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**BEHAVIOURAL SURVEILLANCE RESEARCH
IN RURAL DEVELOPMENT ENCLAVES IN PAPUA NEW GUINEA**

A Study with the WR Carpenters Workforce

by

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PREFACE

To reduce the numbers of new HIV infections in PNG, there is a need to understand people's practices, including their sexual practices, their knowledge about HIV, their ideas, beliefs, and attitudes, and the contexts of their daily lives. This will enable prevention efforts and policy to be more evidence based and tailored to particular population groups.

WR Carpenter Estates operates in an area of higher HIV prevalence in Western Highlands Province. The various tea and coffee estates are situated in proximity to and along the Highlands Highway and they employ large numbers of workers from the Highlands provinces. WR Carpenter Estates was invited as a prioritized site for national behavioural surveillance research by the National Department of Health and the NRI BSS team who collected the data that this report is based on in late 2008.

I would like to thank WR Carpenter Estates management for their approval of this study and collaboration. Much gratitude is expressed to the male and female workers who gave their time and who were interviewed face-to-face with surveys on their sexuality, knowledge of HIV and their practices. Some workers also gave one-to-one interviews, and these stories highlight valuable insights into people's experiences and what these mean to them, which need to be understood for HIV prevention with the WR Carpenters workforce.

The data from this report creates a baseline to support NDoH national behavioral surveillance monitoring and trend data collection. The data also create a baseline for monitoring the NDoH/ADB HIV Prevention in Rural Economic Enclave Project with the WR Carpenters coffee and tea plantation workforce.

The NRI encourages the dissemination of HIV research and translation of these results into locally tailored HIV prevention strategies and policies that can improve the quality of people's lives and health. The data, when applied, can allow for an increase in evidence based, tailored HIV and sexual health information in the best media to suit the workforce population. This research can help stakeholders identify more strategies to increase access to and use of condoms and tailor prevention messages for people in polygamous and concurrent sexual partner relationships. This report gives insights that will help to create more enabling working and living environments for people living with HIV, improve health, information on HIV and other sexually transmitted infections and their treatments, and reduce stigma and discrimination.

The data highlight the need to address policy issues and advocate for improvements in basic sanitation and the provision of greater access to clean water for the workforce and their families. These improvements are fundamental to reducing disease amongst the workforce and their dependants, improving public health and hygiene in estate and working areas, and reducing the burden on health facilities. More analysis of these findings will allow for their use in the response to HIV and to improve the health and quality of life of the WR Carpenters plantation workforce.



Dr Thomas Webster
Director, National Research Institute

ABBREVIATIONS

AASI	Audio-assisted self-interviewing
ACASI	Audio Computer-Assisted Self-Interviewing
ADB	Asian Development Bank
AIDS	Acquired Immunodeficiency Syndrome
ARCSHS	Australian Research Centre in Sex, Health and Society
ART	Antiretroviral Therapy
AusAID	Australian Agency for International Development
BSS	Behavioural Surveillance Surveys
CBO	Community Based Organization
FHI	Family Health International
F	Female
GPS	Global Positioning System
HIV	Human Immunodeficiency Virus
HR	Human Resources
HRS	High Risk Setting
IMR	Institute of Medical Research
KAPB	Knowledge, Attitude, Practice and Behaviour
M	Male
MARPS	Most (More) at Risk Populations
MRAC	Medical Research Advisory Council
MSM	Men who have male to male sex
NAC	National AIDS Council
NACS	National AIDS Council Secretariat
NDoH	National Department of Health
NGO	Non-Governmental Organization
NHASP	National HIV/AIDS Support Project
NRI	National Research Institute
PAC	Provincial AIDS Committee
PI	Principal Investigator
PLHIV	Person Living with HIV
PNG	Papua New Guinea
PSI	Population Services International
RAC	Research Advisory Committee
RAI	Ramu Agri Industries
SDA	Seventh Day Adventist
SHP PAC	Southern Highlands Provincial AIDS Committee
SOP	Standard Operating Procedures
SPSS	Statistical Package for Social Sciences
SRO	Senior Research Officer
STI	Sexually Transmitted Infections
STWG	Surveillance Technical Working Group
TSW	Transactional Sex Worker
UNGASS	United Nations General Assembly Special Session (on HIV and AIDS)
UNSW	University of New South Wales
VCT	Voluntary HIV Counseling and Testing
WHP	Western Highlands Province
WRC	WR Carpenters

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We acknowledge the endorsement and support for this research by the WR Carpenters Management, the Western Highlands Provincial AIDS Committee, the NDoH Surveillance Technical Working Group (STWG), and the NACS Research Advisory Committee (RAC) for ethical clearance. The NRI acknowledge the support from the National Department of Health, the NDoH/ADB HIV Prevention in Rural Enclave Project and the Asian Development Bank.

The principal, co-principal and co-investigators took leadership over this research and monitored data collection to ensure it was completed ethically and conducted within design. They are Dr. Holly Aruwafu, Francis Kupe, Frances Akuani, Thomas Kawage, Lawrencia Pirpir, Dr. Isimel Kitur (NDoH), and Murray Couch (ARCSHS). We express gratitude to Francis Kupe (NRI), Patrick Rawstone (UNSW) and Fumihiko Yokota (ADB/NDoH) for their comments and technical advice on the BSS sampling design and frame for economic enclave sites. Great appreciation is expressed to Dr. Holly Aruwafu and Dr. Isimel Kitur (NDoH) for their ongoing monitoring and technical support to the NRI BSS Unit.

So many thanks are expressed to the NRI BSS team of data collectors for their hard work interviewing 460 members of the WR Carpenters workforce under hot sun and rain in plantation fields across eight sites. The team included: Lawrencia Pirpir, Frances Akuani, Thomas Kawage, Francis Be, Patrick Kaiku, John Laule, Robert Timothy, Nickson Kawage, Kayleen Sapak, Veronica Samof, Patricia Kepui, and Jacinta Ikari. We thank Veronica Samof who made GPS readings during field data collection and created maps of the WR Carpenters behavioural surveillance sites; and Abel Simon who later edited and recreated the maps for this report.

NRI BSS team members Kayleen Sapak and Vivian Toanisi are recognised for their survey data entry and Francis Kupe is recognised for survey data management and verification in and out of the field. Ongoing outputs, data cleaning and production of tables were done by Kayleen Sapak and Francis Kupe.

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Appreciation is expressed to those who worked long and late hours on the production and verification of tables and the writing of this report, particularly Holly Aruwafu, Francis Kupe, Francis Akuani, Kayleen Sapak, Angelyn Amos and Helen Moliki.

EXECUTIVE SUMMARY

WR Carpenter Estates are located in the Western Highlands Province in an area of higher HIV prevalence. WR Carpenter's (WRC) plantation estates are major producers of tea and coffee and they require both permanent and casual mobile workers. The behavioural surveillance survey (BSS) research conducted by the National Research Institute at WR Carpenters, provides data for the NDoH National Surveillance System for monitoring behavioural trends with more at risk populations over time. The data is also provided for WR Carpenters and the NDoH/ADB HIV Prevention in Rural Enclaves Project, to be used as a baseline for monitoring and evaluation of the impact of their HIV project. The BSS research findings can support a HIV prevention and treatment response that is more evidenced based and tailored to the WRC workforce, in order to minimize the impact of the HIV epidemic on workers and their surrounding communities.

Place of Origin, Age and Education

All of the 460 WR Carpenters plantation workers (65.0% M; 35.0% F) surveyed were Papua New Guinean. Most were not living in their place of origin. The workers originated from ten different provinces although most were from the Highlands region. More than half (61.1%) of those interviewed did not know their age, and nearly half (46.7%) of the participants did not have any formal education. This has implications for the interpretation of indicators that are age based.

Employment and Living Conditions

Most plantation workers had worked for WRC for a long period of time, with more than a half (51.5%) having worked for WRC for over 5 years. A third (32.4%) worked for more than ten years, with a half of these longer term employees having worked at WRC for over 20 years.

Three quarters (76.5%) of the participants reported living in bush material or kunai houses. There was a lack of access to clean water and good sanitation for the WR Carpenters workforce which make them more vulnerable to water borne and hygiene related diseases.

Overcrowded housing was common. A third of respondents (32.7%) reported sharing their house with two or more other families, and close to half (45.3%) reported having six to ten people living in the same house with them. Limited privacy presents limited opportunities for sex within marital relationships, and this can contribute to workers seeking sex with their wives and with a variety of other sex partners outside of the house.

Marital Status and Polygamy

Marital and living arrangements amongst the workforce were complex and illustrate how the number and presence of marital sex partners and the nature of living arrangements can change over time in this population group. The majority (85.4%) reported having been married at least once, but over two-fifths (44.6%) said they had married more than once. Of these, a half reported being married three or more times.

While 91.0% of those who had ever married were married at the time of the survey; a third (119; 30.3%) reported that they had experienced a change in their marital partners, through

separation or by being widowed or divorced. Most had then remarried. Understanding patterns of marriage, including the practice of polygamy are important for understanding HIV epidemics. This is because changes in monogamous serial marital partners, multiple concurrent marital and steady live-in sexual partners over time can increase transmission of HIV as condom use with regular partners was lower than with non-regular or transactional sex partners.

A fifth (21.6%) of those surveyed reported being in polygamous marriages, of which over half (54.2%) reported either having two wives or that their husbands had two wives. The rest reported being one of three wives or having three wives (28.3%) or being one of four or more wives or having four or more wives. More women than men reported being in polygamous marriages, with a woman married to a husband who has more than one wife.

The cultural practice of polygamous marriage, with men marrying more than one wife, is common in the Highlands region. Traditionally, having a number of wives increase the wealth, status and power of a husband in systems of reciprocity and exchange, while at the same time maintaining tribal lineages through male children. In the context of WR Carpenters, men with more than one wife would have increased income from the labour of their wives. The prevalence of polygamy is an important consideration in prevention messages, as 'being faithful to one partner' does not fit the experience of a large proportion of the workforce population surveyed who are in polygamous marriages.

Alcohol and Drugs

Alcohol

Slightly more than a third (38.7%) of plantation workers said that they drank alcohol, such as beer, hard stuff or home brew. More male than female workers drank, drank more and more often than female workers. Among those who drank alcohol, more male workers (86.5%) than female workers (13.5%) drank alcohol [***Chi-Square analysis produced significant result at $p < 0.000$].

Of those workers who drank alcohol, there was a high number of drinks taken on a typical day when drinking. Men drank much more than women, with over a half (62.4%) of men who reported that they drank on break, reporting that they drink 10 or more drinks on a typical day when on break.

Drugs

Over the last year, only 15.3% (70) reported ever taking drugs (56M; 14F). More of the male workforce than the female workforce reported that they had tried drugs, particularly marijuana. No one reported injecting drugs.

Condom use when drunk or stoned

Only 9.6% (38; 35M, 3F) of workers who drank reported that there had been a time when they had been so drunk or stoned when they had sex that they had not used a condom. This does not support the view that alcohol and drugs reduce condom use significantly more in the WRC workforce, than compared to other times when people are not drunk or stoned. In the survey, there was a low level of condom use reported across different types of partners. More

male workers (92.1%) than female workers (7.9%) had not used a condom when they had sex because they were too drunk or stoned [***Chi-Square analysis produced significant result at $p < 0.001$].

There is more evidence in the qualitative interviews of a link between being drunk and not using a condom during sex, between drinking alcohol and rape, and between drinking alcohol and violence, threats and physical abuse, disturbance and destruction of property. Some male and female workers talked about how alcohol affected sexual desire and their preferred practices. Men also said that alcohol decreased their fear of approaching women and they found it easier to get women to have sex with them when they drank.

Sexual Practices and Partners

First Sex

Most workers interviewed (92.6%; 426) reported that they had had anal or vaginal penetrative sex. The common reasons given for not having sex were: fear of HIV and STI, fear of parents, religious beliefs, or not being ready to have sex. Some other reasons were based on fear for their reputation, fear of pregnancy, waiting for the right person, or that their father had died of AIDS.

There are limitations in the analysis of age at first sex. More than two thirds (65.9%) did not know their age the first time they had anal or vaginal penetrative sex. Of the third (34.1%) who knew their age at first sex, most (53.1%) reported first having sex between the ages of 15 and 19, or between the ages of 20 and 24 years (22.1%). Of concern is the degree of sex at very young ages. More reported having had their first sex before the age of fifteen (13.8%) than those having their first sex over the age of 25 (11.1%).

Sexual Networks and Number of Sexual Partners

The plantation workers were asked questions about their frequency of sex across a range of partner types. They are defined as:

- regular (spouse, girlfriend/boyfriend or live-in sexual partners),
- non-regular (partner not married to, did not live with, and who was not a steady girlfriend or boyfriend) and
- paid or transactional sex partners (had sex in exchange for money or other gifts, favors or services).

There is a layer of complexity because of the relatively high concurrency of sexual partners across a range of partner types. For instance, many workers might have additional regular partners, made more complex by multiple marital partners, as well as other non-regular and paid partners.

While a majority (65.3%) had one sex partner in the past year; over a third (34.7%) said that they had more than one sexual partner. Close to a fifth (21.6%) had between two to four partners and over ten percent (13.1%) said they had five or more partners. Male workers tended to have greater numbers of multiple sexual partners than female workers.

Detailed accounts of multiple sexual partners and networks of partners of different ages were also present in the qualitative interviews. These accounts suggest that both male and female

workers were having extramarital sex and were having paid or transactional sex. Older men were reported as 'going out' and having sex with younger women or school girls, while younger men were said to be having sex with older women. Polygamy and many examples of marriages where men and women remarried were discussed. Some men said that women lured them to have sex, while women talked more of their husbands, other men and other women's sexual practices, and of men luring them. Compensation for extramarital sex as a consequence for infidelity was also in the data.

Regular Partners and Condom Use

When asked about their regular partners in the past twelve months, 84.0% reported they had one regular partner. Forty-five (16.0%) workers reported they had from 2 to 7 regular partners.

Condom use at last sex with a regular partner was very low and a majority (85.4%) reported not using a condom the last time they had sex with a regular partner. The most common reason for not using a condom at last sex was trust in their partner (39.6%). Other reasons given for not using a condom at last sex, included: a lack of availability, lack of knowledge about condoms, dislike, didn't think it was needed, partner objected to condom use or they were not comfortable.

Non-Regular Partners and Condom use

A third (33.6%; 143) of the sample had one or more non-regular partners. More men than women had non-regular sexual partners in the past year, and men had more non-regular sexual partners and a higher frequency of sex with non-regular partners in the past year. There were significantly more male (88.1%) than female (11.9%) workers who had more than one or more non-regular partner [***Chi-Square analysis produced significant result at $p < 0.000$].

Condom use among the workforce with non-regular partners is low and more than two-thirds (67.1%) reported not using a condom the last time they had had sex with a non-regular partner. Of those who had not used a condom at last sex, the reasons given included: mostly trusting their partner (22.5%); that condoms were not available (19.4%); that they didn't like condoms (16.3%); and they were not comfortable (9.3%); they did not know about condoms (5.4%); or their partner objected (4.7%). When asked how often they had used a condom with a non-regular partner during the last three months, most (59.9%) reported that they never used a condom.

Transactional Sex Partners and Condom Use

Slightly less than a fifth (18.1%; 68M, 9F) of the WRC workforce surveyed who had had sex, reported having paid for or exchanged sex over the last year. Close to a quarter (24.2%, 68M) of the male workforce surveyed who had sex, reported giving money, beer, food, services or other gifts in the past 12 months for sex, and 6.2% (9) of the female workforce surveyed reported that they had received money, beer, food, services or other gifts in exchange for sex in the last 12 months. There were significantly more male workers (88.3%) who paid for sex in the last 12 months than female workers who were paid (11.7%). [*Chi-Square analysis produced significant result at $p < 0.000$].

Of the male workers who said that they had paid a woman for sex in the last year, two of these men said they had also paid one man each to have sex with them over the last three months. Fifty-eight male workers had been given money or other gifts for sex and ten women said that they had paid someone to have sex. Men had exchanged something with women for sex more often than women had been given or paid for sex in the sample, and more women had paid a man for sex than had been paid for sex in the last year.

This data indicates the crossing over between networks of men who pay women for sex with networks of men who sell sex, and networks of women who are paid for sex with networks of men who are paid for sex. As these male and female workers who are involved in transactional sex are also involved with other regular and non-regular partners, and condom use with these partners is lower, strategies for increasing condom use with concurrent sexual partners of all types, is an area that requires a focus.

Anal Sex and Condom Use

Sixty-seven workers (2 male, 65 female) reported that they had had anal sex. Anal sex was mostly between men and women, and 64 female workers (39.8% of all female workers surveyed) reported that they had had anal sex with men. The two men who had male sexual partners also reported living with a woman, and neither had used a condom during last anal sex. There was very low condom use for women at last anal sex with a male partner. Of those 65 women who had had anal sex with men, only three female workers (4.5 %) reported that they had used a condom at last anal sex. There is a need to focus on this higher risk anal sex practice for both men and women, with a view to increasing condom use during anal sex between men and women, and between men and men.

Condom Use, Preference and Access

A large majority (83.1%) reported that they had not used a condom at last sex. Significantly more male (84.0%) than female (16.0%) workers used a condom during their last sexual intercourse [***Chi-Square analysis produced significant result at $p < 0.000$].

Across regular, non-regular and paid partners, the reasons given why condoms were not used were mostly because of trust in regular (39.6%) and non-regular (22.5%) sex partners, and considerably less trust was documented with paid (2.0%) partners. A lack of condom availability was the most identified reason why a condom was not used at last paid sex (32.0%), compared with non-regular (19.4%) or regular (9.5%) partners. Dislike of condoms was more given as the reason why a condom was not used at last sex with a non-regular (16.3%) and with a paid partner (16.0%), than at last sex with a regular partner (7.0%).

In the previous 12 months, more than a third (35.8%; 163) of the workforce said that they had been given condoms. Most (95.8%) workers surveyed had not bought any condoms in the last year and only 19 people (17M, 2F) reported buying condoms. There were significantly more male (74.5%) than female (25.5%) workers who could obtain a condom every time they needed one [*Chi-Square analysis produced significant result at $p < 0.002$]. When asked where male condoms could be accessed, the WRC clinic was identified most often as the provider of male condoms for its workforce and a half (50.4%) reported accessing condoms provided by the WRC clinic.

However, most did not believe that a person could reduce their risk of HIV by using a condom every time they had sex and 47.0% (215) of the sample believed that condoms were effective protection from HIV transmission if used every time they had sex. This suggests that a belief that condoms are not effective protection is contributing to their lack of use.

More detail on inconsistency in condom use was provided in the qualitative interviews. Factors which influenced inconsistency of condom use included: different partner types; that condoms were only seen to be for people living with HIV; that condoms were for people wanting to avoid pregnancy or disease (STI); and low levels of knowledge on how to use a condom.

There were also certain cultural beliefs about men not having sex with their wife while she is breastfeeding. One reason given was that it could make the baby sick, and in these instances the husband has other sex partners when his wife is breastfeeding.

Sexual Violence

More than a quarter of the workforce (27.0%) had either raped someone or had been raped. A fifth (19.2%; 54) of the male workforce reported having vaginal, anal or oral sex with a woman when she did not want to. Two fifths of the female workforce (42.1%; 61) reported that they had been forced to have sex when they did not want to. Less than a quarter (23.9%) reported that a condom had been used at last forced sex. More than a quarter (28.8%) of men who had raped women, had used a condom the last time that they forced a woman to have sex. Less than a fifth (19.7%) of women who reported being raped said that a condom had been used when they were forced to have sex.

Of the men who forced women to have sex with them, and the women who had been forced to have sex, the largest majority (94.7%) reported that men raped alone, or that women had been forced by only one person. A tenth of the male workers who had forced a woman to have sex, reported that they had forced a woman to have sex as part of a group; and only one of sixty-one female workers who had been forced to have sex, reported being forced to have sex by a group.

Penile Cutting and Modification

Only ten men (3.4%) reported that they had been circumcised and eight women (5.0%) reported having sexual partners who were circumcised. While numbers are limited, of the ten men, most (47.1%, 6) had been circumcised in the context of an initiation.

More male plantation workers (77; 25.8%) reported having dorsal slits and 9.4% (15) of female plantation workers reported that their sexual partner had a penile slit.

Inserts were not very commonly reported by the male and female plantation workers. Of the total, only 1.5% reported that they or their partners had penile inserts. One female worker reported having a partner who injected his penis with a substance and he did this to make the penis wider.

STI

When asked if they had ever heard of infections that can be transmitted through sex, two thirds (66.9%) of the workers said that they had heard about sexually transmitted infections. Most of the workforce was not able to identify any STI symptoms in a woman and more men than women identified the correct symptoms of STI in women. Most of the workforce said that they did not know STI symptoms in a man.

While knowledge of symptoms was quite low, about a fifth (22.2%; 102) of the workforce surveyed said that they had experienced STI symptoms over the past year and many more men than women reported multiple STI symptoms. Of those (22.2%; 102) who reported having STI symptoms, a quarter (24.8%) said that they had sought advice and medicine from the clinic or hospital, a fifth abstained from sex until symptoms cleared, and just under a fifth (17.7%) said that they did not seek advice or medicine or that they talked to their partner (15.5%), while the rest self medicated, or used condoms. There is a statistically significant association between a person's sex and seeking STI treatment and there were more male (77.0%) than female (23.0%) workers who had been treated for sexually transmitted infection [****Chi-Square analysis produced significant result at $p < 0.007$**].

HIV Testing

Most (83.0%) of the workers had not had a HIV test in the last 12 months, When asked if they knew where to go if they wanted to get an HIV test, more than half (55.6%) said they knew where to go to get tested but a considerable number did not know where to go. While over half (59.2%) of the workforce agreed that it is possible for someone in the community to have an HIV test and for no one to know the results unless the person wanted them to know; there was still considerable doubt about confidentiality around HIV testing.

HIV Related Knowledge

Only about a fifth of both the male and female workforce identified how to prevent the sexual transmission of HIV, and rejected that HIV was transmitted through mosquitoes or sharing food. Two fifths (40.8%) of the workforce believed that HIV could be transmitted through mosquito bites and the rest (26.7%) were either unsure or did not know. While transmission through a needle was better understood, there was still a quarter who did not know or were unsure that needles could transmit HIV. Mother to child transmission was best understood, with just over a tenth of workers who were unclear about transmission from mother to child during pregnancy, delivery or breastfeeding.

While more (69.8%) understood that you could not get HIV from sharing a meal with someone living with HIV, less (57.8%) reported being willing to eat a meal that has been cooked by a person living with HIV or AIDS, indicating an area for the generation of stigma could be around eating food cooked by someone living with HIV.

Stigma and HIV

Close to two thirds (62.4%), and more men than women, agreed that a healthy-looking person could have HIV. When asked if a worker who is HIV positive should be allowed to continue working at WR Carpenter if they were diagnosed with HIV, the majority (62.0%) said they should not be allowed to continue working. There was also a statistically significant

association between a person's sex and being worried about working in the office or workplace with someone with HIV or AIDS. There were more male (69.3%) than female (30.7%) workers who would be worried about working in the same office or workplace with someone living with HIV or AIDS [****Chi-Square analysis produced significant result at $p < 0.012$**].

Information on HIV

Just over sixty percent (61.2%) of the plantation workers reported that someone had come to their community to talk about STIs, HIV or AIDS, and more men than women knew of community STI, HIV, and AIDS awareness. The data indicates the need for more focused prevention and transmission messages, and more messages for positive and supportive attitudes towards those living with HIV or AIDS within the workforce and broader community.

When asked about the best means of disseminating information on sexual health and HIV to the WRC workforce, the most common answer was through talking (42.1%), then awareness programs (15.1%), health system and health workers (12.9%), church programs (6.3%), drama (5.3%), and video (5.1%). The different sources where the workers got information about STI, HIV and AIDS included: through health workers (34.6%), AIDS awareness (11.2%), through the radio (8.0%), friends (7.3%), WRC management and other staff (6.3%) or relatives (6.1%).

Policy

The workforce was asked if WRC had an HIV policy. Less than half (40.8%) said that WRC had an HIV policy, and more than a half said that they did not have a policy, or were unsure. This indicates a need to promote the existing policy, especially through the use of oral and creative communication strategies for those who do not read.

Nearly a half (47.1%) of the workforce surveyed thought that the management of WRC was addressing HIV. However, more than half (57.8%) did not believe that the company's management would deal fairly and sympathetically with any employees living with HIV. A majority (80.7%) of the workers interviewed thought that the employees of WRC should be more concerned about HIV and AIDS.

INTRODUCTION: THE HIV EPIDEMIC IN PAPUA NEW GUINEA

The HIV epidemic in PNG has steadily increased over the past 20 years. A generalized epidemic was indicated in 2003 when HIV prevalence in antenatal mothers surpassed 1% at the Port Moresby General Hospital. Data at the end of 2006 produced an estimated national HIV prevalence of 1.28%; with projected sharper increasing trends in new infections and in rural areas.

The numbers of people diagnosed with HIV increased annually and by the end of 2009, 32,005 people had been diagnosed with HIV. During 2009, less men (37.3%) than women (61.4%) were diagnosed with HIV (1.3% sex not recorded); by the end of 2009, accumulatively less men (43.2%) than women (52.7%) had been diagnosed with HIV (4.1% sex not recorded). Concentrations of new and accumulative HIV infections are in younger age groups, particularly younger women 15-24 and the 25-34 year old groups, and in men aged 35-44 and older men, age 45-54 (NDoH and NACS 2007; NDoH 2008; NDoH 2009).

At the end of 2009, of the areas that had the highest HIV prevalence, NCD continues to have the highest. Other high prevalence areas include the Highlands region (WHP and EHP and Enga, Simbu and SHP) and Morobe. HIV prevalence is high in urban areas, such as Mt. Hagen and Port Moresby, as well as along, and at the end of, transport routes such as the Highlands Highway, and around some rural economic development areas (NDoH 2008; IMR 2007a).

Behavioural Surveillance

Behavioral surveillance identifies the sexual and other practices that are occurring, and establishes the level of their occurrence. The data is used to assess if particular population groups are at greater or less risk of HIV infection because of their practices, at particular sites over time, as well as increasing understanding of the sexual networks and linkages between more at risk populations and the general population. Collecting BSS data with the same population group over time produces trend data on behaviors and other characteristics within population groups and can help explain changes in HIV prevalence by changes in behavioral practices; while acting as an alert system about what, behaviorally, may be increasing the transmission of HIV infections.

While HIV prevalence increases in the Highlands areas, behavioural surveillance data to inform why this has occurred has been limited. Based in an area of higher and growing HIV prevalence, the workforce of WRC was prioritized by the NDoH and the Surveillance Technical Working Group as a priority site for the Round 2 BSS surveillance research 2008-2009. This survey aims to increase the geographic coverage and type of private industry being monitored by the NDoH National HIV surveillance system, and provide analysis on the relationships between behavioural and demographic data, and other contextual factors which may be creating greater or less vulnerability and risk for the private sector and their workforce.

This behavioural surveillance survey (BSS) provides data for the NDoH National Surveillance System for monitoring behavioural trends with more at risk populations over time; and for WR Carpenters and the NDoH/ADB HIV Prevention in Rural Enclaves project to use as a baseline for monitoring and evaluation, and to support a prevention response to the

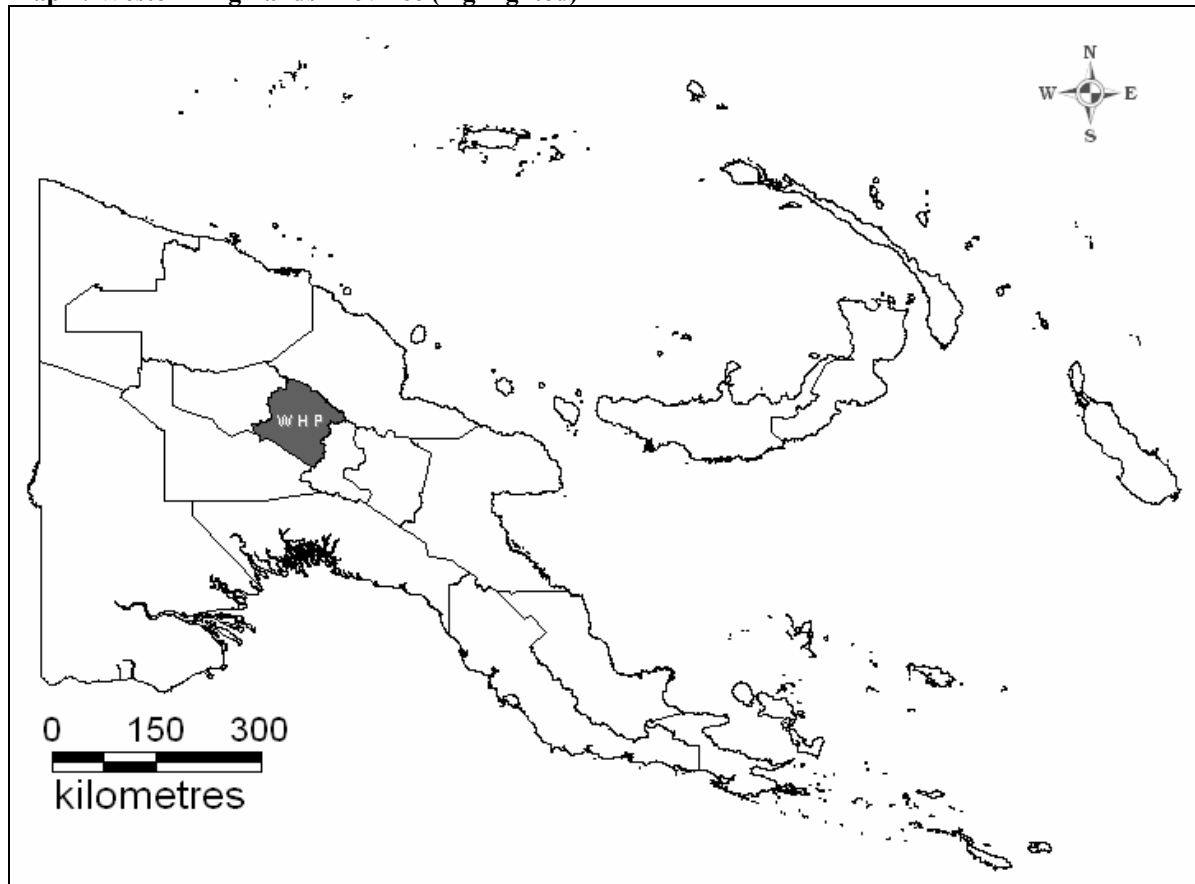
2 Behavioural Surveillance Research with the WR Carpenters Workforce

HIV epidemic that is evidenced based and tailored to minimize the impact on the WRC workforce (See Appendix 1: Collaboration and endorsement by WRC) .

WR Carpenters and Co-Estates

WR Carpenters and Co-Estates is a leading company in tea and coffee growing, manufacturing, packaging and exporting. WRC Estates stretch over long distances and are situated in three districts (Mul Baiyer, Anglimp South Waghi, and North Waghi) of the Western Highlands Province of Papua New Guinea. At the time of the survey, the Anglimp South Waghi and North Waghi Districts were still in the Western Highlands Province and Jiwaka was not yet declared as a province.

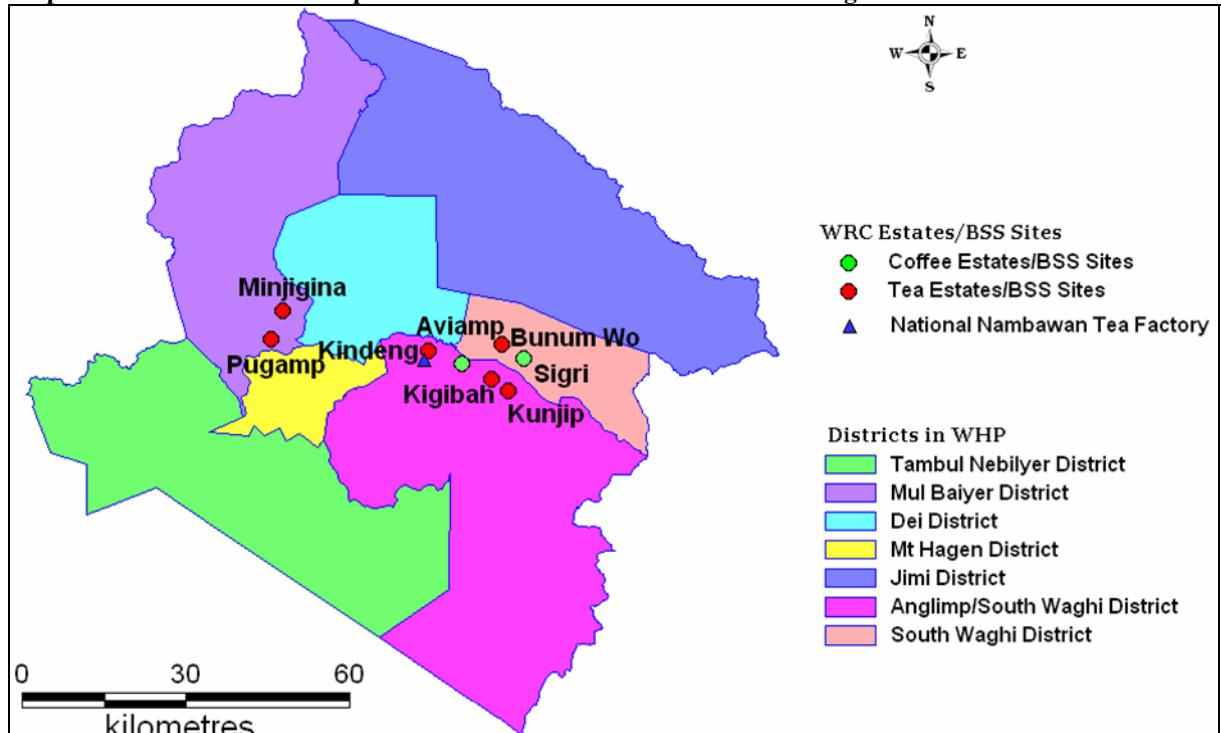
Map 1: Western Highlands Province (highlighted)



Since its establishment in Papua New Guinea in the mid 1960s in the Waghi Valley, WR Carpenters has been the largest producer and exporter of tea in PNG with an estimated 80% or more of the country's tea exports.

