69 percent of women know that HIV can be transmitted by breastfeeding

| | | | |
|---|---|---|---|
| Know where to find services for prevention of HIV transmission from mother-to-child | 88.0 | 86.0 | 86.7 |
| Know that a HIV virus can be transmitted from a mother-to-child during delivery | 87.9 | 82.0 | 83.9 |
| Know that HIV virus can be transmitted from a mother-to-child during pregnancy | 79.5 | 77.0 | 77.8 |

## E. STI knowledge

Seventy-eight percent of respondents knew of STIs other than HIV, including 90 percent of males and 72 percent of females. However, respondents were relatively less knowledgeable about their symptoms (Table 4). When asked to name symptoms of STIs in females, 42 percent of the female and 44 percent of the male respondents could not do so, while 40 percent of the female and 36 percent of the male respondents could name three or more.

**Table 4: Spontaneous knowledge of symptoms of STIs in women (n=1,106)**

| Symptoms in women | Percentage responding | |
|---|---|---|
| | Males | Females |
| Genital ulcers / sores | 43.1 | 46.4 |
| Discharge | 51.1 | 52.8 |
| Burning pain during urination | 44.17 | 49.7 |
| Itching | 31.8 | 38.3 |
| Foul smelling discharge | 39.4 | 37.4 |
| Swelling in the groin area | 30.3 | 21.9 |
| Abdominal pain | 15.6 | 4.3 |
| Could not name any STI symptom | 44.3 | 42.1 |
| Named three or more symptoms | 36.2 | 39.5 |

Among respondents who knew of STIs, 7 percent reported they had experienced a suspected or confirmed STI in the previous 12 months, of which 92 percent received treatment for the infection. Reporting of STIs in the previous year was higher among female respondents (9 percent) compared to males (4 percent). The most common places for respondents to seek treatment were government hospitals/clinics (67 percent), public health centers/health posts (21 percent), and private clinics/hospitals (15 percent). The majority (82 percent) disclosed to the provider that they are HIV-positive, and only 4 percent felt the provider was discriminatory or judgmental as a result.

## F. HIV and CD4 testing

Twenty-four percent of male and 27 percent of female respondents learned their HIV status within the 12 months prior to the survey. More than 90 percent of respondents had their last HIV test in government hospitals or health centers. A significantly higher proportion of males (47 percent) had ever tested with their partners compared to females (27 percent), and about 48 percent of all respondents had tested for HIV more than once. The mean age of respondents when they learned their status was 30.3 years. Main reasons for HIV testing included sickness (65 percent), curiosity about HIV status (14 percent), sickness or death of partner or children (9 percent), part of pregnancy care (4 percent), and to travel abroad (2 percent). In general, more than 70 percent of the respondents' family members and 74 percent of their children younger than 10 years of age had been tested for HIV. Fifty-seven percent of respondents had suspicions about the person from whom they contracted HIV—55 percent suspected their spouse and 19 percent their boy/girlfriend.

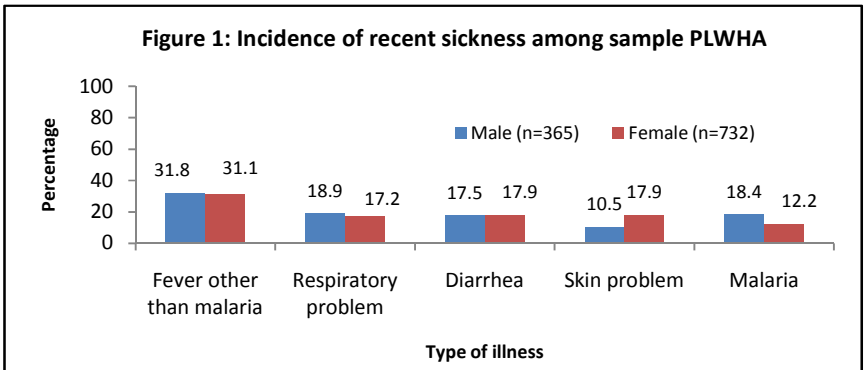
Ninety-nine percent of respondents had had CD4/T-cell testing, 93 percent within the six-month period prior to survey. Thirty percent of respondents reported a CD4/T-cell count of 200 or less at their last testing, and 17 percent did not know their last CD4 count.

## G. Morbidity history

One of the major objectives of the PCP program is to reduce morbidity related to opportunistic infections. Figure 1 provides sex disaggregated prevalence of common morbidities. Table 5 also provides a detailed retrospective assessment of morbidity history for the illnesses among sample respondents. The most common morbidity experienced was fever (31 percent), followed by respiratory problems (18 percent) and diarrhea (18 percent).

*Fever (other than malaria)*

Thirty-one percent of respondents reported fever other than malaria during the three months prior to survey, and there was no statistical difference between male and female respondents.




Fever (due to reasons other than malaria), respiratory problems and diarrhea are measured for the period during the last three months; the prevalence of skin problems is measured for the last six months and malaria, for last year.

*Respiratory problems*

Eighteen percent of respondents complained of respiratory problems such as coughing, difficulty breathing, and tuberculosis (TB) during the last three months, and 23 percent complained of these problems in the year prior to the survey. Among those who had reported respiratory infection in the last year, the majority (64 percent) reported that it was worse than the year prior. Among respondents with respiratory problems, 47 percent experienced them only once, 28 percent twice, and 25 percent three or more times during the past three months.

*Diarrhea*

Eighteen percent of male and female respondents reported having episodes of diarrhea during the three months prior to survey. Among those who had diarrhea in the last year, the majority (51 percent) reported that the episode was worse compared to the year prior. Of those who experienced diarrhea in the last three months, 44 percent reported a single episode, 36 percent reported two to three episodes, and 20 percent four or more episodes. In addition, 63 percent had four or more bowel movements during the last incidence of diarrhea.

There was a statistically significant higher prevalence of diarrhea among respondents who did not have soap at their residence (25 percent) compared to those who had it (17 percent) (Annex 3). Though the difference was not significant, prevalence of diarrhea was higher among respondents who usually use water alone to wash their hands (21 percent), compared to those who reported using water and soap (17 percent).

*Skin infections*

Over 15 percent of respondents reported having a skin problem during the six months prior. Females reported higher levels of skin ailments (18 percent) compared to male respondents (11 percent), a difference that was statistically significant. Among those reporting skin ailments, roughly half experienced one episode, while 39 percent had two or three episodes. Fifty-two percent of respondents reported that they were sicker in the previous year than the year prior, due to skin

problems and this was significantly higher for females (56 percent) than male (40 percent) respondents.

*Malaria*

Fourteen percent of respondents reported malaria infection during the year prior to survey. A significantly higher proportion of males (18 percent) reported malaria than females (12 percent). Twenty percent of those who had malaria reported three or more episodes and this was significantly greater among females (25 percent) than males (16 percent). Among respondents reporting malaria in the last year, 64 percent felt it was worse than the year before (Table 5).

**Table 5 Percentage on morbidity history of PLWHA, by type of ailment and sex**

| | Males (n=365) | Females (n=734) | All (n=1099) |
|---|---|---|---|
| **Diarrhea episodes-last three months** | 17.5 | 17.9 | 17.7 |
| **-last year** | 26.8 | 27.2 | 27.1 |
| **Number of episodes of diarrhea in the last three months** | | | |
| Once | 32.8 | 49.3 | 43.9 |
| Two to three | 45.3 | 31.8 | 36.2 |
| Four and more | 21.9 | 18.9 | 19.9 |
| **Number of bowel movements during the last day of diarrhea**** | | | |
| Two to three | 22.2 | 44.4 | 37.0 |
| 4 or more | 77.8 | 55.6 | 63.0 |
| **Severity of last year diarrhea compared to year before** | | | |
| Worse | 55.5 | 48.8 | 51.0 |
| The same | 17.2 | 14.6 | 15.5 |
| Better | 27.3 | 36.6 | 33.5 |
| **Respiratory problem in the last three months** | 18.9 | 17.2 | 17.8 |
| **Respiratory problem in the last year** | 24.8 | 22.4 | 23.2 |
| **Number of respiratory problems during the last three months**** | | | |
| One | 52.9 | 44.4 | 47.4 |
| Two | 36.8 | 22.2 | 27.3 |
| Three or more | 10.3 | 33.3 | 25.3 |
| **Severity of last year respiratory problem compared to year before** | | | |
| Worse | 65.3 | 64.2 | 64.6 |
| The same | 7.4 | 9.9 | 8.9 |
| Better | 27.4 | 25.9 | 26.5 |
| **Malaria infection in the last year**** | 18.4 | 12.2 | 14.2 |
| **Number of episodes of malaria in the last year*** | | | |
| One | 48.5 | 56.5 | 53.1 |
| Two | 35.3 | 18.5 | 25.6 |
| Three or more | 16.2 | 25.0 | 21.3 |
| **Severity of last year's malaria compared to year before** | | | |
| Worse | 68.7 | 59.8 | 63.6 |
| The same | 9.0 | 17.2 | 13.6 |
| Better | 22.4 | 23.0 | 22.7 |
| **Fever condition other than malaria in the last three months** | 31.8 | 31.1 | 31.3 |
| **Number of episodes of fever (other than malaria) in the last three months:**** | | | |
| Once | 17.8 | 22.2 | 20.7 |
| Twice | 27.5 | 15.1 | 19.3 |
| Thrice | 30.4 | 22.8 | 25.4 |
| Four/more times | 24.3 | 39.9 | 34.7 |
| **Skin problem in the last six months**** | 10.5 | 17.9 | 15.4 |
| **Number of episodes of skin problem in the last six months** | | | |

| | | | |
|---|---|---|---|
| Once | 51.8 | 49.9 | 50.4 |
| Two to three times | 43.5 | 37.3 | 38.6 |
| Four/more times | 4.7 | 12.8 | 11.0 |
| **Severity of last year's skin problem compared to year before **** | | | |
| Worse | 40.1 | 55.6 | 51.6 |
| The same | 29.9 | 17.8 | 20.9 |
| Better | 30.0 | 26.6 | 27.5 |

