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HIV AND SUBSTANCE ABUSE: THE DUAL EPIDEMICS CHALLENGING ZANZIBAR

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ABSTRACT

HIV prevalence in Zanzibar ranges from 0.6% in the general population to 0.9% in antenatal clinic attendees. As in most low prevalence countries, the epidemic is thought to be concentrated in most-at-risk populations (MARPs) including drug users (DUs) and commercial sex workers (CSWs). This study was conducted to determine the prevalence of HIV and other selected infections in a population of DUs in Zanzibar. Between September–October 2005, snowball sampling was used to identify DUs residing in Zanzibar on the islands of Unguja and Pemba. Consenting participants responded to a questionnaire on drug use practices and sexual behaviour. A blood sample was drawn and tested for HIV (Capillus & Determine), hepatitis B & C (Acon rapid test) and syphilis (RPR). A total of 508 persons (26 female and 482 male) self-identified DUs participated in the study. Median age was 31 years, ranging between 17 and 68 years. Injecting drug users (IDUs) accounted for 38.9% (n=198) of the study participants, of whom 46.1% reported to have shared needles; and 9.1% used flashblood (McCurdy et al, 2005). DUs spent an average of US$8.2 per day to support their habits. The prevalence of tested infections was higher in IDUs compared with non-IDUs (HIV: 30% v.12%; hepatitis C: 22% v.15%; syphilis: 17% v. 10% respectively). IDUs who shared needles had higher infection rates compared to those who did not (HIV: 28% v. 5%; hepatitis C: 31% v. 7%). Injection drug use and needle-sharing are common among IDUs in Zanzibar and result in high prevalence of blood-borne infections. IDUs could present a bridge population for the spread of HIV into the general population in Zanzibar, and interventions are urgently needed to prevent this spread.

KEY WORDS: drug use; injection drug use; STI and hepatitis

INTRODUCTION

Zanzibar is comprised of two main islands, Unguja and Pemba, located off the eastern Coast of Zanzibar, south of the equator. Zanzibar has an annual growth rate of 3.1% and a total population of 1,078,964 (National Bureau of Statistics, 2002).

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During the 1980s, Zanzibar began to document the growth of two intertwining epidemics, HIV/AIDS, and the increased use of illegal substances with negative outcomes. The first case of HIV/AIDS in Zanzibar was diagnosed in 1986. Routine antenatal clinic (ANC) surveillance of pregnant women has documented HIV prevalence of <1%. Similarly, a HIV magnitude validation survey[i] and a recently finalized ANC surveillance report have documented HIV prevalence as 0.6% (ZACP, 2003) and 0.87 % (ZACP, 2006a**)** respectively. The validation survey also documented higher HIV prevalence in females (0.9%) than in males (0.2%); with heterosexual transmission as the primary route of infection (Zanzibar AIDS Commission, 2003). The prevalence of HIV infection is highest in women between 15-29 years. Concurrently, voluntary HIV counselling and testing (VCT) data have shown an annual increase in the positively diagnosed subjects from 180 in 1999 (ZACP, 1999) to 690 in 2006 (ZACP, 2006b). The estimated HIV burden at health care delivery points is 4.02% (Fedeli et. al, 2002).

Drug abuse in Zanzibar

Zanzibar is located along an important corridor for drug trafficking (Zanzibar AIDS Commission, 2003). In recent years Zanzibar has documented increasing numbers of young people consuming illicit drugs (Mkapa, 2002). It is estimated that 3.1% of the adult drug using population are injecting drug users (IDUs) (WHO, 2003). Both males and females have been implicated in drug trafficking activities. There also has been an increase in drug trafficking activities from 2001 – 2004 (Zanzibar Police, 2004).