WR Carpenters and Co-Estates have a total of 10 estates, of which eight are wholly owned by the company and the other two estates (Gumandz and Nondugl) are coffee projects which are leased. Those owned by the company include Minjigina (tea), Pugamp (tea), Kindeng (coffee/tea), Aviamp (coffee/tea), Kigabah (coffee), Kudjip (coffee/tea), Sigri (coffee) and Bunum Wo (coffee/tea).

Map 2: BSS sites at 8 WR Carpenters Estates in 3 Districts in Western Highlands Province



Map 3: Topographical View of WR Carpenters Plantation Estates in Western Highlands Province



Formative Research

Formative research was conducted to pilot the questionnaires, make observations, gather sampling and other information about work rosters and scheduling, and to conduct individual and focus group discussions to understand the workforce, their ideas and the local sexual cultures of WR Carpenters. On the 16th of August, 2008, the NRI team left for Mt. Hagen and then traveled down to Kudjip where the main office is located and met with WR Carpenter staff and management.

Formative research was conducted between the 17th and the 19th of August 2008, i.e. over three days. At WR Carpenters the team piloted the English and Pidgin questionnaires and 12 women consented and were interviewed with the BSS survey; 9 in Tok Pisin and 3 in English. Twelve men were interviewed in Tok Pisin, and one in English. These were conducted at Sigri, Kudjip, and Kindeng Estates. The other Estates of Bunum Wo, Kigibah, and Aviamp were also visited but, no interviews were conducted. The two sites of Pugamp and Minjigina were not visited due to their distance and the limited time available. Most approached to take part in the piloting were willing to participate. In compensation for their time they were given K5.00 after the interview. There were some questions that were not clear, which the participants highlighted, and some skip patterns were out of order. These were changed in the final survey.

The focus groups discussed issues related to the survey questions, and identified sexual practices and contextual information. At WR Carpenters 4 gender specific focus group discussions, 2 male and 2 female, were conducted, and 32 participants (15 women and 17 men) took part. The pilot activities provided the basis for the selection and refining of the questions that were later included in the survey.

The pilot demonstrated that some questions were not appropriate for WR Carpenters' workers, others were not clear and needed to be reworded or the translation changed. Some skip patterns were adjusted and the need to add questions and other areas of importance to the workforce and the management of WR Carpenters Estates was identified.

The pilot identified practical and logistical aspects that needed refinement prior to conducting the surveys. Some differences in the responses by men and women were noted. The workers at WR Carpenters spoke about sex and HIV, but were also speaking openly about their working and living environmental conditions, and requested that questions be inserted in the survey on access to water and sanitation.

WR Carpenter had over 3000 staff who could work 6-7 days per week in 12 hour shifts. At WR Carpenters the workforce had more laborers, including pickers and factory workers, than management and skilled workers. Analysis of the workforce composition and discussions with management helped in creating the sampling design, based on the two workforce categories of 1) management and technical skilled workers, and 2) laborers, with consideration for gender distributions. A census of the households across the estates indicated that there were around 86 polygamous marriages. This contributed to a focus on polygamy in the qualitative question guide, and questions on the matter were included on the survey.

TARGET POPULATIONS, METHODS AND SAMPLING

Operational Definitions of Targeted Populations

Sub-population groups targeted for the survey were male and female workers across all estates of WR Carpenters. Women over the age of fifteen who were exchanging sex for money, favours or resources outside the gates of the enclave, and with men and women involved in polygamous marriages across the sites were targeted for qualitative interviews.

Workers were defined as: men and women over the age of 15 who work at WR Carpenters in all job categories, including permanent and contractor or seasonal workers from employee lists at the time of the sampling.

Transactional Sex workers were defined as: women over the age of 15 who exchange sex for money, goods, services and other favours.

Men and women involved in polygamous relationships were defined as: those who are over the age of fifteen and identify as belonging to a marriage, in which the man has more than one wife or the woman is married to a husband who has more than one wife.

Quantitative and Qualitative Methods

The BSS research in 2008 with the WR Carpenters workforce aimed to improve BSS data quality and quantity, with complementary qualitative studies with the workforce, with women exchanging sex outside the gates of both economic enclave, and with men and women in polygamous marriages. Probability sampling and tailored interviewing methods were integrated into the research methods and sampling design.

Questionnaire

A standardized pre-coded questionnaire (BSS) for each of the target groups was used. The survey was adapted to ensure that it took into account the specific socio-cultural realities of Papua New Guinea for the target population concerned. Surveys were translated into Tok Pisin and back-translated into English in the processes of piloting and questionnaire verification. The survey was developed from the first BSS survey and other standardized tools and with the workforce during formative and piloted and revised.

Face-to-Face Interviewing

Face-to-face survey interviews were conducted at WR Carpenters with 460 workers across all 2 job categories from all 8 WR Carpenters owned and managed Tea and Coffee Estates. Incentives of K5 compensated for lost time from work, and followed standard operating procedures (SOP) for face-to-face interviews of randomly selected survey interviewees (See Appendix 2: Standard Operating Procedures (SOP) for Interviewing).

Male and female employees, and women and men from polygamous households participated in qualitative interviews. Twenty-three (10 male and 13 female) qualitative interviews were conducted with the workforce, and those in polygamous relationships within the estates, using a purposively selected sample and informed by on and off site conditions, and research

ethics. The interviews, alongside the quantitative survey data, help provide meaning and understanding to contexts, motivations and practices.

Ethics

Ethical approaches ensured that recruitment and participation in interviews were voluntary and with consent, and sampling strategies and measures designed to ensure that no harm was done, were maintained. Confidentiality of the data was paramount, and there were no links from the data to individual names prior to, during and after data collection and in the reporting and dissemination of the BSS to target populations and their stakeholders. Data back-up, data management and security were addressed. Development and implementation was participatory, with dissemination and translation of results back to WR Carpenters management and stakeholders and to the target population, prior to release and publication of the BSS report (See Appendix 2: Standard Operating Procedures (SOP) for Interviewing, and Appendix 3: Data Management Monitoring and Security).

Sample Size, Sampling Frame and Selection

Sample Size Calculations

A probability sample size of 460 was calculated for the randomized stratified sampling frame among two categories of work types at WR Carpenters: (1) management and technically skilled and 2) laborers including tea and coffee pickers and factory workers, across 8 sites. Those surveyed were randomly selected by types of work and by male and female gender, proportional to the overall workforce and gender distribution at each site.

Overall sample sizes for each site included in this survey were calculated on the basis of factors typically used in surveys with probability samples (See Appendix 4: Sample Size Calculations and Population and Sample Size Distribution Calculations). The expected baseline value of key indicator used in the sample size computations was consistent condom use at last sex across all partner types, with a magnitude of 15% change desired; and to be able to detect a 95% Confidence level, with an 80% statistical power, and a design effect of 2. A multiplier of 1.25 was used, as the core indicator may not be applicable to all participants, as a proportion may not have had sex. From previous BSS at private industries, the proportion that has not had sex is usually much less than 20% of workforce samples. After calculation, the required size for WRC workforce sample was 460 (See Appendix 4: Sample Size Calculations and Population and Sample Size Distribution Calculations).

Sampling Frame and Selection

Stratified random sampling frames for BSS were designed by the NRI BSS specialist and BSS Data Manager, OSL Health management, NDoH epidemiologists, and an international HIV BSS researcher at the University of New South Wales.

A visit to WR Carpenters by the NRI BSS specialist with an NDoH surveillance data manager supported the verification of the household census done by WR Carpenters for their improvement program. At the end of June 2008 the composition of the WR Carpenters workforce, including pickers, garden and factory laborers, skilled and managerial staff, and their dependants was verified and completed from the census.

The numbers and the structure of enclave employees are integral for sampling frame development and to determine the sample size estimations for BSS. During formative consultations in August, the data manager verified the sample of the workforce during formative consultations with HR at WR Carpenters. It was found that employee lists were showing a different demographic with more female workers than the household census previously identified. For sampling purposes the employee list was then used for the BSS sample.

To ensure the random sampling of the workforce, the data manager verified the numbers and structure of the workforce sample of the workforce during formative consultations compiling all adjustments to ensure randomness were then made. These were then adjusted again at the beginning of fieldwork when one segment of the casual workforce was no longer working and available to be sampled from.

The overall numbers on the workforce lists changed and the proportions of the estates changed when casuals that were on the original list were no longer working and they were removed from the sampling lists. This effected the calculation of sampling distribution that had been initially projected and these were recalculated. Random sampling was maintained within new workforce sampling lists after revisions were made. The tables below show the total population and sampling distribution by site and sampling frame.

Table 1: Population distribution across estates by gender

Population distribution on employees list by sex and plantation estate site			
Plantation Estate	Male	Female	Total
Kindeng	719	230	949
Kigabah	139	70	209
Aviamp	598	187	785
Sigri	167	356	523
Pugamp	207	64	271
Minjigina	230	45	275
Bunum Wo	406	457	863
Kudjip	543	228	771
Total	3009	1637	4646

Table 2: Sampling distribution across estates by gender

Sample size distribution by sex and estate			
Estate	Male	Female	Total
Kindeng	71	23	94
Kigabah	14	7	21
Aviamp	59	18	77
Sigri	16	36	52
Pugamp	20	6	26
Minjigina	23	5	28
Bunum Wo	36	41	77
Kudjip	60	25	85
Total	299	161	460

A majority of the sample was male (65.0%) and just over a third (35.0%) female and these are the same proportions as set out in the original protocol (see Appendix 4: Sample Size Calculations and Population and Sample Size Distribution Calculations).

Twenty-three (10 male and 13 female) qualitative interviews were conducted with the workforce and those in polygamous relationships within the estates, using a purposively selected sample and informed by on and off site conditions.

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Table 3: Breakdown of qualitative interviews by sex

Interview population	Male	Female	Total
	n	n	
Workforce	7	11	18
In polygamous relationship	3	2	5
Total	10	13	23

* There were 5 (4M, 1F) interviews not included as they were inaudible.

Women exchanging sex were not interviewed as there were security issues for interviewers to work outside the gates of WR Carpenters near market areas due to ethnic conflict and social unrest. The interviews, with the survey data, give meaning to contexts, motivations and practices.

RESEARCH FINDINGS

DEMOGRAPHICS

Country, Gender, Region and Province of Origin

All of the 460 WRC workers who were surveyed were Papua New Guineans, and a majority of the sample was male (65.0%; 299). Slightly more than a third (35.0%; 161) was female. The workforce originated from ten provinces and most (69.2%) did not live in their place of origin. Most were from the Highlands region, with most (44.8%) of the sample originally from the Southern Highlands Province, followed by the Western Highlands Province (29.8%) and Simbu Province (16.7%). Smaller numbers, ranging from 0.2% to 4.6%, came from other provinces such as Enga, Eastern Highlands, East Sepik, the Autonomous Region of Bougainville, Madang, Morobe and Central.

Table 4: Distribution of WRC workers by province of origin and sex

Province of Origin	Male		Female		Total	
	n	%	n	%	n	%
Southern Highlands Province	130	28.3%	76	16.5%	206	44.8%
Western Highlands Province	87	18.9%	50	10.9%	137	29.8%
Simbu Province	55	12.0%	22	4.8%	77	16.7%
Enga Province	14	3.0%	7	1.5%	21	4.6%
Eastern Highlands Province	6	1.3%	3	0.7%	9	2.0%
East Sepik Province	4	0.9%	0	0.0%	4	0.9%
Autonomous Region of Bougainville	0	0.0%	2	0.4%	2	0.4%
Madang Province	1	0.2%	1	0.2%	2	0.4%
Morobe Province	1	0.2%	0	0.0%	1	0.2%
Central Province	1	0.2%	0	0.0%	1	0.2%
Total	299	65.0%	161	35.0%	460	100.0%

Age Distribution

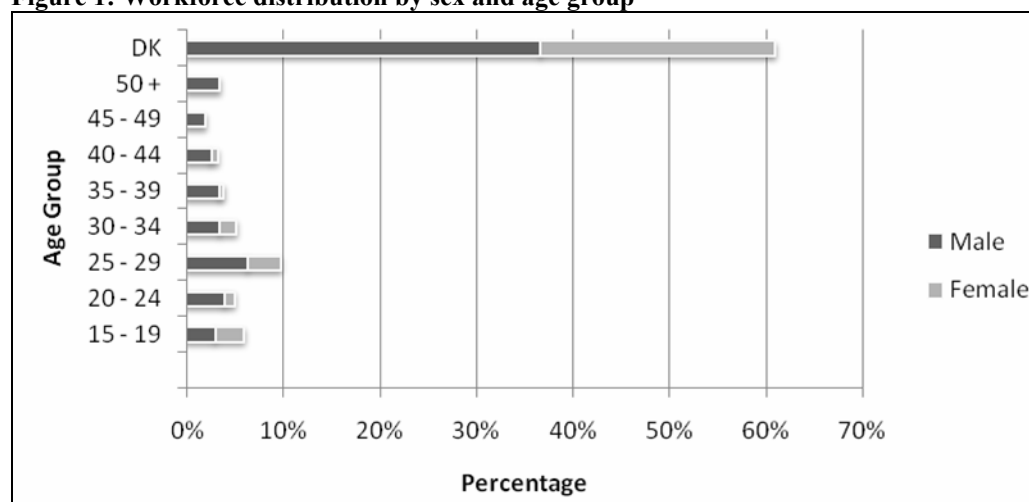
More than half (61.1%) of those interviewed did not know their age. Over half of the male sample (169; 56.6%) reported not knowing their ages and over two-thirds of the female sample (112; 69.5%) did not know their ages. This has implications for the interpretation of indicators that are age based, as later discussed, and could affect those indicators that are conceptualized time bound because of literacy issues.

Table 5: Distribution of WRC workers by sex and 5 year-age group

Age group	Male		Female		Total	
	n	%	n	%	n	%
15-19	14	3.0%	14	3.0%	28	6.1%
2-24	18	4.0%	6	1.0%	24	5.2%
25-29	29	6.4%	16	3.4%	45	9.8%
30-34	16	3.5%	8	1.7%	24	5.2%
35-39	16	3.5%	2	0.4%	18	3.9%
40-44	12	2.6%	3	0.7%	15	3.3%
45-49	9	2.0%	0	0.0%	9	2.0%
50+	16	3.5%	0	0.0%	16	3.5%
DK	169	36.7%	112	24.3%	281	61.1%
Total	299	65.0%	161	35.0%	460	100.0%

Of those who knew their age, the youngest reported being 15 and the oldest 68 years old. Of the workers who knew their ages, the largest concentration was between the ages of 25-29; with more under thirty knowing their ages. Only sixteen men reported being older than 50.

Figure 1: Workforce distribution by sex and age group



Highest Level of Education

Nearly a half (46.7%) of the participants did not have any formal education. Most (41.3%) had some education, but had only had primary education, with a fifth (22.1%) attending secondary education, or a vocational or technical school or college. Most had between 1 to 7 years of education and only 5% of those interviewed had over 11 years of education.

There was an association between not knowing one's age and educational status. Most 84.2% (181/215) of those who had never been to school did not know their age, and 45.3% (86/190) of those who had gone to primary school did not know their age. Nearly all (96.0%; 267/281) of those who did not know their ages had never gone to school or had only gone as far as primary school.

Table 6: Highest level of formal education completed by sex

Highest level of formal education completed	Sex				Total	
	Male		Female		n	%
	n	%	n	%		
Haven't gone to school	132	28.7%	83	18.0%	215	46.7%
Primary education	122	26.5%	68	14.8%	190	41.3%
Secondary school	33	7.2%	6	1.3%	39	8.5%
Vocational/technical	8	1.7%	1	0.2%	9	2.0%
Tertiary/college	2	0.4%	3	0.7%	5	1.1%
Mission School	2	0.4%	0	0.0%	2	0.2%
Total	299	65.0%	161	35.0%	460	100.0%

Religion

Nearly all (96.3%) participants reported Christianity as their religion. Seventeen people (3.7%) reported having no religion. Catholicism was the most common denomination (29.3%), followed by the Evangelical Churches (24.2%), Lutheran (23.5%), and other denominations with small numbers reporting Pentecostal, SDA, PNG Bible Church, United, Revival, Mormon and Bahai.

Table 7: Type of Christian Denomination by sex

Name of Denomination	Male		Female		Total	
	n	%	n	%	n	%
Catholic	85	19.2%	45	10.2%	130	29.3%
Evangelical Churches	60	13.5%	47	10.6%	107	24.2%
Lutheran	73	16.5%	31	7.0%	104	23.5%
Pentecostal	25	5.6%	14	3.2%	39	8.8%
SDA	21	4.7%	5	1.1%	26	5.9%
PNG Bible Church	12	2.7%	3	0.7%	15	3.4%
United	11	2.5%	1	0.0%	12	2.7%
Revival Church	5	1.1%	3	0.7%	8	1.8%
Mormon	1	0.2%	0	0.0%	1	0.2%
Bahai*	0	0.0%	1	0.2%	1	0.2%
Total	293	66.0%	150	33.9%	443	100.0%

*Bahai is not a Christian denomination but was perceived to be by one individual

Employment

Close to a third (31.8%) of the workforce surveyed had worked for WR Carpenters between 1 to 5 years, and under a fifth (16.7%) had been working there for less than a year. More than a half (51.5%) reported working for over 5 years, and a third (32.4%) had worked for WRC for more than ten years. Just less than half of these had been working for over 20 years. Of those sampled more of the male workforce (24.9%) than the female workforce (7.4%), had worked for a longer period of time for WR Carpenters.

Figure 2: Number of years employees worked for the WRC Company by sex**Table 8: Number of years worked at WRC by sex and 5 year-age group**

No. of Years Worked	Male		Female		Total	
	n	%	n	%	n	%
Less than a year	27	6.1%	47	10.6%	74	16.7%
1-5 years	93	20.9%	48	10.8%	141	31.8%
6-10 years	62	14.0%	23	5.2%	85	19.1%
11-15 years	29	6.5%	13	2.9%	42	9.5%
16-20 years	29	6.5%	8	1.8%	37	8.3%
21+ years	53	11.9%	12	2.7%	65	14.6%
Total	293	66.0%	161	34.0%	460	100.0%

Male workers explained that their income varied, depending on whether it was coffee season or not, and on whether their wives were also working, and their income varied a fortnight depending on how much one worked. Some described how their life on the plantation was dependent on credit, and wages went to repay loans given within the plantation to those who had no money which they had to repay with interest. Customary obligations, school fees and

supporting many people on low wages made some take on loans that continue the perpetuation of cycles of poverty for the workforce.¹ Three workers explain:

They give out cash on credit and when they lend out K20.00 to us and we repay about K40.00; this makes a lot profit for them ...he gave me K100.00 and I add K100.00 as interest, he will tell me to go and work and I will borrow money. Also, in the factories and outside the fields, they loan out huge amounts of their own money, we live in that kind of life (Female plantation worker).

I have my family with me as well as my brother's family living with me. They are three and we are six. There are nine of us in one house... You know the pay I get from the company it's not enough. So in terms of school fees, part of my pay I help my family so that's why I do not put my kids in school and also the fees have gone up (Male plantation worker).

I'm married with two wives....I work as a security guard and get paid as little as K40. I budget it for soap, oil and other little items that we need to use at home. Big part of the money goes to credit. We live on credit in the plantation (Male plantation worker).

Close to all workers interviewed supported other people with their income, except for eight (1.8%) workers who reported not supporting anyone. A majority of those surveyed (87.9%) supported up to 10 people: 1 to 5 (44.4%); 6 to 10 (43.5%). and 10.3% of the sample supported more than 10 people.

Table 9: Number of people supported by income by sex and by interval of 5

Number of people supported by income	Male		Female		Total	
	n	%	n	%	n	%
Support none (0 people)	3	0.7%	5	1.1%	8	1.8%
1-5 people	133	29.3%	68	15.0%	201	44.4%
6-10 people	128	28.2%	69	15.2%	197	43.5%
11-15 people	22	4.9%	13	3.0%	35	7.8%
16-20 people	5	1.1%	2	0.4%	7	1.5%
21+ people	5	1.1%	0	0.0%	5	1.0%
Total	296	65.3%	157	34.7%	453	100.0%

*Missing = 7

Living Conditions

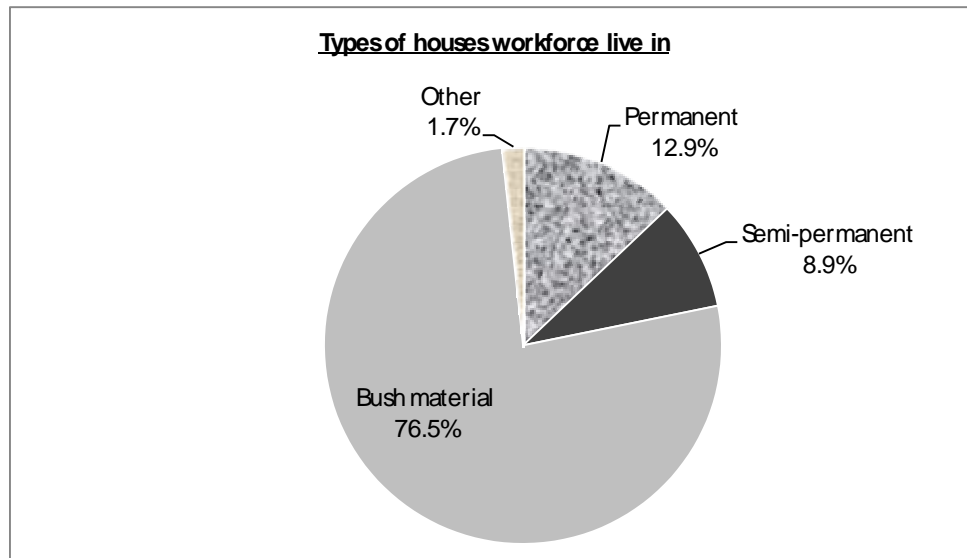
Questions about the living conditions of the workforce, such as housing, water and sanitation, were asked. During formative research it was requested by the targeted population that these questions also get included as they were important issues for them.

¹ Since the time of the survey increases in the pay rate at WRC have occurred. There has been an application of an increase of 20-35% for all staff and WRC maintain that all wages now comply with the requirements of the Minimum Wages Regulation which requires the payment of minimum of K2.12 for Rural Based Workers hourly. In addition to the permanent workforce WRC employs a number of people on a casual basis to meet short term seasonal requirements, such as coffee harvesting, and these are paid on a 'piece rate' basis. These rates are projected to be similar to minimum wage if the worker works for a full 8 hour day (See Appendix 6: Letter of Response from WR Carpenters).

Housing

Over three quarters (76.5%) of the participants reported living in bush material or kunai houses while close to a fifth of the workforce lived in permanent houses (12.9%) or semi-permanent houses (8.9%).

Figure 3: Types of houses workforce live in by sex



A few others individually mentioned living in other types of houses inside and outside of the plantation which included: a pit house, a box house, a block outside of the plantation, plank houses, a plastic room, a room flat and a single quarters. Those living in company houses reported that they were not well maintained and given to them with no furniture. If furniture was supplied, their pay would be deducted. Others who are not housed in the company houses live in kunai houses, which they built themselves.

When asked about the number of families sharing the same house, only 3.5% of the workforce had no other family living with them. Close to two thirds (63.8%) reported sharing their house with one other family. A third (32.7%) reported sharing their house with two or more other families; a quarter (24.4%) had between 2 and 4 families living with them and less than a tenth (8.3%) reported having five or more families living with them.

Table 10: Number of families sharing house with worker by sex

Number of families share the same house with worker	Male		Female		Total	
	n	%	n	%	n	%
0	15	3.30%	1	0.20%	16	3.50%
1	178	38.80%	115	25.10%	293	63.80%
2	37	8.10%	27	5.90%	64	13.90%
3	19	4.10%	14	3.10%	33	7.20%
4	12	2.60%	3	0.70%	15	3.30%
5+	37	8.10%	1	0.20%	38	8.30%
Total	298	64.9%	161	35.1%	459	100.00%

*Missing = 1

In relation to the numbers of people in the household, just over forty percent (40.6%) of workers reported having one to five people living with them in their house, while closer to half (45.3%) reported having six to ten people living in the same house with them. Close to a

tenth (10.2%) reported having between 11 and 14 people living with them in their house and fewer (3.2%) reported having from 15 to 35 people living with them. Only three workers (0.7%) had no one living with them. Houses were small and overcrowded causing some members of the families to sleep in other available housing with relatives and friends. One interviewee described how he and his family manage this over-crowding:

Yes, I'm married. I'm married with three wives and I have eight children plus three wives ...ah twelve altogether... but the house is small so we just sit around, cook eat and then the other two go and sleep with other family at the compound nearby and then next day come back and we stay together... they come and stay so we plan to pick tea and coffee (Male plantation worker).

Table 11: Number of people living in a house by sex

Number of people who live in your house	Male		Female		Total	
	n	%	n	%	n	%
No persons	3	0.7%	0	0.0%	3	0.7%
1-5 persons	125	27.2%	62	13.5%	187	40.6%
6-10 persons	132	28.7%	76	16.5%	208	45.3%
11-14 persons	30-	6.5%	17	3.8%	47	10.2%
15-35 persons	9	1.9%	6	1.2%	15	3.2%
Total	299	65.0%	161	35.0%	460	100.0%

*See Appendix 5: Additional Table 139 for expanded table of 'Number of people living in a house by sex' by each age

In the following a male worker describes having at least thirteen people in his house, and he illustrates the complexity of marital relations:

My family and my brother's family we live together. He has three children in his family and I have four children, all of us stay together in a single house... I'm married with seven wives, four went out and three are still around...when it's coffee season the women pick coffee, but for now they all depend on me, I'm the only one working...when they are at home they look after the house and wash clothes and other things (Male plantation worker).

Overcrowding has important impacts. Hygiene and health is an issue if the house does not have water or a toilet, and it is difficult for couples to have sex within their home because of limited privacy. Such limited privacy presents limited opportunities for sex within marital relationships, and can lead to workers seeking to have sex with a variety of other sex partners outside of the house as well as with their wives.

Interviewer: When you want to have sex with your wives, where do you take them? *Male plantation worker:* When I feel free or when I see that the house is free, I take them in one by one inside and have sex (Male plantation worker).

She would say, as for me the house is crowded, or my brothers are at home, or my in-laws are also in the house. You know the mindset of a man is a totally different thing altogether, so we just take her along to the nearby tea gardens ...enough space to have sex among the tea gardens... just have sex in the coffee garden and tea gardens, at the tea garden there are big bushes..at night time, during the day time (Male plantation worker).

Water

Access to clean water for consumption and sanitation is a major problem faced by the workers. When asked if they had clean running water in or at their house, the majority (80.9%) reported that they didn't, but they identified various places where they went to get water and some gave multiple responses.

A third (33.3%), and mostly men, mentioned that they got water from nearby drains from the run-off water from the tea and coffee processing. Most (52.9%) got water from multiple natural sources such as rivers, creeks, streams, swamps, waterfalls and springs near the estates where they lived, or from the rain stored in tanks and drums. Some workers (13.8%) accessed water from other sources such as from wells and water supply (pumps, factory, water taps). Certainly many of the natural sources, and the run off drain water, are unsafe for drinking.

Table 12: Sources of water reported by workforce by sex

Sources of water	Male		Female		Total	
	n	%	n	%	n	%
Drain water	124	24.8%	42	8.4%	166	33.3%
River	89	17.8%	43	8.6%	132	26.5%
Rain (Tank/Drum)	50	10.0%	32	6.4%	82	16.4%
Creek	24	4.8%	15	3.0%	39	7.8%
Water fall	4	0.8%	1	0.2%	5	1.0%
Spring water	2	0.4%	2	0.4%	4	0.8%
Swamp	0	0.0%	1	0.2%	1	0.2%
Stream water	0	0.0%	1	0.2%	1	0.2%
Well water	19	3.8%	18	3.6%	37	7.4%
Water supply	13	2.6%	13	2.6%	26	5.2%
Pump	2	0.4%	1	0.2%	3	0.6%
**Other	2	0.4%	1	0.2%	3	0.6%
Total	329	65.9%	170	34.1%	499	100.0%

*Missing =11 **Others included: at 10 compound from factory, block 20, bus stop/main road

About three times more men than women got water from the drain and 1.8 times more men than women got water from the river, rain or creek. Men and women took water mostly from the drain (run off from the processing) and the river, and stored rain was the next source of water for both.

The qualitative data supported the account that access to clean water for cooking, drinking and washing was a major concern of plantation workers. Some of those interviewed mentioned increasing cases of diarrhea and typhoid resulting from unclean water. Two of these follow:

But at the plantation, it's very hard. In our villages we get good clean water, good food from gardens... But here I see that it's very hard to help people on the plantation. So I feel that they should provide a water supply to every compound. It would be okay for them to get fresh water for drinking or some good services like a water supply, some good houses or raise the standard of housing (Female plantation worker).

There's no drain water for washing. There's no proper water, washing area, kitchen...and so high levels of diarrhea (Female plantation worker).

Toilets

Half (50.9%; 234) of those surveyed did not have a pit or flush toilet in close proximity to their house. Another half (49.1%; 226) reported having a toilet at their house and the majority of those who reported having toilets at their houses had a pit toilet. When workers were asked where they went to the toilets, the most common place mentioned was a pit toilet (36.9%), between the coffee trees (26.5%), in the bushes (18.8%) or tea plantations (13.6%). One interviewee expressed the view that:

This is a big company, yet we don't have toilets or a water supply for washing...
so they go to the tea plantation (Female plantation worker).

Poor access to water, sanitation and toilets was seen as a major problem, and it was what workers talked about most during individual interviews. Some interviewees reported using company public toilets, while others had built their own pit toilets near their houses. Consistent with the survey data, those interviewed said that those who had no toilets used the nearby bushes, or tea and coffee rows.

Figure 4: Places used as toilets

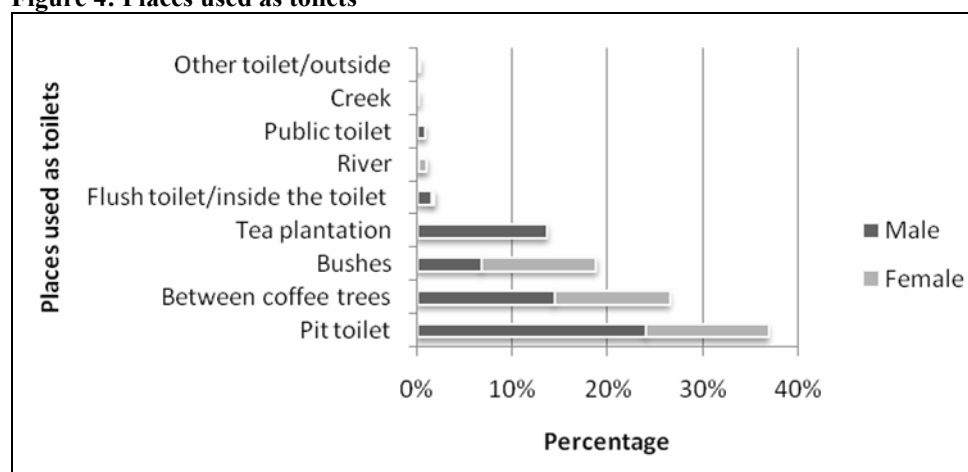


Table 13: Places where workers go to the toilet by sex

Places where workers go to the toilet	Male		Female		Total	
	n	%	n	%	n	%
Pit toilet	143	24.0%	77	12.9%	220	36.9%
Between coffee trees	86	14.4%	72	12.1%	158	26.5%
Bushes	40	6.7%	72	12.1%	112	18.8%
Tea plantation	81	13.6%	0	0.0%	81	13.6%
Flush toilet/inside toilet	9	1.5%	2	0.3%	11	1.8%
River	1	0.2%	5	0.8%	6	1.0%
Public toilet	5	0.8%	0	0.0%	5	0.8%
Creek	1	0.2%	0	0.0%	1	0.2%
Other toilet/outside	2	0.3%	0	0.0%	2	0.3%
Total	368	61.7%	228	38.2%	596	100.0%

*Missing=5 **Multiple responses

This lack of access to clean water and good sanitation for WR Carpenters workforce makes them more vulnerable to water borne and hygiene related diseases. Access to water, and having toilets and sanitation are basic living conditions that can impact on overall health and the spread of disease, and this becomes more critical for people living with HIV or AIDS

who have suppressed immune systems, and who would benefit especially from better hygiene and access to clean water.²

Marital Status

The majority (85.4%) of those surveyed reported having ever been married. Of those who had been married, more than two thirds (68.4%) didn't know their age when they first got married.

