

# HIV/AIDS and Construction Workers: Knowledge, Risk Sexual Behaviours and Attitude

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## Abstract

**Introduction:** The construction industry depends mainly on labour to translate other resources into a physical object (i.e. building, road, airport etc.). The industry's workforce is always mobile and its activities are characterized by difficult working conditions. The mobile workforce of industry and their vulnerability to HIV/AIDS pandemic have been fairly researched. The objective of the study is to determine construction workers' HIV/AIDS knowledge, risk sexual behaviours and their attitude towards HIV/AIDS.

**Method:** The study adopted a cross sectional research design and purposive sampling method was used to select respondents. The researched area included sites in Dar es Salaam, Morogoro and Dodoma cities. A sample size involved 20 construction sites and 5 respondents from each site. A hundred questionnaires were distributed out of which 58 were fairly filled. The study adapted standard questionnaires developed by UNAIDS, Family Health International (FHI) and Demographic and Health Surveys (DHS). The collected data was analyzed using the Statistical Package for Social Sciences (SPSS) software version 20.0.

**Results:** The results show that most construction workers have low HIV knowledge, low risk sexual behaviours and positive attitude towards HIV/AIDS. Furthermore, indicators of low knowledge were evident in awareness of PMTCT services, HIV can be spread through breastfeeding, HIV can be spread through sharing injection and HIV can be spread through unsafe sex.

**Conclusion:** In conclusion risk sexual behaviours are low, attitude towards HIV/AIDS is generally positive but HIV knowledge is low. However, there are alarming concerns in some indicators of both risk sexual behaviours and attitude noted in the study.

**Keywords:** HIV/AIDS, knowledge, risk behaviours, attitude, construction workers, Tanzania

## 1. Introduction

### 1.1 Synopsis of HIV/AIDS Infection

HIV/AIDS pandemic is a threat to the workforce not only in Tanzania but in the Sub-Saharan region. The UNAIDS Fact Sheet (2017) reports that globally, in 2016 there were 36.7 million people living with HIV, 1.8 million people became newly infected with HIV and 1 million people died from AIDS-related diseases. Likewise, the UNAIDS Fact Sheet (2017) reports that in Eastern and Southern Africa there were 19.4 million people living with HIV, estimated 790 000 new HIV infections and 420 000 people died of AIDS-related diseases. Efforts have been in place to combat the infection resulting into global and regional decline in new HIV infection and AIDS related deaths. According to the UNAIDS Fact Sheet (2017) new HIV infections among adults declined by an estimated of 11% from 2010 to 2016 and AIDS-related deaths have fallen by 48% since the peak in 2005 globally. In East and Southern Africa, new HIV infections declined by 29% between 2010 and 2016 and the number of AIDS-related deaths in the region fell by 42 % (*ibid*).

Tanzania which is part of East and Southern Africa is one among the severely affect countries. East and Southern Africa accounts for 43% of the global total of new HIV infections (UNAIDS Fact Sheet, 2017). According to Tanzania HIV Fact Sheet (2016) the HIV prevalence in Tanzania is estimated at 4.7% and a total of 1.4 million Tanzanians were estimated to be living with HIV in 2015. Tanzania HIV Fact Sheet (2016) also reports that an estimated 54,000 new infections and 36,000 AIDS-related deaths occur in Tanzania annually. However, like in many parts of the world, new HIV infection and AIDS related deaths have been declining in Tanzania following a

number of interventions instituted by the Government and other stakeholders. The TACAIDS et al. (2009 & 2013) report state that HIV prevalence in Tanzania declined from 7% to 6% in 2008 and from 6% to 5% in 2011. As of June 2011, an estimated 1.6 million people in Tanzania were living with HIV (TACAIDS et al., 2013).