Data on emerging epidemics of HIV among drug users in Zanzibar

Zanzibar has a concentrated HIV epidemic. The recently observed upsurge in illicit drug use has prompted authorities in Zanzibar to act quickly in order to contain the situation and mitigate accompanying consequences. In countries documenting significant drug use, drug users (DUs) are particularly vulnerable to HIV. This vulnerability is increased by the presence of injecting drug use and needle sharing among HIV-infected IDUs. These observations have been documented in Asian and North African countries and in South Africa (Wodak et. al, 2004; Reihman, 1996). In Zanzibar, addressing the HIV prevention needs of vulnerable populations has been acknowledged as a national priority (Zanzibar AIDS Commission, 2005; ZACP, 2005).

Prior to 2005, there were no data that linked HIV and substance abuse in Zanzibar. In recognition of the need to fill this gap, a special exploratory assessment study was designed and conducted in the islands to determine the prevalence of HIV among DUs and to identify, describe, and document sexual and drug using risk behaviours among DUs in Zanzibar.

METHOD

This exploratory cross-sectional study involved primary data collection to document HIV and sexually transmitted infection (STI)-associated risk behaviours and patterns of STI infection among DUs. A snowball sampling approach was used in which rehabilitated and reformed DUs helped to recruit potential participants. This approach

[i] Validation survey: A community based HIV prevalence survey conducted to determine HIV population prevalence among the sexual active population.

increased trust and encouraged participation among members of this hidden population. Qualitative (focus groups discussions [FGDs] and key informant interviews) and quantitative (semi-structured, pre-tested questionnaire) data collection was carried out in neutral sites. A modified WHO-Rapid Assessment and Response (RAR) questionnaire was used to collect quantitative data. Collected data included demographic information; basic information on drug use (including predisposing factors to drug abuse; amount and type of consumed drugs; drug related behaviour); sexual behaviours, and key challenges facing drug users in Zanzibar. The study recruited 508 self-identified DUs who were over 12 years of age. Verbal consent was obtained from study participants prior to recruitment and during blood sample collection. The decision to seek verbal rather than written consent was based on concerns about associated stigma in this sub-population and high cultural sensitivity regarding drug use. Based on this, an anonymous unlinked approach was applied. Ethical clearance was sought from the Zanzibar Health Research Council and from the police anti-narcotics section. Verbal consent for blood sample collection was sought from study participants.

Collected specimens were labelled and transported to a central laboratory and processed to analyze the presence of (i) HIV (rapid test and Elisa); (ii) hepatitis B & C (Acon rapid test); (iii) syphilis (using RPR and TPHA). Biological samples were also subjected to internal and external quality control. Drug samples (brown and white heroin) were collected and submitted to the Chief Government Chemist for analysis. Collected data were entered, cleaned and analyzed using Microsoft Excel and Epi-Info for Windows version 3.2.2 of 2004 and SAS.

RESULTS

A total of 508 participants were recruited. Ninety-two (18.1%) were residents of Pemba Island and 416 (81.8%**)** residents of Unguja Island. Female DUs accounted for 5.1% (26/508) of the study participants. More than half (51.9%, 264/508) of the study participants were aged 25 to 34. Never married participants accounted for the majority of study participants (59.4%, 302/508); (20.4%, 104/508) were divorced. Three times as many females (53.8%, 14/26) were divorced than were males (18.7%, 90/482). Marriage was more common among men compared to women, who were more likely to be cohabiting. Most of the study participants had either a primary (42.3%, 215/508) or a secondary (50.4%, 256/508) school education. Drug users came from diverse occupational background where petty trade (21.7%, 111/508) and casual labour (15.9%, 81/508) were the most common occupations.

Injection drug risk behaviours

Of the 508 study participants, 198 (38.9%) were IDUs. The prevalence of IDUs was higher in Unguja (41.0%) compared to Pemba (30.0%). The proportion of male IDUs (39.6%, 191/482) was larger than the proportion of female IDUs (26.9%, 7/26).