Table 14: Ever married by sex

Ever married	Male		Female		Total	
	n	%	n	%	n	%
Yes	252	58.4%	141	30.7%	393	85.4%
No	47	10.2%	20	4.3%	67	14.6%
Total	299	65.0%	161	35.0%	460	100.0%

Of those who knew their age, two thirds (66.4%) got married between the ages of 15 and 24, and nearly a fifth (18.5%) got married between the ages of 25 and 29. The most common age at first marriage was 20 to 24 years; and then 15 to 19 years.

Table 15: Age at first marriage by sex in 5 year age group by sex including don't know age

Age at first marriage	Male		Female		Total	
	n	%	n	%	n	%
less than 15	0	0.0%	8	2.0%	8	2.1%
15-19	17	4.3%	19	4.8%	36	9.1%
20-24	32	8.1%	14	3.6%	46	11.8%
25-29	21	5.3%	2	0.5%	23	5.9%
30-34	7	1.8%	0	0.0%	7	1.8%
35-39	0	0.0%	1	0.3%	1	0.3%
40+	3	0.8%	0	0.0%	3	0.8%
Don't know	172	43.8%	96	24.4%	268	68.2%
Total	252	64.1%	140	35.6%	392	100.0%

*Missing = 1

Table 16: Age at first marriage by 5 year age group by sex excluding don't know age

Age at first marriage	Male		Female		Total	
	n	%	n	%	n	%
Less than 15	0	0.0%	8	18.2%	8	6.5%
15-19	17	21.2%	19	43.2%	36	29.3%
20-24	32	40.0%	14	31.9%	46	37.1%
25-29	21	26.2%	2	4.5%	23	18.5%
30-34	7	8.8%	0	0.0%	7	5.6%
35-39	0	0.0%	1	2.2%	1	0.8%
40+	3	3.8%	0	0.0%	3	2.4%
Sub-Total	80	100.0%	44	100.0%	124	100.0%
Don't Know	172		96		268	
Total	252		140		392	

* Missing = 1

There were eight young females who married before the age of fifteen. Of these eight, four (ages 8 and 10 when married) had never gone to school and the other four (ages 13 and 14

² As a company, WR Carpenters agrees that some of the facilities provided require review (See Appendix 6: Letter of Response from WR Carpenters).

when married) had had some primary schooling. A few men married later in life, with three marrying over the age of forty.

In the context of HIV, patterns of marriage are important in understanding changes in steady and multiple concurrent marital and sexual partners over time. More than half (55.4%) of the workforce who had ever been married, reported marrying only once. However, close to half (44.6%) said they had married more than once. Of these, half reported marrying twice; and the rest three or more times. The same numbers of female and male workers reported having married twice, but considerably more male workers than female workers were married three or more times.

In the qualitative interviews there were a considerable number of accounts of multiple marriages, and of remarriage. One such account:

I can recall, I've been married, divorced, married, divorced, married, divorced, I've been doing that, and now I'm married and my father paid bride price and here I am and I got married again to a second wife and both of them are together (Male Plantation Worker).

Table 17: Number of times married by sex

No. of times married	Male		Female		Total	
	n	%	n	%	n	%
1	126	32.20%	89	22.8%	215	55.4%
2	43	11.0%	43	11.0%	86	22.2%
3 and over	78	20.1%	9	2.3%	87	22.4%
Total	247	63.6%	141	36.4%	388	100.0%

*Missing=5

Polygamy as discussed below, adds a layer of multiple concurrent marital sexual partnerships within networks that can include a variety of other sexual partners.

Polygamous Marriages

At WR Carpenters, nearly all of the respondents (91.0%) who had ever been married stated that they were presently married at the time of the survey. Of those presently married, the majority (78.4%) of both the male and the female workforce reported that they had only one spouse.

A total of eighty-five workers (18.5%) surveyed reported that they were in polygamous marriages. Over half (54.2%) of those in polygamous marriages, and the same number of men and women, reported either having two wives and or that their husbands had two wives.

Table 18: Number of wives man has by male and number of wives woman's husband has by female

Number of wives by sex	Number of wives						Total	
	2		3		4+		n	%
	n	%	n	%	n	%		
Number of wives you have - Male	23	27.1%	9	10.6%	2	2.4%	34	40.0%
Number of wives husband has - Female	23	27.1%	15	17.6%	13	15.3%	51	60.0%
Total	46	54.2%	24	28.2%	15	17.7%	85	100.0%

Nine male workers reported having three wives and fifteen female workers reported being one of three wives (28.2%). Two males reported having four wives and 13 female workers (17.7%) reported being one of four wives. There were more female workers reporting that

their husband had more than one wife, than there were men reporting having more than one wife.

The practice of polygamous marriages, with men marrying more than one wife, is a common cultural practice in the Highlands region, and polygamy has been traditionally associated with having a number of wives who work to increase the wealth of their husband in systems of reciprocity and exchange. In the context of WR Carpenters, men with more than one wife would have increased income from the labour of their wives. Here is one man's account:

I married two women because first it's like you know we are men ah...So we are men and in our custom, it means if we have two wives, it's our custom that we pay bride price with pigs and some other stuff. On my father's side, he too has two wives so I also have to follow my father and I also have two wives because on my side, one of my wives can look after four pigs and the other can look after another four pigs. That makes eight pigs altogether and that will establish my name in the community. That is the basis of my belief, and that is the reason I married two wives.... the two of them are not like the educated ones, the two of them don't know how to read and write. *Tupela longlong bilong [ples] tupela olsem kaukau*. It's like, whatever work they are doing is just making gardens only...(Male plantation worker).

Another reported that having many wives, for some, was a strategy for making more money during coffee season, as one female worker mentioned:

When its coffee season, he will get 10 to 20 women within that short period between the fifth and eighth month. He will marry this number of women. He will get the money from the coffee and will spend it on all kinds of women. At the moment he has six wives at his house (Female plantation worker).

Polygamous marriages add layers of complexity to sexual networks of concurrent steady marital sexual partners; and to networks of other concurrent regular, non-regular and transactional sex partners, making polygamy an important consideration in prevention messages: 'being faithful to one partner' does not fit the experience of a large proportion of the workforce population surveyed.

All of the men interviewed were in polygamous marriages, except for one who was not married. A few of the women also reported that their husband had other wives. Within these interviewees, various reasons were given for polygamous marriages, such as for wealth, maintaining tribal lineages through the male child and status in the tribe.

It is our custom. You know, us Highlanders, women follow this custom. For men who have a lot of land and with plenty of wealth from the village, like a son of a chief or a business man, women like to marry them (Male plantation worker).

It's like our tradition, traditional ways where we marry two women. If another woman gives birth to a baby girl or something of that kind, we think of our male lineage so we will still pay for another woman to marry, just like that. That's our tradition, so my first wife gave birth to a baby girl and two boys and they are dead now. Okay, I found another one and now I've got another one and now I've got a son. This is our custom (Male plantation worker).

Changes in Marital Status – Being Widowed, Separated or Divorced

Of the 393 (85.4%) male and female workers who reported being married, nearly a third (119; 30.3%) reported that they had experienced a change in their marital status, through separation, being widowed or divorced.

Table 19: Widowed, separated or divorced by sex

Ever widowed, separated or divorced	Male		Female		Total	
	n	%	n	%	n	%
Separated	28	23.5%	18	15.1%	46	38.7%
Divorced	28	23.5%	30	25.2%	58	48.7%
Widowed	10	8.4%	5	4.2%	15	12.6%
Total	66	55.5%	53	44.5%	119	100.0%

More men had been separated, and slightly more women divorced than men. Of those who were widowed; more men than women reported being widowed. Around ten percent (11.7%) of the married workforce (46/393) had been separated; just over 14.8% (58) had been divorced, and only 3.8% (15) of the total workforce said that they had been widowed.

As earlier reported, the majority (85.4%; 393) of workers reported that they had at least been married once. At the time of the survey, of those that had been married, more than two thirds (69.7%; 274) said that they were still married and had never been separated, widowed or divorced.

Of those third of the workforce who said had once married and had been separated, widowed or divorced; most had already remarried. Some others were still separated, widowed or divorced and had not married, or were separated, divorced or widowed and had other sex partner(s). Table 20 below shows the complexity of marital and living arrangements, and illustrates the nature of changing marital and non-marital sex partners and living arrangements over time.

Table 20: Present marital status of those ever married by widowed, separated and divorced by sex

Present marital status of those ever married by widowed, separated and divorced by sex	Male		Female		Total	
	n	%	n	%	n	%
Widowed but now married	9	2.3%	4	1.0%	13	3.3%
Separated but now married	24	6.1%	15	3.8%	39	9.9%
Divorced but now married	26	6.6%	20	5.1%	46	11.7%
Presently married - Never widowed/sep/div	186	47.3%	88	22.4%	274	69.7%
Still divorced presently not married	0	0.0%	7	1.8%	7	1.8%
Still separated presently not married	3	0.8%	3	0.8%	6	1.5%
Still widowed presently not married	1	0.3%	1	0.3%	2	0.5%
Divorced but now with sex partner	2	0.5%	3	0.8%	5	1.3%
Separated but now with sex partner	1	0.3%	0	0.0%	1	0.3%
Total	252	64.1%	141	35.9%	393	100.0%

* This table captures the current marital status of all that have reported ever being married

The degree of concurrent steady, casual and transactional sexual partners for those both married and not married is discussed in ‘Sexual History’ following the section on ‘Alcohol and Drug Use’ below.

ALCOHOL AND DRUG USE

Alcohol Use

The majority of the workforce (61.3%) said that they did not drink alcohol, and more than a third (38.7%) said that they did. There is a statistically significant association between a person’s sex and drinking alcohol, such as beer, hard stuff or home brew. Among those who drank alcohol, more male workers (86.5%) than female workers (13.5%) drank alcohol [***Chi-Square analysis produced significant result at $p < 0.000$].

Table 21: Drinks alcohol by sex

Drinks alcohol	Male		Female		Total	
	n	%	n	%	n	%
Yes	154	33.5%	24	5.2%	178	38.7%
No	145	31.5%	137	29.8%	282	61.3%
Total	299	65.0%	161	35.0%	460	100.0%

Of those who reported drinking, most (69.0%) reported drinking beer; a fifth (20.1%) drank steam and a tenth drank spirits.

Table 22: Types of Alcohol that the workforce drank by sex

Types of alcohol	Male		Female		Total	
	n	%	n	%	n	%
Beer	138	60.3%	20	8.7%	158	69.0%
Homebrew (steam or pine)	40	17.5%	6	2.6%	46	20.1%
Hard-stuff spirits	20	8.7%	3	1.3%	23	10.0%
Wine	0	0.0%	1	0.4%	1	0.4%
Other types	0	0.0%	1	0.4%	1	0.4%
Total	198	86.5%	31	13.5%	229	100.0%

*Percentages and totals based on multiple responses

The survey indicates that more than half (59.6%) of the workers drank a lot, with 10 or more drinks on a typical day when they were drinking; and just over a fifth (20.3%) reported drinking between 5-9 drinks.

Figure 5: Number of drinks taken on a typical day when drinking

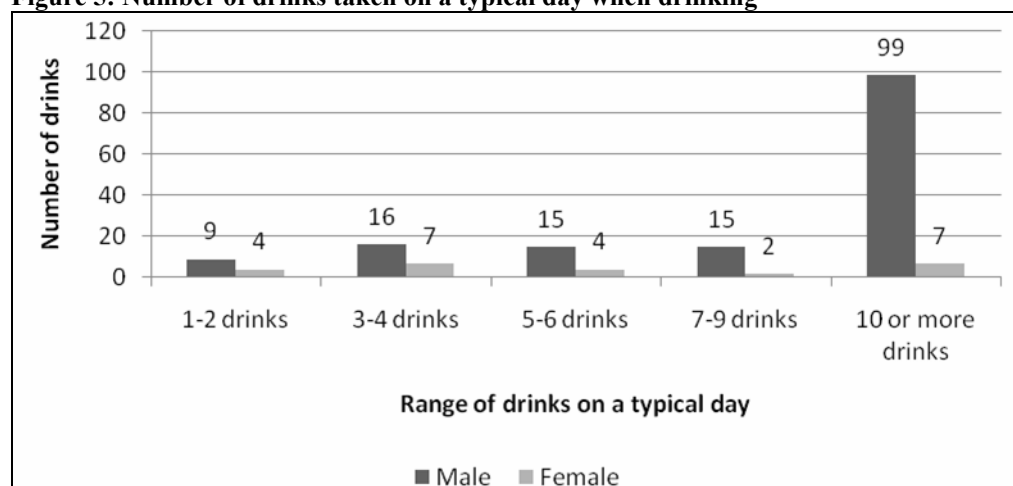


Table 23: Frequency of drinks containing alcohol on a typical day when drinking by sex

Number of drinks on a typical day when drinking	Male		Female		Total	
	n	%	n	%	n	%
1-2 drinks	9	5.8%	4	16.7%	13	7.3%
3-4 drinks	16	10.4%	7	29.2%	23	12.9%
5-6 drinks	15	9.7%	4	16.7%	19	10.7%
7-9 drinks	15	9.7%	2	8.3%	17	9.6%
10 or more drinks	99	64.3%	7	29.2%	106	59.6%
Total	154	100.0%	24	100.0%	178	100.0%

Of those workers who drank alcohol, there were reports of high numbers of drinks taken on a typical day when drinking. In the qualitative interviews, workers talked about the kinds of alcohol that they drank and they said that steam was being brewed on the estate. Men explained that alcohol decreased their fear of approaching women and that they found it easy to get women to have sex with them when they drank. They also linked alcohol with individual or group rape, domestic violence, threats and physical abuse and destruction of property. Some male workers talked about how alcohol increased their sexual desire.

When I'm around and when I'm drunk I think that's the time for sex. Whatever, situation they [referring to any women] are in, if I'm drunk they must lie down for me to have sex (Male plantation worker).

For drinking, workers will go to a place near the main highway. And they would drink until day break. The women go as well; even the bosses' wives go and drink too. The boys will buy 2 to 3 cartons and they drink until day break. They roam around in the night, screaming and shouting for nothing until day break and then go to their houses to sleep. Only the bosses drink at home (Female plantation worker).

Alcohol Use during Periods of Work and when on Break

Close to two fifths (39.3%; 70) of the workforce who drank alcohol (178), reported that they drank alcohol during periods of work. Most (70.0%) workers, who drank during periods of work, drank either once or twice a month, or once or twice a fortnight. The rest (30.0%) drank more often during periods of work with over a quarter (26.7%) drinking once or twice a week.

Table 24: Number of drinks taken on a typical day when at work by sex

How often worker drinks alcohol when at work	Male		Female		Total	
	n	%	n	%	n	%
Once or twice a week	17	24.3%	1	1.4%	18	26.7%
Three or more times a week	3	4.3%	0	0.0%	3	4.3%
Once or twice a fortnight	23	32.9%	1	1.4%	24	34.3%
Once or twice a month	21	30.0%	4	5.7%	25	35.7%
Subtotal	64	91.4%	6	8.6%	70	100.0%
Never drinks at work	84		17		101	
Total	148		23		178	

More of the workforce drank alcohol during break than during periods of work. Around two thirds (64.6%; 115) of the workforce who drank alcohol (178), reported that they drank alcohol when they were on break. Most (64.3%) workers who drank on break; drank once or twice a month, or once or twice a fortnight. Over a quarter (29.5%) drank more often during

their break time; from a few men (5; 4.3%) who drank daily to considerably more (25.2%) men and women who drank once to twice a week.

Table 25: Frequency of drinks containing alcohol when on break by sex

How often worker drinks alcohol when on break	Male		Female		Total	
	n	%	n	%	n	%
Every day	5	4.3%	0	0.0%	5	4.3%
Once or twice a week	25	21.7%	4	3.5%	29	25.2%
Three or more times a week	6	5.2%	1	0.9%	7	6.1%
Once or twice a fortnight	34	29.6%	2	1.7%	36	31.3%
Once or twice a month	32	27.8%	6	5.2%	38	33.0%
Subtotal	102	88.7%	13	11.3%	115	100.0%
Never drinks during break	49		9		58	
Total	151		22		173	

*Missing = 5

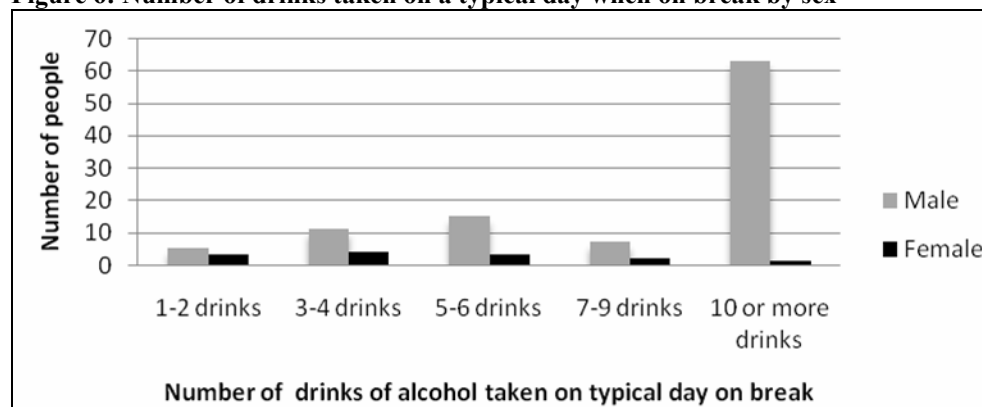
The survey indicates that more than half (56.1%) of the workers drank a lot, with 10 or more drinks on a typical day when they were drinking on break; and just over a fifth (23.7%) reported drinking between 5-9 drinks.

Table 26: Number of drinks on a typical day when on break by sex

Number of drinks on a typical day on break	Male		Female		Total	
	n	%	n	%	n	%
1-2 drinks	5	4.4%	3	2.6%	8	7.0%
3-4 drinks	11	9.6%	4	3.5%	15	13.2%
5-6 drinks	15	13.2%	3	2.6%	18	15.8%
7-9 drinks	7	6.1%	2	1.8%	9	7.9%
10 or more drinks	63	55.3%	1	0.9%	64	56.1%
Total	101	88.6%	13	11.4%	114	100.0%

* 1 missing

Figure 6: Number of drinks taken on a typical day when on break by sex



Men drank much more than women, with over a half (62.4%) of men who reported that they drank on break, drinking 10 or more drinks on a typical day when on break.

Drug Use

There are a range of different types of drugs that are taken by people for many reasons, and the workforce was asked whether they had ever taken drugs. Over the last year, only 15.3% (70) reported ever taking drugs (56M; 14F).

Table 27: Ever taken drugs by sex

Ever taken drugs	Male		Female		Total	
	n	%	n	%	n	%
Yes	56	12.2%	14	3.1%	70	15.3%
No	242	52.7%	147	32.0%	389	84.7%
Total	298	64.9%	119	35.1%	394	100.0%

*Missing = 66

More men than women had ever taken drugs and there is a statistically significant association between a person's sex (male and female) and trying a range of different types of drugs. There was significantly more of the male workforce (80.0%) reporting that they had tried a range of different types of drugs than the female workforce (20.0%) [*Chi-Square analysis produced significant result at $p < 0.01$].

Of those who reported taking drugs, most (87.1%) had taken marijuana. No one reported injecting drugs, but, as discussed later, one woman reported that she had a sexual partner that had had a penile injection.

Although only 15.3% (70) of the sample reported taking drugs, from interviews with both men and women there are accounts of young boys and men taking drugs in the plantation. There are reports that there are many men living in the plantation, who take drugs and walk around in public and pose security risks for women and young girls. Some reports were that these men were raping women when stoned. One such report included this:

There are many men who take marijuana that live here. Most of them are young boys who live here and they are all drug bodies (boys who take drug). They are not scared of us. They will smoke and walk around in the public places. They do that and they rape women in the night. It's those guys who take drugs that rape women (Female plantation worker).

Condom Use when Drunk and Stoned

The large majority (90.4%) reported that they had never been so drunk or stoned when they had sex that they had not used a condom. Only 9.6% (38) of workers reported that there had been a time when they had had sex when they were drunk and stoned and had not used a condom, and all but three were male workers.

Table 28: Been too drunk or stoned and did not use a condom by sex

Ever been too drunk or stoned that you did not use a condom?	Male		Female		Total	
	n	%	n	%	n	%
Yes	35	8.9%	3	0.8%	38	9.6%
No	240	60.9%	116	29.4%	356	90.4%
Total	275	69.8%	119	30.2%	394	100.0%

* Missing = 32 and 34 did not have sex

There is a statistically significant association between a person's sex and if they had ever been too drunk or stoned that they had not used a condom. Among those who drank alcohol or who had taken drugs, more male workers (92.1%) than female workers (7.9%) had not used a condom when they had sex because they were too drunk or stoned [***Chi-Square analysis produced significant result at $p < 0.001$].

Less than 10% of those who drank reported having unprotected sex when they were too drunk or stoned. Even though unprotected sex is reported by a tenth; this does not provide

support for the assertion that alcohol and drugs reduce condom use significantly when compared with when people are not drunk or stoned in the WRC workforce.

In the survey, there was a low level of reported condom use reported across different types of partners, and this is discussed in the next section. There is more evidence in the interviews of a link between being drunk and not using a condom during sex, and between drinking alcohol and rape, violence, threats and physical abuse, disturbance and destruction of property. Some workers, male and female, talked about how alcohol affected sexual desire and preferred practice.

If you were really drunk and there was no condom and you see a woman who was easy for you to have sex with, even without a condom you still will have sex (Male plantation worker).

Some men don't have sex with women all the time when they are fully drunk, they don't bother to have sex. When he [my husband] is drunk, he will say, "I will not use a condom, it's my choice, he will say that" (Female plantation worker).

SEXUAL HISTORY

First Sex

Nearly all WRC workers interviewed (92.6%; 426) reported that they had ever had sexual intercourse. In the survey 'having sex' was defined as anal or vaginal penetrative sex.

Table 29: Ever had sexual intercourse by sex

Ever had sexual intercourse	Male		Female		Total	
	n	%	n	%	n	%
Yes	281	61.1%	145	31.5%	426	92.6%
No	18	3.9%	16	3.5%	34	7.4%
Total	299	65.0%	161	35.0%	460	100.0%

Only thirty-four (7.4%) male and female workforce reported that they had never had sex. The common reasons for not having sex were fear of HIV and STI, afraid of parents, religious beliefs or not being ready to have sex. Other reasons were: afraid of their reputation or afraid of pregnancy; were waiting for the right person; that their father had died of AIDS; they not wanting to have sex and having self pity.

Table 30: Reasons for not having sexual intercourse by sex

Reasons for not having sexual intercourse by sex	Male		Female		Total	
	n	%	n	%	n	%
Afraid of HIV/STI	12	26.1%	6	13.0%	18	39.1%
Afraid of parents	4	8.7%	5	10.9%	9	19.6%
Religious beliefs	1	2.2%	6	13.0%	7	15.2%
Not ready	5	10.9%	0	0.0%	5	10.9%
Afraid reputation may be spoiled	2	4.3%	0	0.0%	2	4.3%
Afraid of getting pregnant	1	2.2%	0	0.0%	1	2.2%
Waiting for right person	1	2.2%	0	0.0%	1	2.2%
Didn't want to	1	2.2%	0	0.0%	1	2.2%
Father died of AIDS	0	0.0%	1	2.2%	1	2.2%
Self pity	1	2.2%	0	0.0%	1	2.2%
Total	28	60.9%	18	39.1%	46	100.0%

*Multiple responses and rounded percentages

The workers were also asked if they had had oral sex the last time that they had had sex and there were few who reported that they had. Less than 5% (3.9%; 4M, 12F) reported having oral sex at their last sex.

Table 31: Had oral sex by sex

The last time you had sex did you have oral sex	Male		Female		Total	
	n	%	n	%	n	%
Yes	4	1.0%	12	2.9%	16	3.9%
No	260	63.9%	131	32.2%	391	96.1%
Total	264	64.9%	143	35.1%	407	100.0%

* Missing = 19 and 34 did not have sex

There are limitations to the analysis of age at first sex. More than two thirds (65.9%) did not know their age the first time they had anal or vaginal penetrative sex. Of the third (34.1%) who knew their age at first sex, most (53.1%) reported first having sex between the ages of 15 and 19, or between the ages of 20 and 24 years (22.1%). Of concern is the degree of sex at very young ages. More reported having had their first sex before the age of fifteen (13.8%) than those having their first sex over the age of 25 (11.1%).

Table 32: Age group at first sexual debut by sex

Age at first penetrative sex	Male		Female		Total	
	n	%	n	%	n	%
<15	12	12.1%	8	17.4%	20	13.8%
15-19	51	51.5%	26	56.5%	77	53.1%
20-24	23	23.2%	9	19.6%	32	22.1%
25-29	10	10.1%	3	6.5%	13	9.0%
30+	3	3.0%	0	0.0%	3	2.1%
Sub-Total	99	100.0%	46	100.0%	145	100.0%
Don't Know	182		99		281	
Total	281		145		426	

*34 did not have sex

The UNGASS Indicator 15 is defined as the percentage of most-at-risk populations, such as both male and female plantation workers, aged 15 to 24 years old who have had sexual intercourse before the age of 15. A quarter (24.32%) of male and female workers aged 15 to 24 years old reported having sex before the age of 15. There were only 9 young workers who were between the ages of 15-24 and who had sex before the age of 15. This indicator must be treated with caution as the majority did not know their ages and the numbers in the youth category 15-24 are small.

Sexual Intercourse in the Last 12 months

Of those who said they had experienced having sex, more than two-thirds (70.0%) reported that they had had sex in the last 12 months: two thirds (66.0%) were male and a third (34.0%) were female.

Table 33: Sexual intercourse in the last 12 months by sex

Had sex in last 12 months	Male		Female		Total	
	n	%	n	%	n	%
Yes	192	45.1%	106	24.9%	298	70.0%
No	89	20.9%	39	9.1%	128	30.0%
Total	281	66.0%	145	34.0%	426	100%

*Missing = 34

The plantation workers were asked questions about the frequency of sex and practices across a range of partner types, including those defined as regular (spouse, girlfriend/boyfriend or live-in sexual partners), non-regular (partner not married to, did not live with, and who was not a steady girlfriend or boyfriend) and paid or transactional sex partners (had sex in exchange for money or other gifts).

There is a layer of complexity with the relatively high concurrency of sexual partners across a range of partner types, made more complex by the additional factor of polygamy involving husbands who have multiple wives. More women than men reported being in polygamous marriages, i.e. being with a husband who has more than one wife. Most men and women did not use condoms during sex across all partner types; however condom use with regular partners was lower than with non-regular partners or paid sex partners and condom use with paid sex partners was lower than reported condom use with non-regular partners. Men had significantly more access to condoms and used them more often than women.

Number of Sexual Partners (in last 12 months)

Workers who had sex within the last 12 months were asked about the number of partners they had had sex with in the last 12 months. While a majority (65.3%) had one sex partner in the past year; over a third (34.7%) said that they had more than one sexual partner in the past year. Close to a fifth (21.6%) had between two to four partners and over ten percent (13.1%) said they had five or more partners. Male workers tended to have greater numbers of multiple sexual partners than female workers.

A majority (65.3%) said they had one partner, while a third had more than one partner in the past year. Close to a fifth (21.6%) had between two to four partners and the rest (13.1%) said they had five or more partners.

While both men and women reported having more than one sexual partner, the male workers tended to have greater numbers of partners than female workers. A half (50.0%; 95) of male workers, but less than a tenth of female workers (7.5%; 8) who had multiple sexual partners, said they had two or more partners.

Table 34: Number of sexual partners in the last 12 months by sex

Number of sexual partners last 12 months	Male		Female		Total	
	n	%	n	%	n	%
1	95	32.0%	99	33.3%	194	65.3%
2	26	8.8%	1	0.3%	27	9.1%
3	12	4.0%	3	1.0%	15	5.1%
4	20	6.7%	2	0.7%	22	7.4%
5+	37	12.5%	2	0.7%	39	13.1%
Total	190	64.0%	107	36.0%	297	100.0%

Table 35: Overall distribution of numbers of sexual partners in the last 12 months by sex

Number of sexual partners	Number of female sexual partners did you have in the last 12 months		Number of male sexual partners did you have in the last 12 months		Total	
	Male		Female		n	%
	n	%	n	%		
1	95	32.0%	99	33.3%	194	65.3%
2	26	8.8%	1	0.3%	27	9.1%
3	12	4.0%	3	1.0%	15	5.1%
4	20	6.7%	2	0.7%	22	7.4%
5	6	2.0%	0	0.0%	6	2.0%
6-10	17	5.7%	1	0.3%	18	6.1%
11-22	11	3.7%	1	0.3%	12	4.0%
35	1	0.3%	0	0.0%	1	0.3%
51	1	0.3%	0	0.0%	1	0.3%
83	1	0.3%	0	0.0%	1	0.3%
Total	190	64.0%	107	36.0%	297	100.0%

Detailed accounts of multiple sexual partners and networks of partners were also present in the qualitative interviews. These accounts suggest that both men and women were having sex outside of marriage; both were having paid or transactional sex; older men were going out with younger women or school girls; younger men were going out with older women; some were polygamous; and there were also many examples of marriages where men and women remarried. Some men said that women lured them to have sex, and women talked more of their husbands and other men and other women's sexual practices, and of men luring

them. Compensation for extramarital sex as a consequence for infidelity was also evidenced in interviews. Below are some examples:

The young ones [men] they go out with young girls.... But some young men they go with married women. When they go they will give them money so they make a secret deal between them (Female plantation worker).

The man...he is working here, okay his wife is at home... and the other man goes and gives her twenty kina to play cards...He went to the house and slept with that woman and then they found out, her husband found out and they went to court and the fellow compensated the husband. The man now settles in a different area and other man left and remarried with a new wife. That woman he divorced her and she goes around everywhere at tea plantation and said come there so they gave her two kina, four kina or six kina, when they give she just receives it and roams around here every day (Female plantation worker).

These are young girls and they go out with old men... And you will not believe that he takes this young lady around... Then I asked, "Did you sleep with some other women outside or apart from your wife?" and he said, "Yeh, I sleep with one woman and that woman" (Female plantation worker).

Women who have money, come with their money and find men and offer money to young men to have sex with them (Male plantation worker).

UNGASS Indicator 16 is defined as the percentage of women and men aged 15-49 who have had sexual intercourse with more than one partner in the last 12 months. In this sample 30.1% of the male and female plantation workers ages of 15-49 had more than one sexual partner in the last 12 months. Within these, 44.5% were men between the ages of 20-24, while no woman within the same age range reported having more than one partner in the last 12 months.

UNGASS Indicator 17 is defined as the percentage of women and men aged 15-49 who had more than one partner in the past 12 months and who used a condom during their last sexual intercourse. Over a third (36.7%) of women and men aged 15-49 who had had more than one sexual partner in the last 12 months also used a condom during their last sexual intercourse.

Regular Sexual Partners (in Last 12 Months)

Those who had one or more sexual partners in the last 12 months were asked about regular, non-regular and paid sexual relationships. Regular partners were defined as spouse, girlfriend/boyfriend or live-in sexual partners. When asked about their regular partners in the past twelve months, 84.0% reported they had one regular partner, and forty-five (16.0%) workers reported they had more than one regular partner in the last 12 months. The female workers tended to have less numbers of multiple regular partners when compared to male plantation workers.

Table 36: Number of regular partners in the last 12 months by sex

Number of regular partners in the last 12 months	Male		Female		Total	
	Number of regular partners such as spouse, girlfriend, boyfriend or live-in sexual partners in last 12 months		Number of regular partners such as spouse, girlfriend, boyfriend or live-in sexual partners in last 12 months			
	n	%	n	%	n	%
1	136	48.4%	100	35.6%	236	84.0%
2	25	8.9%	4	1.4%	29	10.3%
3	10	3.6%	1	0.4%	11	3.9%
4	2	0.7%	0	0.0%	2	0.7%
5	0	0.0%	1	0.4%	1	0.4%
7	2	0.7%	0	0.0%	2	0.7%
Total	175	62.3%	106	37.7%	281	100.0%

Workers were asked how many times they had sexual intercourse with their regular partners in the last 12 months. Two fifths (42.1%) said they had sex from one to ten times with their regular partner in the past year. More said that they had sex more frequently, with close to a fifth (18.3%) from 11 to 68 times in the past year and some (8.3%; 21) having sex with a regular partner over 70 times in the past year. Less than a third (31.5%) didn't know how many times they had had sex with their regular partner in the past year.