** Difference between groups significance at <0.05, ** at <0.01 and *** at <0.001*

## H. Utilization of health services

Table 6 shows the proportion of respondents who visited health facilities and who were hospitalized in the last three months. Over one-third of respondents had visited a health facility in the last three months for illnesses related to opportunistic infections. The most common reason for visiting a facility was diarrhea (36 percent), followed by respiratory illness (33 percent), and non-malarial fever (31 percent). Significantly higher proportion of males (18 percent) visited the hospital for malaria illness compared to females (7 percent). Among respondents who visited health facilities in the last three months, 10 percent were hospitalized and the major cause for the hospitalization was respiratory illness (30 percent). Thirty-eight percent of the hospitalized respondents were admitted for less than eight days at their last admission, while 44 percent were admitted for more than 14 days.

**Table 6 Proportion of respondents who visited health facilities and were admitted to hospitals, by sex**

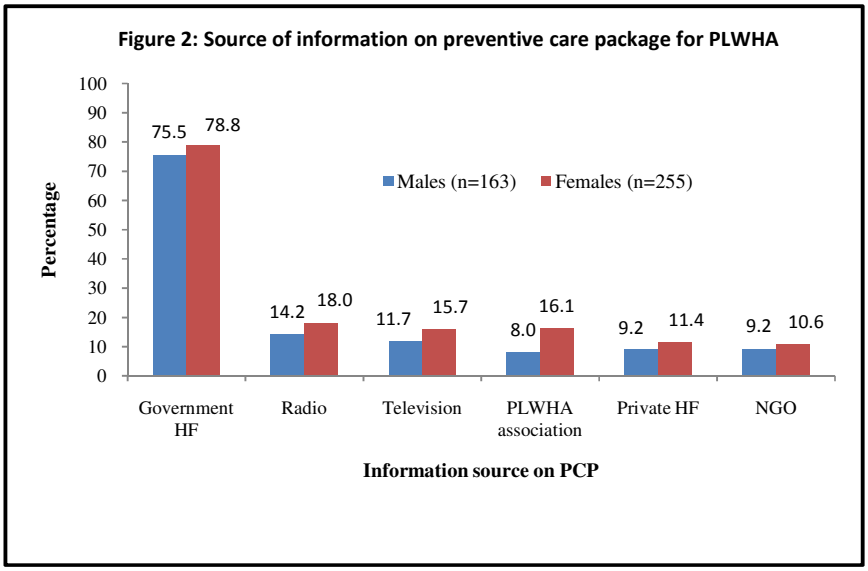
| | Males (n=362) | Females (n=733) | All (n=1095) |
|---|---|---|---|
| **Visited health facility in last three months for opportunistic infections**** | **27.3** | **37.4** | **34.2** |
| Visited clinic or hospital for diarrhea | 37.4 | 35.4 | 35.9 |
| Visited clinic or hospital for respiratory illness | 36.8 | 31.9 | 33.2 |
| Visited clinic or hospital for fever other than malaria | 27.1 | 32.0 | 30.7 |
| Visited clinic or hospital for skin problem | 12.8 | 19.3 | 17.6 |
| Visited clinic or hospital for malaria** | 17.9 | 7.3 | 10.0 |
| **Hospitalized in last three months** | **13.1** | **9.2** | **10.3** |
| Hospitalized for respiratory illness | 46.2 | 20.8 | 29.7 |
| Hospitalized for diarrhea | 7.7 | 12.0 | 9.5 |
| Hospitalized for malaria | 7.7 | 12.0 | 9.5 |
| Hospitalized for skin problem | 23.1 | 4.0 | 10.5 |
| **Number of days hospitalized on last admission in the last year*** | | | |
| 1-7 days | 27.9 | 45.2 | 38.1 |
| 8-14 days | 23.3 | 14.5 | 18.1 |
| 15-21 days | 32.6 | 12.9 | 21.0 |
| 22 + days | 16.3 | 27.4 | 22.8 |

**Difference between groups significance at <0.05, ** at <0.01*

## I. Experience with basic preventive care package

*Information*

Over one-third (38 percent) of respondents received information on the importance of basic preventive care for PLWHA. A significantly higher proportion of males (45 percent) received information compared to female respondents (35 percent). Among those who received information on preventive care practice, 79 percent of females and 76 percent of males received it from government health facilities (Figure 2). Other common sources of information were radio (18 percent of females and 14 percent of males) and television (16 percent of females and 12 percent of males). A significantly higher proportion of females (18 percent) received such information from PLWHA associations compared to males (8 percent). A significantly higher proportion of respondents in Addis Ababa (46 percent) received information on preventive care kits compared to the regions (35 percent).




*Utilization*

Though very few respondents had received PCP kits, some were already using items offered in the package. Ninety-one percent of respondents reported using soap regularly, though only 79 percent of them reported washing their hands with soap. A significantly higher proportion of females (94 percent) used soap regularly compared to males (86 percent). More than a quarter of all the respondents reported using WuhaAgar regularly, with the same level of use for male and female respondents (26 percent). A higher proportion of respondents using the water treatment were from the regions (31 percent) compared to Addis Ababa (6 percent). Overall, only 18 percent of all respondents reported that either they or a family member had used WuhaAgar for drinking water in the last week. This gap between reported regular use and use in the last week reflects inconsistent use of the product. The utilization of another water purification product, "PUR" was negligible.

*Availability*

Table 7 shows current availability of PCP items at respondents' homes. At the time of the survey, 91 percent of respondents had soap, 40 percent had de-worming agents, 36 percent had condoms, 26 percent had insecticide treated nets (ITNs), and 23 percent had WuhaAgar. Of the preventive case items mentioned, ORS was least available in respondents' households. Availability of male condoms and ORS were significantly lower in females' households compared to males'.

**Table 7 Proportion of respondents' households currently having basic preventive care items, by sex**

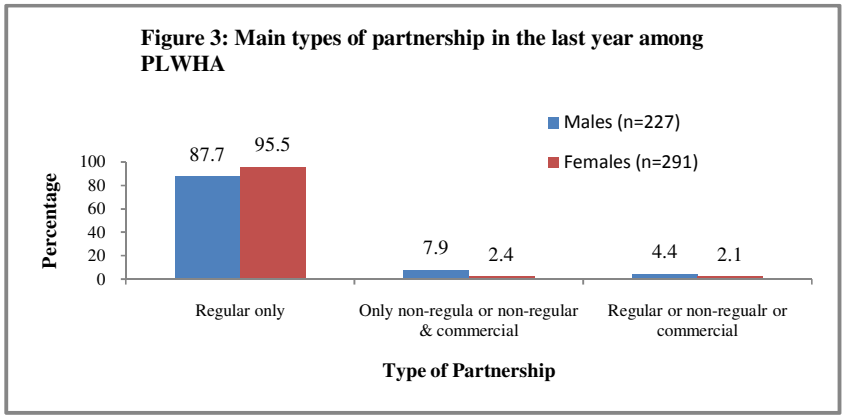
| Basic preventive care item | Males | Females | All |
|---|---|---|---|
| Soap** | 86.5 | 92.8 | 90.7 |
| WuhaAgar | 24.7 | 22.3 | 25.2 |
| ORS* | 16.2 | 10.9 | 12.7 |
| Insecticide treated bed net (ITN) | 24.1 | 27.3 | 26.3 |
| Condom*** | 50.7 | 28.0 | 35.5 |
| De-worming agent | 38.1 | 40.8 | 39.9 |
| **(n)** | **365** | **728** | **1093** |

** Difference between groups significance at <0.05, ** at <0.01, *** at <00.1*

## J. Sexual behavior and condom use

*Partnership*

Virtually all respondents had ever had sex and the majority (73 percent of females and 54 percent of males) had their first sexual intercourse below age 19. Significantly more males than females were sexually active, having had sex in the previous 12 months (66 percent of males; 40 percent of females). Among those who had sex in the last year, 96 percent of the females and 88 percent of the males had regular partner(s) only. Eight percent of males and 2 percent of females had both regular and non-regular or commercial partners, while 4 percent of males and 2 percent of females had only non-regular or commercial partners. Seventy-four percent of male and 65 percent of the female respondents were using condoms consistently, a difference that was statistically significant.