Blood sharing or “flashblood” is a practice in which one IDU with no access to drugs gets an aliquot of blood from a friend who has just injected himself with a drug. The first IDU draws blood back into a syringe until the barrel is full and then passes the syringe to the second injector. This practice has been documented since at least 2005 in female IDUs in Dar es Salaam, Tanzania (McCurdy et al, 2005). In Zanzibar, the

practice of sharing flashblood was documented in 9.1% (18/198) of male IDUs all of whom were from Unguja Island in the Urban District.

Although IDUs are already at high risk of contracting blood borne infections, their vulnerability is increased by the practice of needle sharing because of the risk of sharing residual and potentially infected blood across users. Needle sharing was reported by 45.9% (91/198) of the IDUs. About 46.6% (89/191) of male IDUs shared needles. About 29.8% (59/198) of IDUs reported that water cleansing of injecting paraphernalia (syringes) was the most commonly practiced sterilization technique.

Drug costs and coping strategies

In FGDs, participants emphasized that drug users "*spend as they earn,*" with IDUs reportedly spending the equivalent of US$8.2 per day, or an average of US$246 per month, an amount that is extremely high when compared with Tanzania's 2005 per capita income of US$330 (World Bank, 2006). Coping strategies used to support a drug habit include pursuing legal but low paying jobs or engaging in illegal and other high risk behaviours such as sex work, theft, and selling drugs.

DUs in Zanzibar are aware of the negative effects of drug abuse. A total of 79.3% (403/508) of respondents acknowledged knowing individuals who had negative outcomes from drug use and who could name the individuals, the adverse effects, and the individuals' places of residence. Forty-three percent of respondents mentioned HIV and drug use associated deaths (220/508); 14% mentioned HIV/TB infections; other medically-associated conditions such as mental disorders, paralysis, pneumonia, tetanus and public intimidation accounted for the remaining adverse effects mentioned by respondents. However, 20.7% (105/508) could not associate drug use to any negative effects.

Sexual risk behaviours of drug users in Zanzibar

Sexual behaviour plays an important role in the transmission of HIV and other STIs. The rapid assessment also examined risky sexual behaviours that overlap with drug use. Fifty-nine percent (300/508) of DUs reported having had their sexual debut between the ages of 15-19 years; 22.6% (115/508) between the ages of 20-24 years; and 7.1% (36/508) under the age of 14 years. The median age for sexual debut was 18 years of age. The majority of DUs reported a preference for vaginal sex with caressing and more than 50% reported engaging in oral sex (cunnilingus and fellatio). Of all the reported sexual behaviours, anal sex (receptive) has the highest transmission risk of sexually transmitted infections such as HIV, and hepatitis B and C. Only one female reported a preference for anal sex compared to 126 (26.1%) males. It is important to note that participants were asked about sexual preference and not specific sexual behaviours; however, given the number of male participants who indicated a preference for anal sex (34.0%; 65/191), there is some concern about the frequency with which high risk anal sex may be occurring among DUs in Zanzibar.

Nearly 71% (359/508) of the study participants reported having multiple sexual partners in the past 12 months. Females reported higher numbers of multiple sex partners compared to males 76.9% (20/26) v. 70.5% (340/482). Eleven (11) of 21 females (52.3%) reported five or more sex partners in the last 12 months. About 11.6% of male study participants (56/482) reported having had at least five (range 5-130) sexual partners in the last 12 months. Five of the study participants said that the partners were too numerous to

remember. Participation in group sex[ii] was reported by 16.3% of study participants. This practice was lower in females 7.7% (2/26) compared to males 23.0% (111/482). Some female IDUs (85.7%; 6/7) reported exchanging sex for drugs. An equal proportion reported having five or more sex partners in the past 12 months while only 7.9% (15/191) of male IDUs reported having exchanged sex for drugs. Documented group sex participation was three times as common in males (23%; 111/482) as in females (7.7%; 2/26). Forty-seven percent of respondents reported witnessing group sex in exchange for drugs while 50.1 % (255/508) witnessed group rape of an overdosed DU.