Table 37: Times had sexual intercourse with a regular partner in the last 12 months by sex

Number of Times	Male		Female		Total	
	n	%	n	%	n	%
1-5 times	45	17.5%	21	8.2%	66	25.7%
6-10 times	34	13.2%	8	3.1%	42	16.4%
11-21 times	14	5.4%	5	1.9%	19	7.4%
24-30 times	11	4.3%	1	0.4%	12	4.7%
34-48 times	2	0.8%	4	1.6%	6	2.3%
50-68 times	7	2.7%	3	1.2%	10	3.9%
70 or more times	6	2.3%	15	5.8%	21	8.3%
Don't know	56	21.8%	25	9.7%	81	31.5%
Total	175	68.1%	82	31.9%	257	100.0%

*Missing = 24

Condom Use at Last Sex with Regular Sex Partner

Condom use at last sex with regular partners was very low and greatest large majority (85.4%) reported not using a condom the last time they had sex with a regular partner. This question was not time bound and all of those who had ever had a regular partner in their life at any point in time answered.

Table 38: Condom use at last sex with a regular sex partner by sex

Condom used at last sex	Male			Female			Total	
	n	% within total	% within sex	n	% within total	% within sex	n	%
Yes	48	11.7%	18.0%	12	2.9%	8.3%	60	14.6%
No	219	53.2%	82.0%	133	32.2%	91.7%	352	85.4%
Total	267	64.9%	100.0%	145	35.1%	100.0%	412	100.0%

*34 never had sex **Missing = 14

Of those 60 workers who used a condom at last sex: more than half (56.7%; 34) said that they suggested condom use themselves; around a fifth said that their regular partner suggested condom use; and another fifth said that they and their partners both suggested condom use at last sex.

Table 39: Who suggested condom use at last sex with a regular sex partner by sex

Who suggested condom use	Male		Female		Total	
	n	%	n	%	n	%
Myself	28	46.7%	6	10.0%	34	56.7%
My partner	8	13.3%	5	8.3%	13	21.6%
Both agreed	12	20.0%	1	1.7%	13	21.7%
Total	48	80.0%	12	20.0%	60	100.0%

Most did not use a condom at last sex with regular partners for a great variety of reasons. Most reported not using condoms because of trust between them and their regular partners (39.6%).

Table 40: Reasons for not using condom with a regular partner by sex

Reason for not using condom with regular partner	Male		Female		Total	
	n	%	n	%	n	%
Trust partner	133	30.1%	42	9.5%	175	39.6%
Not available	27	6.1%	15	3.4%	42	9.5%
Did not like condoms	24	5.4%	7	1.6%	31	7.0%
Don't know about condoms	9	2.0%	21	4.8%	30	6.8%
Didn't think it was needed	16	3.6%	3	0.7%	19	4.3%
Partner objected	11	2.5%	8	1.8%	19	4.3%
Not comfortable	12	2.7%	3	0.7%	15	3.4%
Want children	11	2.5%	3	0.7%	14	3.2%
Religious belief	5	1.1%	5	1.1%	10	2.3%
Don't know	1	0.2%	9	2.0%	10	2.3%
Afraid of condoms	2	0.5%	8	1.8%	10	2.3%
Don't know how to use condoms	5	1.1%	3	0.7%	8	1.8%
For people with multiple partners	4	0.9%	3	0.7%	7	1.6%
Condoms reduce pleasure	3	0.7%	3	0.7%	6	1.4%
For sex workers	0	0.0%	5	1.1%	5	1.1%
Old age and don't need condom	1	0.2%	4	0.9%	5	1.1%
Did not think of it	2	0.5%	2	0.5%	4	0.9%
Not living with sexual partner	1	0.2%	3	0.7%	4	0.9%
Condoms may have holes	1	0.2%	2	0.5%	3	0.7%
AIDS not prevalent	2	0.5%	1	0.2%	3	0.7%
Condoms for new generation	2	0.5%	1	0.2%	3	0.7%
Both tested negative did not use condoms	1	0.2%	2	0.5%	3	0.7%
Never use condoms	3	0.7%	0	0.0%	3	0.7%
Custom belief	2	0.5%	0	0.0%	2	0.5%
Bush man, don't use condom, live in village	1	0.2%	1	0.2%	2	0.5%
Both agreed not to use condom	0	0.0%	1	0.2%	1	0.2%
Don't care	0	0.0%	1	0.2%	1	0.2%
Girl too young	1	0.2%	0	0.0%	1	0.2%
For People living with HIV	0	0.0%	1	0.2%	1	0.2%
Use condom only when pregnant	0	0.0%	1	0.2%	1	0.2%
We were in a hurry	1	0.2%	0	0.0%	1	0.2%
Afraid of AIDS and did not use condom	0	0.0%	1	0.2%	1	0.2%
Other (Did not specify)	1	0.2%	1	0.2%	2	0.5%
Total	282	63.8%	160	36.2%	442	100.0%

*Percentages based on multiple responses and rounded off to 1 decimal place

Other reasons given for not using a condom included: a lack of availability, lack of knowledge about condoms, dislike, didn't think it was needed, partner objected to condom use or they were not comfortable.

Others said they did not use a condom at last sex with their regular partners as they wanted children or had religious beliefs that restricted condom use, fear or lacked trust in condoms, or that they reduced pleasure or were for others such as sex workers or those having multiple sex partners.

During the qualitative interviews, inconsistency in using condoms was identified. Some men reported using condoms only with women outside of marriage and not with their wives. Other men only used condoms with their wives when they were breastfeeding fearing the child would get sick. Lack of knowledge about condoms and condom use also contributed to some men and women not using condoms. It was not common for women interviewees to speak about themselves as having sex outside of marriage; they spoke more about other women having extramarital sex. Below are expressions by men of their attitude to condoms and their use:

I don't use condoms. I don't use them with my two wives because the condom itself has some kind of lubrication. This thing can destroy a family. With this in mind, I don't use condoms (Male plantation worker).

That's not too many times like I said before, when I go around with other women, yes I use a condom, once in a while and for any other times you know when we have sex these days But I don't go looking for it, but in case there is a time when we come across women who like us to have sex outside of our marriage, condoms are always in our pockets, in the car, and in the wallets ... as for myself I carry them around (Male plantation worker).

A female worker gave an account of how men don't like to use condoms, and how she negotiates use of condoms with husband and other sex partners, primarily for contraception. In her marriage and from her experience, the use of a condom depended more on her husband's choice, despite her attempts for negotiation.

But those who always have sex with women, they don't like to use condoms. They will say, "We want the real thing. We want to feel flesh to flesh". I use condoms, when men come and we don't want to have children, and we don't want the sperm to go inside and form babies. My husband he is a big head, he normally does that [have sex without condom]. I tell him, "I look after the children and I have had enough and tell him he should use a condom". I tell him that and sometimes he uses it and sometimes he doesn't want to use it. And he will say he doesn't want to (Female plantation worker).

The workers were asked how often they used condoms in the last 3 months with all their regular sexual partners. Three quarters (77.2%) reported never using a condom with a regular partner in the last 3 months, with fewer workers (15.7%) using them sometimes, and only 4.3% reporting that they always used condoms with a regular partner in the last three months.

Table 41: Condom use with regular partner(s) in last 3 months by sex

How often was condom used with all regular partners	Male		Female		Total	
	n	%	n	%	n	%
Always	9	3.2%	3	1.1%	12	4.3%
Sometimes	30	10.7%	14	5.0%	44	15.7%
Never	130	46.3%	87	31.0%	217	77.3%
Total	175	62.3%	106	37.7%	281	100.0%

The data indicates extremely low use of condoms with regular partners and low consistent condom use.

Non-Regular Sexual Partners

Non-regular sexual partners were defined as partners, to whom the interviewee was not married, did not live with, and who was not a steady girlfriend or boyfriend. While a third (66.4%) said that they didn't have any non-regular sexual partners; a third (33.6%; 143) had one or more non-regular partners. More men than women had non-regular sexual partners in the past year; and men had more non-regular sexual partners and a higher frequency of sex with non-regular partners in the past year.

Table 42: Has one or more non-regular partners in the past year by sex

One or more non-regular partners such as those not married to, do not live with, and are not a steady girlfriend or boyfriend in last 12 months	Male		Female		Total	
	n	%	n	%	n	%
Yes	126	29.6%	17	4.0%	143	33.6%
No	154	36.2%	129	30.3%	283	66.4%
Total	280	65.7%	146	34.3%	426	100.0%

*Note: Question asked of all 460; 34 did not have sex.

There is a statistically significant association between a person's sex (male and female) and having one or more non-regular partners. There were more male (88.1%) than female (11.9%) workers who had more than one or more non-regular partner [***Chi-Square analysis produced significant result at $p < 0.000$].

Of those workers that had non-regular sexual partners in the past year, slightly less than a third (30.4%) reported having one non-regular sex partner; but over half (56.4%) had two or more non-regular sex partners in the last year, with most of these having two to four non-regular sex partners, and 15.7% did not know how many non-regular partners that they had. More male workers than female workers had non-regular partners, and had more non-regular sex partners, in the last year.

Table 43: Number of non-regular sexual partners in the last 12 months by sex

Number of non-regular sex partners in last 12 months	Male		Female		Total	
	n	%	n	%	n	%
1	27	26.5	4	3.9	31	30.4
2	22	21.6	0	0.0	22	21.6
3	13	12.7	2	2.0	15	14.7
4	6	5.9	0	0.0	6	5.9
5	2	2.0	0	0.0	2	2.0
6	2	2.0	0	0.0	2	2.0
7	3	2.9	0	0.0	3	2.9
8	1	1.0	0	0.0	1	1.0
9	1	1.0	0	0.0	1	1.0
10	1	1.0	0	0.0	1	1.0
20	1	1.0	0	0.0	1	1.0
75	1	1.0	0	0.0	1	1.0
Don't know	14	13.7	2	2.0	16	15.7
Total	94	92.2	8	7.8	102	100.0

* Missing = 41

Of those who had sex with non-regular partners in the past year, half (49.5%) had sex between 1 and 5 times; 18.2% had sex between 6 and 10 times; and 16.2% had sex 11 or more times in the past year. Some (16.2%) did not know the number of times they had had sex with a non-regular partner in the past year.

Table 44: Number of times had sexual intercourse with a non-regular partner in the last 12 months

Number of times had sex with non-regular partner last year	Male		Female		Total	
	n	%	n	%	n	%
1-5 times	44	44.4%	5	5.1%	49	49.5%
6-10 times	16	16.2%	2	2.0%	18	18.2%
11 and more	13	13.1%	3	3.0%	16	16.2%
Did not know # times	14	14.1%	2	2.0%	16	16.2%
Total	87	87.9%	12	12.1%	99	100.0%

* Missing = 44

Of those who had non-regular partners, two fifths (41.1%) said that their non-regular partners had other sex partners. There is also a statistically significant association between a person's sex (male and female) and knowing that their non-regular sex partners has other sex partners. There were more male plantation workers (63.5%) than female plantation workers (36.4%) who said that their non-regular sex partners had other sex partners [*Chi-Square analysis produced significant result at $p < 0.033$]. One interviewee expressed a view in some detail:

That's among ourselves they have this stupid attitude and big headedness so they go with another man's wife (adultery)...this is how they go about doing it, sometimes they take them to the tea plantation and sometimes they take them to another person's house and they put them in the house and sometimes they do it or sometimes they bring them to their house...sometimes they give them two kina, five kina, ten kina they just give and do it...and leave the women again. Some make the women pregnant and after giving birth then the man will not claim his son and they suffer...they don't look after the wife and the children properly. Though they get a fortnight pay, they go get beer and get drunk and eat with another prostitute and we just live in that situation (Female plantation worker).

Condom Use during Non-Regular Sex

Condom use with non-regular partners is low among the workforce and over two-thirds (67.1%) reported that they had not used a condom the last time they had had sex with a non-regular partner.

Table 45: Condom use at last sex with non-regular partner by sex

Was a condom used at last sex with non-regular partner	Male		Female		Total	
	n	%	n	%	n	%
Yes	43	30.1%	4	2.8%	47	32.9%
No	83	58.0%	13	9.1%	96	67.1%
Total	126	88.1%	17	11.9%	143	100.0%

For those who used condoms, the suggestion to use condoms with non-regular partners came mostly from the workers themselves (76.6%).

Table 46: Who suggested condom use at last sex by sex

Who suggested condom use	Male		Female		Total	
	n	%	n	%	n	%
Myself	34	72.3%	2	4.3%	36	76.6%
Both agreed	0	0.0%	2	4.3%	2	4.3%
My partner	9	19.1%	0	0.0%	9	19.1%
Total	43	91.5%	4	8.5%	47	100.0%

And fewer reported that the suggestion had come from the other partner (19.1%). In only 4.3% of cases did the suggestion come from both partners.

Of those who had not used a condom at last sex, the reasons given included: mostly trusting their partner (22.5%); that condoms were not available (19.4%); didn't like condoms (16.3%); condoms were not comfortable (9.3%); they did not know about condoms (5.4%); their partner objected (4.7%); they didn't think of it (3.1%); and didn't think it was needed (2.3%). Less than a fifth gave reasons including: that they were young people, that they were old, that condoms reduced pleasure, because of religious beliefs, that they were drunk, and were afraid of or didn't trust condoms as they may have holes. Two men thought it was not necessary to use a condom as AIDS was not yet 'here'.

Table 47: Reasons for not using condom with non regular partner at last sex by sex

Reasons for not using condom with non-regular partner last sex	Sex				Total	
	Male		Female		n	%
	n	%	n	%		
Trust partner	26	20.2%	3	2.3%	29	22.5%
Not available	25	19.4%	0	0.0%	25	19.4%
Don't like condoms	18	14.0%	3	2.3%	21	16.3%
Not comfortable	12	9.3%	0	0.0%	12	9.3%
Don't know about condoms	6	4.7%	1	0.8%	7	5.4%
Partner objected	5	3.9%	1	0.8%	6	4.7%
Did not think of it	4	3.1%	0	0.0%	4	3.1%
Didn't think it was needed	3	2.3%	0	0.0%	3	2.3%
Condom is for young people	1	0.8%	2	1.6%	3	2.3%
I was drunk	2	1.6%	1	0.8%	3	2.3%
Old age and no need to use condoms	1	0.8%	2	1.6%	3	2.3%
Condom reduce pleasure	2	1.6%	0	0.0%	2	1.6%
Religious belief	2	1.6%	0	0.0%	2	1.6%
AIDS is not prevalent or not here yet	2	1.6%	0	0.0%	2	1.6%
Don't know	0	0.0%	2	1.6%	2	1.6%
Don't know how to use condoms	2	1.6%	0	0.0%	2	1.6%
Condom may have holes	1	0.8%	0	0.0%	1	0.8%
Afraid of condom	1	0.8%	0	0.0%	1	0.8%
To avoid HIV/AIDS	1	0.8%	0	0.0%	1	0.8%
Total	114	88.4%	15	11.6%	129	100.0%

* Percentages based on multiple responses and rounded off to 1 decimal place

When asked how often they had used a condom with a non-regular partner during the last three months: most (59.9%) reported that they never used a condom; 22.6% reported that they used condoms sometimes; and 17.5% reported that they always used condoms. Nearly three quarters (72.5%) of the workers were not using condoms consistently with their non-regular partners.

Table 48: Frequency of condom use with non-regular partner(s) over the last 3 months by sex

How often was a condom used non regular partner last 3 months	Male		Female		Total	
	n	%	n	%	n	%
Always	23	16.8%	1	0.7%	24	17.5%
Sometimes	26	19.0%	5	3.6%	31	22.6%
Never	70	51.1%	12	13.1%	82	59.9%
Total	119	86.9%	18	13.1%	137	100.0%

*Missing=6

More detail on inconsistency in condom use was provided in the qualitative interviews. Factors which influenced inconsistency of condom use included: different partner types; condoms were only seen to be for people living with HIV; to avoid unwanted pregnancy or

disease (STI); and low knowledge on how to use a condom. There were also certain cultural beliefs concerning sex and breastfeeding that promoted condom use, while the husband had other sexual partners.

When my wives are still breast feeding the babies, she knows that the child will get sick. We both agree as we think about the child. That's the reason both of us use condom. And for sex outside of marriage, we must still use condoms no matter if the women say yes or no, safety is important (Male plantation worker).

Same Sex Partners

Male workers were asked if they had male sexual partners, and women were asked if they had female sexual partners. Only three workers (0.7%; 2 male, 1 female) said that they had had same sex sexual partners.

One male worker reported having 3 male sex partners in the last 12 months, while the other male workers reported having had one male sex partner each in the last year. The two men who had male sexual partners also reported living with a woman, and neither wore a condom during last anal sex. One woman reported having two female sexual partners in the last 12 months. Of those who said they had same sex partners, only one woman reported paying a female sex partner to have sex with her.

Condom Use during Anal Sex

Sixty-seven workers (2 male, 65 female) reported that they had had anal sex. It is important to note that anal sex was more common between men and women, and 64 female workers (39.8% of all female workers surveyed) reported that they had had anal sex with men. A limitation of the survey was that it did not ask men the frequency of anal sex with women.

Table 49: Condom use at last anal sex with male partner by sex

Condom use at last anal sex with male partner	Male		Female		Total	
	n	%	n	%	n	%
Yes	0	0.0%	3	4.5%	3	4.5%
No	2	3.0%	62	92.5%	64	95.5%
Total	2	3.0%	65	97.0%	67	100.0%

There was no condom use at last anal sex with male partners by men and the two male workers said that they had not used a condom the last time they had anal sex with their male same sex partner. There was very low condom use for women at last anal sex with a male partner. Of those 65 women who had had anal sex with men; only three female workers (4.5%) reported that they had used a condom at last anal sex with a man. There is a need to focus prevention efforts on this higher risk practice for both men and women to increase condom use during anal sex between men and women, and between men and men.

Paid/Transactional Sexual Partners

Paid or transactional sexual partners were defined as partners with whom a person had had sex in exchange for money, beer, food, services, favors or other gifts. During formative research there were some discussions with the male and female workforce about paid or transactional sex, and it was indicated that a lot of 'pasin faul' (casual sex) happened at the plantation. Because of the low income they earn, which is not enough to support their

families, women were exchanging sex with both married men and youth. The price for sex in WR Carpenters Estates ranged from a low 0.50 toea, the same price for a betel-nut or a loose cigarette, to K10.00 and more, depending on the woman or female youth. Sex takes place in the tea and coffee rows or in the nearby bushes, along the gum tree line and outside of the estate gates.

Sexual negotiations happen at video houses at nights during video shows or at the local dance places at the compounds or outside the gates; but mostly during pay days at the local markets. Sex workers are known as raun-raun meri, rot meri, lus mamas, pasindia meri, wabra meri, or fo'kopi, which refers to the fourth grade or the lowest grade of coffee beans. This grade of coffee is regarded as waste, not good, thus the term fourth grade coffee or fo'kopi was created.

It is said that coffee season is the time when a lot of sex work happens throughout WR Carpenters estates. Because coffee is a seasonal cash crop and requires a lot of manpower, many men, young and old, married or unmarried, come to the estates to work in the coffee plantations and the factory. The team was told that coffee season is everybody and anybody's time – meaning that from children to young people to adults, everybody has money on hand. As coffee brings in a lot of cash and workers, men in particular, use this opportunity to give something to women to have sex with them. Overcrowding becomes another problem during the coffee seasons and laborers congregate and interact mostly within their ethnic groups in compounds identified with particular provinces.

Most of the workers interviewed in one-to-one qualitative interviews were aware of transactional sex and gave accounts that it was happening inside and outside of the estate between younger and older men and younger and older women. More men than women gave accounts of paid transactional sex, and intergenerational transactional sex was discussed. Female school students, female workers and village women were reported to be exchanging sex with men for money or other things.

Sometimes when we are drinking and we get drunk, we have sex. But when we are normal we don't do it. We feel shy to do it because they are not our wives and so, we can force them to have sex....for us we don't offer money first, we have sex first and then later we give money....there's a lot of female school students that we have sex with and we give them K50.00, K100.00. The village women, we give them K10.00, K5.00. Small amounts, we know these ladies are village women so we give them small amounts...As you know, school students they have a need for money so we start developing this boyfriend/girlfriend relationship. We make arrangements and then we go and pick them up or meet them at hotels, give them beer and after having sex with them we offer them money and we go and drop them off and go back to our houses. We give them money like it's a commission for them. When they send messages that they need money, and when their parents neglect them or that kind of thing or they have no options they ask us and even demand us to give them money. But before we give them money we have sex with them first, we don't give out money out blindly (Male plantation worker).

The women lure a lot of men and she takes many of them to tea, coffee plantation... They have sex together and hide... and when they are caught, they

bring them to court and they admit it...they bring them to court to talk during the court so we know or find out (Female plantation worker).

Buying sex, it's like there are so many women around here and few men, so when the women come around, men just pay them and have sex with them...It's like men have their black magic. They carry it around and use it on women and the women get confused and go directly to the man and he takes the woman away to have sex with her. The women hang around and when they crave for cigarettes and betel nut, they go and tell any man that this is what we want and if you give it to me, you can have sex with me...[that's women] inside and outside the compound. This practice of luring people for sex is here to stay, and you see men luring women and women luring men to have sex (Male plantation worker).

In general, the practice of transactional sex in and around WR Carpenters was evident and openly talked about by both men and women. However, in the qualitative interviews female workers did not directly talk about themselves being involved. Instead, they referred to other women and men practicing transactional sex, including their husbands. Men on the other hand gave accounts and details of how they went about negotiating for and paying for sex, and as the quantitative data corroborates, significantly more men were paying for sex than women were being given something for sex, and male workers reported having more transactional partners than female workers.

There are limitations in this data in understanding the experiences of women exchanging sex outside of the gates of the different estates and this was due to security issues on the ground during data collection which restricted movement outside of the gates of the Estates for BSS interviewers.

Paid Partnerships in the Last 12 Months

Male and female workers surveyed were asked if they had ever paid for, or exchanged money, goods, services or other gifts or favors for sex. Men were asked if they had ever given anyone money, goods, services or other gifts or favors for sex and women were asked if they had received money, goods, services or other gifts or favors for sex.

Table 50: Paid or gave women something for sex in the last 12 months (asked to men) or was paid or given something by men for sex in the last 12 months (asked to women)

Paid or have been paid to have sex in the last 12 months	Male			Female			Total	
	Paid or gave a woman something for sex in last 12 months			Was given something or paid to have sex with a man in last 12 months			n	%
	n	% within sex	% within total	n	% within sex	% within total		
Yes	68	24.2%	16.0%	9	6.2%	2.1%	77	18.1%
No	213	75.8%	50.0%	136	93.8%	31.9%	349	81.9%
Total	281	100.0%	66.0%	145	100.0%	34.0%	426	100.0%

*Not applicable=34 never had sex

Nearly a fifth (18.1%; 68M, 9F) of the WRC workforce surveyed who had had sex, reported having paid for or exchanged sex over the last year. Close to a quarter (24.2%, 68M) of the male workforce surveyed who had sex, reported having given money, beer, food, services or other gifts in the past 12 months for sex, and nine (6.2%) of the female workforce surveyed who had had sex, reported that they had received money, beer, food, services or other gifts in exchange for sex in the last 12 months.

Of those who had these transactional sex partners in the last 12 months, more male workers paid money or exchanged beer, food, services, favors or other gifts for sex in the last year, than female workers were paid money or given something to have sex in the past year. There is a statistically significant association between a person's sex (male and female) and having a transactional (paid or paying) partner in the last 12 months. There were more male workers (88.3%) who paid for sex in the last 12 months than female workers (11.7%) who were paid for sex in the last year [*Chi-Square analysis produced significant result at $p < 0.000$].

Table 51: Number of transactional sex partners (men giving something or women being given something for sex) in the last 12 months by sex

Number of sexual partners with whom you had sex in exchange for money, beer, food, services, favor or other gift in last 12 months	Male			Female			Total	
	Number of sexual partners with whom you had sex and gave money, beer, food, services, favors or other gifts in last 12 months			Number of sexual partners who paid or gave money to you for beer, food, services, favors or other gifts for sex in last 12 months				
	n	% within sex	% within total	n	% within sex	% within total	n	%
1	13	26.5%	23.2%	5	71.4%	8.9%	18	32.1%
2	11	22.4%	19.6%	0	0.0%	0.0%	11	19.6%
3	7	14.3%	12.5%	1	14.3%	1.8%	8	14.3%
4	7	14.3%	12.5%	0	0.0%	0.0%	7	12.5%
5	2	4.1%	3.6%	0	0.0%	0.0%	2	3.6%
6	2	4.1%	3.6%	1	14.3%	1.8%	3	5.4%
7	3	6.1%	5.4%	0	0.0%	0.0%	3	5.4%
8	1	2.0%	1.8%	0	0.0%	0.0%	1	1.8%
9	1	2.0%	1.8%	0	0.0%	0.0%	1	1.8%
10	1	2.0%	1.8%	0	0.0%	0.0%	1	1.8%
51	1	2.0%	1.8%	0	0.0%	0.0%	1	1.8%
Total	49	100.0%	87.5%	7	100.0%	12.5%	56	100.0%

*Missing = 21 (2F, 19M)

Half (51.7%) of the men who gave something for sex reported having one to two paid sexual partners in the last 12 months, and more than a quarter (26.8%) had from 4 to 9 partners. Two men (3.6%) reported having either ten or fifty-one transactional sexual partners in the past year.

The UNGASS Indicator 18 is defined as the percentage of female and male most at risk populations aged 15-49 that had transactional sex in the last 12 months and reported the use of a condom with their most recent client. Close to forty percent (37.8%) of male and female plantation workers aged 15-49 who had had transactional sex in the last 12 months had used a condom with their most recent client.

While 68 male workers reported that they had paid for sex in the last year, only 34 knew their ages; 9 women reported being paid for sex in the last year but only 3 knew their ages. This indicator is calculated on only those that knew their ages and were between 15 and 49.

Other Transactional and Paid Partners

Of the male workers who said that they had paid a woman for sex in the last year, two of these men also said they had paid one man each to have sex with them over the last three months. Three women, who had been given something for sex with men in the past year, also reported paying two men each for sex in the past three months.

Table 52: Number of men you gave money or gifts for sex in the last 3 months by gender

Number of male paid partners in last 3 months	Male		Female		Total	
	n	%	n	%	n	%
0	65	86.7%	5	6.7%	70	93.3%
1	2	2.7%	0	0.0%	2	2.7%
2	0	0.0%	3	4.0%	3	4.0%
Total	67	89.3%	8	10.7%	75	100.0%

*Missing =2

Table 53: Number of men that had ever been given money or other goods for sex and the number of women who had ever paid someone for sex

Ever been given money or other gifts (M) or ever paid anyone for sex (F)	Male		Female		Total	
	Ever been given money or other gifts for sex		Ever paid someone for sex			
	n	%	n	%	n	%
Yes	58	20.7%	10	6.9%	68	16.0%
No	222	79.3%	135	93.1%	357	84.0%
Total	280	100.0%	145	100.0%	425	100.0%

*Missing =1 ** 34 did not have sex

Of the total workforce, fifty-eight male workers had been given money or other gifts for sex and ten women said that they had paid someone to have sex. While men had exchanged something with women for sex more often than women had been given or paid for sex in the sample; more women had ever paid a man for sex than had been paid for sex in the last year, and a large number of men had ever been paid for sex.

These data indicate the crossing over between networks of men who pay women for sex with networks of men who sell sex, and networks of women who are paid for sex with networks of men who are paid for sex. As these male and female workers who exchange sex are also involved with other regular and non-regular partners, and condom use with these partners is lower, strategies for increasing condom use with concurrent sexual partners is an area that requires a focus. As later reported, consistent condom use and condom use at last sex is highest between transactional partners, then between non-regular partners and lowest between regular partners.

Transactional or Paid Partnerships in the Last 3 Months

Of those who had paid for sex in the previous three months, most (49.0%) had transactional sex between one to three times; 55.3% of male workers who had given a woman something for sex in the past three months, had given something to a woman, 4 to 20 times in the last 3 months.

Of those 6 women who received cash or goods in the last three months for sex; one woman said she was paid for sex only once, two had transactional sex two times each, one had been paid for sex three times and two women said they had been paid for sex five or nine times. Forty-seven male workers identified that they had given money or gifts to women for sex a total of 190 times in the past three months, and six female workers were given something for sex a total of 22 times in the past three months.

Table 52: Number of times had transactional sex over the last 3 months by sex

Number of times had transactional sex over the past three months	Male			Female			Total	
	Number of times gave money or gifts to women for sex in the past three months			Number of times given money or gifts for sex in the past three months			n	%
	n	% within sex	% within total	n	% within sex	% within total		
1	11	23.4%	20.8%	1	16.7%	1.9%	12	22.6%
2	7	14.9%	13.2%	2	33.3%	3.8%	9	17.0%
3	4	8.5%	7.5%	1	16.7%	1.9%	5	9.4%
4	5	10.6%	9.4%	0	0.0%	0.0%	5	9.4%
5	4	8.5%	7.5%	1	16.7%	1.9%	5	9.4%
6	5	10.6%	9.4%	0	0.0%	0.0%	5	9.4%
7	2	4.3%	3.8%	0	0.0%	0.0%	2	3.8%
9	2	4.3%	3.8%	1	16.7%	1.9%	3	5.7%
15	1	2.1%	1.9%	0	0.0%	0.0%	1	1.9%
16	1	2.1%	1.9%	0	0.0%	0.0%	1	1.9%
20	1	2.1%	1.9%	0	0.0%	0.0%	1	1.9%
DK	4	8.5%	7.5%	0	0.0%	0.0%	4	7.5%
Total	47	100.0%	88.7%	6	100.0%	11.3%	53	100.0%

*Missing = 5 (5M)

While both men and women had reported paying a woman to have sex with them in the past year, only the male workers reported that they had paid a woman for sex in the last three months. The highest number of women paid for by one man was sixteen. More than three quarters (78.2%) of the male workers who had exchanged something for sex in the past three months had sex between 1 to 3 times; while close to a fifth (21.8%) had given money or other gifts to 4 to 16 women in the last 3 months to have sex.

Table 53: Number of women given money or gifts for sex in the last 3 months by male

Number of women given money or gifts for sex in the last 3 months	Male	
	n	%
1	10	21.7%
2	10	21.7%
3	16	34.8%
4	5	10.9%
5	1	2.2%
7	2	4.3%
8	1	2.2%
16	1	2.2%
Total	46	100.0%

*Missing =1

From all women who exchanged sex in the last three months, one woman reported having anal sex with three paying partners in the last 3 months and condoms were not used with any of these men.

Condom Use during Transactional Sex

Consistent condom use with paid and paying clients was low. Less than a fifth (17.6%) of male and female workers who exchanged something for sex always used a condom with their paid or paying partners in the past 3 months.

The majority either only sometimes or never used condoms with paid or paying partners in the past three months. Close to a third (31.1%) sometimes used a condom and half (51.4%) of

the male workers and half (50.0%) of the female workers, who had exchanged sex in the past three months, had never used a condom over the past three months.

Table 56: Frequency of condom use with your paid / paying partner(s) during the last 3 months by sex

Frequency of condom use with paid partners over the last 3 months	Male			Female			Total	
	Frequency of condom use with paid partners over the last 3 months			Frequency of condom use with paying partners over the last 3 months				
	n	% within sex	% of total	n	% within sex	% of total	n	%
Always	11	21.2%	19.0%	2	33.3%	3.4%	13	22.4%
Sometimes	19	36.5%	32.8%	1	16.7%	1.7%	20	34.5%
Never	21	40.4%	36.2%	3	50.0%	5.2%	24	41.4%
Does not know	1	1.9%	1.7%	0	0.05	0.0%	1	1.7%
Total	52	100.0%	89.7%	6	100.0%	10.3%	58	100.0%

In a qualitative interview, one man reported that he always used condoms, as did other men, when having sex with women outside of their marriages.

That's not too many times like I said before, when I go around with other women. Yes I use condoms, once in a while and for any other times you know when we have sex these days... but I don't go looking for it, but in case there is time when we come across women who like us to have sex outside of our marriage, condoms are always in our pocket, in the car, in the wallets ... like me I carry them around (Male plantation worker).

Male and female workers were asked if they had used a condom the last time they had transactional sex with a paid or paying partner, and most (57.1%) had not.

Table 57: Condom use at last sex with paid partner (by male) and condom use at last sex with paying partner (by female)

Was a condom used at last transactional sex	Male		Female		Total	
	n	%	n	%	n	%
Yes	29	37.7%	4	5.2%	33	42.9%
No	39	50.6%	5	6.5%	44	57.1%
Total	68	88.3%	9	11.7%	77	100.0%

Of men who were paying women to have sex, 42.6% had used a condom at last paid sex; and while numbers are limited for women, fewer women (37.5%) used a condom at last sex with a man that had given them money or other goods for sex.

Of those 33 workers that reported that they did use a condom at last paid sex, almost all (90.9%) suggested condom use themselves.