Fifty-three percent of respondents disclosed their HIV status to their partner(s). Among those who disclosed their status, 91 percent told their partners within one month of learning their status. Twenty-eight percent of respondents had sex without a condom before telling their partner. The vast majority of respondents changed their sexual frequency after finding out they were HIV-positive. Forty-four percent reported abstaining and 43 percent reduced their sexual frequency. Eight percent of respondents reported that they were discouraged from having sex, with most discouragement coming from health workers (68 percent), neighbors (37 percent), and spouses (11 percent).

*Contraceptive use*

Fifty-seven percent of respondents or their partners have ever used a family planning method. Among respondents who have ever used family planning, only 49 percent of them or their partners were currently using a method. Injectables were the most common method used by females (59 percent), followed by condoms (45 percent). Among currently users, condoms were popular among both males (78 percent) and females (67 percent). The high level of condom use is presumably associated with the condom's double benefit of fertility control and disease prevention.

**Table 8: Ever-use of family planning among respondents and their partners, by method**

| Family planning method | Percentage | | | |
|---|---|---|---|---|
| | Ever used(n=632) | | Currently using(n=311) | |
| | Males | Females | Males | Females |
| Injectable | 41.9 | 59.2 | 25.6 | 33.5 |
| Male condom | 44.5 | 29.2 | 77.6 | 66.7 |
| Pill | 30.4 | 35.1 | 11.5 | 6.7 |

*Condom use, preferred brand, and source*

Fifty-one percent of all respondents had ever used a condom and ever use of condom was significantly higher among male (71 percent) compared to female (41 percent) respondents. Condoms were considered accessible among the majority of respondents (Table 9). Among 73 percent of respondents, the price of condoms was affordable and the median time to the preferred source was 10 minutes. Only 9 percent of all the respondents had experienced stock outs from their preferred source, but the majority (64 percent) were able to obtain condoms from an alternative source.

**Table 9 Patterns of availability and accessibility of condoms by sex**

| | Percentage | | |
|---|---|---|---|
| | Males (n=365) | Females (n=734) | All (n=1099) |
| **Ever used condom*** ** | 70.7 (n=253) | 41.4 (n=304) | 51.1 (n=557) |
| **Condoms are bought or given** | | | |
| Buying | 55.4 | 39.0 | 46.3 |
| Free | 22.9 | 41.4 | 33.2 |
| Both | 21.6 | 19.7 | 20.5 |
| **There are condoms sold at affordable prices** | 72.3 | 74.2 | 73.2 |
| **Time to reach the usual source of condom:** | | | |
| Less than 6 minutes | 28.1 | 37.2 | 33.0 |
| 6-10 minutes | 21.3 | 25.7 | 23.7 |
| 11-30 minutes | 40.3 | 28.3 | 33.8 |
| More than 30 minutes | 10.3 | 8.9 | 9.5 |
| Median time to reach source of condom (minutes) | 15 | 10 | 10 |
| **Current source is preferred source of condom** | 96.8 | 96.6 | 96.7 |
| **Experienced stock out of condom at usual source** | 15.1 | 3.0 | 8.5 |
| **When stock out experienced, was able to get from other source** | 66.7 | 50.0 | 63.8 |

The main source of condom for males was pharmacy (39 percent), kiosk (33 percent), and health facilities (29 percent) (Figure 4). The main source of condoms for females was their sex partner (35 percent), pharmacy (34 percent), and health facilities (34 percent).

**Figure 4: Main sources of condoms for PLWHA**

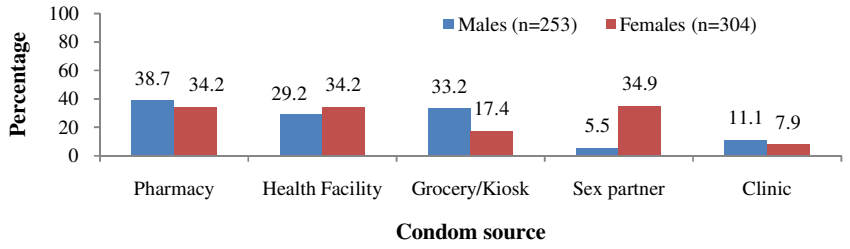



**Table 10 Condom brands used and reason for preferred brand (n=557)**

| | Males (n=253) | Females (n=300) |
|---|---|---|
| **Brand of condom used** | | |
| Sensation | 55.7 | 57.1 |
| Hiwot Trust | 70.4 | 63.7 |
| Unbranded | 4.3 | 8.3 |
| Others | 2.8 | 6.3 |
| **Why preferred the brand** | | |
| Quality | 42.7 | 41.5 |
| Free of charge | 22.5 | 36.3 |
| Affordable price | 19.8 | 22.9 |
| Partner provides | 1.2 | 17.7 |
| Odor | 12.3 | 5.3 |
| The feel of the condom | 9.1 | 6.0 |
| Size | 3.6 | 6.3 |
| Color | 1.6 | 1.0 |

The most commonly used condom brands were Hiwot (70 percent of males and 64 percent of females) and Sensation (56 percent of males and 57 percent of females). Unbranded condoms were also used by 8 percent of females and 3 percent of male respondents. Other brands such as Durex and French Feelings were used by less than 6 percent of female and 3 percent of male users. The main reasons given for using specific brands were quality (42 percent), receiving it free-of-charge (36 percent of females and 23 percent of males) and affordability (23 percent of females and 20 percent of males). Other reasons included partner providing the condom, odor, the feel of the condom, and the size.

## K. Opportunity, ability and motivations in HIV prevention behavior

One strategy of measuring program effectiveness is the assessment of respondents' opportunities, abilities and motivations (OAM) to undertake specific behaviors, such as basic preventive care. OAM analysis is based on controlling for multi-dimensional effects using factor analysis for data reduction and reliability of the data (PSI, 2005). The reliability of the data is determined by Cronbach's alpha being greater than, or equal to, 0.70 (Annex 1,4,7, and 9). All results are calculated from responses to given statements of strongly disagree, disagree, agree, and strongly agree.

*Condom use*

Annex 2 includes tables on opportunities, abilities and motivational factors related to condom use. Among respondents who ever used condoms, nearly 70 percent were consistent users. In general, respondents had a very high level of knowledge on the ability of condoms to prevent HIV re-infection and STIs (mean=3.49) and a high level of self-efficacy to use condoms correctly and consistently (mean=3.28). Respondents also reflected considerable confidence to prevent themselves from HIV re-

infection or STI infection (mean=3.16) and considerable belief in the quality of condoms (mean=3.10). On the other hand, the level of social support to use condoms by friends, partners and community was relatively low (mean=2.62), but still higher than the expected average of 2.5 (determined from 4=strongly agree, 3=agree, 2 disagree, and 4=strongly disagree)

Table 11 shows the segmentation table on consistent and non-consistent/non-condom users with corresponding unadjusted odds ratio (OR). Condom users were more than five times more likely to agree with the condom's ability to prevent HIV re-infection, compared to non-users. However, no significant knowledge differences were observed between consistent users and non-users related to the ability of condom to prevent STIs. Compared to those who do not use condoms consistently, consistent condom users were significantly more likely to receive social support from friends, partners and community members. Consistent condom users also had high levels of self-efficacy to correctly and consistently use condoms and to refuse sex without condoms with any type of partners as compared to non-consistent users. Non-consistent or non-users of condom were also more likely to report that using condoms is difficult and unappealing. The beliefs related to strength, quality, and safety of condoms were not significantly different between users and non-users. However, non-users believed that condoms decrease sexual pleasure and intimacy with a partner.