HIV Infection rates among drug abusers

The overall prevalence of HIV among DUs was 13%. The HIV prevalence was higher in women (30.7%; 8/26) compared to men (12.0%; 58/482-p≤ *0.001*). HIV infection in Pemba was lower (3.3%) compared to those documented in Unguja (15.1%). The highest prevalence of HIV infection is found among DUs aged 30-34 years. HIV prevalence among DUs (12.9%) is significantly higher compared to that in the general population (0.6%).

HIV infection rates were almost two times higher among participants who reported five or more sex partners (15.8%-32/202) compared to those with only one partner 7.8% (9/115). Male DUs who reported having had anal sex (19.9%; 96/482) had twice the risk of contracting HIV infection compared to those who did not (10.5%; 51/482 – p< 0.001). The prevalence of HIV infection was 26.2% among IDUs compared to 4.5% in non-injecting drug users (***p≤ 0.0001)***. The HIV infection rates among those who reported sharing needles was 28%. Prevalence of HIV was higher in those with only primary school education (17.5%; 36/206) compared to those with a secondary school education (10.2%; 25/245). The prevalence of HIV was higher among single (14.4%; 42/292) and divorced (14.1%; 14/99) participants than in married (6.8%; 5/74) and cohabiting (9.5%; 2/21) participants. Attempts to compare HIV infection rates between DUs and the general population by marital status revealed higher rates in the DUs than in the latter.

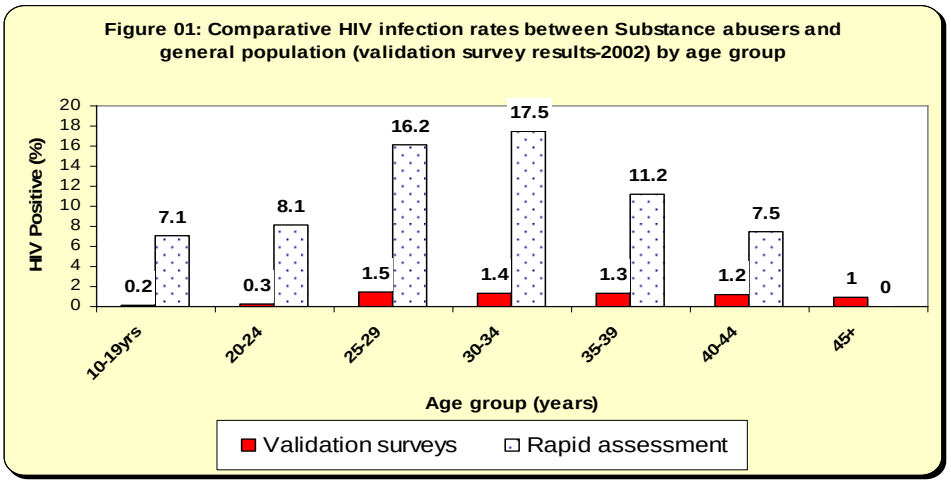
HIV prevalence among Injecting Drug Users (IDUs)

Nearly all participants (98.2%; 499/508) reported using heroin in the form of white and brown sugar. Heroin was the only injectable drug reported in this population. There were 300 participants who were using but not injecting heroin. The prevalence of HIV among injecting heroin users was 26.2% (50/191) compared to 4.1% (13/316) among non-injecting heroin users. Needle sharing was reported in 91 of the 198 IDUs. The prevalence of HIV among those IDUs who shared needles was 28.4% (25/88[iii]), compared to IDUs who did not share needles at 24.70% (23/93), compared to non-IDUs at 4.2% (13/310).

Non-IDUs had the lowest infection rates (5.0%). The difference in HIV prevalence between IDUs and non-IDUs was statistically significant in males but not in females (Males: 25.8% v. 2.8%: p=0.0001; Females: 40.0% v. 27.8%). When IDUs were stratified by needle sharing, infection was 28.4% in those who shared needles compared to 24% in IDUs who did not share needles.

[ii] Group sex: entail sexual activities performed to a DU by his/her peers as a result of drug overdose or as a means of acquiring drugs (coping strategy) to maintain the drug taking habit.