Table 58: Who suggested condom use at last paid sex by sex

Who suggested condom use?	Male		Female		Total	
	n	%	n	%	n	%
Myself	27	81.8%	3	9.1%	30	90.9%
Both of us	2	6.1%	1	3.0%	3	9.1%
Total	29	87.9%	4	12.1%	33	100.0%

While numbers are limited, this data suggests that more of the male workers who pay for sex suggest condom use, than female workers who exchange sex. Of those who did not use condoms with paid partners at last sex, 32.0% reported that condoms were not available and 16.0% that they did not like them. Others said that they didn't know about them (10.0%), they were not comfortable (8.0%) or that their partner objected (8.0%).

Table 59: Reasons for not using condom at last sex with a paid partner by sex

Reason for not using condom	Male		Female		Total	
	n	%	n	%	n	%
Not available	15	30.0%	1	2.0%	16	32.0%
Don't like condoms	8	16.0%	0	0.0%	8	16.0%
Don't know about condoms	4	8.0%	1	2.0%	5	10.0%
Not comfortable	4	8.0%	0	0.0%	4	8.0%
Partner objected	3	6.0%	1	2.0%	4	8.0%
Condoms reduce pleasure	1	2.0%	1	2.0%	2	4.0%
Did not think of it	2	4.0%	0	0.0%	2	4.0%
Don't know	0	0.0%	2	4.0%	2	4.0%
Don't know how to use it	1	2.0%	0	0.0%	1	2.0%
I trust my partner	0	0.0%	1	2.0%	1	2.0%
Did not think needed	1	2.0%	0	0.0%	1	2.0%
Was drunk did not use condom	1	2.0%	0	0.0%	1	2.0%
Said would marry me	0	0.0%	1	2.0%	1	2.0%
Don't trust my paid partner	1	2.0%	0	0.0%	1	2.0%
Afraid of HIV/AIDS	1	2.0%	0	0.0%	1	2.0%
Total	42	84.0%	8	16.0%	50	100.0%

** Percentages based on multiple responses

There were smaller responses for reduction of pleasure (4.0%), didn't think of it (4.0%) or trusting their partner (2.0%).

Those with regular and non-regular partners, who said that they had more availability to condoms, used them less than transactional sex partners who reported less access but higher usage of condoms.

Work Context and Sex

In some work situations, the numbers of days at work before having a break had an impact on a worker's sex life. While most reported working from 6 to 14 days before taking a break; the majority (78.6%) said their work arrangement did not affect their sex life. This is understandable as many live within the plantation when on work and when on break.

Table 60: Working arrangement affect sex life by sex

Working arrangement affect your sex life	Male		Female		Total	
	n	%	n	%	n	%
Yes	75	17.6%	16	3.8%	91	21.4%
No	205	48.2%	129	30.4%	334	78.6%
Total	280	65.9%	145	34.1%	425	100.0%

*Missing = 1

However, a fifth (21.4%) said that the duration of work before having a break affected their sex life, and gave multiple reasons about how their work schedule affected them. There is a statistically significant association between a person's sex (male and female) and if their arrangement of work had an effect on their sex life. Among those workers who reported that their arrangement of work had an effect on their sex life, there were more male (82.4%) than female (17.6%) workers who reported that their work arrangement had an effect on their sex life [***Chi-Square analysis produced significant result at $p < 0.000$].

Of those men and women whose sex life was affected because of length of time before a break, two thirds (67.8%) reported that work arrangements increased their feelings and desire to have sex, but only 12.2% reported that it caused them to look for sex outside of the gate or fence and fewer (6.1%) that it created frustrations.

Table 61: Reasons how work arrangement affects sex life by sex

How work arrangement affects sex life	Male		Female		Total	
	n	%	n	%	n	%
Increasing feelings and desire for sex	75	65.2%	3	2.6%	78	67.8%
Look for sex inside /outside of gate	14	12.2%	0	0.0%	14	12.2%
Frustration	7	6.1%	0	0.0%	7	6.1%
Masturbate	1	0.9%	0	0.0%	1	0.9%
Felt shy	0	0.0%	5	4.4%	5	4.4%
Said other but did not specify	8	6.9%	2	1.7%	10	8.7%
Total	105	91.3%	10	8.7%	115	100.0%

* Percentages based on multiple responses and numbers rounded

Only seven men said that they were sexually frustrated by their work arrangements, and only five women said that they felt shy because of their work arrangements and that this affected their sex lives.

In the following extract from an interview, a male plantation worker explains how extramarital sex, which could happen during work time, is arranged:

Today they use the mobile phone that's great. I am here and a woman will call me from Hagen, that's it I just leave my work and I'm out already They leave their family and they buy food and give to the other women and they are done. The family at home thinks that their father or husband is innocent. No he goes around having sex with different women (Male plantation worker).

Of the 77 male and female workers who had had transactional sex over the past year, only male workers paid for sex inside the plantation. Those female workers, who reported exchanging sex, said that they did not do so inside the plantation during their time off. Of those male workers who paid for sex; over forty percent (41.6%; 32M) said that they had had paid sex within the plantation on their time off.

Table 62: Paid sex inside the plantation on time off by sex

Had paid sex inside plantation on time off	Male		Female		Total	
	n	%	n	%	n	%
Yes	32	41.6%	0	0.0%	32	41.6%
No	37	48.1%	8	10.4%	45	58.4%
Total	69	89.6%	8	10.4%	77	100.0%

There is a statistically significant association between a person's sex (male and female) and if they had paid sex inside the plantation on time off. Of those men who reported paying for sex and women who reported being given something for sex, there were significantly more male (46.4%) than female (00.0%) workers who reported that they had paid sex inside the plantation on time off [***Chi-Square analysis produced significant result at $p < 0.010$].

Sexual Violence – Rape

More than a quarter of the workforce (27.0%) had either raped someone or had been raped. The male workers were asked if they had had sex with a woman when she did not want to, and the female workforce were asked if they had been forced to have sex (vaginal, anal or oral) when they did not want to. A fifth (19.2%; 54) of the male workforce surveyed, reported having vaginal, anal or oral sex with a woman when she did not want to; two fifths of the female workforce (42.1%; 61) reported that they had been forced to have sex when they did not want to.

Table 63: Had forced sex with a woman when she did not want to by male; was forced by a man to have sex by female

Forced sex	Male			Female			Total	
	Ever had sex (vaginal, anal, or oral) with a woman when <i>she</i> did not want to.			Ever had sex (vaginal, anal, or oral) with a man when <i>you</i> did not want to.				
	n	% within sex	% within total	n	% within sex	% within total	n	%
Yes	54	19.2%	12.7%	61	42.1%	14.3%	115	27.0%
No	227	80.8%	53.3%	84	57.9%	19.7%	311	73.0%
Total	281	100.0%	66.0%	145	100.0%	34.0%	426	100.0%

* Note that 34 did not have sex

Both men and women gave accounts of rape happening within, and outside, the plantation. Reasons for rape varied among men and women interviewed. Perpetrators were said to be men from the local villages and male youth in the plantation. Many women were vulnerable and became victims as men took advantage when they walked alone by themselves. Some talked of the effects of alcohol and marijuana in perpetuating rape and that tight and revealing clothing which attracted men's attention was identified as a cause for rape. Below are two accounts from female workers:

When its coffee session the company get men and women from other villages and it is often overcrowded. When woman go to toilet – we don't have toilets so we go to tea garden or coffee garden – and there men keep watch and tighten the women's legs, hands and carry them into the coffee garden. That kind of attitude is here. Sometimes, we go to the market, and men who used to sleep in the block, the locals there, often stop us at tea garden and carry many women away and rape them. Some just rape the women and run away. They do that to us but we hardly complain. This life style happens when there is coffee session (Female plantation worker).

Those man who take marijuana and those who drink steam or home brew, that's when they have complications with their senses and are stimulated to rape women... And also how the women dress up... they wear miniskirts and expose their thighs and show their breasts and some clothes where it adheres to their bodies and that attract men's attention. That's especially for us at the village level, here at the plantation. And as in towns the men are already used to so it's normal for them. And sometimes when women wear trousers which are not fitting and very tight, this will attract men (Female plantation worker).

Less than a quarter (23.9%) of the sample reported that a condom had been used at last forced sex.

More than a quarter (28.8%) of men who had raped women had used a condom the last time that they forced a woman to have sex. Less than a fifth (19.7%) of women who reported being raped said that a condom had been used when they were forced to have sex.

Table 64: Condom use at last forced sex by sex

Condom used last forced sex	Male		Female		Total	
	n	%	n	%	n	%
Yes	15	13.3%	12	10.6%	27	23.9%
No	37	32.7%	49	43.4%	86	76.1%
Total	52	46.0%	61	54.0%	113	100.0%

*Missing = 2

Group or Individual Forced Sex

Of the men who forced women to have sex with them or women who had been forced to have sex; nearly all (94.7%) reported that they raped by themselves or were raped by one man only. For the female workers, nearly all (98.4% or 60) of the women who had experienced forced sex, reported they were forced by one man.

Table 65: Had forced sex with a woman by oneself by male and was forced by one man to have sex by female

Forced sex by individual	Male - Had forced sex with a woman by oneself			Female - Was forced by one man to have sex			Total	
	n	% within sex	% within total	n	% within sex	% within total	n	%
Yes	48	90.6%	42.1%	60	98.4%	52.6%	108	94.7%
No	5	9.4%	4.4%	1	1.6%	0.9%	6	5.3%
Total	53	100.0%	46.5%	61	100.0%	53.5%	114	100.0%

*Missing = 1

A tenth (10.0 %; 4) of the male workers reported that they had forced a woman to have sex as part of a group. Only one female worker surveyed reported being forced to have sex by a group.

Table 66: Forced sex by group by sex

Was this is in or by a group	Male		Female		Total	
	n	%	n	%	n	%
Yes	4	4.0%	1	1.0%	5	5.0%
No	36	35.6%	60	59.4%	96	95.0%
Total	40	39.6%	61	60.4%	101	100.0%

*Missing = 14

Women spoke about the violence that could occur during forced sex, and about how women didn't always tell others of the rape, as they worried about the broader impact of retaliatory violence between groups, or being afraid of their husbands. The matter is mostly settled at a village level or not reported or addressed.

If there is new face in the area rape cases happen. Those who live here, small girls of aged ten or eleven years, they will cut their skin with a knife or cut their hands or they stab them if they refuse and that's what they do. And when these cases are reported they don't take this man to police station and arrest them. They bring the matter and settle at the village level, because they fear that locals murder people for nothing. They live in the plantation and they are worried about their lives and they do that...The workers here don't do that, there are a few who see there are some good pretty young ladies around here; they push them and pull them into the tea rows (Female plantation worker).

Some men rape women, steal their bilums and money, they do it like this. Two men can come and rape a woman. One holds a bush knife while the other rapes her. When he is finished, the other holds the bush knife and the other man rapes her. They run away and this is the kind of life we have here (Female plantation worker).

Some of the good women come and tell their husbands and others hideaway [do not tell]. They are afraid of their husband and so they do not tell them [they hide]. Men are at work and women go as they like to the places where men work, and as

they move around they get raped and some hide and do not tell anyone. Some good women are able to talk more clearly (Female plantation worker).

Frequency of Forced Sex and Condom Use

Of those of the male workers who reported forcing sex, a third (36.2%) reported having forced sex with a woman only once; more (62.8%) reported forcing women two or more times. A majority of women (60.7%) who reported that they had been forced to have sex by a man, reported that it had happened only once. However, 39.3% of the women reported that they had been forced to have sex by a man two or more times.

Table 67: Number of times forced sex by sex

Number of times forced	Male			Female			Total	
	Number of times men forced a woman to have sex with them			Number of times women were forced to have sex by a man			n	%
	n	% within sex	% within total	n	% within sex	% within total		
1	17	36.2%	15.7%	37	60.7%	34.3%	54	50.0%
2	7	14.9%	6.5%	10	16.4%	9.3%	17	15.7%
3	7	14.9%	6.5%	10	16.4%	9.3%	17	15.7%
4	2	4.3%	1.9%	0	0.0%	0.0%	2	1.9%
5	2	4.3%	1.9%	2	3.3%	1.9%	4	3.7%
6	2	4.3%	1.9%	1	1.6%	0.9%	3	2.8%
7	3	6.4%	2.8%	0	0.0%	0.0%	3	2.8%
9	1	2.1%	0.9%	0	0.0%	0.0%	1	0.9%
10	3	6.4%	2.8%	1	1.6%	0.9%	4	3.7%
11	1	2.1%	0.9%	0	0.0%	0.0%	1	0.9%
20	1	2.1%	0.9%	0	0.0%	0.0%	1	0.9%
48	1	2.1%	0.9%	0	0.0%	0.0%	1	0.9%
Total	47	100.0%	43.5%	61	100.0%	56.5%	108	100.0%

*Missing =7

Sometimes the male workers saw women as the cause of why men rape women at the plantation, and the use of weapons during forced sex was reported by both the male and female workers. Here is an example:

Once a man sees a woman that is so attractive to him or he asks her and if the woman refuses, he plans and mobilizes young boys and by force they come and kidnap her and rape her.yes if a man sees that the woman acts girly-girly and she does that to attract men and men sees that and becomes jealous and he just goes out with a knife and rapes her.... that's like the women who expose their thighs, or bouncing their buttocks. This is how rape occurs...one is, if I mobilize with three or four of my friends, and walk along the road and on the other end a woman walks alone by herself, she walks towards us, boys then walk straight and confront her and then we quickly look at the back and see that there is no one at the back so we just rape her (Male plantation worker).

Less than a quarter (23.9%) of male and female workers who reported forced sex, said that a condom was used the last time it had occurred. Three quarters of male workers who forced a woman to have sex did not use a condom the last time that they had done so. Only a fifth (19.7%) of the female workers said that a condom was used the last time that they had been forced to have sex.

Table 68: Condom use at last forced sex by sex

Condom used at last forced sex	Condom used the last time you forced a woman to have sex - Male			Condom used the last time you were forced to have sex - Female			Total	
	n	% within sex	% within total	n	% within sex	% within total		
Yes	15	28.8%	13.3%	12	19.7%	10.6%	27	23.9%
No	37	71.2%	32.7%	49	80.3%	43.4%	86	76.1%
Total	52	100.0%	46.0%	61	100.0%	54.0%	113	100.0%

*Missing = 2

Forced sex and violence also occurs in marriages when husbands ask their wives for sex and the wives refuse. Sometimes there is alcohol involved.

When I feel like I want to have sex, and I ask my wife and if she says no, I will get angry and I will hit her. This way, she gives in and we have sex. I do this a lot of the time (Male plantation worker).

The men who reported forced sex were asked if they had ever had forced anal sex with a man when he did not want to, and women who reported forced sex were asked if they had ever had forced sex with a man when he did not want to. Seven female workers reported that they had forced a man to have sex with them, when he did not want to, but neither of the two men said that they had not forced their same sex partner to have anal sex with them.

Table 69: Forced anal sex with man when he did not want to by male and forced a man to have sex when he didn't want to by female

Ever had forced sex with a man	Male		Female		Total	
	n	%	n	%	n	%
Yes	0	.0%	7	5.8%	7	5.8%
No	2	1.7%	111	92.5%	113	94.2%
Total	2	1.7%	118	98.3%	120	100.0%

Of those female workers who had forced a man to have sex; three had forced sex with a man once, two reported forcing a man to have sex twice, and one woman reported forcing a man three times to have sex with her.

Table 70: Number of times had forced a man to have sex by female

Number of times had forced a man to have sex	Female	
	n	%
1	3	50.0%
2	2	33.3%
3	1	16.7%
Total	6	100.0%

Missing = 1

Table 71: Condom use at last forced sex

Condom use last forced sex	Female	
	n	%
Yes	2	33.3%
No	4	66.7%
Total	6	100.0%

*Missing = 1

Of those seven women who had forced a man to have sex; two of the female workers said a condom was used the last time she forced a man to have sex with her and four women reported that a condom was not used.

The level of sexual violence reported is high, with over a quarter (27.0%) of the workforce who had either raped someone or who had been raped, and around a quarter of these times reported that a condom had been used. While a fifth of the male workforce surveyed reported having vaginal, anal or oral sex with a woman when she did not want to, two fifths of the female workforce surveyed reported that they had been forced to have sex when they did not want to. These data indicate the urgent need to improve access to PEP and counseling for sexual violence.

Condom Use, Preferences and Accessibility

Overall, the level of exposure to condoms was low in the WR Carpenters workforce, condom preference was low, and use and access was reported to be limited.

Condom Use

Two thirds (64.1%) of the workforce reported never using a male condom with a sexual partner. In total, across regular, non-regular and paid partner types, condoms were reported to be not used, and the reasons given were: trust in their partner with regular (39.6%) and non-regular (22.5%) sex partners. A lack of condom availability was identified as the reason why a condom was not used at last paid sex (32.0%), with non-regular (19.4%) or regular (9.5%) partners. Dislike of condoms was given as the reason why a condom was not used with non-regular partners (16.3%), at last paid sex (16.0%), or last sex with a regular partner (7.0%).

Table 72: Ever used a male condom with a woman or had sex with a man who was using a male condom by sex

Have you ever used a male condom with sexual partner	Male		Female		Total	
	n	%	n	%	n	%
Yes	115	27.0%	38	8.9%	153	35.9%
No	166	39.0%	107	25.1%	273	64.1%
Total	281	66.0%	145	34.0%	426	100.0%

*34 did not have sex

A lack of knowledge of how to use a condom was one of the reasons workers gave for not using condom in the qualitative interviews. Other reasons for not using condoms included, religious beliefs, cultural taboos and a fear of using condoms. Below are some examples:

Condom... I don't really know about condoms so we just throw them away. Because, since when I was young, I don't know about condoms, until up to now, these many years, and I still don't know about the condom. It's about sex so I've never used a condom in my life...others they know, so they have condoms and they use condoms to have sex with women (Male plantation worker).

Condoms are for promiscuous people, for protecting them from getting infections. It's for your own good that you use condom within the family, they say... That's the reason why I'm not using condoms If we stay within our Christian values, it's like condom and illness will not happen to me or my family. And the Christian life it's very good. That's what I think (Male plantation worker).

Almost all male and female workers (93.2%) reported that they had either had never had sex with a woman who was wearing a female condom (for the men) or had never used a female condom when they had sex with a male sexual partner (for the women). Only eleven men and six women reported that they had had sex when a female condom was used.

Table 73: Sex with women who used female condom by male and had ever used female condom by female

Ever used a female condom	Male		Female		Total	
	Had sex with women who used female condom		Had sex with man while using female condom		n	%
	n	%	n	%		
Yes	11	2.6%	6	1.4%	17	4.0%
No	258	60.6%	139	32.6%	397	93.2%
Unsure	12	2.8%	0	.0%	12	2.8%
Total	281	66.0%	145	34.0%	426	100.0%

*34 did not have sex

A majority (83.1%) reported that they had not used a condom at last sex, and significantly, more men than women used a condom at last sex.

Table 74: Used a Condom at last sex by sex

Condom use at last sex	Male		Female		Total	
	n	%	n	%	n	%
Yes	63	14.9%	12	2.8%	75	17.7%
No	216	50.9%	133	31.4%	349	82.3%
Total	279	65.8%	145	34.2%	424	100.0%

*34 did not have sex

There is a statistically significant association between a person's sex (being male or female) and using a condom during last sexual intercourse. There were more male (84.0%) than female (16.0%) workers who used condom during their last sexual intercourse [***Chi-Square analysis produced significant result at $p < 0.000$].

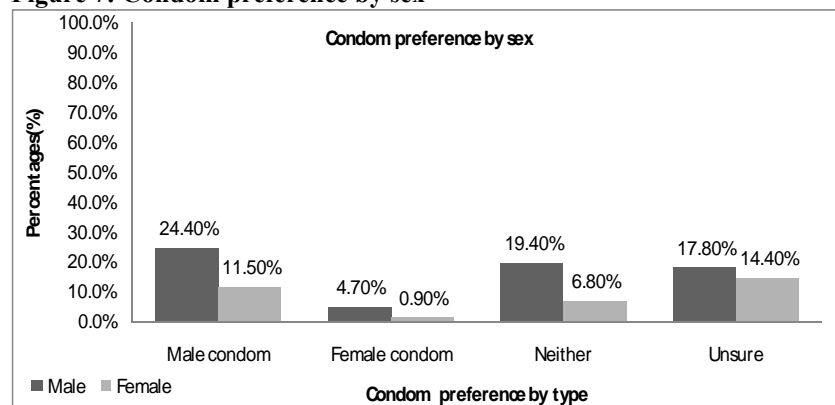
Preference

Generally condoms were not preferred and most did not have a preference for any brand or know their names. Male condoms were more preferred (35.9%); female condoms were preferred by only a few (5.6%). A majority preferred neither male nor female condoms or were unsure of their preference.

Table 75: Male or female condom preference by sex

Which condom do you prefer	Male		Female		Total	
	n	%	n	%	n	%
Male condom	108	24.4%	51	11.5%	159	35.9%
Female condom	21	4.7%	4	0.9%	25	5.6%
Neither	86	19.4%	30	6.8%	116	26.2%
Unsure	79	17.8%	64	14.4%	143	32.3%
Total	294	66.3%	149	33.6%	443	100.0%

*Missing = 17

Figure 7: Condom preference by sex

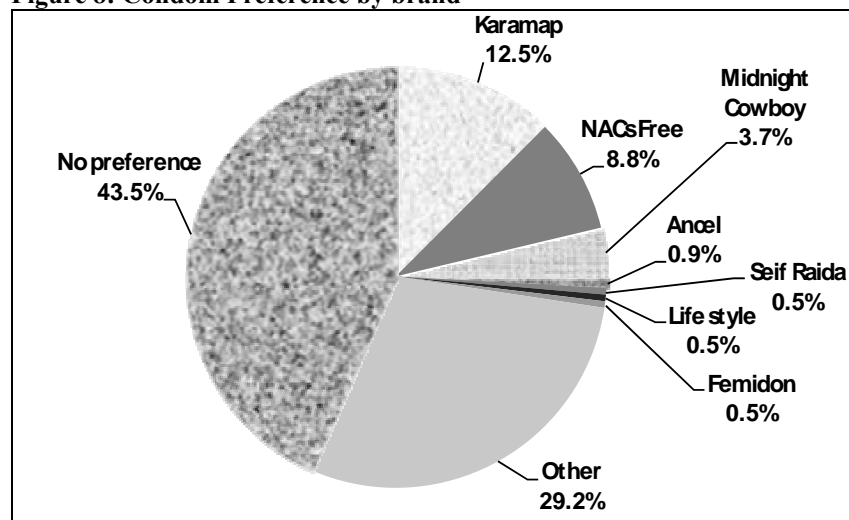
Slightly less than half (43.5%) mentioned that they had no preference for a brand of condoms, and only a small number of those indicated the names for condom brands most preferred: Karamap (12.5%), NACS free condom (8.8%), Midnight cowboy (3.7%), Ancell (0.9%), and Seif Raida, Lifestyle and Femidon (0.5% each). Nearly a third (29.2%) did not know the names of condom brands.

Table 76: Type of condom brand preferred by sex

Types of condom brands preferred	Male		Female		Total	
	n	%	n	%	n	%
No preference	77	35.6%	17	7.9%	94	43.5%
Karamap	25	11.6%	2	0.9%	27	12.5%
NACS Free	17	7.9%	2	0.9%	19	8.8%
Midnight Cowboy	8	3.7%	0	0.0%	8	3.7%
Ancell	1	0.5%	1	0.5%	2	0.9%
Seif Raida	0	0.0%	1	0.5%	1	0.5%
Lifestyle	0	0.0%	1	0.5%	1	0.5%
Femidon	0	0.0%	1	0.5%	1	0.5%
Other not specified	39	18.1%	24	11.1%	63	29.2%
Total	167	77.31%	49	22.9%	216	100.0%

*Percentages and totals based on multiple response and rounded numbers

Figure 8: Condom Preference by brand



Condom Supply and Accessibility

Slightly more than a third (35.8%; 163) of the workforce said that they had been given condoms in the previous 12 months. More men than women said that they had been given condoms, and, as will be discussed in this chapter, men also had more access to condoms which they took, and they were more comfortable in going to the clinic to take them.

Table 77: Given condoms in the last 12 months by sex

Last 12 months have been given condoms	Male		Female		Total	
	n	%	n	%	n	%
Yes	148	32.5%	15	3.3%	163	35.8%
No	151	33.1%	142	31.1%	293	64.2%
Total	299	65.6%	157	34.45	456	100.0%

*Missing = 4

There is a statistically significant association between a person's sex (male and female) and if they were given condoms in the last 12 months. There were significantly more men (90.8%)

than women (9.2%) who had been given condoms in the last 12 months [***Chi-Square analysis produced significant result at $p < 0.000$].

A majority (70.6%; 320) of workers had not received free, or taken any free, condoms in the last month. Of those 133 workers that had received or taken free condoms in the last month, more than a third (35.3%) had received or taken between one and six free condoms or had received or taken between seven and twelve condoms (39.8%). Nearly a quarter (24.9%) had taken or received between 16 and 48 condoms in the last month.

Table 78: Number of condoms taken or received free in the last month by sex

Taken or received condoms free in the last month	Male		Female		Total	
	n	%	n	%	n	%
1	3	2.3%	2	1.5%	5	3.8%
2	6	4.5%	0	0.0%	6	4.5%
3	10	7.5%	1	0.8%	11	8.3%
4	6	4.5%	2	1.5%	8	6.0%
5	6	4.5%	0	0.0%	6	4.5%
6	9	6.8%	2	1.5%	11	8.3%
7	3	2.3%	3	2.3%	6	4.5%
9	2	1.5%	0	0.0%	2	1.5%
10	9	6.8%	0	0.0%	9	6.8%
12	32	24.1%	4	3.0%	36	27.1%
16	1	0.8%	0	0.0%	1	0.8%
17	1	0.8%	0	0.0%	1	0.8%
18	2	1.5%	0	0.0%	2	1.5%
20	4	3.0%	0	0.0%	4	3.0%
24	10	7.5%	3	2.3%	13	9.8%
30	3	2.3%	0	0.0%	3	2.3%
32	1	0.8%	0	0.0%	1	0.8%
35	1	0.8%	0	0.0%	1	0.8%
36	5	3.8%	0	0.0%	5	3.8%
40	1	0.8%	0	0.0%	1	0.8%
48	1	0.8%	0	0.0%	1	0.8%
Subtotal	116	87.2%	17	12.8%	133	100.0%
Not taken or received	180		140		320	
Total	296		157		453	

* Missing = 7

Interviewees explained how the company supplied condoms and made them available to workers. Workers accessed them at the Aidpost, from supervisors and from the community relations office (HIV Prevention) in the rural enclave's project. She expressed the view that embarrassment in going to get condoms was a barrier for access, and how a strategy had been created to facilitate people's access.

The Company does supply them....the company usually puts 2 to 3 boxes at the Aidpost and we go and get them from there. The workers feel embarrassed to go and get it there and we bring them here [to our house] and they come and ask...Then workers carry them around with them. How they take care of them or carry them around that I don't know...They carry it around to the coffee gardens, many places, around the houses, and you'll see them (Female plantation worker).

I don't find it hard to get condoms. As for me, to be honest I get them from the clinic, our (WRC) clinic. I usually ask the nurse and she gives me plenty. Even now...I still have a box left. When my male friends come I supply some to them and I tell them, take it and don't walk around without it. And I always go and get

them and nothing is stopping me. In my mind, I always think about using this thing, so I must always go and get them (Male plantation worker).

Most (95.8%) workers interviewed had not bought any condoms in the last year. Only 19 people (17M, 2F) reported buying condoms. From these few who bought condoms in the past year, most bought from 6 to 24 or from 6 or 12 condoms. Of those who bought condoms, more men than women bought condoms. There appears to have been limited reach at the time of the baseline with affordable, socially marketed and purchased condoms.

Table 79: Number of condoms bought in the last 12 months by sex

No. of condoms bought in the last 12 months	Male		Female		Total	
	n	%	n	%	n	%
0	280	61.7%	155	34.1%	435	95.8%
1	1	0.2%	1	0.2%	2	0.4%
2	2	0.4%	0	0.0%	2	0.4%
5	2	0.4%	0	0.0%	2	0.4%
6	3	0.7%	0	0.0%	3	0.7%
8	1	0.2%	0	0.0%	1	0.2%
10	2	0.4%	0	0.0%	2	0.4%
12	4	0.9%	1	0.2%	5	1.1%
24	2	0.4%	0	0.0%	2	0.4%
Total	297	65.3%	157	34.6%	454	100.0%

*Missing = 6

Lack of access also contributes to people's lack of use of condoms and more than half (55.0%) said that they could not get a condom every time they needed them. More men than women could obtain condoms every time they needed one.

Table 80: Get a condom every time needed by sex

Obtain condoms every time that you need one	Male		Female		Total	
	n	%	n	%	n	%
Yes	149	33.6%	51	11.5%	200	45.0%
No	150	33.8%	94	21.2%	244	55.0%
Total	299	67.3%	145	32.7%	444	100.0%

*Missing = 16

There is also a statistically significant association between a person's sex (male and female) and ability to obtain a condom every time one is needed. There were significantly more male (74.5%) than female (25.5%) workers who can obtain a condom every time they needed one [*Chi-Square analysis produced significant result at $p < 0.002$].

Table 81: Places or people where male condoms are accessed by sex

Who or where to access male condoms by sex	Male		Female		Total	
	n	%	n	%	n	%
WRC	121	43.5%	19	6.8%	140	50.4%
Health facility, clinic, aid post	56	20.1%	7	2.5%	63	22.7%
Street vendors	23	8.3%	1	0.4%	24	8.6%
Dispenser	15	5.4%	3	1.1%	18	6.5%
Shops	10	3.6%	4	1.4%	14	5.0%
Friend	6	2.2%	0	0.0%	6	2.2%
Pharmacy	2	0.7%	0	0.0%	2	0.7%
Fellow workers	4	1.4%	0	0.0%	4	1.4%
VCT Centers	2	0.7%	0	0.0%	2	0.7%
Ourselves	0	0.0%	1	0.4%	1	0.4%
Family	0	0.0%	1	0.4%	1	0.4%
Supplies don't come	1	0.4%	0	0.0%	1	0.4%
Did not specify or said unsure	0	0.0%	2	0.4%	2	0.8%
Total	240	86.3%	38	13.7%	278	100.0%

* Percentages based on multiple responses and rounded numbers

When asked where male condoms could be accessed, WRC clinic was identified most often as the provider of male condoms for its workforce and just over a half (50.4%) reported accessing condoms provided by the WRC clinic. 22.7% said that they had accessed condoms at a health facility or clinic, and 26.9% mentioned that they got condoms from a variety of places, including: street vendors, dispensers, shops, from friends. A few obtained condoms from the VCT center, or from fellow workers, family members, and the pharmacy. More men than women said they knew where to access condoms.

When asked directly if they had been given or taken condoms provided by WR Carpenters Clinic; it was found that there was a statistically significant association between a person's sex (male and female) and if they were ever given or taken condoms provided by WR Carpenters Clinic. There were more men (91.3%) than women (8.7%) who had been given or taken condoms provided by WR Carpenters Clinic [***Chi-Square analysis produced significant result at $p < 0.000$].

Only around ten percent (10.7%; 49 people) knew of a place or person where they can obtain female condoms but more than half of these people reported that they could access female condoms at the WRC clinic. While limited in numbers, more men (34) than women (15) knew where to obtain female condoms.

Places mentioned where female condoms could be accessed included health facilities, clinics and aidposts (which include Hagen, Kundiawa and Kudjip Hospitals), the pharmacy, dispensers, a friend; or market and street vendors.

Table 82: Places or people where female condoms are obtained by sex

Know place where you obtain female condom	Male		Female		Total	
	n	%	n	%	n	%
Yes	34	11.4%	15	9.5%	49	10.7%
No	265	88.6%	143	90.5%	408	89.3%
Total	299	100.0%	158	100.0%	457	100.0%

In terms of condom preferences, many workers did not know about female condoms and would prefer male condoms. However, as this quote from the nursing officer reflects, numbers of male and female condoms are taken at the end of each day, and that there is also distribution through the HIV prevention project office.

Every day I put 20 male condoms and 10 female condoms in the box. So how much, how many they want, they just come and pick them up and at the end of the day, I total them. If 20 go I put 20 more. Maybe especially I mean, the highest is 20 so each day I distribute 20 male condoms and 10 female condoms. The female, not many women come and take them. Men especially are taking and maybe at the end of the day the box is empty. At the project office, they do have a condom box, a dispenser (Female plantation worker).

A half of workers (48.4%), and more men than woman, were opposed to having condoms and condom dispensers around their workplace. A third (37.0%) said that it was a good idea to have condoms and condom dispensers around the workplace while others (14.7%) were unsure.

Table 83: Opinion about having condoms and condom dispensers around workplace by sex

How do you feel about having condom dispenser around the workplace	Male		Female		Total	
	n	%	n	%	n	%
It's a good idea	105	23.0%	64	14.0%	169	37.0%
I am against it	152	33.3%	69	15.1%	221	48.4%
Unsure	42	9.2%	25	5.5%	67	14.7%
Total	299	65.4%	158	34.6%	457	100.0%

*Missing = 3

It could be that a belief that condoms would not effectively protect them contributes to their lack of use. Less than half (47.0%; 215) believed that a person could reduce their risk of HIV by using a condom every time they had sex; or were unsure (4.4%), while most (48.6%) had the view that risk of HIV transmission could not be reduced by using a condom correctly over time when having sex.