**Table11 Segmentation table: condom use ability and motivation among consistent users and non-users of condoms**

| Indicators | Proportion ( percent) | | OR (95% CI) | Sig. |
|---|---|---|---|---|
| | Consistent Users in last year | Non-consistent /non users | | |
| | Percentage | | | |
| **Ability-Knowledge** | **(n=331)** | **(n=135)** | | |
| Agree that condoms can be used to prevent HIV re-infection | 99.1 | 95.6 | 5.15 (1.23-21.5) | * |
| Agree that condoms can be used to prevent STI | 89.7 | 91.0 | 0.76 (0.45-1.70) | NS |
| Agree that condom should be used consistently and correctly to prevent STIs | 97.3 | 94.1 | 2.38 (0.45-1.78) | NS |
| Agree that condoms can be used as a family planning method | 98.2 | 97.0 | 1.47(0.40-5.40) | NS |
| **Ability-Social support** | **(n=302)** | **(n=119)** | | |
| Agree that my friend and I encourage each other to use condoms correctly and consistently | 84.1 | 46.6 | 5.98(3.72-9.61) | *** |
| Agree that most of my friends approve the use of condoms | 72.8 | 63.6 | 1.53(0.97-2.41) | |
| Agree that most of my friends encourage consistent and correct use of condoms | 71.2 | 58.8 | 1.72(1.10-2.67) | * |
| Agree that there is someone that I can talk to when I have questions or concerns about condoms | 77.8 | 53.8 | 3.01(1.92-4.73) | *** |
| Agree that my partners/spouse supported me to use condoms | 89.4 | 51.7 | 7.93(4.74-13.25) | *** |
| Agree that most of my community support for making decisions about my sex life | 64.5 | 50.0 | 1.81(1.18-2.79) | ** |
| **Ability-Self efficacy** | **(n=344)** | **(n=150)** | | |
| Agree that I am confident that I can correctly use condoms | 98.9 | 65.5 | 45.26(12.10-93.61) | *** |
| Agree that I am confident that I can consistently use a condom with my regular partner and causal partner | 98.6 | 69.0 | 31.39(12.09-81.49) | *** |
| Agree that I can refuse to have sex with a new partner if we don`t have a condom even if I want to have sex | 96.0 | 78.2 | 6.72(3.44-13.13) | *** |
| **Motivation-Outcome expectation** | **(n=356)** | **(n=141)** | | |
| Agree that condoms are effective in preventing HIV infection | 94.7 | 88.7 | 2.21(1.10-4.45) | * |
| Agree that condoms are effective in preventing STIs | 96.3 | 90.1 | 2.81(1.21-6.09) | ** |
| Agree that if one uses condoms correctly and consistently they don't have to worry about contracting HIV | 63.1 | 58.9 | 1.19(0.80-1.77) | NS |
| **Motivation-Attitude** | **(n=347)** | **(n=105)** | | |
| Disagree that using a condom all the time is difficult for me(® | 89.9 | 68.6 | 3.99(2.32-6.84) | *** |
| Disagree that the idea of using condoms does not appeal to me ® | 91.0 | 72.4 | 3.81(2.16-6.70) | *** |
| Agree that I feel comfortable to use condoms with my partner | 86.4 | 64.8 | 3.48(2.11-5.77) | *** |
| Disagree that condoms break easily ® | 79.5 | 76.2 | 1.22(0.73-2.06) | |
| **Motivation-belief** | **(n=331)** | **(n=135)** | | |
| Disagree that free condoms mostly break easily ® | 91.0 | 86.2 | 1.61(0.80-3.26) | NS |
| Disagree that condoms given for free are of poor quality ® | 88.3 | 89.4 | 0.86(0.41-1.83) | NS |
| Disagree that condoms in general are not safe ® | 73.7 | 75.5 | 0.92(0.54-1.56) | NS |
| Disagree that most people who use condoms are promiscuous® | 77.0 | 74.5 | 1.15(0.68-1.97) | NS |
| Disagree that condoms decrease sexual pleasure® | 67.0 | 47.4 | 2.26(1.41-3.62) | *** |
| Disagree that condoms decreases intimacy or emotional closeness® | 70.0 | 51.1 | 2.25(1.40-3.62) | ** |

**p< 0.05; **p<0.01; p<0.001;* NS=not statistically significant ®= shows reversed direction of the statement

Multivariate logistic regression identified factors that are significantly associated with consistent use of condoms (Table 12). The predictor variables in the model are calculated as composite score (mean) from reliable variables as indicated by Cronbach's alpha (annex1) and statements indicated in Table 11. The analysis was performed separately for males and females. .

Multivariate analysis for male respondents identified social support, satisfaction with condom use, and socioeconomic status as significant predictors of consistent condom use. A unit increase in the mean composite score of social support measured by encouragement or support from friends, other PLWHA, partners/spouse to use condoms is likely to increase consistent condom use by nearly three times. Male respondents who disagreed with statements that condoms decrease sexual pleasure, decrease emotional closeness, and that condom users are promiscuous persons were nearly twice as likely to use condoms consistently. Rich male respondents were 13 times more likely to use condoms consistently compared to their poor counterparts.

The model including only females suggests that three factors are significantly associated with condom use: self efficacy, attitude, and social support. Social support was consistently found to be a significant predictor of consistent condom use in both the male and female models. Female respondents who received a unit increase in mean composite score of social support were nearly four times more likely to use condoms consistently. Self-efficacy is the most important predicator of condom use in the female model. Self-efficacious female respondents who are able to use condoms correctly, those who can use condoms confidently with their regular and casual partners, and those who can refuse to have sex with new partners without condoms, even if they want to have sex are 18 times more likely to use condoms consistently, for a unit increase in the average composite score for self-efficacy. Attitudes of females were also significantly associated with the outcome, with those possessing positive attitudes toward condom use being over eight times more likely to consistently use condoms.

**Table 12: Adjusted odds ratios (and 95% confidence intervals) from logistic regression for predictors of consistent condom use with partners**

| | Males | | Females | |
|---|---|---|---|---|
| | **Adjusted OR** | **95% confidence interval** | **Adjusted OR** | **95% confidence interval** |
| **Self-efficacy** | - | - | 18.12*** | (3.93-83.65) |
| **Social support** | 2.91** | (1.37-6.15) | 3.47* | (1.24-9.72) |
| **Belief on satisfaction** | 1.87* | (1.01-3.49) | - | - |
| **Attitude** | - | - | 8.27** | (1.79-38.26) |
| **Socioeconomic status** | | | | |
| Poor (Ref.) | 1.00 | | 1.00 | |
| Medium | 2.24 | (0.79-6.39) | 0.33 | (0.10-1.08) |
| Rich | 13.09** | (2.97-57.80) | 1.88 | (0.32-11.09) |

**p< 0.05; **p<0.01; p<0.001; blank spaces(-) indicates the variable is not included in the model for respondent category as it doesn't contribute to the improvement of the model.*

*WuhaAgar use*

Annex 5 shows results for WuhaAgar use. Only 19 percent of the respondents used WuhaAgar to treat drinking water in the last week. In general, treating drinking water using WuhaAgar or Pure as a norm, and perceived social support to use the product was far below the average level of 2.5. The attitude of respondents was very supportive of the need to treat drinking water and there was also recognition that treated water is protective of water-born diseases. Knowledge related to the importance of WuhaAgar to treat drinking water and self-efficacy to treat water by using it were slightly higher than average.

The unadjusted odds ratio (Annex 6) shows that users of WuhaAgar were highly likely to practice water treatment as a standard behavior and highly likely to receive social support for their actions. Self-efficacy to treat drinking water is significantly higher among users compared to non-users. However, there was no significant knowledge difference between users and non-users related to the efficacy of WuhaAgar to kill germs or the danger of ostensibly clean water to cause diarrhea.

The multivariate logistic regression identified factors that are significantly associated with drinking treated water, controlling for other factors (Table 13). The analysis was performed separately for males and females.

The multivariate analysis for male respondents showed that knowledge, social support, and marital status are significantly associated with drinking water treated with WuhaAgar. A unit increase in knowledge (measured by agreement that water can be contaminated by germs that are too small to see, that WuhaAgar can make it free for drinking, and that diarrhea can be caused by drinking water that looks clear) are 49 percent less likely to drink WuhaAgar treated water. Socially supported respondents were nearly 5 times more likely to use WuhaAgar for unit increase in social support from friends, neighbours, and PLWHA associations. Widowed respondents were 13.8 times more likely to drink water treated with WuhaAgar compared to single male respondents.

The model for female respondents identified five characteristics significantly associated with WuhaAgar use: self efficacy, social support, attitude, outcome expectation, and level of education. Female respondents who measured as "self-efficacious" with the knowledge and ability to treat their drinking water were four times more likely to use WuhaAgar for a unit increase knowledge and ability to treat drinking water. Respondents who were socially supported were 2.6 times more likely to use WuhaAgar than those who were not. Respondents who considered WuhaAgar as protective were 3.8 times more likely to use the product than those who did not consider the product protective. Interestingly, respondents who knew that water can be contaminated by germs, and that WuhaAgar can make drinking water safer, were 71 percent less likely to use WuhaAgar treated drinking water, after controlling for other variables. Female respondents were 12 percent less likely to use WuhaAgar treated water for a one year increase in level of education.