[iii] The results of three samples were not conclusive-for laboratory diagnosis.



Source: Zanzibar AIDS control programme (ZACP/MOHSW) validation survey report -2003

Table 1. HIV prevalence by injecting heroin use

	Number in	HIV prevalence	
Heroin-IDU	Sample	N	%
Non-injecting heroin user	288	13	4.5
Injecting heroin user	191	50	26.2
Non-injecting, non-heroin user	9	0	0
IDU & Needle Sharing			
Non-IDU no needle sharing	219	11	5
IDU, no needle sharing	93	23	24.7
IDU, needle sharing	88	25	28.4

Other infections

The assessment documented the overall prevalence of hepatitis C among IDUs in Zanzibar at 15.5% (74/478[iv]). Hepatitis C prevalence was higher in female participants (21.7%, 5/23) compared to male participants (15.1%, 69/455), and also higher in study participants with anal sexual preferences (21.3%, 26/122) compared to 13.6% of those who did not (p=0.04). Hepatitis B infection was low among participants with prevalence of 2.1% (10/479[v]) in males and 0% in females.

The study revealed an overall syphilis prevalence of 9.9 % (48/486) being relatively higher in females compared to males at 17.4% (4/23) and 9.5 %(44/463) respectively.

Co-infections

The study also documented co-existence of multiple infections among the DUs. Nearly 40% of infected DUs are co-infected with HIV and hepatitis C. Further analysis to rule out co-infection was conducted on all study participants who were found to be infected with either HIV; hepatitis C and B; or syphilis. Marked level of co-infections was documented especially between HIV/hepatitis C; hepatitis C/syphilis; HIV/syphilis and hepatitis B/Syphilis as shown in Table 2.

[iv] 30 samples were not enough for the laboratory processing and diagnosis of HCV. (SNE-sample not enough)

[v] 29 samples were not enough for HBV analysis.

Table 2. Prevalence of co-infections

Co-infections	Number in sample	Prevalence of Co-infection	
		n	%
HIV and Hepatitis C	59	20	33.9
HIV and Syphilis	61	9	14.8
HIV and Hepatitis B	59	1	1.7
Hepatitis C and Hepatitis B	74	4	5.4
Hepatitis C and Syphilis	74	16	21.6
Hepatitis B and Syphilis	10	2	20.5

There were challenges in reaching this hidden population. The involvement of former substance users facilitated access to DUs; however, the study team encountered additional socio-cultural barriers to recruiting female study participants that called for special recruitment strategies and transportation arrangements. Female participants were recruited only in Unguja, and not in Pemba. The strength of snowball sampling is that it uses social networks to reach and recruit hard to access and socially marginalized hidden populations; however, the method may miss DUs who are not part of the network. Recall power limitation of study participants' is also a limitation of this study, especially in reporting daily drug consumption, number of sexual partners; and frequency of sexual behaviours. In addition, some participants may find it difficult to reveal socially undesirable and stigmatized behaviours such as drug use, commercial sex work, and anal sex.

DISCUSSION

There is a lack of detailed information and literature on the sex and drug-related behaviours that put DUs in Zanzibar at risk for HIV, hepatitis C, and STIs. The existing surveillance and monitoring systems cannot routinely capture and link HIV to substance use. The results of this assessment underscore the need to monitor and track HIV and STIs among most-at-risk populations (MARPs) including DUs. The study has documented that the majority of DUs in Zanzibar are middle-aged single men with a primary to secondary school education who live in the urban areas of Unguja Island and engage in petty trade or casual labour. Results of this assessment indicate that the majority of DUs also are located in major towns while the predominant consumed drug in rural Zanzibar remains (illicit) alcohol and marijuana.