Table 84: Reduce risk of HIV by using a condom consistently and correctly every time they have sex by sex

Can person reduce the risk of getting HIV by using condom correctly every time they have sex	Male		Female		Total	
	n	%	n	%	n	%
Yes	145	31.7%	70	15.3%	215	47.0%
No	154	33.7%	68	14.9%	222	48.6%
Don't know	0	0.0%	20	4.4%	20	4.4%
Total	299	65.4%	158	34.6%	457	100.0%

*Missing = 3

It is of major concern that, as these data indicate, more than a half of the workers did not believe or were unsure that using condoms correctly every time is effective to reduce the risk of HIV transmission.

PENILE CUTTING — CIRCUMCISION, DORSAL SLITS, AND INSERTS

Questions about penile cutting (including circumcision, dorsal slits, and inserts) were asked of both men and women. These questions were developed to generate data, from male and female perspectives, on their experience of penile cutting: men and male youth reported their cutting, and inserts; and women and female youth reported on their sexual partners who had penile modifications. The questions for men were designed to increase understanding about penile cutting related practices, for inserts, circumcision and slitting, and how and where the cutting was done.

Circumcision

Circumcision is the full removal of the penis foreskin tissue. Only ten men (3.4%) reported that they had been circumcised and eight women (5.0%) reported having sexual partners that were fully circumcised.

Table 85: Full circumcision reported by sex

Ever been circumcised	Male Been circumcised			Female Male partners circumcised			Total	
	n	% within sex	% within total	n	% within sex	% within total	n	%
Yes	10	3.4%	2.2%	8	5.0%	1.7%	18	3.9%
No	288	96.6%	62.9%	152	95.0%	33.2%	440	96.1%
Total	298	100.0%	65.1%	160	100.0%	34.9%	458	100.0%

*Missing = 2

While numbers are small, of the ten men, most (47.1%, 6) had been circumcised in the context of an initiation. Others were done by friends, at a hospital or clinic, by oneself and at home. Two of the eight women had partners who were circumcised through initiation, and the rest were done at clinics, at home, by a friend, or by oneself.

Table 86: Numbers of circumcised men and place circumcision took place and numbers of women who had circumcised partners and the place circumcision took place

Place of circumcision	Place you were circumcised			Place male sex partner was circumcised			Total	
	Male			Female				
	n	% within sex	% within total	n	% within sex	% within total	n	%
Initiation	6	60.0%	35.2%	2	28.6%	11.7%	8	47.1%
Clinic	1	10.0%	5.9%	1	14.3%	5.9%	2	11.8%
Friend	1	10.0%	5.9%	1	14.3%	5.9%	2	11.8%
Himself	0	0.0%	0.0%	2	28.6%	11.7%	2	11.8%
Hospital	1	10.0%	5.9%	0	0.0%	0.0%	1	5.8%
At home	0	0.0%	0.0%	1	14.3%	5.9%	1	5.8%
Myself	1	10.0%	5.9%	0	0.0%	0.0%	1	5.8%
Total	10	100.0%	58.8%	7	100.0%	41.2%	17	100.0%

*Missing = 1

Razor blades were the most commonly used cutting instrument. One female plantation worker talked about the risks involved for young men who lose a lot of blood after self-circumcision.

These are our boys. They wanted to cut [circumcise] themselves and when we saw them, we took them to the hospital. They cut their balls [penis]...They were dying so we took them to the hospital. When they cut it, blood was running like water (Female plantation worker).

Slits (Dorsal)

A superincision, or dorsal slit, involves the cutting of, but not the removal of, the penile foreskin. The penis dorsal foreskin that is slit, hangs from either side of the penis on the underside of the shaft and the glans penis is exposed and appears circumcised from the dorsal view.

Table 87: Number of men with penile foreskin slit and number of women who had male sexual partners with dorsal slits

Number of men with dorsal slits	Ever had penile foreskin slit (Male)			Sex partners had their penile foreskin slit (Female)			Total	
	n	% within sex	% within total	n	% within sex	% within total	n	%
Yes	77	25.8%	16.8%	15	9.4%	3.3%	92	20.0%
No	222	74.2%	48.4%	145	90.6%	31.6%	367	80.0%
Total	299	100.0%	65.1%	160	100.0%	34.9%	459	100.0%

*Missing = 1

Among the male plantation workers, a quarter (77; 25.8%) reported having dorsal slits and 9.4% (15) of female plantation workers reported that they had had a sexual partner with a penile slit.

Of the men who have the slits, 59.8% reported having the slit performed by a friend, while less than a fifth (17.1%) reported initiation; by a relative (9.8%); at the clinic (7.3%); or by oneself (6.1%). Of the partners of female workers who had a penile foreskin slit; most were performed by a friend, relative, or by themselves.

Table 88: Place male worker had penile skin slit (by male) and place female workers partners had slit done (by female)

Place where penile skin is cut	Place where penile foreskin was cut			Place where partner got their penile skin slit			Total	
	Male			Female			n	%
	n	% within sex	% within total	n	% within sex	% within total		
Friend	42	57.5%	51.2%	7	77.8%	8.5%	49	59.8%
During Initiation	14	19.2%	17.1%	0	0.0%	0.0%	14	17.1%
Relative	7	9.6%	8.5%	1	11.1%	1.2%	8	9.8%
At clinic	6	8.2%	7.3%	0	0.0%	0.0%	6	7.3%
Self	4	5.5%	4.9%	1	11.1%	1.2%	5	6.1%
Total	73	100.0%	89.0%	9	100.0%	11.0%	82	100.0%

*Missing = 10

In an interview one woman said that her husband had a slit in prison when he was young, and another male plantation worker described how other boys had given themselves dorsal slits by the river and some had bled. This was a deterrent to him, and he performed a procedure on himself, using a needle and a piece of black tire rubber that lasted for about two weeks, to reduce the potential for bleeding when he gave himself a dorsal slit.

Half of the plantation workers with dorsal slits reported that razor blades had been used to cut the skin (51.9%); with much fewer using a scalpel or long blade (26.6%), 17.8% used rubber, rubber and a nylon string; a needle and rubber, rubber amox, or a rubber gun, and less used bamboo (2.5%) or a stick (1.3%).

Table 89: Cutting instrument used for penile dorsal foreskin slit by sex

Instrument used to cut skin for penile foreskin slit	Male			Female			Total	
	Instrument used to cut skin for penile foreskin slit			Instrument used to cut skin of partner penile slit			n	%
	n	% within sex	% within total	n	% within sex	% within total		
Razor blade	36	50.0%	45.6%	5	71.4%	6.3%	41	51.9%
Scalpel (long sharp blade)	19	26.4%	24.1%	2	28.6%	2.5%	21	26.6%
Rubber (rubber and nylon string, rubber amox and rubber gun)	10	13.9%	12.7%	0	0.0%	0.0%	10	12.7%
Needle with rubber	4	5.6%	5.1%	0	0.0%	0.0%	4	5.1%
Bamboo	2	2.8%	2.5%	0	0.0%	0.0%	2	2.5%
Stick	1	1.4%	1.3%	0	0.0%	0.0%	1	1.3%
Total	72	100.0%	91.1%	7	100.0%	8.9%	79	100.0%

*Missing = 13

In the following interview extract, a male plantation worker expresses the view that dorsal slits were practiced to create male and female pleasure and his account suggests that an element of desire for pleasure should be considered within the HIV prevention response.

Yes...there are many, many here that have done it [slit their foreskin]. Women will feel it [have pleasure], men will not feel it... She will feel nice and she'll enjoy it...The new generation of men and women came up with this idea to get pleasure...to enjoy themselves; to please their bodies (Male plantation worker).

Inserts

A variety of types of penile inserts were found to be occurring in PNG male sexual cultures in the 1990s (Decock et al, 1997; Hull 2000, 2001); and more recent studies indicate the variations in prevalence of these between samples and population groups (Valley et al, 2009; Aruwafu et al, 2009; Aruwafu et al, 2010). Male workers were asked if they had ever inserted small objects under their penis foreskin; while the female workers were asked if they had sexual partner(s) who had inserted objects under their penis foreskin.

Inserts were not very commonly reported by the male and female plantation workers and in total only 1.5% reported that they or their partners had inserts. Only four men (1.3% of male workforce) said that they had penile inserts and three women (1.3%) reported that their partners had objects under their penile foreskin.

Table 90: Inserted objects under penile foreskin by sex

You or your partner ever inserted objects under penile foreskin	Inserted small objects under your penis (Male)			Had male partner who inserted small objects under his penis (Female)			Total	
	n	% within sex	% within total	n	% within sex	% within total	n	%
Yes	4	1.3%	0.9%	3	1.9%	0.7%	7	1.5%
No	295	98.7%	64.1%	158	98.1%	34.3%	453	98.5%
Total	299	100.0%	65.0%	161	100.0%	35.0%	460	100.0%

Two of the male workers reported having inserts for less than a month and 2 reported still having them.

Of the four male workers who inserted small objects, one inserted plastic, another inserted a piece of toothbrush and a couple mentioned rubber and rubber tube, or elastic. The female

workers said that their partners had inserted ball bearings, a piece of toothbrush and the other mentioned rubber or elastic.

All four men reported using razor blades to cut the penile foreskin when inserting the small objects. One of the women reported that a scalpel was used to cut her partner’s penis when the objects were inserted and the others did not specify what was used.

Table 91: Types of objects male worker inserted (male) and types of objects female worker’s partners inserted (female)

Types of inserts	Male		Female		Total	
	n	%	n	%	n	%
Ball bearings	0	0.0%	1	28.5%	1	28.5%
Plastic	1	14.2%	0	0.0%	1	14.2%
Piece of tooth brush	1	14.2%	1	14.2%	2	14.2%
Others (rubber and rubber tube, elastic)	2	28.5%	1	14.2%	3	42.7%
Total	4	56.9%	3	56.9%	7	100.%

One male worker said that the more recently introduced penile inserts could cause women pain. This question has since been inserted into BSS questionnaires to further understand more about the impact on women when they have sex with men with inserts, as risk of HIV transmission for women is increased if vaginal irritation is created during sex from inserts.

Penile Injections

No male workers reported injecting their penis. One female worker reported having a partner who injected his penis with a substance and he did this to make the penis wider.

PORNOGRAPHIC MOVIES AND MAGAZINES

In the last 12 months, just over a fifth (20.9%) of the workforce reported that they had watched X-rated blue movies or videos, and just under a fifth (17.9%) reported looking at pornographic magazines.

Table 92a: In the last 12 months have you watched any X-rated blue movies, or videos

Watched X-rated blue movies, or videos in the last 12 months	Male		Female		Total	
	n	%	n	%	n	%
Yes	82	17.8%	14	3.0%	96	20.9%
No	217	47.2%	147	32.0%	364	79.1%
Total	299	65.0%	161	35.0%	460	100.0%

Table 92b: Looked at any pornographic magazines in the last 12 months

Looked at any pornographic magazines in the last 12 months	Male		Female		Total	
	n	%	n	%	n	%
Yes	72	15.7%	10	2.2%	82	17.9%
No	225	49.1%	151	33.0%	376	82.1%
Total	297	64.8%	161	35.2%	458	100.0%

*Missing = 2

Significantly more male than female workers looked at pornographic magazines or movies. There is a statistically significant association between a person's sex (male and female) and looking at pornographic magazines. There were more male (87.8%) than female (12.2%) workers who looked at pornographic magazines [***Chi-Square analysis produced significant result at $p < 0.000$].

Similarly, there is also a statistically significant association between a person's sex (male and female) and watching x-rated blue movies or video in the last 12 months. There were significantly more male (85.4%) than female (14.6%) workers who watched x-rated blue movie or video in the last 12 months [***Chi-Square analysis produced significant result at $p < 0.000$].

Just over a fifth (22.8%) of those who looked at pornography reported that it had an effect on their sexual behavior, and more men than women said it affected them.

Table 93: X-rated movies have effect on sexual behavior

Does watching X-rated movie have effect on sexual behavior	Male		Female		Total	
	n	%	n	%	n	%
Yes	80	20.7%	8	2.1%	88	22.8%
No	172	44.6%	126	32.6%	298	77.2%
Total	252	65.3%	134	34.7%	386	100.0%

Increased feelings and desire to have sex were the main effects (67.8%) of looking at pornography. Looking for sex outside the gate and frustration, followed with five female workers who said that they felt ashamed after watching pornography, and one male worker who reported that watching pornography made him masturbate.

Table 94: Effects of looking at pornography

Effects of watching and looking at pornography materials	Male		Female		Total	
	n	%	n	%	n	%
Increased feeling/ desire to have sex	75	65.2%	3	2.6%	78	67.8%
Look for sex outside the gate	14	12.2%	0	0.0%	14	12.2%
Feeling frustrated	7	6.1%	0	0.0%	7	6.1%
Feel ashamed	0	0.0%	5	4.4%	5	4.4%
Masturbate	1	0.9%	0	0.0%	1	0.9%
Other	8	7.0%	2	1.7%	10	8.7%
Total	105	91.3%	10	8.7%	115	100.0%

*Based on multiple responses and rounder numbers

There is a statistically significant association between a person’s sex (male and female) and the effect watching x-rated movie or looking at pornographic magazines does to their sexual behavior. There were more male (90.9%) than female (9.1%) workers who reported that watching x-rated movies or looking at pornographic had an effect on their sexual behavior [***Chi-Square analysis produced significant result at $p < 0.000$].

SEXUALLY TRANSMITTED INFECTIONS (STIs)**Awareness and Knowledge of STI**

Workers were asked questions on STIs, ranging from awareness and knowledge about STI, their signs and symptoms and STI reported occurrence and treatment seeking behavior. When asked if they had ever heard of infections that can be transmitted through sex, two thirds (66.9%) of the workers said that they had heard about sexually transmitted infections.

Table 95: Heard of infections that can be transmitted through sex by sex

Heard of infections transmitted through sex	Male		Female		Total	
	n	%	n	%	n	%
Yes	223	48.6%	84	18.3%	307	66.9%
No	75	16.3%	77	16.8%	152	33.1%
Total	298	64.9%	161	35.1%	459	100.0%

*Missing = 1

More male workers than female workers had heard of infections transmitted through sex; with three quarters (74.8%) of male workers surveyed and just over half (52.2%) of female workers having had heard of STI.

Table 96: Descriptions of female STI symptoms by sex

STI symptoms in women	Male		Female		Total	
	n	%	n	%	n	%
Don't know	139	23.0%	117	19.3%	256	42.3%
Weight loss	61	10.1%	15	2.5%	76	12.6%
Loss of hair	57	9.4%	13	0.2%	70	11.6%
Skin discoloration (black, yellow or pale)	25	4.1%	5	0.8%	30	5.0%
Dusty or dry skin	20	3.3%	10	1.7%	30	5.0%
Vaginal discharge	16	2.6%	11	1.8%	27	4.5%
Pain or blood during urination	8	1.3%	10	1.7%	18	3.0%
Genital sore	9	1.5%	3	0.5%	12	2.0%
Foul smell	6	1.0%	2	0.3%	8	1.3%
Abdominal pain	1	0.2%	5	0.8%	6	1.0%
Pain during sex	1	0.2%	2	0.3%	3	0.5%
Won't see any symptoms	3	0.5%	0	0.0%	3	0.5%
Feel pain	1	0.2%	1	0.2%	2	0.3%
Vaginal itching	1	0.2%	0	0.0%	1	0.2%
Syphilis	3	0.5%	0	0.0%	3	0.5%
Diarrhea	7	1.2%	1	0.2%	8	1.3%
Scabies	6	1.0%	2	0.3%	8	1.3%
Eye turns (yellow or red or green)	7	1.2%	0	0.0%	7	1.2%
Skin infections (sore/ boil on skin)	4	0.7%	1	0.2%	5	0.8%
Not walking properly	2	0.3%	2	0.3%	4	0.7%
Lazy or no energy/weak	2	0.3%	2	0.3%	4	0.7%
Swollen breast	3	0.5%	0	0.0%	3	0.5%
Gonorrhea	1	0.2%	1	0.2%	2	0.3%
Gain weight	2	0.3%	0	0.0%	2	0.3%
Blood cells not working	2	0.3%	0	0.0%	2	0.3%
Malaria	2	0.3%	0	0.0%	2	0.3%
Long face (and hair stand up)	2	0.3%	0	0.0%	2	0.3%
Sore lips	0	0.0%	2	0.3%	2	0.3%
Problems with menstruation	2	0.3%	0	0.0%	2	0.3%
Swollen belly	2	0.3%	0	0.0%	2	0.3%
Burnt liver	1	0.2%	0	0.0%	1	0.2%
Typhoid	1	0.2%	0	0.0%	1	0.2%
Crave for fatty foods	1	0.2%	0	0.0%	1	0.2%
Back ache	1	0.2%	0	0.0%	1	0.2%
Swollen thighs	1	0.2%	0	0.0%	1	0.2%
Total	400	66.1%	205	31.9%	605	100.0%

*Percentages and totals based on multiple response

Most of the workforce was not able to identify any STI symptoms in a woman and more men than women identified the correct symptoms of STI in women.

Two fifths (42.3%) of the workforce said that they did not know STI symptoms in a woman, while more (34.2%) identified loss of hair or weight, and dry skin or discoloration of skin than STI symptoms such as vaginal discharge, painful urination or genital sores (9.5%).

Less than a fifth (13.3%) of the workforce gave correct information on STI symptoms in a woman such as vaginal discharge; pain or blood during urination; genital sores; abdominal pain; pain during sex; no symptoms or vaginal itching. Five people mentioned the names of syphilis and gonorrhoea.

Most of the workforce said that they did not know STI symptoms in a man. When asked to describe these, two fifths (37.9%) said that they did not know the symptoms in men and more (36.3%) identified weight loss, loss of hair and changes in face, skin color and dry skin; then STI symptoms such as penile discharge, painful urination, genital sores, swelling, genital itching or no symptoms (16.6%). Four people mentioned the names of syphilis and gonorrhoea. More men than women identified the correct symptoms of STI in men.

Table 97: Descriptions of male STI symptoms by sex

STI symptoms in a man	Male		Female		Total	
Don't know	115	18.4%	122	19.5%	237	37.9%
Weight loss	79	12.6%	16	2.6%	95	15.2%
Loss of hair	39	6.2%	11	1.8%	50	8.0%
Change in face (lips, nose, eyes) & skin color	41	6.6%	6	1.0%	47	7.5%
Dry, dusty skin/face/lips	30	4.8%	5	0.8%	35	5.6%
Penile discharge	28	4.5%	8	1.3%	36	5.8%
Pain/Blood during urination, yellow urine, slow flow of urine	20	3.2%	5	0.8%	25	4.0%
Genital sore	18	2.9%	2	0.3%	20	3.2%
Swollen genitals	15	2.4%	3	0.5%	18	2.9%
Genital itching	1	0.2%	0	0.0%	1	0.2%
No sign and hard to tell	3	0.5%	0	0.0%	3	0.5%
Diarrhea	11	1.8%	1	0.2%	12	1.9%
Skin infections	8	1.3%	4	0.6%	12	1.9%
Feel tired or weak	7	1.1%	2	0.3%	9	1.4%
Foul smelling	3	0.5%	3	0.5%	6	1.0%
Feeling pain (Abdominal, head)	1	0.2%	2	0.3%	3	0.5%
Syphilis	2	0.3%	0	0.0%	2	0.3%
Gonorrhoea	1	0.2%	1	0.2%	2	0.3%
Weight gain	1	0.2%	0	0.0%	1	0.2%
Fever	1	0.2%	0	0.0%	1	0.2%
Typhoid	1	0.2%	0	0.0%	1	0.2%
Malaria	1	0.2%	0	0.0%	1	0.2%
Don't walk straight	0	0.0%	1	0.2%	1	0.2%
Other	7	1.1%	0	0.0%	7	1.1%
Total	433	69.3%	192	30.7%	625	100.0%

*Percentages and totals based on multiple response

Self Reported Symptoms of STI

While knowledge of symptoms was quite low; around a fifth (22.2%; 102) of the workforce surveyed said that they had experienced STI symptoms over the past year and many, more men than women, reported multiple STI symptoms.

Burning pain during urination (31.6%) was the most common symptom reported, followed by penile and vaginal discharge (17.1%), swelling in the scrotum and vagina (15.4%), genital itching (14.5%), pain during sex (12.7%) and ulcers or sores (8.8%).

Table 98: Experience of STI symptoms in the last 12 months by sex

Over the past year (12months), have you experienced any of these symptoms	Male		Female		Total	
	n	%	n	%	n	%
Burning pain on urination	46	20.2%	26	11.4%	72	31.6%
Penile discharge/vaginal discharge	26	11.4%	13	5.7%	39	17.1%
Swellings in scrotum/ in vagina	24	10.5%	11	4.8%	35	15.4%
Genital itching	30	13.2%	3	1.3%	33	14.5%
Painful during sex	15	6.6%	14	6.1%	29	12.7%
Genital ulcer/sores	18	7.9%	2	.9%	20	8.8%
Total	159	69.7%	69	30.3%	228	100.0%

*Percentages and totals are based on responses

Of those (22.2%; 102) who reported having STI symptoms, a quarter (24.8%) said that they sought advice and medicine from the clinic or hospital and just under a fifth (17.7%) said that they did not seek advice or medicine.

Table 99: What was done the last time you had STI symptoms in the past year by sex

Treatment seeking for STI in past year: What was done the last time had STI symptoms	Male		Female		Total	
	n	%	n	%	n	%
Sought advice and/or medicine from a clinic/hospital	35	15.5%	21	9.3%	56	24.8%
Stopped having sex until symptoms cleared	38	16.8%	8	3.5%	46	20.4%
Did not seek advice or medicine	20	8.8%	20	8.8%	40	17.7%
Informed sexual partner about the discharge/ulcer	22	9.7%	13	5.8%	35	15.5%
Sought advice/medicine from a traditional doctor	12	5.3%	3	1.3%	15	6.6%
Used a condom until symptoms cleared	10	4.4%	2	0.9%	12	5.3%
Took medicine that was at home	8	3.5%	3	1.3%	11	4.9%
Took medicine that was given by friends/relative	7	3.1%	0	0.0%	7	3.1%
Sought advice/medicine from a pharmacy	3	1.3%	1	0.4%	4	1.8%
Total	155	68.6%	71	31.4%	226	100.0%

*Percentages and totals based of multiple responses

A fifth (20.4%) stopped having sex until symptoms were cleared and thirty-five others (15.5%) said that they had informed their sexual partner about having the discharge or ulcer. Not many (6.6%) sought advice or medicine from a traditional doctor. Just 5.3% said that they had used a condom until symptoms were cleared, while the rest (9.8%) took medicine that was at home, given to them by a friend or relative or had sought advice or medicine from a pharmacy.

Table 100: Ever been treated for STI by sex

Ever been treated for STI	Male		Female		Total	
	n	%	n	%	n	%
Yes	67	14.7%	20	4.4%	87	19.1%
No	231	50.8%	137	30.1%	368	80.9%
Total	298	65.5%	157	34.5%	455	100.0%

*Missing = 5

Close to a fifth of the workforce said that they had ever been treated for a sexually transmitted infection. There is a statistically significant association between a person's sex (male and female) and whether they had ever been treated for sexually transmitted infection (STI). There were more male (77.0%) than female (23.0%) workers who had been treated for sexually transmitted infection [****Chi-Square analysis produced significant result at $p < 0.007$**].

When the workers were asked if they would go to a WR Carpenters clinic to get advice or treatment if they thought they had sexually transmitted infection, close to two thirds (63.4%) said that they would. There is also a statistically significant association between a person's sex (male and female) and whether they would go to a WR Carpenters clinic to get advice or treatment if they thought they had sexually transmitted infection. There were more male (69.4%) than female (30.6%) workers who reported that they would go to a WRC Clinic to get advice or treatment if they thought they had STI [****Chi-Square analysis produced significant result at $p < 0.006$**].

In the interview extract below, a health worker at WRC said that he treats around five people with sexually transmitted infections per week. The issue of gender sensitivity for genital examinations was identified as a barrier for proper examination and delays treatment for women.

STI cases, it's very serious on the plantations...every week I treat almost 5 STI [patients]. Recently I saw a patient, an old man with an STI maybe primary syphilis.... So it's very serious on plantations...most cases are gonorrhoea. Gonorrhoea and then lower abdominal pain, PID especially with the ladies. When they don't get treatment early for their gonorrhoea, it affects the pelvis so they get PID [pelvic inflammatory disease]. That's worse in plantation for the ladies. And we do have syphilis, and sometime warts. But I don't do examinations. They [women] don't, they don't want me to see or something like that. So I, I only ask questions (WRC Health worker).

Table 101: Feel comfortable to go to the WR Carpenters' clinic by sex

Feel comfortable going to a WRC clinic	Male		Female		Total	
	n	%	n	%	n	%
Yes	238	52.1%	116	25.4%	354	77.5%
No	59	12.9%	44	9.6%	103	22.5%
Total	297	65.0%	160	35.0%	457	100.0%

*Missing=3

Generally the workforce felt comfortable going to go to the WR Carpenters clinic, and over three quarters (77.5%) said that they felt comfortable to go to WR Carpenters clinic. While most said that they would go, there was still over a fifth (22.5%) who said they did not feel comfortable to go to WRC clinic, and most of these were female employees.

There is a statistically significant association between a person's sex (male and female) and if they would feel comfortable going to a WR Carpenters clinic. There were significantly more male workers (67.2%) than female workers (32.8%) who reported they felt comfortable going to a WR Clinic [***Chi-Square analysis produced significant result at $p < 0.041$**].

The significant relationships outlined in the area of STI, highlight that men report more STI, but would go for treatment more often and more often at the WRC clinic if they had STI symptoms and would feel more comfortable than women.

KNOWLEDGE, OPINIONS AND ATTITUDES ABOUT HIV AND AIDS

In relation to HIV, questions were asked to assess the plantation worker's level of knowledge of HIV transmission and prevention, and to understand their experience, opinions and attitudes towards people living with HIV, particularly concerning stigma and discrimination.

Knowledge of PLHIV

Half of the workforce knew a person living with HIV (53.3%) but a greater number (82.2%) had known someone who had died of AIDS.

Table 102: Know someone who is living with HIV by gender

Know someone who is living with HIV	Male		Female		Total	
	n	%	n	%	n	%
Yes	175	38.0%	70	15.2%	245	53.3%
No	124	27.0%	91	19.8%	215	46.7%
Total	299	65.0%	161	35.0%	460	100.0%

Table 103: Do you know anyone who has died of AIDS

Know of someone who died of AIDS	Male		Female		Total	
	n	%	n	%	n	%
Yes	265	57.6%	113	24.6%	378	82.2%
No	34	7.4%	48	10.4%	82	17.8%
Total	299	65.0%	161	35.0%	460	100.0%

More men than women knew people who were living with HIV or who had died of AIDS, and there was a statistically significant association between a person's sex (male and female) and if they knew someone living with HIV. There were more male (71.4%) than female (28.6%) workers who knew someone living with HIV [**Chi-Square analysis produced significant result at $p < 0.001$]. Similarly, there was a statistically significant association between a person's sex (male and female) and knowing someone who had died of AIDS. There were more male (70.1%) than female (29.9%) workers who knew someone who had died of AIDS [***Chi-Square analysis produced significant result at $p < 0.000$].

Caring for PLHIV

More than a half (57.8%) had not experienced a relative or a close friend who had become sick and died of AIDS. Of those who knew someone who was HIV positive and had died of AIDS, more had had a close relative (28.9%) who had become sick or died of AIDS, than had had a close friend (13.3%) die of AIDS.

Table 104: Had a close relative and/or friend die of AIDS

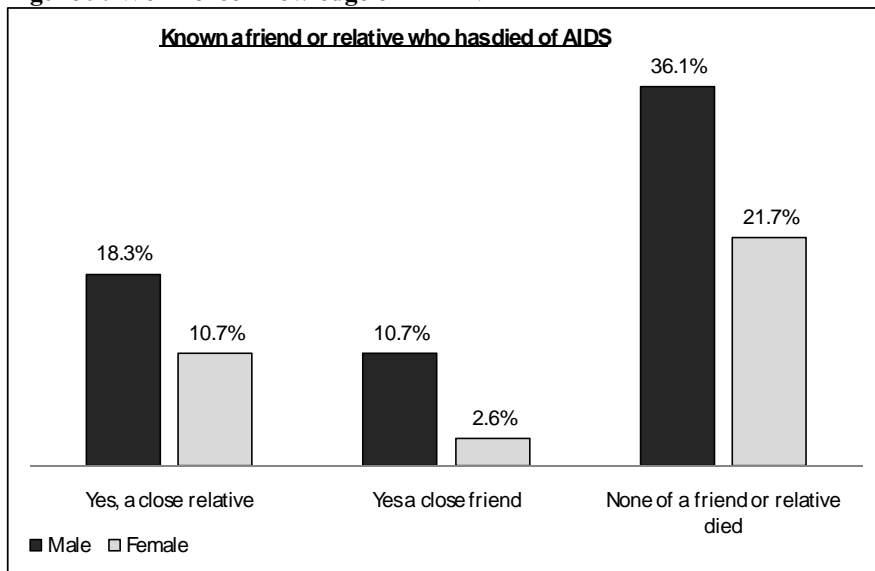
Had a close relative or friend who has died of AIDS	Male		Female		Total	
	n	%	n	%	n	%
Yes, a close relative	84	18.3%	49	10.7%	133	28.9%
Yes a close friend	49	10.7%	12	2.6%	61	13.3%
No	166	36.1%	100	21.7%	266	57.8%
Total	299	65.1%	161	35.0%	460	100.0%

There were several workers who reported that they had looked after, or had known, a person living with HIV or who had died of AIDS.

I've looked after two couples. I looked after them so I know their appearance when they have AIDS... The man looks healthy, he looks healthy and we thought he was okay. And the women also looked healthy, both of them looked healthy. When the days went by we began to see changes in their lives... I see they look skinny without muscles. They look very very very skinny and they live in that life...I observed and eventually both of them were affected by [the HIV] virus and died... I saw that and I'm still seeing that (Male plantation worker).

One woman, we were both married to two brothers and she had seven or eight children and her husband went to Moresby and contracted AIDS and died. The wife was left behind and the house she lived had deteriorated and about to collapse so I brought them to stay with me at my house. I gave them a room, the wife and the children. We live together but when we are all fast asleep she brought in a man and they slept together...the man left her and went to Moresby and remarried and he died in Moresby. When she thought about that she got angry and brought in different men often... So I told her and the children to pack up and move (Female plantation worker).

Figure 9: Workforce knowledge of PLHIV



Most said they would not be willing to take care of a person living with AIDS in their household. More than a half (58.8%) of the sample said that they would care for a male relative but more men than women said that they would care for a male relative with HIV.

Table 105: Willing to care for male relative with AIDS in your household by sex

Willing to care for a male relative with AIDS	Male		Female		Total	
	n	%	n	%	n	%
Yes	184	40.4%	84	18.4%	268	58.8%
No	113	24.8%	75	16.4%	188	41.2%
Total	297	65.1%	159	34.9%	456	100.0%

*Missing=4

Slightly less (56.2%) of the workforce would care for a female relative and again, more male workers than female workers said that they would care for a female relative within their household. Lack of knowledge of HIV prevention and transmission and less exposure to

relatives or friends who had died of AIDS could be impacting on why female workers were less willing to look after people living with HIV or AIDS.

Table 106: Willing to care for female HIV relative in your household by sex

Willing to care for a female relative with AIDS	Male		Female		Total	
	n	%	n	%	n	%
Yes	176	38.3%	82	17.9%	258	56.2%
No	122	26.6%	79	17.2%	201	43.8%
Total	298	64.9%	161	35.1%	459	100.0%

*Missing=1

There is a statistically significant association between a person's sex (male and female) and caring for a male relative who is sick with AIDS in their house. There were significantly more male (68.7%) than female (31.1%) workers who would care for their male relative who is sick with AIDS in their house [*Chi-Square analysis produced significant result at $p < 0.037$].

Knowledge of Prevention and Transmission

Knowledge of HIV Prevention

This section outlines the findings from a range of questions on transmission and prevention of HIV. When considering knowledge on prevention, it was found that there was considerable lack of knowledge and uncertainty about the effectiveness of condoms. Less than half (47.7%) of workers said that they could protect themselves from HIV by using a condom correctly every time, and close to a quarter (23.6%) were unsure or didn't know.

Table 107: Knowledge of using condom correctly every time for protection against HIV by sex

Can people protect themselves from HIV by using a condom correctly every time they have sex?	Male		Female		Total	
	n	%	n	%	n	%
Yes	138	30.2%	80	17.5%	218	47.7%
No	89	19.5%	42	9.2%	131	28.7%
Unsure	55	12.0%	0	0.0%	55	12.0%
Don't Know	14	3.1%	39	8.5%	53	11.6%
Total	296	64.8%	161	35.2%	457	100.0%

*Missing=3

A majority (81.6%) believed that people could protect themselves from HIV by not having or abstaining from sex. A tenth (9.4%) disagreed and a tenth (9.0%) were either unsure or did not know that abstinence could protect them.