**Table 13: Adjusted odds ratios (and 95% confidence intervals) from logistic regression for predictors of users of drinking water treated with WuhaAgar in the last week**

| | Males | | Females | |
|---|---|---|---|---|
| | **Adjusted OR** | **95% confidence interval** | **Adjusted OR** | **95% confidence interval** |
| **Knowledge** | 0.51** | (0.31-0.82) | - | - |
| **Self-efficacy** | 0.55 | (0.29-1.04) | 3.99*** | (2.27-7.01) |
| **Social support** | 4.76*** | (2.87-7.89) | 2.56*** | (1.88-3.49) |
| **Attitude** | 0.85 | (0.47-1.52) | 0.29*** | (0.15-0.55) |
| **Outcome expectation** | 2.11 | (0.86-5.17) | 3.76*** | (1.98-7.11) |
| **Level of education** | 0.91 | (0.80-1.03) | 0.88*** | (0.82-0.95) |
| **Age of respondent** | - | - | 0.98 | (0.94-1.02) |
| **Socioeconomic status** | | | | |
| Poor (Ref.) | 1.00 | | | |
| Medium | 1.10 | (0.37-3.25) | 0.97 | (0.50-1.94) |
| Rich | 1.81 | (0.74-4.42) | 1.68 | (0.95-2.99) |
| **Marital Status** | | | | |
| Single (Ref.) | 1.00 | | | |
| Married | 2.59 | (0.75-8.95) | 0.49 | (0.25-1.02) |
| Widowed | 13.78* | (2.66-71.34) | 0.52 | (0.24-1.12) |
| Divorced | 1.05 | (0.19-5.88) | 0.40 | (0.18-0.88) |

| | | | | |
|---|---|---|---|---|
| Cohabiting | 2.79 | (0.61-12.72) | 1.43 | (0.54-3.75) |
| Separated | 0.46 | (0.01-30.57) | 0.35 | (0.08-1.61) |

**p< 0.05; **p<0.01; p<0.001; blank spaces(-) indicates the variable is not included in the model for respondent category as it doesn't contribute to the improvement of the model.*

Nine percent of the respondents had ever bought WuhaAgar or Pure and among them 68 percent reported the price as 2.50 Birr (USD 0.20) or less. Only 13 percent bought it for more than 3 Birr (USD 0.24). If the price of WuhaAgar were to increase to 3 birr, 88 percent reported that they would still be willing to buy it.

*Safe water system and hygiene practices*

The main source of drinking water for respondents' households was piped water (80 percent), followed by water from tap/kiosk (16 percent). About 2 percent used water from an open well, river and other unsafe sources (Annex 3). The majority of respondents transported their drinking water from the source using a *jerican* (71 percent) or open bucket (22 percent). In terms of storage, 64 percent stored drinking water in containers, with 52 percent using open jericans, 17 percent using wide-mouthed containers with lead, and 13 percent using narrow-mouthed containers with lead. Forty-three percent of respondents with containers had only one and 30 percent had two. This suggests that, though the majority of respondents had relatively safe sources of drinking water, most modes of transportation and storage could expose their water to contamination.

Thirty-five percent of the respondents' households had ever done something to improve water quality and 30 percent had done so in the last year. Eighty-five percent used WuhaAgar and 18 percent boiled their water. The main reasons given for not treating drinking water was the belief that water was safe (72 percent), not knowing what to do (12 percent), and because products such as WuhaAgar are expensive (10 percent).

Eighty-two percent of the respondents had ever heard of WuhaAgar/Pure, however only 38 percent had ever used it. Among those who had ever heard of WuhaAgar, 50 percent heard about it from the radio, 49 percent from health care providers, 42 percent from television, and 6 percent from friends or relatives. Among those who ever used WuhaAgar, 60 percent had used it in the last week. The main source of WuhaAgar was hospitals/health centers (65 percent), pharmacies/drug shops (23 percent), and shops/kiosks (8 percent). Among those who had ever used the product, 91 percent had received information or advice about how to use it.

Respondents' hand washing habits varies by activity. It was common to wash hands before eating food (90 percent), after eating food (80 percent), or after using the toilet (73 percent). Only 53 percent washed hands before preparing food. Significant proportions did not use soap; only three-quarters reported washing their hands with soap. Prevalence of diarrhea was higher among respondents who used water alone to wash their hands (22 percent), compared to those who used water and soap (17 percent), a difference that was statistically significant.

The majority of respondents (60 percent) use a pit latrine without a slab, a pit latrine with slab (12 percent), and a ventilated pit latrine (7 percent). Sixty-nine percent of the available toilets were shared with other households, and 9 percent either had no toilet or used the open field.

*Insecticide Treated Net (ITN) use*

Fifteen percent of the respondents reported that at least one member of their household had malaria in the six months prior to the survey; among respondents outside of Addis Ababa, 19 percent reported having malaria in the past six months. The majority (96 percent) of respondents had heard of insecticide treated mosquito nets to prevent malaria, with the most common sources of information being radio (62 percent), health facilities (13 percent), television (12 percent), and neighbors/friends (8 percent). Ninety-one percent of respondents knew that a person can prevent malaria and, among these, 90 percent reported sleeping under a mosquito net. Other methods of prevention mentioned were taking medication (30 percent) and keeping the house/environment clean (26 percent). Traditional ways of malaria prevention such as eating garlic and smoking the house were also reported by 17 percent of respondents. Misconceptions reported by respondents included drinking clean water (12 percent) and avoiding colds/flues (3 percent).

Thirty percent of the respondents had mosquito nets in their households. Among them, 64 percent slept under the net the previous night. Seventy-seven percent of respondents had one net, while 21 percent had two nets in their household. Among respondents who had a net, 67 percent received it free-of-charge and 33 percent purchased it. Among those not using a net, 53 percent reported no threat of malaria and 34 percent reported the cost of the net as the reason for non-use. Among those who purchased bed nets, three quarters paid 40 Birr (USD $3.13) for it.

*Oral Rehydration Solution (ORS) use*

ORS is among the PCP components promoted among PLWHA. The majority of respondents (91 percent) knew about ORS, 29 percent had ever bought it, and 20 percent received it free-of-charge. Among those who knew of ORS, 73 percent mentioned the pharmacy as a possible source, 52 percent reported health facilities, and 8 percent mentioned shops. Among those who had obtained ORS, 72 percent last bought it from hospital/health centers and 26 percent from local pharmacies. Sixty-seven percent had heard information in the last six months on the utility of ORS. The most common sources of information were health facilities (82 percent), radio (21 percent), television (10 percent), and friends or relatives (8 percent). Only 9 percent of the respondents currently had ORS in their homes.

Twenty-five percent of respondents reported that a member of their household or that they themselves had suffered from diarrhea in the last three months. Fifty-one percent used *Lemlem*, 23 percent used ORS, and 7 percent used a homemade sugar and salt solution. Others reported consumption of fluids such as soup (8 percent) or milk (3 percent). Twenty-five percent did nothing during the last episode.

There is high level of approval of and expectation about the protective effect of ORS among users (Annex 11). The median price of a single packet of ORS was 2 Birr (USD $0.16) which is also the local market price in most towns. Seventy-eight percent of respondents would still be willing to buy ORS if the price of ORS were to increase to 3 Birr (USD $0.23). The proportion of respondents willing to buy ORS decreased by 11 percent should the price increase to 4 Birr (USD $0.31).

*Clinical service and adherence to ART*

Ninety-two percent of the respondents have received care and support services from health providers in the last three months. A significantly greater proportion of respondents from Addis Ababa (95 percent) received services compared to respondents from other regions (90 percent). Among respondents who received heath services, 99 percent had received them from government hospitals and health centers. Eighty-eight percent of service beneficiaries received ART, 46 percent received counseling, 14 percent received psychosocial support, 8 received percent prevention of mother-to-child transmission, and 7 percent received family planning services. The majority (96 percent) was

satisfied with the service; Addis Ababa respondents had significantly lower levels of satisfaction (92 percent), compared to regional respondents (97 percent). Among respondents who were dissatisfied, 48 percent were dissatisfied with the treatment of health professionals and 36 percent reported a long waiting time.

Eighty-five percent of the respondents were on ART and, among them, 5 percent had not followed the required regiment of drugs in the past three months. Among those who missed their specified dose, 14 percent had missed it in the last week, 46 percent in the last month and 54 percent from 1 to 3 months prior to survey. Reason for not taking the required drugs were feeling ill (31 percent), feeling the drug was harmful (13 percent) and depression (9 percent). Other reasons included lack of food, forgetting, not packing the drug during travel, and use of holy water. More than half of all respondents who missed their drugs also missed three or more doses in the last month.

**L. Media access and preferences**

The PCP program includes media interventions to promote the basic preventive components. Table 13 shows access to and listenership of radio, as well as preferred stations and listening times. About three-quarters of respondents own a radio, but only 73 percent of those who own one listen to it regularly; 75 percent of the owners listened in the last week. Radio was the most common information source about HIV/AIDs and condoms (69 percent), followed by television (44 percent). These were also the preferred sources, in addition to regional FM stations preferred by regional respondents. Early evening hours were the preferred time to listen to radio (46 percent), as were weekends, preferred by over 70 percent of respondents.