Blood sharing (flashblood) has been documented among CSWs in mainland Tanzania (McCurdy et al, 2005). The rapid assessment reported on in this paper documented for the first time the practice of sharing flashblood among male IDUs in one district in Unguja, Zanzibar. Flashblood emerges as another mode of cost sharing and a coping mechanism to sustain a drug habit among DUs. This practice has the potential to fuel the epidemic in Zanzibar, especially when the majority of male IDUs are married or have multiple sexual partners; potentially providing a significant bridge for HIV transmission to the general population. Furthermore, the documented high prevalence of needle sharing increases the likelihood that other blood borne

infections will spread in Zanzibar. Experiences in Asia demonstrate that needle sharing has contributed to HIV prevalence among IDUs (Wodak et al., 2004; CDC/GAP, 2004; Chu and Levy, 2005).

This study also documents high prevalence of HIV, and hepatitis B and C infection rates among DUs and IDUs in particular compared to those found in the general population. HIV infection among DUs and IDUs in particular has been fuelled by overlapping risks behaviours including injection drug use and needle sharing, multiple sexual partners, high levels of STIs, commercial sex work, the exchange of sex for drugs, and high risk sexual behaviours including anal sex. Similarly, the absence of proper sterilization techniques while sharing injecting paraphernalia contributes to HIV infection as well as other bacterial infections (Gordon and Lowry, 2005). Higher co-infection rates HIV/hepatitis C and syphilis/HIV infection rates have also been documented in countries where co-epidemic exists (Garten et al, 2005; Lopez-Zetina et al, 2000).

HIV RELATED DRUG ABUSE PREVENTION IN ZANZIBAR

Currently, in Zanzibar, HIV and drug abuse prevention campaigns are limited to increasing knowledge and awareness of HIV and have involved both government and civil society organizations (CSO's). The Zanzibar Multisectoral HIV Strategic Plan and the Zanzibar National HIV policy have strongly acknowledged the need for HIV prevention targeted for hidden populations. Efforts to mainstream HIV and drug abuse issues in Zanzibar are just beginning. Involvement of CSO's and community-based organizations (CBOs) and other community structures should include support to affected families. Harm reduction strategies are acknowledged in key documents but are difficult to implement due to the existence of national policies, laws and regulations that are more culturally oriented. To prevent the coalescence of the HIV and drug use epidemics there is an unequivocal need to intensify the advocacy and demand for advanced HIV and substance abuse prevention, care and support services to all in need. We must support IDUs "as drug addicted people badly in need of health services and support from society rather than as criminals. Arrangements need to be in place to ensure that they are referred to care, treatment and rehabilitation rather than being taken to court" (Samdach Hun Sen, CDC/GAP, 2004).

CONCLUSION AND RECOMMENDATIONS

Monitoring the drug treatment and HIV/AIDS prevention, care and treatment needs of at-risk populations, particularly DUs, will shed more light on drug abuse related transmission dynamics in Zanzibar. The presence of risk sex and drug-related risk behaviours that lead to increased transmission of HIV and other blood borne infections calls urgently for holistic interventions that include prevention, care, treatment and support services for DUs in Zanzibar. Unequivocally, there is an urgent need to review and update the governing laws and policies that hamper the implementation of public health interventions to control and contain the co-epidemics among DUs.

Accessing stigmatised hidden populations should involve key actors from public and non-public sectors including CBOs and CSOs. As part of an overall approach to intervention, services that encompass VCT and HIV screening services and referrals; access to care and treatment

including HAART; needle exchange programmes and harm minimisation programmes; hepatitis management (prevention-immunization and treatment); rehabilitation services; and mobile home-based care services are crucial components in ensuring access to prevention and the continuum of care to the affected communities. There is need to scale up awareness campaigns and use reformed DUs as peer educators through HIV and DU clubs and drop-in centres in the country.

In conclusion, this rapid assessment has documented and described the HIV/STI transmission dynamics among DUs in Zanzibar. Further in-depth studies are needed to establish HIV patterns in other at-risk subpopulations to better establish the burden of HIV on at-risk households and care delivery facilities. More research also is needed to estimate the size of at-risk populations, and to document behavioural risk patterns among men who have sex with men; CSWs and persons in correctional facilities.

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