Table 108: Knowledge of HIV protection through not having sex by sex

Can people protect themselves from HIV by not having sex	Male		Female		Total	
	n	%	n	%	n	%
Yes	263	57.5%	110	24.1%	373	81.6%
No	14	3.1%	29	6.3%	43	9.4%
Unsure	9	2.0%	0	0.0%	9	2.0%
Don't know	11	2.4%	21	4.6%	32	7.0%
Total	297	65.0%	160	35.0%	457	100.0%

* Missing=3

Close to three quarters (73.6%) believed that people could protect themselves from getting HIV infection by having sex with only one uninfected sex partner who has no other sex

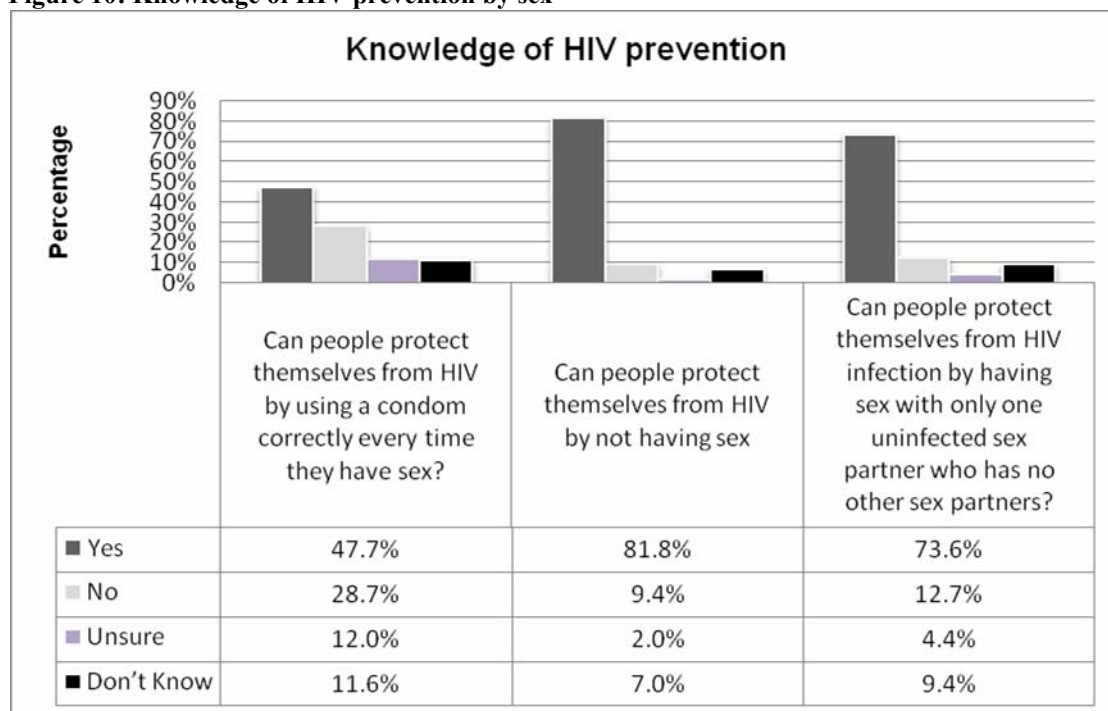
partners; but a quarter of the workers did not believe this (12.6%) or were unsure or didn't know (13.8%).

Table 109: Knowledge about people protecting themselves by having sex with only one uninfected sex partner who has no other sex partners

Can people protect themselves from HIV infection by having sex with only one uninfected sex partner who has no other sex partners?	Male		Female		Total	
	n	%	n	%	n	%
Yes	237	51.6%	101	22.0%	338	73.6%
No	26	5.7%	32	7.0%	58	12.6%
Unsure	20	4.4%	0	0.0%	20	4.4%
Don't know	15	3.3%	28	6.1%	43	9.4%
Total	298	64.9%	161	35.1%	459	100.0%

*Missing=1

Figure 10: Knowledge of HIV prevention by sex



Some areas of knowledge about transmission were low, as is discussed in the next section on transmission; however knowledge about the link between unprotected sex and HIV was higher. However, this understanding does not always translate into people's practices or their beliefs that condoms will, or will not, protect them from HIV. Here is an example of discrepancy between knowledge and practice:

In 2007, it was true that I had sexual relations with about three other women. Now we have given up on each other and these days I'm married and have my own family and the news about this dreadful disease spreading and for that I have given up [having multiple partners].... Sometimes when I'm in the field or somewhere they try to entice me. I then ask if they are interested and they want money for that I give them Two Kina, Four Kina or Five Kina. Then we have sex.... That's what they want okay, they say that I don't have money or nothing or anything, if they are willing then I go with them and have sex with them (Male plantation worker).

Knowledge of HIV Transmission

Two fifths (40.8%) of the workforce believed that HIV could be transmitted through mosquito bites and the rest (26.7%) were either unsure or did not know. Only a third (32.5%) knew that mosquitoes could not transmit HIV. Most of the workforce do not understand or are unclear that mosquitoes do not transmit HIV, and more men (71.7%) than women (59.6%) either did not know or were unclear. That HIV is not transmitted through mosquito bites is the most unclear area of knowledge around HIV transmission for this workforce.

Table 110: Knowledge about transmission through mosquito bites by gender

Can a person get HIV from mosquito bites?	Male		Female		Total	
	n	%	n	%	n	%
Yes	126	27.5%	61	13.3%	187	40.8%
No	84	18.3%	65	14.2%	149	32.5%
Unsure	63	13.8%	0	0.0%	63	13.8%
Don't Know	24	5.2%	35	7.6%	59	12.9%
Total	297	64.8%	161	35.2%	458	100.0%

*Missing=2

While the majority (69.8%) disagreed that a person could get HIV by sharing a meal with someone who is infected with HIV; still close to a third (30.2%) thought that HIV could be transmitted through sharing a meal with a person living with HIV or were uncertain or didn't know.

Table 111: Knowledge if people can get HIV by sharing meal with a PLHIV by sex

Can a person get HIV by sharing a meal with someone who is infected with HIV?	Male		Female		Total	
	n	%	n	%	n	%
Yes	42	9.1%	17	3.7%	59	12.8%
No	211	45.9%	110	23.9%	321	69.8%
Unsure	27	5.9%	0	0.0%	27	5.9%
Don't know	19	4.1%	34	7.4%	53	11.5%
Total	299	65.0%	161	35.0%	460	100.0%

The majority (76.5%) of the workforce believed that a person could get HIV by sharing a needle that was already used by someone else, and this is true. A quarter (23.4%) of the workers did not know or were unsure that HIV could be transmitted through sharing needles.

Table 112: Knowledge about if a person can get HIV from sharing needles during injection by sex

Can a person get HIV from injections with a needle that was already used by someone else?	Male		Female		Total	
	n	%	n	%	n	%
Yes	251	54.6%	101	22.0%	352	76.5%
No	18	3.9%	33	7.2%	51	11.1%
Unsure	20	4.3%	0	0.0%	20	4.3%
Don't know	10	2.2%	27	5.9%	37	8.0%
Total	299	65.0%	161	35.0%	460	100.0%

Most (88.1%) of the workers knew that a pregnant woman infected with HIV could give the HIV virus to her unborn child. More men than women answered correctly. Most workers (88.9%) agreed that a pregnant woman infected with HIV could give HIV to her newborn baby during breastfeeding, and more men than women knew that transmission of HIV could occur during breastfeeding.

Table 113: Knowledge about HIV transmission from pregnant woman to unborn child by sex

Can a pregnant woman infected with HIV give the virus to her unborn child?	Male		Female		Total	
	n	%	n	%	n	%
Yes	260	60.7%	117	27.3%	377	88.1%
No	18	4.2%	33	7.7%	51	11.9%
Total	278	65.0%	150	35.0%	428	100.0%

Table 114: Knowledge about HIV transmission during breastfeeding by sex

Can a pregnant woman infected with HIV: Give HIV to her newborn during breastfeeding?	Male		Female		Total	
	n	%	n	%	n	%
Yes	257	60.5%	121	28.5%	378	88.9%
No	24	5.6%	23	5.4%	47	11.1%
Total	281	66.1%	144	33.9%	425	100.0%

Most (89.0%) of the workforce also knew that a woman could give HIV to her newborn during delivery.

Table 115: Knowledge about HIV transmission from pregnant woman infected with HIV to her newborn child during delivery by sex

Can a pregnant woman infected with HIV: Give HIV to her newborn during delivery?	Male		Female		Total	
	0	%	0	%	0	%
Yes	259	60.7%	121	28.3%	380	89.0%
No	24	5.6%	23	5.4%	47	11.0%
Total	283	66.3%	144	33.7%	427	100.0%

Overall, most of the workforce understood mother to child transmission more than other modes of transmission: most (88.1%) said that a pregnant woman infected with HIV could give the HIV virus to her unborn child; that a pregnant woman infected with HIV could give HIV to her newborn baby during breastfeeding (88.9%) and that a woman can give HIV to her newborn during delivery (89.0%).

Close to two thirds (62.4%), and more men than women, agreed that a healthy-looking person could have HIV; some did not know that a healthy looking person could have HIV (15.7%), and close to a fifth (22.0%) were unsure or didn't know. There was still close to a third of workers who did not know that a healthy looking person could have HIV.

Table 116: Knowledge if a healthy looking person can have HIV by sex

Do you think that a healthy-looking person can have HIV?	Male		Female		Total	
	n	%	n	%	n	%
Yes	199	43.3%	88	19.1%	287	62.4%
No	37	8.0%	35	7.6%	72	15.7%
Unsure	44	9.6%	0	0.0%	44	9.6%
Don't know	19	4.1%	38	8.3%	57	12.4%
Total	299	65.0%	161	35.0%	460	100.0%

That's one of the viruses, one of the virus that kills man, that kills white cells, the man dies if the virus is in them...that includes, healthy men, unhealthy men, but still they have the virus in them. If he doesn't look after himself and he goes around having sex without a condom, he will surely contract the disease. He may have the virus but we wouldn't know. Eventually it will show out (Male plantation worker).

Over half of those interviewed thought that HIV could be transmitted through mosquitoes or did not know or were unsure and close to a third thought that HIV could be transmitted by sharing a meal or did not know or were unsure. While transmission through a needle was better understood, there was still a quarter who did not know or were unsure that needles could transmit HIV. Mother to child transmission was best understood with just over a tenth unclear about transmission from mother to child during pregnancy, delivery or breastfeeding.

The UNGASS Indicator 14 is defined as the percentage of most-at-risk population who both identify correct ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission. From this data, only 18.99% of both the male and female workforce identified the correct ways of preventing the sexual transmission of HIV and also rejected the major misconceptions about HIV transmission.

More (21.15%) of those who had comprehensive knowledge were less than 25 years old compared to those who were over the age of 25 (18.11%). Among these, there were also more male (24.49%) than female (16.92%) who identified the correct ways of preventing sexual transmission of HIV and who also rejected major misconceptions about HIV transmission. While lack of knowledge of age limits results; comprehensive knowledge of HIV transmission and prevention in the plantation workforce population is quite low.

Opinions and Attitudes on Transmission and Prevention and PLHIV

The workforce was also asked about their opinions on situations and practices that may or may not put people at risk of acquiring HIV or which could create stigma and discrimination. Most (85.6%) agreed that a woman should refuse to have sex with her husband or suggest he used a condom if she finds out he has been having sex with someone else.

Table 117: Woman should refuse to have sex with her husband or suggest he use a condom if he has had sex with someone else by sex

Women should refuse to have sex with husband or use condom if husband has other sex partners	Male		Female		Total	
	n	%	n	%	n	%
Yes	244	56.7%	124	28.8%	368	85.6%
No	38	8.8%	24	5.6%	62	14.4%
Total	282	65.5%	148	34.4%	430	100.0%

*Missing=30

While 69.8% understood that you could not get HIV from sharing a meal with someone living with HIV, fewer (57.8%) reported being willing to eat a meal that had been cooked by a person living with HIV or AIDS. Close to two fifths (42.2%) said they would not be willing. This indicates that there would be an uneasiness and potential for stigma towards a person living with HIV who cooks and shares or sells their prepared food.

Table 118: Willing to eat a meal cooked by a person living with HIV or AIDS by sex

Willing to eat a meal cooked by a PLHIV	Male		Female		Total	
	n	%	n	%	n	%
Yes	182	40.2%	80	17.7%	262	57.8%
No	110	24.3%	81	17.9%	191	42.2%
Total	292	64.5%	161	35.6%	453	100.0%

*Missing=7

More than a half (57.8%) said they were willing to share the same toilet with a work colleague who is HIV positive, while the rest (42.2%) said they would be worried about sharing the same toilet. This indicates uneasiness and a potential for stigma and discrimination towards PLHIV in relation to using toilet areas.

Table 119: Worried about sharing same toilets with work colleague who is HIV positive by sex

Worried about sharing same toilet with HIV infected person	Male		Female		Total	
	n	%	n	%	n	%
Yes	178	38.9%	86	18.8%	264	57.8%
No	118	25.8%	75	16.4%	193	42.2%
Total	296	64.8%	161	35.2%	457	100.0%

*Missing=3

When asked if a worker should be allowed to continue working at WR Carpenter if they were diagnosed with HIV, a majority (62.0%) said they should not be allowed to continue working. Again, this data demonstrates a potential for stigma and discrimination among the workforce. There was a statistically significant association between a person’s sex (male and female) and whether a WRC worker who has HIV should be allowed to continue working. There were more male (70.6%) than female (39.4%) workers who reported that a WRC HIV positive worker should be allowed or continue to work [*Chi-Square analysis produced significant result at $p < 0.021$].

Table 120: A HIV positive WRC worker be allowed to continue working by sex

Worker has HIV should be allowed to continue working	Male		Female		Total	
	n	%	n	%	n	%
Yes	120	26.8%	50	11.2%	170	38.0%
No	168	37.6%	109	24.4%	277	62.0%
Total	288	64.4%	159	35.6%	447	100.0%

*Missing=13

While men were more open for people living with HIV to continue working; there were still more male workers than female workers who expressed that they would be afraid to share an office with a PLHIV. More than half (57.1%) of the workforce said that they would be afraid about sharing the same office or workplace with a PLHIV.

There was also a statistically significant association between a person’s sex (male and female) and being worried to work in the office or workplace with someone with HIV or AIDS. There were more male (69.3%) than female (30.7%) workers who would be worried to be working in the same office or workplace with someone living with HIV or AIDS [**Chi-Square analysis produced significant result at $p < 0.012$].

Table 121: Workforce worried about sharing same office or workplace with PLHIV by sex

Worried about sharing same office/workplace with HIV infected person	Male		Female		Total	
	n	%	n	%	n	%
Yes	181	39.6%	80	17.5%	261	57.1%
No	115	25.2%	81	17.7%	196	42.9%
Total	296	64.8%	161	35.2%	457	100.0%

*Missing=3

Given the expressed anxiety about being in the workplace with a person living with HIV, and misconceptions about HIV transmission; it was not surprising that close to half of the

workforce surveyed said they would not keep it a secret (52.2%) if a family member was diagnosed with HIV, as this could contribute to themselves being stigmatized.

Table 122: Disclosure of HIV status of a family member by sex

Family member become ill with HIV and want it to remain secret	Male		Female		Total	
	n	%	n	%	n	%
Yes	142	31.0%	77	16.8%	219	47.8%
No	155	33.8%	84	18.3%	239	52.2%
Total	297	64.8%	161	35.2%	458	100.0%

*Missing=2

During one interview there was expressed a belief that HIV was a punishment from God and a belief the power of the church and God to heal HIV.

You don't go to church, so God can inflict such punishment on you too. If you don't obey his word or so, he can heal this sick too. I've seen it many times. Two couples in the plantation I've seen they had sick AIDS and they went to church and they got healed. And at first they went for their blood test at Banz. Now they tested blood for sometimes and found they were negative and normal (Male plantation worker).

As can be seen in the tables above, a high proportion of the workers expressed considerable uneasiness or worry about eating food with, or sharing a toilet or the same office with, people living with HIV.

Table 123: Opinions, attitudes towards people living with HIV by all

Attitudes and opinions about PLHIV	Willing to eat a meal cooked by a PLHIV?	Worried about sharing same toilet with HIV infected person?	If a worker has HIV should be allowed to continue working?	Worried about sharing same office workplace with HIV infected person?	Family member become ill with HIV and want it to remain secret?	If a student has HIV, should he or she be allowed to continue attending school?	If a male relative of yours became sick with AIDS, would you be willing to care for him in your household?	If a female relative of yours has AIDS, would you be willing to care for him in your household?
Yes	57.8%	57.8%	38.0%	57.1%	47.8%	31.6%	58.8%	56.2%
No	42.2%	42.2%	62.0%	42.9%	52.2%	68.4%	41.2%	43.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

These data indicate the need for more focused prevention and transmission messages, to correct misconceptions and increase more positive and supportive attitudes towards those living with HIV or AIDS within the workforce and broader community.

EXPOSURE TO HIV INTERVENTION PROGRAMS AND PROJECTS

More than sixty percent (61.2%) of the plantation workers reported they had someone come to their community to talk about STI, HIV or AIDS in their community, and more men than women knew of community STI, HIV, and AIDS awareness.

Table 124: Talks about STI or HIV and AIDS in your community by sex

Has anyone come to your community	Male		Female		Total	
	n	%	n	%	n	%
Yes	214	46.6%	67	14.6%	281	61.2%
No	84	18.3%	94	20.5%	178	38.8%
Total	298	64.9%	161	35.1%	459	100.0%

The different sources where the workers got information about STI, HIV and AIDS included through: health workers (34.6%), AIDS awareness (11.2%), the radio (8.0%), friends (7.3%) and WRC management and other staff (6.3%) or relatives (6.1%).

Table 125: Sources of information on HIV by sex

Sources of information on HIV	Male		Female		Total	
	n	%	n	%	n	%
Health workers	144	25.2%	54	9.4%	198	34.6%
AIDS awareness (Community Awareness)	41	7.2%	23	4.0%	64	11.2%
Radio	39	6.8%	7	1.2%	46	8.0%
Friend	34	5.9%	8	1.4%	42	7.3%
Community relation/Management/Counsellor - WRC	26	4.5%	10	1.7%	36	6.3%
Relative	21	3.7%	14	2.4%	35	6.1%
Work mates	11	1.9%	6	1.0%	17	3.0%
Books/pamphlets at WRC	15	2.6%	0	0.0%	15	2.6%
Newspaper	12	2.1%	2	0.3%	14	2.4%
Information from people	5	0.9%	9	1.6%	14	2.4%
Have not heard of HIV and AIDS from anyone	2	0.3%	9	1.6%	11	1.9%
TV	7	1.2%	3	0.5%	10	1.7%
NGO	6	1.0%	3	0.5%	9	1.6%
Teachers/at school/college/uni student	2	0.3%	6	1.0%	8	1.4%
PLHIV	4	0.7%	3	0.5%	7	1.2%
Church	1	0.2%	3	0.5%	4	0.7%
Community leaders	4	0.7%	0	0.0%	4	0.7%
Peer educator/peer group discussion	1	0.2%	1	0.2%	2	0.3%
Poster/sticker	1	0.2%	1	0.2%	2	0.3%
Researchers	1	0.2%	1	0.2%	2	0.3%
HIV VCT sites	0	0.0%	1	0.2%	1	0.2%
HIV/AIDS course	1	0.2%	0	0.0%	1	0.2%
Video	0	0.0%	1	0.2%	1	0.2%
Don't know	7	1.2%	16	2.8%	23	4.0%
Other	2	0.3%	4	0.7%	6	1.0%
Total	378	69.6%	165	30.4%	543	100.0%

The majority (42.1%) thought that the best means of disseminating information on sexual health and HIV to the WRC workforce was through: talking (42.1%), awareness programs (15.1%), health system and health workers (12.9%), church programs (6.3%), drama (5.3%), and video (5.1%), books and pamphlets (3.7%), local radio and media (2.9%) and posters (2.0%).

Table 126: Best means of disseminating information on HIV by sex

Best ways to get information on HIV & AIDS	Male		Female		Total	
	n	%	n	%	n	%
Talking	161	32.9%	45	9.2%	206	42.1%
Awareness programs	46	9.4%	28	5.7%	74	15.1%
Through health system/workers	48	9.8%	15	3.1%	63	12.9%
Through church programs	18	3.7%	13	2.7%	31	6.3%
Drama	16	3.3%	10	2.0%	26	5.3%
Video	10	2.0%	15	3.1%	25	5.1%
Books & pamphlets	8	1.6%	10	2.0%	18	3.7%
Local media i.e. radio/TV	8	1.6%	6	1.2%	14	2.9%
Posters	9	1.8%	1	0.2%	10	2.0%
Peer educator	4	0.8%	3	0.6%	7	1.4%
Intervention programs	1	0.2%	1	0.2%	2	0.4%
Through education system	1	0.2%	1	0.2%	2	0.4%
Believe there is no best way	1	0.2%	0	0.0%	1	0.2%
Internet sites	0	0.0%	1	0.2%	1	0.2%
Through PLWHIV	1	0.2%	0	0.0%	1	0.2%
Other	5	1.0%	3	0.6%	8	1.6%
Total	337	68.9%	152	31.1%	489	100.0%

UNGASS Indicator 9 is defined as the percentage of most-at-risk populations reached with HIV prevention programs. It is calculated using the percentage of male and female plantation workers who reported that they know where to go to have an HIV test and they were given condoms in the last 12 months. Around a third (34.08%) of male and female plantation workers, who reported that they knew where to go to receive an HIV test, were also given condoms in the last 12 months. Among these, there was a difference of 35.69% between male and female who knew where to go to have an HIV test and were given condoms in the last 12 months where men were (43.85%) compared to 8.16% of women. Note limitations identified due to subset not knowing their ages.

Voluntary Testing and Counseling

Apart from seeking treatment for STIs, questions on voluntary counseling and testing (VCT) for HIV were also asked to understand the health seeking behavior of the workforce and to know their HIV status. When asked if they had ever heard of HIV voluntary counseling and testing (VCT), half had heard of it (49.6%) and the other half (50.4%) had never heard about VCT.

Table 127: Have heard about VCT by sex

Heard about VCT	Male		Female		Total	
	n	%	n	%	n	%
Yes	169	36.9%	58	12.7%	227	49.6%
No	129	28.2%	102	22.3%	231	50.4%
Total	298	65.1%	160	35.0%	458	100.0%

*Missing=2

Of those who had heard about it, men were more aware of VCT compared to the female workers. There is a statistically significant association between a person's sex (male and female) and whether they have heard of VCT (HIV Voluntary Counseling and Testing). There were more male (74.4%) than female (25.6%) workers who have heard of VCT [***Chi-Square analysis produced significant result at $p < 0.000$].

Most (32.2%) had heard about VCT through Health workers and HIV awareness (23.1%), and through the radio (10.4%). The other sources of information on VCT, included: WRC

management or staff (10.1%), friends or relatives (8.4%) TV (2.3%), church and church workers (2.0%), village counselor, peer educators, billboards, school, newspaper, books and pamphlets, VCT sites, NGOs, and others. Books and pamphlets were least identified as a source of information on VCT.

Table 128: Where workers heard about VCT by sex

Where workers heard about VCT	Male		Female		Total	
	n	%	n	%	n	%
Health workers	72	24.1%	24	8.1%	96	32.2%
HIV awareness	56	18.7%	13	4.3%	69	23.1%
Radio	28	9.4%	3	1.0%	31	10.4%
WR Carpenters management team, clinic, community relation officer	27	9.1%	3	1.0%	30	10.1%
Friends/relatives	20	6.7%	5	1.7%	25	8.4%
Television	4	1.3%	3	1.0%	7	2.3%
Church workers/churches	5	1.7%	1	0.3%	6	2.0%
In the village or village counselor	2	0.7%	2	0.7%	4	1.3%
Billboards	4	1.3%	0	0.0%	4	1.3%
Peer educator	4	1.3%	0	0.0%	4	1.3%
School or school children	2	0.6%	2	0.7%	4	1.3%
Newspaper	3	1.0%	0	0.0%	3	1.0%
HIV VCT site called Maria Queen and VCT team	2	0.6%	1	0.3%	3	1.0%
Don't know	0	0.0%	2	0.7%	2	0.7%
Other people	1	0.3%	1	0.3%	2	0.7%
Got information from course funded by ADB	0	0.0%	1	0.3%	1	0.3%
Heard stories	1	0.3%	0	0.0%	1	0.3%
Heard about it but I don't know what it is	0	0.0%	1	0.3%	1	0.3%
Spouse	0	0.0%	1	0.3%	1	0.3%
NGO's	1	0.30%	0	0.0%	1	0.3%
No one but I just know	0	0.0%	1	0.3%	1	0.3%
Sticker	1	0.3%	0	0.00%	1	0.3%
During work days	0	0.0%	1	0.3%	1	0.3%
Books/pamphlets	1	0.3%	0	0.0%	1	0.3%
Total	234	78.30%	65	21.70%	299	100.00%

*Based on multiple responses and rounded numbers

While over half (59.2%) of the workforce agreed it is possible for someone in the community to have an HIV test and no one would know the results unless the person wanted them to know; close to half (40.8%) did not think it was possible. This indicates that there is a lack of confidence in the confidentiality of services and that the community talks about those who test positive.

Table 129: Possibility for someone to get a HIV test and no one would know the results by sex

Is it possible for person to get HIV test and no one know results	Male		Female		Total	
	n	%	n	%	n	%
Yes	178	39.6%	88	19.6%	266	59.2%
No	110	24.5%	73	16.3%	183	40.8%
Total	288	64.1%	161	35.9%	449	100.0%

*Missing=11

Indicator 8 relates to HIV testing in more at-risk populations (other groups and is defined as the percentage of male and female plantation workers who received an HIV test in the last 12 months and who knew their result. Close to a quarter (24.02%) of the male and female plantation workers who reported to receive an HIV test in the last 12 months also know their results. Among these, there were 5.0% more male (25.38%) than female (20.41%). Not knowing their ages is a limitation in the calculation of this indicator. Only 179 knew their age and be used for the calculation of this indicator.

When asked if they knew where to go if they wanted to get a HIV test, more than half (55.6%) said they knew where to go to get tested. On the other hand, there were still a large percent; close to half (44.4%) who did not know where to go for an HIV test.

Table 130: Do you know where to go for HIV test by sex

Know where to go for HIV test	Male		Female		Total	
	n	%	n	%	n	%
Yes	179	39.0%	76	16.6%	255	55.6%
No	120	26.1%	84	18.3%	204	44.4%
Total	299	65.1%	160	34.9%	459	100.0%

*Missing=1

However, when asked if they if they ever had a HIV test in the last 12 months, most (83.0%) of the workers had not had a test in the last year. Of those who had been tested in the last 12 months, the majority (88.3%) knew their results. Just over ten percent (11.7%) did not receive their results.

Table 131: HIV test in last year by sex

Don't want to know results; but did you have an HIV test in the past year	Male		Female		Total	
	n	%	n	%	n	%
Yes	57	12.4%	21	4.6%	78	17.0%
No	242	52.6%	140	30.4%	382	83.0%
Total	299	65.0%	161	35.0%	460	100.0%

Workers were also asked whether, if WR Carpenters offered a voluntary confidential testing, they would be willing to take a test and most (72.8%) said that they would be willing to take a test. When asked about their own self disclosure if they were diagnosed with HIV; most (76.0%) of the workforce said that they would tell a family member if they find out that they discovered that they had HIV. Other people they were likely to tell included: the WRC management (35.1%) or a fellow worker (16.0%). The people they were least likely to tell were their friends (1.6%). However, close to a quarter of the workforce said they would not tell anyone if they found out they were living with HIV and close to a half said that they would keep it a secret if a family member had HIV.

WRC HIV Policy in the Workplace

The workforce was asked if WR Carpenters had an HIV policy. Under half (40.8%) said that WRC had an HIV policy and over half said that they did not or were unsure, indicating a need to promote the existing policy with other strategies for those who do not read.

Table 132: HIV policy for WRC workforce by sex

Is there a WRC workplace policy on HIV	Male			Female			Total	
	n	% within sex	% within total	n	% within sex	% within total	n	%
Yes	115	40.1%	25.7%	68	42.2%	15.2%	183	40.8%
No	165	57.5%	36.8%	66	41.0%	14.7%	231	51.6%
Don't know	7	2.5%	1.6%	27	16.8%	6.0%	34	7.6%
Total	287	100.0%	64.1%	161	100.0%	35.9%	448	100.0%

*Missing=12

Close to half (48.5%) think that employees living with HIV and AIDS should have access to similar benefits as the employees who are not infected by HIV and AIDS, but most said that PLHIV should not have the same benefits or were unsure.

When the workforce were asked if they thought that HIV and AIDS are likely to have a serious effect on the productivity of the company, more than half (54.1%) reported that they thought the effect would be serious, some thought that it would have some effect (8.9%) or little effect (8.5%). Only 28.4% reported that it would have no effect.

Table 133: HIV and AIDS are likely to have a serious effect on the productivity of your company by sex

Do you think HIV and AIDS are likely to have a serious effect on the productivity of your company?	Male			Female			Total	
	n	% within sex	% within total	n	% within sex	% within total	n	%
Little	19	6.5%	4.4%	18	12.6%	4.1%	37	8.5%
Some	30	10.2%	6.9%	9	6.3%	2.1%	39	8.9%
Serious	175	59.7%	40.1%	61	42.7%	14.0%	236	54.1%
None	69	23.5%	15.8%	55	38.5%	12.6%	124	28.4%
Total	293	100.0%	67.2%	143	100.0%	32.8%	436	100.0%

Close to half (47.1%) of the workforce surveyed thought that the management of WRC was addressing HIV. However, more than half (57.8%) did not believe that the company's management would deal fairly and sympathetically with any employees living with HIV.

Table 134: WRC Management addressing HIV by sex

WRC management addressing HIV	Male			Female			Total	
	n	% within sex	% within total	n	% within sex	% within total	n	%
Yes	157	52.7%	34.2%	59	36.6%	12.9%	216	47.1%
No	139	46.6%	30.3%	98	60.9%	21.4%	237	51.6%
Don't know	2	0.7%	0.4%	4	2.5%	0.9%	6	1.3%
Total	298	100.0%	64.9%	161	100.0%	35.2%	459	100.0%

Table 135: WRC Management deal fairly and sympathetically with worker with HIV by sex

Do you believe that the company's management will deal fairly and sympathetically with any employees with HIV?	Male			Female			Total	
	n	% within sex	% within total	n	% within sex	% within total	n	%
Yes	105	35.1%	22.8%	69	42.9%	15.0%	174	37.8%
No	178	59.5%	38.7%	88	54.7%	19.1%	266	57.8%
Don't know	16	5.4%	3.5%	4	2.5%	0.9%	20	4.3%
Total	299	100.0%	65.0%	161	100.0%	35.0%	460	100.0%

One male worker interviewed thought that the management of WRC did not want people living with HIV on the Estates and that they would be sent home:

The company has prohibited us to accommodate such people in the estate. So we will send them, send them to the village. But they have been going to the hospital since, and they are slowly getting well, and they are no longer in the plantation. They reside outside of the plantation (Male plantation worker).

Table 136: Should WRC employees be more concerned about HIV by sex

Do you think the employees of WR Carpenters should be more concerned about HIV or AIDS?	Male			Female			Total	
	n	% within sex	% within total	n	% within sex	% within total	n	%
Yes	251	83.9%	54.6%	120	74.5%	26.1%	371	80.7%
No	44	14.7%	9.6%	38	23.6%	8.3%	82	17.8%
Don't know	4	1.3%	0.9%	3	1.9%	0.7%	7	1.5%
Total	299	100.0%	65.0%	161	100.0%	35.0%	460	100.0%

The majority (80.7%) of the workers interviewed thought that the employees of WR Carpenters should be more concerned about HIV and AIDS. The data provides a point to work from for a targeting of information and strategies for change for the WRC workforce to protect them from HIV.

DISCUSSION AND RECOMMENDATIONS

In approaching a discussion of such rich BSS data, there is a need to focus on some areas that help to understand the potential for HIV transmission. In this case, such issues include: the concurrency of sex partners; STI and their treatment; condom use; sexual practices such as penile modification; sexual violence; and stigma and discrimination within the WR Carpenters workforce; and workers vulnerability in the context of the HIV epidemic. These are areas for focus in more targeted prevention programs for the workforce of WR Carpenters.

Concurrency of Sexual Partners and Condom Use

There are a considerable number of polygamous marriages, a common socio-cultural practice, with men marrying more than one wife. Changes in marital partners, reflected in a high number of people separated or divorced and then remarrying, and a range of other sex partners, creates a layering of concurrent multiple sex partners and creates sexual networks that overlap. With low rates of condom usage, this creates a context for HIV to spread throughout the workforce.

The prevention message 'be faithful to one partner' does not fit well for those within polygamous marriages. The majority of the workforce said that they had married, and nearly a fifth reported that they were in polygamous marriages where husbands had more than one concurrent marital sexual partner, and where all wives are linked into a marital sexual network with their husbands' other wives. As well, polygamous marital partners are connected to other sexual networks, more often through the husband's than the wife's other concurrent regular, non-regular and paid sex partners. There were more male than female workers who had other concurrent sexual partners.