**Table14: Media access and preferences**

| | Males | Females | All |
|---|---|---|---|
| **Owns radio** | 78.8 | 74.9 | 76.2 |
| | | | |
| **Received information on HIV and AIDs in last three months from:** | | | |
| Radio | 86.2 | 64.1 | 71.5 |
| Television | 63.5 | 42.7 | 49.6 |
| Peer educators | 14.0 | 32.5 | 26.4 |
| Billboards | 21.7 | 10.4 | 14.2 |
| Pamphlets/flyers | 21.8 | 14.5 | 16.9 |
| Magazine | 18.7 | 7.8 | 11.4 |
| Newspapers | 24.7 | 4.2 | 11.0 |
| Other | 4.0 | 5.4 | 4.9 |
| | | | |
| **Most preferred source of information on HIV and AIDS** | | | |
| Radio | 87.9 | 70.8 | 76.5 |
| Television*** | 56.5 | 44.2 | 48.3 |
| Health workers | 31.7 | 58.5 | 49.6 |
| Peer educators | 11.8 | 32.1 | 25.3 |
| Newspaper | 12.4 | 6.2 | 8.2 |
| Magazine | 7.4 | 7.3 | 7.3 |
| Billboards | 10.7 | 7.7 | 8.7 |
| **N** | **363** | **732** | **1095** |
| | | | |
| **Preferred radio station** | | | |
| Ethiopian Radio | 47.5 | 43.2 | 44.9 |
| FM 97.1 | 24.7 | 30.4 | 28.2 |
| FM South Region | 3.4 | 2.7 | 3.0 |
| FM Amhara | 2.8 | 4.8 | 4.0 |
| FM Jimma | 0.9 | 1.0 | 0.9 |
| Radio Fana | 9.9 | 4.6 | 6.6 |
| Others | 4.9 | 4.8 | 4.8 |
| FM 96.3 | 2.2 | 5.9 | 4.5 |
| | | | |
| **Preferred time to listen radio** | | | |
| Early morning | 8.6 | 9.1 | 8.9 |
| Morning | 10.8 | 17.9 | 15.2 |
| Midday/lunch time | 5.8 | 5.7 | 5.8 |
| Early afternoon | 6.2 | 6.8 | 6.4 |
| Late afternoon | 4.9 | 7.6 | 6.6 |
| Evening | 53.5 | 49.7 | 51.2 |
| Late evening | 10.2 | 3.2 | 5.9 |
| | | | |
| **Days most often listen to radio** | | | |
| Monday | 64.4 | 60.6 | 62.1 |
| Tuesday | 64.7 | 56.3 | 59.5 |
| Wednesday | 65.6 | 66.0 | 65.9 |
| Thursday | 63.5 | 52.6 | 56.8 |
| Friday | 66.6 | 60.4 | 62.8 |
| Saturday | 81.8 | 74.0 | 77.0 |
| Sunday | 91.1 | 71.9 | 79.3 |
| **N** | **326** | **523** | **849** |

## V. CONCLUSIONS and RECOMMENDATIONS

In less developed countries such as Ethiopia, opportunistic infections are the leading cause of morbidity and mortality among PLWHA—ART alone is insufficient for a healthy life. This study is a baseline survey for the basic PCP program for PLWHA, undertaken in four major regions and the capital city, Addis Ababa. The study provides pre-intervention estimates against which the impact of the project will be measured, as well as insights on the direction of intervention.

A total of 1106 people were interviewed in 33 health facilities in four regions and Addis Ababa. All respondents were clients of health facilities and were living with HIV. The average age was 36 and 33 years for male and female respondents, respectively. Sixty percent of male and 31 percent of female respondents were currently married or cohabiting; 24 percent of ever married males and 53 percent of females were widowed or divorced. The majority (56 percent) of respondents attributed their widowhood or divorce to HIV. As a result, a large proportion of respondents did not have a regular partner.

There was a very high level of knowledge related to HIV transmission from mother-to-child, however 54 percent of the respondents had given birth in the last ten years and a quarter of their children had not been tested for HIV. Significantly higher proportion of males respondents (90 percent) knew of STIs other than HIV, compared to females (72 percent).

A significant proportion of respondents had never received information on the importance of basic preventive items for PLWHA. Among those who had received the information, the vast majority (77 percent) received it from government health facilities.

Only a quarter of the respondents had WuhaAgar at their household. However, a gap in the regular use and use during the last week was observed and this indicates inconsistent use of the product.

More than half of the respondents had sexual intercourse in the past year, and 90 percent had regular partners. A significantly higher proportion of males (74 percent) were using condoms consistently compared to female (65 percent) respondents. Over 70 percent of respondents used condom consistently among those who had sex in the previous one year. Quality was the most important characteristic influencing brand choice of condoms, followed by availability of free condoms, and affordability.

Sixty-four percent of the respondents stored drinking water using containers, 52 percent used open jericans, and 17 percent used wide container with lead. Though the majority acquired their drinking water from safe sources, most used unsafe modes to transport or store water.

Thirty-five percent of the respondents or members of their households had ever done something to improve water quality and 30 percent did so in the last year. Among those who had done something, 85 percent used WuhaAgar and 18 percent boiled their water. The main reason mentioned for not doing anything was confidence in the quality of water (72 percent), not knowing what to do (12 percent), and WuhaAgar being expensive (10 percent).

Thirty percent of the respondents currently had mosquito nets in their household, however only 16 percent used the net year round. Traditional ways such as eating garlic and smoking the house were also reported by 17 percent of respondents. Misconceptions reported by respondents included drinking clean water (12 percent) and avoiding colds/flues (3 percent).

Twenty seven percent of the respondents or their household members had diarrhea in the last year. However, only 70 percent had used ORS or homemade sugar-salt solutions to prevent dehydration. About one in ten did not know about ORS. A quarter had done nothing or used fluids such as soup, milk, soft drinks or holy water during their last episode of diarrhea.

Multivariate logistic regression identified that sex, self-efficacy, social support, belief, and socioeconomic status are significantly associated with consistent use of condoms, after controlling for other factors. Self-efficacious respondents who were confident and could correctly and consistently use condoms and those who believed that condoms do not decrease sexual pleasure and emotional closeness were more likely to use condoms consistently.

The multivariate logistic regression identified that sex, self-efficacy, social support, and outcome expectation were significantly associated with drinking water treated with WuhaAgar. It was also observed that a one-year increase in level of education is likely to reduce WuhaAgar use by 10 percent.

The above findings guide us to the following recommendations for improving the program interventions.

- Promote HIV testing among offspring of project beneficiaries in particular and PLWHA in general.
- Aggressively communicate the package items, how to use them, and the expected outcomes of their use through health facilities and various media outlets.
- Promote social support to encourage condom use through friends, sex partners/ spouse, and community members.
- Build self-efficacy of female PLWHA to build confidence on correct use of condoms and the ability to refuse sex with any partner without a condom even if they desire sex.
- Employ appropriate communication to reduce beliefs such as condoms decrease pleasure, intimacy or emotional closeness with partners, specifically among male PLWHA.
- Communicate to change attitudes, such as using condom all the time is difficult and not appealing, particularly among female PLWHA.
- Encourage consistent condom use among PLWHA.
- Promote the availability of WuhaAgar at the household level and consistent use of the water treatment, particularly among men respondents.
- Promote self-efficacy of PLWHA on how to treat water using WuhaAgar, especially among female PLWHA.
- Encourage social support from neighborhood, friends, fellow PLWHA and their association.

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**Annexes**:

**Annex 1: Reliability analysis on condom use**

| Behavioral change determinant | Cronbach's Alpha | Number of Items | Question Number |
|---|---|---|---|
| **Ability** | | | |
| Knowledge | 0.791 | 4 | q1026 q1027 q1029 q1030 |
| Social support | 0.877 | 6 | q1031 q1032 q1033 q1034 q1035 q1036 |
| Self efficacy | 0.859 | 3 | q1037q1038 q1039 |
| **Motivation** | | | |
| Outcome expectation | 0.768 | 3 | q1040 q1041 q1042 |
| Attitude | 0.782 | 4 | q1043 q1044 q1046 q1048 |
| Belief related to strength of condom | 0.830 | 3 | q1049 q1050 q1051 |
| Belief related to satisfaction | 0.774 | 3 | q1053 q1054 v1055 |