As within polygamy, there is a need to understand more generally, changes in steady and multiple concurrent marital sexual partners over time. Nearly a half of the sample who had married, said they had married twice, three or more times, and close to a third reported that they had experienced a change in their marital partners, through separation, being widowed or divorced. More men had been separated, slightly more women divorced than men, and more men than women reporting being widowed. Polygamous and multiple marriages are most salient, in light of the low condom use across all partner types, but particularly between regular partners where trust was the reason most mentioned for not using a condom.

A third of those surveyed said that they had more than one partner in the past year with close to a third having two to four, or five or more additional sex partners. More workers reported having one or more non-regular sex partners, than paid or transactional sex partners or other regular partners in the previous year.

Under a fifth had more than one regular partner in the last year and condom use at last sex with regular partners was very low with the greatest majority (over three quarters) not using a condom the last time they had sex with a regular partner and the greatest majority also reporting never using a condom with their regular partners in the previous three months.

Close to a third of workers surveyed had one or more non-regular sex partners in the past year, and more male than female workers had non-regular sexual partners in the past year, and men also had more non-regular sexual partners and a higher frequency of sex with non-

regular sex partners. Most (over two-thirds) reported not using a condom the last time they had had sex with a non-regular partner, and most said that they never used a condom with a non-regular partner during the last three months.

Close to a fifth reported having paid for or exchanged something for sex over the last year and close to a quarter of the total sexually active male workforce surveyed reported giving something in the past year in exchange for sex, while only nine of the female workforce surveyed had been given something or paid for sex in the past year. Significantly more male workers paid for sex in the last year than female workers were paid for sex in the last year.

There was higher condom use between transactional sex partners than with non-regular or regular sex partners, with regular partners reporting the least condom use. Of men who were paying women to have sex, about forty percent had used a condom at last paid sex with a woman; and close to forty percent of women reported that a condom was used at last sex with a man who had given them money or something for sex. But consistent condom use with transactional sex partners is less, with only a fifth of male and female workers always using a condom with their paid or paying partners in the past three months.

Those regular and non-regular partners, who said that they had more availability to condoms, used them less than transactional sex partners who reported less access but higher usage of condoms. While condom use with transactional partners was higher, it was still less than fifty percent at last sex and consistent condom use was much less. A focus on increasing condom use with paid transactional sex partners and across all concurrent sex partners is needed.

Anal sex between men was not common; however many more women reported anal sex with men. Only two men said that they had same sex sexual partners; however it was found that neither wore a condom during last anal sex with a man. These two men who had male to male sexual partners reported also living with a woman indicating the overlap of sexual networks of regular male and female sex partners with male same sex sexual networks with no to little condom use reported.

It is important to note that anal sex was reported mostly between men and women and many more female workers (over a third of all female workers surveyed) reported that they had had anal sex with men. There was a very low condom use for women at last anal sex with a male partner and less than five percent of women said that a condom was used at last anal sex with a man. Education on higher risk anal sex and the importance of condom use during anal sex is an area that requires a prevention focus.

Increasing condom use of those who have concurrent sexual partners across a range of partner types is a needed focus for prevention programs. Across regular, non-regular and paid partner types, condoms were reported not to be used, most commonly because of trust in their partner with regular and non-regular sex partners, and very little trust was involved as to why a condom was not used with paid partners. A lack of condom availability was more identified as why a condom was not used at last paid sex, than with non-regular or regular partners; while dislike of condoms as a reason why a condom was not used was higher with non-regular partners and at last paid sex than at last sex with a regular partner.

Two thirds of the workforce reported never using a male condom with a sexual partner, and a majority (over eighty percent) reported that they had not used a condom at last sex, and significantly more male than female workers had used a condom at last sex. Men used

condoms more and they also reported more access to condoms than women and significantly more men than women had been given condoms in the last 12 months and significantly more male than female workers also said that they could obtain a condom every time they needed one. A need for a focus on increasing access to condoms and information and education for women about VCT, STI and HIV is evident in the data.

Less than half of workers were opposed to having condoms and condom dispensers around their workplace and more men than women were against having condoms around the workplace. It could be that disagreement with condoms and the belief that condoms would not effectively protect is contributing to their lack of use. The data indicates that just over half of the workers did not believe that using condoms correctly every time was effective to reduce risk of HIV transmission. Information to the workforce on the efficacy of condoms, more discussions about condoms and condom access would be recommended.

More men did drink significantly, and drink more than women. While alcohol and drugs are substances that influence people's practicing safe sex; the link between alcohol and drugs and unprotected sex in this workforce context was not strongly associated.

STI

More male workers than female workers had heard of infections transmitted through sex; but most of the workforce were not able to identify any STI symptoms in a woman and more men than women identified the correct symptoms of STI in women. A fifth of the workforce surveyed said that they had experienced STI symptoms over the past year, and many more men than women, reported multiple STI symptoms. Only a quarter said that they sought advice and medicine from the clinic or hospital.

Close to a fifth of the workforce said that they had been treated for a sexually transmitted infection. Significantly, more male than female workers had been treated for sexually transmitted infections. More male than female workers reported that they would go to a WRC Clinic to get advice or treatment if they thought they had STI and more men than women reported they felt comfortable going to a WRC Clinic. But there is a need to create a more enabling environment for woman at the WRC Clinic to increase their access to condoms and STI treatment.

The significant relationships outlined in the area of STI highlight that men report more STI, but would go for treatment more often, and more often at the WRC Clinic, if they had STI symptoms and would feel more comfortable. Knowledge of STI is low and condom use is low with a variety of partners across a range of different sexual networks but a lack of follow-up with STI clinical treatment and care creates more risk of HIV transmission in the workforce because of the role that STI plays as a cofactor.

Penile Modification

There is variability of penile modification practices reported in the sample depending on the type of cutting. Few men reported that they had been circumcised and few women reported having sexual partners that had been fully circumcised. Most had been circumcised in the context of an initiation; others were done by friends, and less at a hospital or clinic. Some men reported doing it on their own and at home, and reports of blood loss when young males were doing this on their own were highlighted in the qualitative data.

Considerably more (a quarter) reported having dorsal slits and more female plantation workers reported that they had had a sexual partner with a penile dorsal slit than had been circumcised. Slits were performed mostly by friends and in initiations, at clinics or by oneself. There were no accounts in interviews of workers cleaning the razor blades or other instruments that were most commonly used during cutting practices.

Formative research indicated that younger male workers were experimenting with different inserts and a belief that the insertion of wire would be a protection from STI and HIV. Inserts were even less commonly reported by the male and female plantation workers surveyed and only four men said that they had penile inserts and three women reported that their partners had inserts. One female worker reported having a partner who injected his penis with a substance and he did this to make the penis wider, and no one reported injecting other drugs.

Certainly there is an indication of the need to begin prevention within the institution of initiation to ensure that instruments being used are not shared and clean, and create targeted information for men on safer cutting practices with men in more informal or less ritualized contexts.

Understandings of HIV Prevention and Transmission

Only about a fifth of the total workforce identified the correct ways of preventing the sexual transmission of HIV and also rejected the major misconceptions about HIV transmission such as transmission through mosquitoes and sharing food.

A large majority (over eighty percent) believed that people could protect themselves from HIV by not having or abstaining from sex and three quarters believed that people could protect themselves from getting HIV infection by having sex with only one uninfected sex partner who has no other sex partners; however a belief in the effectiveness of condoms to protect was considerably less.

While transmission through a needle was better understood, there was still a quarter who did not know or were unsure that needles could transmit HIV. Mother-to-child transmission was best understood with just over a tenth unclear about transmission from mother to child during pregnancy, delivery or breastfeeding.

Close to a third thought that HIV could be transmitted through sharing a meal with a person living with HIV and over a third were unsure or did not know that a healthy looking person could have HIV. Over half of those interviewed thought that HIV could be transmitted through mosquitoes or did not know. Over half would be worried to share the same toilet or office space, also indicates that there are beliefs that HIV can be spread through social contact in community and work contexts or from handling food and this will create the contexts for stigma and discrimination. Programs must be clear about these misconceptions and focus on the ways that one cannot get HIV if levels of stigma and discrimination are to be lowered in the workforce.

Stigma and discrimination

There were more male than female workers who knew someone living with HIV or who knew someone who had died of AIDS. It is not surprising, therefore, that significantly more male than female workers would care for their male relative who is sick with AIDS in their household. A lack of willingness to care for a person living with AIDS indicates a potential for stigma and discrimination within the household towards another family member or relative, and highlights the potential need for fostering home-based care, care centers and to have referral, and support services.

Within the workplace, only thirty-eight percent said that a person on the workforce should be allowed to continue work and significantly more male than female workers reported that a WRC HIV positive worker should be allowed or continue to work. At the same time, significantly more male than female workers would be worried to be working in the same office or workplace with someone living with HIV or AIDS. These would indicate the potential for discrimination and rejection within the work environment.

Close to a half said that they would keep it a secret if a family member had HIV. When asked about their own self disclosure if they were diagnosed with HIV; most of the workforce said that they would tell a family member, WRC management or a fellow worker if they found out that they had HIV. People least likely to be told were friends. Close to a quarter of the workforce said they would not tell anyone if they found out they were living with HIV. These attitudes would contribute to a lack of desire for testing within the workforce to know one's results.

Most (over four-fifths) of the workers had not had an HIV test in the last year. Two fifths did not believe that they could have a confidential test and no one would know their results, and two-fifths also did not know where to get a test. Increasing confidential testing and promotion of VCT would help with treatment and prevention efforts, when considering the behavioural practices and sexual networks of the workforce and the potential for increase in HIV infection in the workforce in this higher prevalence region.

Public Health, Quality of Life and Policy Issues

These BSS data show that HIV prevention and behaviour change strategies targeted for the workforce need to consider the literacy and educational levels of the workforce, and innovative and different approaches need to be taken to engage with socio-cultural, contextual and individual factors and practices that support high numbers of concurrent sexual partnerships and low condom use. There is a need to increase condom use, and improve understanding of HIV and its prevention and transmission, with an approach that decreases stigma and discrimination towards PLHIV in the workforce

There is a need to focus on men as agents of change in relation to their own sexual health and to support women to gain more access to and information on condoms, gender inequities and sexual violence and access for women for information on HIV and increase recognition and treatment for STI and understandings of positive living and ART.

Conditions of life such as wages, access to clean water and good sanitation need consideration as policy issues. These data indicate that there is a lack of access to clean water and good sanitation for WR Carpenters workforce which make them more vulnerable to

water borne and hygiene related diseases. Access to water, and having toilets and sanitation are basic living conditions that can impact on overall health, public health and the spread of disease. These conditions become more critical for people living with HIV or AIDS who have suppressed immune systems, and who would benefit from better hygiene and access to clean water.

Many were not clear on the WR Carpenters HIV Policy. Less than half of the sample thought that WRC was addressing HIV and AIDS and that they would deal with a worker sympathetically and fairly if they had HIV. At the same time, workers expressed the view that the WRC and the Rural Enclave Project were main contacts for HIV prevention and provided condoms, and information on HIV and VCT, and the WRC clinics were main sources of condoms and information. Certainly ongoing oral presentations and information passed through networks of people and from drama and video, and discussion would appear to be a way to start getting more information across on WRC HIV Policy and activities of the project.

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APPENDIX 1: COLLABORATION AND ENDORSEMENT BY WRC



“CONFIDENTIAL”

RURAL ENCLAVES HIV/AIDS COORDINATING
COMMITTEE MEETING DECISION

MEETING NO: 04

DATE: 26 March 2008

At this meeting the Enclaves Coordinating Committee meeting revised and ratified the following.

SUBMISSION NO: 04

The Summary brief on, "Behavioural Surveillance Research to be conducted at the workforce level at WR Carpenter Estates by the National Research Institute for the NDOH Surveillance System" under the current ADB Rural Enclaves HIV Prevention Project. This Research will form the basis for Behaviour Change Interventions

DECISION NO: 04

Acknowledge and endorse the submission by the National Research Institute to conduct Behavioural Surveillance Research with the workforce.

SIGNED: [Signature] Date: 20/03/08

Ramesh Vasudevan
Acting Chairperson
Enclaves HIV/AIDS Coordinating Committee

APPENDIX 2: STANDARD OPERATING PROCEDURES FOR INTERVIEWING

The Standard Operating Procedure (SOP) allowed for standardization of approach and interviewing, highlights informed consent and the rights of those being interviewed, while monitoring data management and supervision.

Ethics Statement, and Introduction to the National Research Institute (NRI) and interviewer

The interviewer introduces themselves and reads the introductory ethics statement to the individual participant who has been randomly sampled, before getting his or her consent.

The ethics statement explains the purpose of the NRI interview, the reasons and the benefits of the behavioral surveillance survey being conducted by NRI at the rural enclave, and outlines research ethics including:

- Confidentiality is maintained,
- Voluntary participation of the interviewee and they have the right to refuse to participate or answer any questions,
- The survey is anonymous and names are not written, and
- The benefit of the survey is explained.

At WR Carpenters a K5 incentive will be given to compensate for the time spent participating in the interview and not working. Incentives are given after the interview and the sign sheet for incentives is initialed when the K5 is given.

Consent

For participants at WR Carpenters the consent of the participant is obtained before interviewing him or her.

If she or he consents, the interviewer puts a tick to indicate this on the space allocated for yes.

The interviewer then signs in the data management box to validate that the person has given informed consent.

After getting consent, the person is taken to an available room or space outside in the fields or around the Estates where confidentiality and privacy are protected and emphasized; and The worker knows that they can refuse any questions and leave at any time and end the interview.

Recording the name and signature of the interviewer

When the interviewee gives consent, the person interviewing (WR) signs their signature to ensure and validate that informed consent has been given. The signature validates that the person has given informed consent. The name of the person is not asked or recorded.

Today's date

Write the date (the day, the month and the year) this questionnaire was filled in.

Time of Interview

Write down the time the interview begins and the time that it ends on the space allocated for time.

Participant and Data Management Codes

For the questionnaire number, write the first three letters of the name of the enclave site followed by a three digit number beginning with 001. As the name of the enclave is WR Carpenters then write WRC followed by the three digit numbers 001. The Participant Code and the questionnaire number will then be WRC-001.

Supervising staff will sign the completed questionnaires when they receive them from the interviewers at WR Carpenters when the questionnaires are gathered and reviewed daily, with spot checks to ensure consent is being obtained, as well as incentives being given correctly. There is a box for a data check to be done by the supervisor, data manager or other research staff which indicates who reviewed the data after each day of collection to monitor missing data, and monitor how the surveys are being completed. Information communicated to the team about the analysis of the questionnaires during daily data check will help to improve data collection. The Data Manager and Data entry staff will complete the codes for data management section during data verification and entry.

Introductions, to be used by interviewers, at each section of the Questionnaires

For WR Carpenters, the statement before each section is read every time for each participant. These sections include: Section 1: Background characteristics; Section 2: Marriage and Common-law living in partners; Section 3: Alcohol and Drugs; Section 4: Sexual History; Section 5: Sexual Partners: Regular partners; Section 6: Non-Regular Partners; Section 7: Paid Sexual Partners; Section 8: Sexual Practices; Section 9: Male and Female Condoms; Section 10: STIs; Section 11: Knowledge, opinions and attitudes; Section 12: Exposure to project interventions; and Section 13: Work place.

Information about skip patterns is noted throughout the interview where necessary for the interviewer who has been trained to follow these to minimize missing data and error.

Conclusion

After the interview is complete, thank the participant for his or her time, participation and cooperation. Surveys are kept in a covered clipboard or stored and given to those supervising data management.

Incentives

For participants at WR Carpenters, an incentive of K5 is to be given at the end of the survey or qualitative interview. The participant is told that the K5 incentive is given to them for the loss of working time while participating in the interview. The participant signs a receipt indicating with a symbol or mark (x) after receiving the K5. No names are listed.

APPENDIX 3: DATA MANAGEMENT MONITORING AND SECURITY

Field Monitoring

There were several layers of monitoring to ensure that the survey was being conducted and informed consent was obtained according to the approved protocol and ethics statement.

Co-Principal investigators were on-site daily throughout data collection and responsible for close monitoring of survey data collection and signed as Research Supervisors. They ensured adherence to survey protocols and sampling procedures, the maintenance of ethical standards, ensured completion of consent and other data management data and that questionnaires are completed. The Co-Principal Investigators debriefed as a team with casual staff, and provided daily feedback to the Principal Investigator, who was in the field with the teams for much of the data collection period.

When the questionnaire is completed, a few areas are filled in by the fulltime team for data management and ethical quality assurance, including a supervisor's signature ensures that the front page is complete and that a field check has been done on the survey questionnaire.

How to store, manage, and secure the WR Carpenters data and forms

- At WR Carpenters forms were checked daily and locked in a designated hotel room in Hagen in a patrol box. The principal and co-investigators were responsible for checking completed surveys and locking them in the patrol box before transferring them to NRI.
- At both sites, the NRI Research Officers were responsible for the forms during the daily interviews and transferred the forms to the data manager or other senior research officer at the end of the day for reasons of security and confidentiality.
- The Data Manager (SRO) came to the field during the first week of data collection to review questions with staff and the data manager and the principle investigator took the surveys to the NRI in Moresby
- The surveys when received at NRI from the survey sites will be counted to ensure that the same number from the field has been received. The senior research officer (Data Manager) signed as the recipient per the date received on the front of each survey when they arrive at NRI.

The surveys were locked in a cabinet to avoid losses and to ensure confidentiality and ethics. The surveys are kept in a secured office at all times that has an alarm system. Access to the database files is limited and files password coded. Open files will only be the ones the data entry staff will be working on. Security passwords have been created to limit access to files where data entry has been completed and verified.

Data is backed up on a separate hard or flash drives by data entry staff to avoid any data losses and this will be supervised by the Data Manager. Daily backed up electronic data is secured in a fireproof safe at the alarmed BSS office at NRI. Computers used for data entry will not be connected to any existing network and will not be used for any purposes other than data entry and verification.

Data Entry for the WR Carpenters data into a computer database

- The SPSS software installed in three computers for the data entry operation.

- The creation of WR Carpenters databases is done using the SPSS database software
- The completed survey forms will be entered directly into the SPSS data entry application. This was by three casual data entry staff with assistance from the data manager and a code book.
- The SPSS software allowed the casual data entry staff to enter the data that will be ticked or coded during the data verification stage.
- Most variables were entered in numbers. For example, for the variable of “Sex”, the males will be coded as “1”, and females as “2”.
- A different data entry staff did a double check of the survey data entered by other data entry staff once it was entered for typing errors, missing values, out of range values by verifying frequency counts for each variable among all samples, and a systematic check of data quality after the first 100 to assess if double entry is required.

For qualitative data, the digital interviews were downloaded on a daily basis and backed onto a flash drive that was locked during transcription. Transcribed interviews were then coded and then entered and managed in a qualitative software package called QSR NVivo, and folders were password coded.

How to analyze and use the data

The SPSS data outputs were analyzed by the NRI BSS team. A data analysis plan including blank tables was designed and the SRO and team assisted in conducting the print out of data outputs for analyses - frequencies, univariate and multivariate analyses were conducted. Specific indicators for UNGASS are analyzed. Further analyzes such as Chi-Square and correlation statistics have been done be provided for variables of interest and significance, with multivariate analyses conducted across selected variables.

The transcribed interviews were analyzed using output from the QSR NVivo software package and by going b to the original transcripts to substantiate around the selected quotes.

APPENDIX 4: SAMPLE SIZE CALCULATIONS AND POPULATION

Sample Size Calculations

A probability sample size of 460 was calculated for the WR Carpenters work force across 8 sites. Those surveyed were randomly selected by types of work and by male and female gender, proportional to the overall workforce and gender distribution at each site.

Overall sample sizes for each site included in this survey were calculated on the basis of factors typically used in surveys with probability samples. The expected baseline value of key indicator used in the sample size computations was consistent condom use at last sex across all partner types, with a magnitude of 15% change desired; and to be able to detect a 95% Confidence level with an 80% statistical power; and design effect of 2. A multiplier of 1.25 was used as the core indicator was not applicable to all participants as a proportion may not have had sex. From previous BSS this is usually much less than 20% in workforce samples at private industries.

The following formula was used to determine the sample size for target groups for the BSS: Formula for calculating the required sample size for a given sub-population (n):

$$n=D \frac{\left[Z_{1-\alpha} \sqrt{2P(1-P)} + Z_{1-\beta} \sqrt{\frac{P_1(1-P_1) + P_2(1-P_2)}{2}} \right]}{(P_2 - P_1)^2}$$

Where:

D = 2	design effect;
P ₁ = .50	50% consistent condom use in the last 3 months with all partner types
P ₂ = .65	65% consistent condom use in the last 3 months with all partner types
P =	(P ₁ + P ₂) / 2;
Z _{1-α} = 1.645	the z-score corresponding to desired level of significance
Z _{1-β} = 1.282	The z-score corresponding to the desired level of power

The size is calculated with having 95% significance, with 90% confidence of detecting a 15 percentage point increases from P₁ to P₂. The following values of the indices apply:

D = 2 Design effect is conservative.

P₁ = .50 outcome of key behaviours and this is the estimated proportion at the time of the first survey. In this instance is consistent condom use during sex over the last 3 months across types of partners. The actual proportion being used in calculations is conservative at 50% and most available data indicates that this indicator would be significantly less. After data collection this can be adjusted with the proportion determined by the survey, giving more robustness to the sample and easily increasing power above 90%.

P₂ = .65 (the proportion at some future date, such that the quantity (P₂ - P₁) is the size of the magnitude of change you want to be able to detect in the target proportion at some future date, so that (P₂ - P₁) is the magnitude of change you want to be able to detect in the indicator

the future. P₂ is a change of 15% in consistent condom use across types of partners over last 3 months.

$$P = (P_1 + P_2) / 2$$

Alpha Z_{1-α} = the z-score corresponding to the probability with which it is desired to be able to conclude that an observed change of size (P₂ - P₁) would not have occurred by chance; Z_{1-α} = 1.645 the z-score corresponding to desired level of significance

Beta Z_{1-β} = the z-score corresponding to the degree of confidence with which it is desired to be certain of detecting a change of size (P₂ - P₁) if one actually occurred; Z_{1-β} = 1.282 the z-score corresponding to the desired level of power

$$n = \frac{D}{(P_2 - P_1)^2} \left[Z_{1-\alpha} \sqrt{\frac{2P(1-P)}{P}} + Z_{1-\beta} \sqrt{\frac{P_1(1-P_1) + P_2(1-P_2)}{P}} \right]^2$$

$$n = \frac{2}{(0.0225)} \left[1.645 \sqrt{\frac{2(0.575)}{(0.425)}} + 1.282 \sqrt{\frac{50(1-0.5) + 0.65(1-0.65)}{0.65}} \right]^2$$

$$n = \frac{2}{(0.0225)} \left[\frac{1.645 \sqrt{0.48875}}{\sqrt{1}} + \frac{1.282 \sqrt{0.4775}}{\sqrt{5}} \right]^2$$

$$n = \frac{2}{(0.0225)} \left[1.1500301 + \frac{0.887879625}{5} \right]^2$$

$$n = \frac{2}{(0.0225)} \left[2.037909725 + \frac{0.1775793}{5} \right]^2$$

$$n = \frac{2}{(0.0225)} \left[4.151076047 \right]^2$$

$$n = \frac{2}{(0.0225)} [184.58] \quad n = 369$$

There is then a need to apply a multiplier to correct for the fact that the core indicator will not be applicable to all participants as a proportion may not have had sex. While data from previous BSS indicates that this is much less than 20% in workforce samples, conservatively the multiplier will be based on an arbitrary .80 the multiplier is 1.25 (1.) / 0.8. Therefore, required sample size of the workforce **n= (369*1.25) = 460.**

Population and Sample Size Distribution Calculations

Table 137: Population Size Distribution

ESTATE	% of male each site (male out of 3001)	Male Dist of site (male out of 785)	Sex				% of Total pop across each site	% of Total	Total
			Male	% of female each site (female out of 1645)	Female dist of site (female out of 785)	Female			
Aviamp	20.0	76.6%	601	11.2%	23.4	184	16.9%	100	785
% of Total Pop			13			4			17
Bunum Wo	13.5	46.8%	404	27.9%	53.2	459	18.6%	100	863
% of Total Pop			9			10			19
Kigabah	4.6	66.5%	139	4.3%	33.5	70	4.5%	100	209
% of Total Pop			3			2			5
Kindeng	23.9	75.7%	718	14.0%	24.3	231	20.4%	100	949
% of Total Pop			15			5			20
Kudjip	18.1	70.6%	544	13.8%	29.4	227	16.6%	100	771
% of Total Pop			12			5			17
Minjigina	7.5	82.2%	226	3.0%	17.8	49	5.9%	100	275
% of Total Pop			5			1			6
Pugamp	6.9	76.8%	208	3.8%	23.2	63	5.8%	100	271
% of Total Pop			4			1			6
Sigri	5.4	30.8%	161	22.0%	69.2	362	11.3%	100	523
% of Total Pop			3			8			11
Total	100	64.6%	3001	100.0%	35.4	1645	100.0%	100	4646

Table 138: Sample Size Distribution

	Gender Distribution							Total	
	% of male across each site	Male Pop Dist of site	Male	% of Female across each site	Female Pop Dist of site	Female	% of Total population across each site	Pop Dist of site	
Aviamp	19.7%	76.6	59	11.2%	23.4	18	16.7%	100	77
% of Sample size Pop			13			4			17
Bunum Wo	12.0%	46.8	36	25.5%	53.2	41	16.7%	100	77
% of Sample size Pop			8			9			17
Kigabah	4.7%	66.7	14	4.3%	33.3	7	4.6%	100	21
% of Sample size Pop			3			2			5
Kindeng	23.7%	75.5	71	14.3%	24.5	23	20.4%	100	94
% of Sample size Pop			15			5			20
Kudjip	20.1%	70.6	60	15.5%	29.4	25	18.5%	100	85
% of Sample size Pop			13			5			18
Minjigina	7.7%	82.1	23	3.1%	17.9	5	6.1%	100	28
% of Sample size Pop			5			1			6
Pugamp	6.7%	76.9	20	3.7%	23.1	6	5.7%	100	26
% of Sample size Pop			4			1			6
Sigri	5.4%	30.8	16	22.4%	69.2	36	11.3%	100	52
% of Sample size Pop			3			8			11
Total	100%	65.0	299	100%	35.0	161	100%		460

APPENDIX 5: ADDITIONAL TABLES

Table 139: Number of people living in a house by sex

Number of people live in your house	Sex				Total	
	Male		Female			
	n	%	n	%	n	%
0	3	0.70%	0	0.00%	3	0.70%
Subtotal	3	0.7%	0	0.00%	3	0.7%
1	11	2.40%	0	0.00%	11	2.40%
2	10	2.20%	9	2.00%	19	4.10%
3	30	6.50%	10	2.20%	40	8.70%
4	30	6.50%	17	3.70%	47	10.20%
5	44	9.60%	26	5.70%	70	15.20%
Subtotal	125	27.20%	62	13.50%	187	40.70%
6	37	8.00%	13	2.80%	50	10.90%
7	36	7.80%	29	6.30%	65	14.10%
8	23	5.00%	15	3.30%	38	8.30%
9	15	3.30%	12	2.60%	27	5.90%
10	21	4.60%	7	1.50%	28	6.10%
Subtotal	132	28.70%	76	16.50%	208	45.20%
11	10	2.20%	4	0.90%	14	3.00%
12	11	2.40%	5	1.10%	16	3.50%
13	7	1.50%	4	0.90%	11	2.40%
14	2	0.40%	4	0.90%	6	1.30%
Subtotal	30	6.50%	17	3.70%	47	10.20%
15	2	0.40%	1	0.20%	3	0.70%
17	3	0.70%	2	0.40%	5	1.10%
20	0	0.00%	1	0.20%	1	0.20%
21	1	0.20%	1	0.20%	2	0.40%
22	1	0.20%	0	0.00%	1	0.20%
23	1	0.20%	0	0.00%	1	0.20%
32	1	0.20%	0	0.00%	1	0.20%
35	0	0.00%	1	0.20%	1	0.20%
Subtotal	9	2.0%	6	1.30%	15	3.30%
Total	299	65.00%	161	35.00%	460	100.00%

Table 140: Age at first sexual intercourse by sex

Age at first sexual intercourse	Sex				Total		
	Male		Female		n	%	Cum. %
	n	%	n	%			
6	1	0.2%	0	0.0%	1	0.2%	.2%
8	1	0.2%	2	0.5%	3	0.7%	.9%
9	1	0.2%	0	0.0%	1	0.2%	1.1%
10	4	0.9	0	0.0%	4	0.9%	2.0%
12	2	0.5%	0	0.0%	2	0.5%	2.5%
13	0	0.0%	3	0.7%	3	0.7%	3.2%
14	3	0.7%	3	0.7%	6	1.4%	4.6%
15	11	2.6%	2	0.5%	13	3.1%	7.7%
16	9	2.1%	10	2.3%	19	4.5%	11%
17	12	2.8%	2	0.5%	14	3.3%	14.3%
18	12	2.8%	7	1.6%	19	4.5%	18.8%
19	7	1.6%	5	1.2%	12	2.8%	21.6%
20	17	4.0%	5	1.2%	22	5.2%	26.8%
21	0	.0%	2	0.5%	2	0.5%	27.3%
22	3	.7%	2	0.5%	5	1.2%	28.5%
23	2	.5%	0	0.0%	2	0.5%	29.0%
24	1	.2%	0	0.0%	1	0.2%	29.2%
25	4	.9%	2	0.5%	6	1.4%	30.6%
26	1	.2%	1	0.2%	2	0.5%	31.1%
27	2	.5%	0	0.0%	2	0.5%	31.6%
28	2	.5%	0	0.0%	2	0.5%	32.1%
29	1	.2%	0	0.0%	2	0.2%	32.3%
30	1	.2%	0	0.0%	1	0.2%	32.5%
32	1	.2%	0	0.0%	1	0.2%	32.7%
53	1	0.2	0	0.0	0	0.2%	32.9%
don't know	182	42.7%	99	23.2%	281	66.0%	98.9%
Total	281	66.0%	145	34.0%	426	100%	

APPENDIX 6: LETTER OF RESPONSE FROM WR CARPENTERS



CARPENTER ESTATES

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Division of WRC Ltd

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Telephone: (675) 542 2700, (675) 542 2326 • Facsimile: (675) 542 1616

01st September

The Director
National Research Institute
PO Box 5854
BOROKO
National Capital District

Attention: Dr. Thomas Webster

Dear Dr. Webster

REF: REPORT ON 'A STUDY WITH WR CARPENTERS WORKFORCE'

We are in receipt of report "A Study with WR Carpenters workforce."

We have received your report and are in general agreement with it, however we would like to have the following matters reviewed and corrected.

1. In paragraph 3 of the Executive Summary it states that wages could be as low as K30 to K80 per fortnight. We believe that this statement is misleading because of a mis-statement of fact at that time and also because of major increases in pay rates since the time of the survey. Since the timing of your survey we have applied increase of 20-35% to all our staff and maintain that all wages comply with the requirements of the Minimum Wages Regulation which requires the payment of minimum of K2.12 to Rural Based Workers hourly.

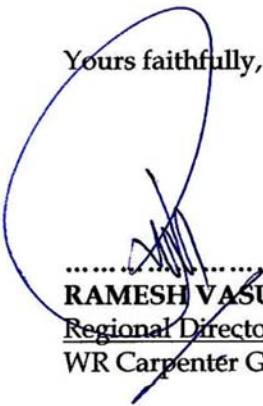
In addition to our permanent workforce we employ a number of people on a casual basis to meet short term seasonal requirements such as coffee harvesting. Frequently other members of an employee's family or local villages will take up their casual or seasonal positions which are frequently paid on "piece rate" basis. Our studies have proven that the "piece rates" offered will at least be equal to minimum rates, should the worker work at the job for a full 8 hour a day.

2. Paragraph 4 refers to accommodation and clean water facilities. As a Company, Carpenter Estates agrees that some of the facilities provided requires review. Whilst we believe that the conditions we offer our employees are in line with those offered by other rural employers. We advise that we are mindful of the need to improve these conditions. In doing so it must be understood that it is a massive undertaking and that progress will be governed by the profit generated and health of the organization.

Plans are as follows;

- 10 X Housing units at Aviamp in 2011 at the cost of K140,000
- Spending K500,000 in 2011 at Minjigina as a first stage of developing permanent style housing for a permanent labor housed on that Estate.
- In association with the ADB to complete spending of K2.7million by July 2011 to refurbish and build Aid Post Staff Houses and sanitation and clean water.
- Continue negotiations with the ADB Enclaves project to start a further K3million from 2011, through to 2013 to expend a further K3million staff housing and associated further Buildings.
- Expenditures on company schools over the last 4 years has amounted to K200,000.

Yours faithfully,



.....
RAMESH VASUDEVAN

Regional Director

WR Carpenter Group of Companies (PNG)