**Annex 2: Monitoring table: behavior on condom use among PLWHA**

| Behavior | All respondents |
|---|---|
| Family members tested for HIV | 70.3% |
| Consistent condom use in last month/year with sex partner | 69.7% |
| Female PLWHA who currently use family planning | 20.9% |
| **Ability-Knowledge (n/mean)** | **(946/3.49)** |
| Condoms can be used to prevent HIV re-infection | 3.51 |
| Condoms can be used to prevent STIs | 3.43 |
| Condoms should be used consistently and correctly to prevent STIs | 3.45 |
| Condoms can be used as a family planning method | 3.57 |
| **Ability-Social support (n/mean)** | **(671/2.62)** |
| My friend and I encourage each other to use condoms correctly and consistently | 2.61 |
| Most of my friends approve the use of condoms | 2.66 |
| Most of my friends encourage consistent and correct use of condoms | 2.63 |
| There is someone that I can talk to when I have questions or concerns about condoms | 2.73 |
| My partners/spouse supported me to use condoms | 2.64 |
| Most of my community support for making decisions about my sex life | 2.45 |
| **Ability-Self efficacy (n/mean)** | **(902/3.28)** |
| I am confident that I can correctly use condoms | 3.22 |
| I am confident that I can consistently use a condom with my regular partner and causal partner | 3.28 |
| I can refuse to have sex with a new partner if we don`t have a condom even if I want to have sex | 3.33 |
| **Motivation-Outcome expectation (n/mean)** | **(991/3.16)** |
| Condoms are effective in preventing HIV infection | 3.39 |
| Condoms are effective in preventing STIs | 3.37 |
| If one uses condoms correctly and consistently they don't have to worry about contracting HIV | 2.72 |
| **Motivation-Attitude (n/mean)** | **(734/3.13)** |
| Using a condom all the time is difficult for me® | 3.12 |
| The idea of using condoms does not appeal to me ® | 3.14 |
| I feel comfortable to use condom with my partner | 3.09 |
| Condoms break easily ® | 3.08 |
| **Motivation-belief related to quality (n/mean)** | **(793/3.10)** |
| Free condoms mostly break easily ®. | 3.15 |
| Condoms given for free are of poor quality ®. | 3.17 |
| Condoms in general are not safe ®. | 2.93 |
| **Motivation-belief related to pleasure (n/mean)** | **(760/2.92)** |
| Most people who use condoms are promiscuous®. | 3.04 |
| Condoms decrease sexual pleasure®. | 2.80 |
| Condoms decreases intimacy or emotional closeness®. | 2.82 |

*1=Means are calculated from; 1=Strongly disagree, 2=Disagree, 3=Agree, 4=Strongly agree; ® shows reversed direction of the statement

**Annex 3: Safe water system, hygiene practices**

| Indicator | Four Regions | Addis Ababa | Total |
|---|---|---|---|
| **Main source of drinking water** | | | |
| Pipe | 80.7 | 77.4 | 79.9 |
| Public tap/kiosk | 13.9 | 21.2 | 15.8 |
| Spring | 2.9 | 0.7 | 2.4 |
| Others (Open well, river, etc) | 2.5 | 0.9 | 1.9 |
| **Most often used material to transport Water:** | | | |
| Do not transport | 1.7 | 0.7 | 2.0 |
| Open Bucket | 11.8 | 49.8 | 21.6 |
| Jerrican | 81.3 | 41.3 | 71.0 |
| Traditional clay pot | 4.1 | 0.0 | 3.0 |
| Others | 1.1 | 6.0 | 2.4 |
| Store drinking water in your house | 62.1 | 67.8 | 63.6 |
| Ever done anything improve quality of drinking water in HH | 42.5 | 11.3 | 34.5 |
| Ever heard about WuhaAgar/ Pure | 82.6 | 81.6 | 82.4 |
| Ever used WuhaAgar/Pure | 47.8 | 9.5 | 38.0 |
| **When do you wash hands** | | | |
| Before eating food | 89.6 | 92.9 | 90.0 |
| After eating | 80.0 | 82.4 | 80.8 |
| After using the toilet | 71.7 | 78.1 | 73.4 |
| Before preparing food | 52.1 | 56.9 | 53.3 |
| Before feeding children | 4.3 | 1.1 | 3.5 |
| **Regular means of washing hands** | | | |
| Soap and water | 74.3 | 74.3 | 74.3 |
| Water only | 25.7 | 25.7 | 25.7 |
| **Incidence of Diarrhea among respondents:** | 16.5 | 16.7 | 16.6 |
| Currently having soap at household | 16.7 | 16.5* | 16.6* |
| Currently not having soap at household | 22.2 | 35.0 | 24.8 |
| **Incidence of Diarrhea among:** | 16.5 | 16.7 | 16.6 |
| Regular soap users to wash hands | 17.1 | 15..6 | 16.7 |
| Non regular soap users to wash hands | 20.5 | 23.6 | 21.3 |
| **When do you wash hands with soap** | | | |
| Before eating food | 59.9 | 71.0 | 62.0 |
| After using the toilet | 57.3 | 64.2 | 59.0 |
| After eating | 53.2 | 49.8 | 52.3 |
| Before preparing food | 38.9 | 49.1 | 41.5 |
| Before feeding children | 3.9 | 1.1 | 3.7 |
| **Toilet for your household** | | | |
| Open pit latrine without slab | 60.7 | 57.0 | 59.8 |
| Pit latrine with slab | 13.6 | 8.8 | 12.4 |
| Ventilated pit latrine | 4.8 | 14.4 | 7.3 |
| Flush septic tank | 2.2 | 4.9 | 2.9 |
| No facility/bush/field | 10.5 | 5.6 | 9.3 |
| **(n)** | **283** | **814** | **1097** |

**Annex 4: Reliability analysis on WuhaAgar use**

| Behavioral change determinant | Cronbach's Alpha | Number of Items | Question Number |
|---|---|---|---|
| **Opportunity** | | | |
| Social norms | 0.847 | 4 | q1142 q1143 q1144 q1145 |
| **Ability** | | | |
| Knowledge | 0.925 | 3 | q1147 q1148 q1149 |
| Self efficacy | 0.773 | 4 | q1150 v1151 q1152 q1153 |
| Social support | 0.895 | 4 | q1154 q1155 q1156 q1157 |
| **Motivation** | | | |
| Attitude | 0.700 | 3 | q1158 q1160 q1161 |
| Outcome expectation | 0.819 | 3 | q1170 q1171 q1172 |

**Annex 5: Monitoring table: behavior on WuhaAgar use and hygiene practices among PLWHA**

| **Indicators** | **All respondents** |
|---|---|
| **Behavior** | **Percentage** |
| Consistently used WuhaAgar to treat water in the last week | 18.5% |
| Use soap before food preparation | 41.5% |
| Use soap before eating food | 62.0% |
| Use soap after using toilet | 59.0% |
| Consistently store water in narrow mouthed container with lead | 12.7% |
| | **Mean** |
| **Opportunity-Social norms (n/mean)** | **(740/2.01)** |
| Majority of PLWHA always use WuhaAgar to treat their drinking water | 2.03 |
| It is common to use PUR and treating drinking water among PLWHA | 1.73 |
| Most people in the community often take precaution to drink safe water | 2.23 |
| Most of my friends take action to treat their drinking water to make it safer | 2.05 |
| **Ability-Knowledge (n/mean)** | **(943/2.84)** |
| Water can be contaminated by germs that are too small to see with your eyes | 2.84 |
| Adding WuhaAgar or PUR to water makes it free from germs and safer to drink | 2.86 |
| Diarrhea can be caused by drinking water that looks clear | 2.85 |
| **Ability-Self efficacy (n/mean)** | **(863/2.93)** |
| I can treat the water that I drink whenever I need to | 2.90 |
| I am easily able to treat my water to make it safer to drink. | 3.04 |
| Disagree that treating my water with WuhaAgar/PUR is not easy to do ( R ) | 2.66 |
| I know how to make water safe for drinking | 3.14 |
| **Ability-Social support (n/mean)** | **(1039/1.80)** |
| I can get WuhaAgar/PUR from my PLHA association | 1.75 |
| People in my neighborhood have taught me how to treat my water. | 1.76 |
| My friends encourage me to use WuhaAgar/PUR | 1.82 |
| Fellow PLWHA have shown me how to use WuhaAgar/PUR | 1.85 |
| **Motivation-Attitude (n/mean)** | **(1018/3.45)** |
| It is a good thing to treat drinking water. | 3.45 |
| It is a good idea that everyone in my household only drink treated water | 3.51 |
| It is a bad idea to drink untreated water | 3.40 |
| **Motivation-Outcome expectation (n/mean)** | **(892/3.40)** |
| Treating water with WuhaAgar/PUR is the safest way to protect my family from water-borne diseases. | 3.27 |
| Water Guard is effective in making water safe for drinking | 3.46 |
| Treating water with WaterGuard/Pure get rid of contaminants that can harm my health | 3.49 |

*1=Means are calculated from; 1=Strongly disagree, 2=Disagree, 3=Agree, 4=Strongly agree

**Annex 6: Segmentation table, WuhaAgar opportunity, ability, and motivation among consistent users and non-users**

| Indicators | Proportion (%) | | OR (95% CI) | Sig. |
|---|---|---|---|---|
| | Consistent Users in last week | Non-consistent /non users | | |
| **Opportunity-Social norms** | **(n=137)** | **(n=603)** | | |
| Agree that majority of PLWHA always use WuhaAgar to treat their drinking water | 76.6 | 20.9 | 12.43(7.99- 19.3) | *** |
| Agree that it is common to use PUR and treating drinking water among PLWHA | 42.8 | 12.1 | 5.42(3.57-8.22) | *** |
| Agree that most people in your community often take precaution to drink safe water | 65.9 | 35.0 | 3.61(2.44-5.33) | *** |
| Agree that most of your friends take action to treat their drinking water to make it safer | 73.0 | 24.0 | 8.63(5.66-13.16) | *** |
| **Ability-Knowledge** | **(n=203)** | **(n=739)** | | |
| Agree that water can be contaminated by germs that are too small to see with your eyes | 70.0 | 63.5 | 1.34(0.96-1.88) | **NS** |
| Agree that adding WuhaAgar or PUR to water makes it free from germs and safer to drink. | 69.5 | 63.0 | 1.32(0.94-1.84) | **NS** |
| Agree that diarrhea can be caused by drinking water that looks clear | 70.9 | 63.6 | 1.39(0.99-1.94) | **NS** |
| **Ability-Self efficacy** | **(n=200)** | **(n=662)** | | |
| Agree that you can treat the water that you drink whenever you need to | 95.5 | 58.8 | 14.15(.24-27.64) | *** |
| Agree that you are easily able to treat your water to make it safer to drink | 93.5 | 69.5 | 6.31(3.51-11.35) | *** |
| Disagree that treating your water with WuhaAgar/PUR is not easy to do (R) | 62.5 | 58.9 | 1.20(0.86-1.66) | **NS** |
| Agree that you know how to make water safe for drinking | 94.5 | 77.5 | 4.81(2.58-8.96) | *** |
| **Ability-Social support** | **(n=201)** | **(n=837)** | | |
| Agree that you can get WuhaAgar/PUR from your PLWHA association | 45.8 | 12.5 | 5.84(4.14-8.21) | *** |
| Agree that people in your neighborhood have taught you how to treat your water | 48.3 | 14.4 | 5.52(3.94-7.73) | *** |
| Agree that your friends encourage you to use WuhaAgar/PUR | 53.2 | 16.7 | 5.72(4.11-7.96) | *** |
| Agree that fellow PLWHA have shown you how to use WuhaAgar/PUR | 56.4 | 17.3 | 6.21(.46-8.65) | *** |
| **Motivation-Attitude** | **(n=203)** | **(n=814)** | | |
| Agree that it is a good thing to treat drinking water | 95.6 | 95.7 | 0.92(0.44-1.95) | **NS** |
| Agree that it is a good idea that everyone in your house hold only drink treated water | 97.0 | 94.6 | 1.90(0.79-4.54) | **NS** |
| Disagree that it is a bad idea to drink untreated water ® | 92.6 | 86.7 | 1.92(1.09-3.38) | * |
| **Motivation-Outcome expectation** | **(n=203)** | **(n=698)** | | |
| Agree that treating water with WuhaAgar/PUR is the safest way to protect your family from water-borne diseases. | 99.1 | 87.1 | 12.48(3.42-45.5) | *** |
| Agree that WaterGuard is effective in making water safe for drinking | 98.0 | 98.3 | 0.90(0.29-2.81) | **NS** |
| Agree that treating water with WaterGuard/Pure get rid of contaminants that can harm your health | 98.0 | 98.8 | 0.54(0.17-1.74) | **NS** |

*$p< 0.05$; **$p<0.01$; $p<0.001$; NS=not statistically significant

**Annex 7: Reliability analysis on bed net use**

| Behavioral change determinant | Cronbach's Alpha | Number of Items | Question Number |
|---|---|---|---|
| **Opportunity** | | | |
| Social norm | 0.868 | 3 | q1216 q1217 q1218 |
| **Ability** | | | |
| Self-efficacy | 0.820 | 3 | q1225 q1226 q1227 |
| Social support | 0.912 | 3 | q1228 q1229 q1230 |
| **Motivation** | | | |
| Outcome expectation | 0.771 | 5 | q1234 q1235 q1236 q1237 q1238 |

**Annex 8: Monitoring table: behavior on bed net use among PLWHA**

| Behavior | All respondents |
|---|---|
| Consistently (year round ) sleep under an ITN | 16.4% |
| Respondent/anyone in the household had malaria in the last six months | 15.0% |
| Have any mosquito net in the household | 30.3% |
| | **Mean** |
| **Opportunity-Social norms (n/mean)** | **(902/2.22)** |
| Agree that using ITN daily is normal among PLWHA | 2.16 |
| Agree that majority of PLWHA know how to take precautions to avoid malaria | 2.32 |
| Agree that most of my friends and neighbors use misquote nets | 2.19 |
| **Ability-Self efficacy (n/mean)** | **(1010/3.16)** |
| Agree that you know how to use a bed net. | 3.02 |
| Agree that hanging a bed net is easy for me to do | 3.02 |
| Agree that it is your responsibility to make sure you sleep under bed net | 3.43 |
| **Ability-Social support (n/mean)** | **(1084/1.95)** |
| Agree that people in your neighborhood have told you how to use bed nets | 1.95 |
| Agree that people in your neighborhood have encouraged you to use bed nets | 1.92 |
| Agree that your friends have counseled you to use bed nets | 1.98 |
| **Motivation-Outcome expectation (n/mean)** | **(1013/3.44)** |
| Agree that the best protection against malaria is the use of ITN | 3.53 |
| Agree that using a bed net provides restful sleep for PLWHA | 3.39 |
| Agree that when you sleep under ITN, you do not to have worry about getting malaria | 3.35 |
| Agree that ITN will kill mosquitoes, when get in touch | 3.54 |
| Agree that ITN will not protect you from malaria even if you use them (R) | 3.41 |

*1=Means are calculated from; 1=Strongly disagree, 2=Disagree, 3=Agree, 4=Strongly agree

**Annex 9: Reliability analysis on ORS use**

| Behavioral change determinant | Cronbach's Alpha | Number of Items | Questions |
|---|---|---|---|
| **Motivation** | | | |
| Outcome expectation | 0.860 | 3 | q1423 q1424 q1425 |
| Attitude | 0.775 | 3 | q1426 q1427 q1428 |

**Annex 10: Monitoring table: behavior on ORS use among PLWHA**

| **Indicators** | **All respondents** |
|---|---|
| **Behavior** | **Percentage** |
| Used ORS, Lemlem or homemade sugar & salt during the last incidence of diarrhea in the last three months | 70.1% |
| | **Mean** |
| **Motivation –Outcome expectation-(n/mean)** | **(1006/3.26)** |
| Agree that taking ORS is effective in preventing diarrheal dehydration in PLWHA | 3.56 |
| Agree that if one uses ORS consistently, they don't have to worry about dehydration due to diarrhea | 3.89 |
| Disagree that ORS can't protect your family from dehydration due to diarrhea ® | 3.33 |
| **Motivation Attitude-(n/mean)** | **(977/3.43)** |
| Agree that it is important to take ORS when there is diarrhea. | 3.66 |
| Agree that PLWHA can't protect themselves from dehydration due to diarrheal disease | 3.15 |
| Agree that ORS has a serious side effect | 3.50 |

*1=Means are calculated from; 1=Strongly disagree, 2=Disagree, 3=Agree, 4=Strongly agree

**Annex 11: Segmentation table: behavior on ORS use among during the last incidence of diarrhea in the last three months**

| **Indicators** | **Proportion (%)** | | **OR (95% CI)** | **Sig.** |
|---|---|---|---|---|
| | **Users of ORS during last diarrhea** | **Non users of ORS during last diarrhea** | | |
| **Motivation - Outcome expectation** | **(n=175)** | **(n=831)** | | |
| Agree that taking ORS is effective in preventing diarrheal dehydration in PLWHA | 2.9 | 3.0 | 1.08(0.40-2.90) | NS |
| Agree that if one uses ORS consistently, they don't have to worry about dehydration due to diarrhea | 21.1 | 30.3 | 1.61(1.09-2.39) | * |
| Disagree that ORS can't protect your family from dehydration due to diarrhea ® | 20.6 | 13.0 | 0.58(0.38-0.88) | * |
| **Motivation - Attitude** | **(n=173)** | **(n=804)** | | |
| Agree that it is important to take ORS when there is diarrhea. | 6.9 | 1.9 | 0.26(0.12-0.56) | ** |
| Agree that PLWHA can't protect themselves from dehydration due to diarrheal disease | 15.6 | 17.3 | 1.15(0.73-1.81) | NS |
| Agree that ORS has a serious side effect | 11.0 | 7.1 | 0.61(0.35-1.05) | NS |

*$*p< 0.05$; $**p<0.01$; $p<0.001$;* NS=not statistically significant