### *1.2 The Context of HIV/AIDS in the Construction Industry*

The HIV prevalence of 4.7% (Tanzania HIV Fact Sheet, 2016) in the population of Tanzania cannot leave the construction industry safe. Bowen et al. (2008) reports an HIV prevalence rate of 13.96% among construction employees and concludes that the industry has one of the highest prevalence rates of any economic sector. Bowen et al. (2015) point out that the construction industry is the third highest hit by HIV/AIDS after mining and transport. The construction industry depends mainly on labour to translate other resources into a physical object (i.e. building, road, airport etc.). The industry's workforce is always mobile and its activities are characterized by difficult working conditions. The mobile workforce and the nature of activities of the industry and their vulnerability to HIV/AIDS pandemic have been fairly researched. The construction industry is particularly vulnerable to the epidemic because of its migrant labour force, large unskilled labour force and aging workforce amongst other reasons (Harinarain & Haupt, 2014). The HIV prevalence rates are increasing in many rural areas in which a significant proportion of the population migrates for work (Zhuang et al., 2012). The ILO (2008) explains that many studies have identified construction workers as a risk group along with miners and transport workers because many of them are mobile workers, with poor living and working conditions, and often separated from their families. Akinola et al. (2013) found that the vulnerability of migrant construction workers in India to HIV/AIDS were very high despite the high levels of HIV/AIDS knowledge and awareness. Migrant labour is a high risk group for HIV transmission in view of poor knowledge, high proportion of alcohol users among those reporting casual sex, and low proportion of condom use during non-regular sexual relationship (Arora et al., 2014). Qu et al. (2008) point out that the majority of construction workers in China comprise of floating population (migrant workers) exemplified by more males, younger age group, lower education level, more short-term and heavier labour. Weine & Kashuba (2012) reveal that HIV risk among migrant labour was associated with multilevel determinants at the levels of policy, socio-cultural context, health and mental health, and sexual practices. Collectively, these studies reveal internal and external mobile workforce of the industry, poor living and working conditions and low levels of education. These reasons and many others subject the construction industry to the risk of HIV/AIDS infection.

### *1.3 Construction Workers HIV/AIDS Knowledge, Risk Sexual Behaviours and Attitude*

Construction workers are exposed to HIV/AIDS and thus the need to explore concerns on the pandemic. These concerns include: HIV/AIDS knowledge, risk sexual behaviours as well as attitude. Researches worldwide have varying outcomes on knowledge, risk sexual behaviours and attitude towards HIV/AIDS. Qu et al. (2008) determine that majority of construction workers in China had poor knowledge of HIV/AIDS and more than 60% had negative attitude towards people living with HIV/AIDS (PLWHA). Kanda et al. (2009) reveal that construction workers were familiar with the term HIV/AIDS but both internal and external migrant workers have a poor knowledge of HIV/AIDS and over 50% respondents expressed discriminatory attitudes towards PLWHA. A study by Zhuang et al. (2012) reports high levels of sex with casual or commercial sex partners, low levels of consistent condom use with casual or commercial sex partners, and extremely low levels of condom use among those with stable partners which is a reflection of high risk sexual behaviours. Bowen et al. (2014) found that five firms believe they do not yet know enough about HIV/AIDS to make an informed decision about an effective HIV/AIDS policy or programme for their organization.

Haupt et al. (2005) report that both younger and older construction workers generally had acceptable levels of knowledge, perceptions and attitudes on most issues relative to the disease. However, the results of the study indicate that both age cohorts did not perceive HIV and AIDS as a serious problem at their workplace. Weine & Kashuba (2012) found that the sexual practices most often associated with increased HIV risk were: limited condom use, multiple partnering, clients of sex workers, low HIV knowledge, and low perceived HIV risk. Bowen et al. (2016a) determine that prejudice and lifestyle risk are the terminal predictors of fear of testing. Kassa et al. (2013) study reveals that the prevalence of risky sexual behaviours among big construction enterprise workers was 44.9%. Pant et al. (2013) found that construction workers had sufficient knowledge and more than half had positive attitude towards HIV/AIDS and concluded that attitude and use of condom were unsatisfactory. Purwaningsih et al. (2015) reveal that construction workers showed less knowledge, positive attitude, and less practice toward the risk of HIV transmission. Bowen et al. (2016b) found that HIV positive workers have poorer education levels and lower AIDS-related knowledge than non-infected workers.

The varying levels of knowledge, risky sexual behaviours and attitude towards HIV/AIDS among construction workers calls for further research in other parts of the world. Researches related to HIV/AIDS in the construction

industry are almost non-existent in Tanzania. The current study seeks to fill this gap.

## 2. Methods

The study adopted a cross sectional research design. The population of the study was all active construction sites employing more than fifty workers. Purposive random sampling method was used to select sites for the study. The study was carried out in three regions of Tanzania including Dar es Salaam, Morogoro and Dodoma. Major reasons for selecting the three cities were the diversification and nature of construction sites, activities available in the selected areas and the easy access by the researchers. A sample size of 20 construction sites was chosen and 5 randomly selected respondents from each site were expected to fill the questionnaires. Out of 100 distributed questionnaires, 58 were fairly filled for the analysis which equates to 58%.

The study adapted standard questionnaires developed by UNAIDS, Family Health International (FHI) and Demographic and Health Surveys (DHS). The questionnaires were translated from English to Swahili and self-administered during the study. The major variables for the study includes: background (age, sex, marital status, experience, occupation and current relationship); knowledge, risk sexual behaviours and attitude indicators.

The collected data was analyzed using the Statistical Package for Social Sciences (SPSS) software version 20.0. Descriptive statistics, recode into different variables and compute variables features were used to compute frequencies for background variables, indices and scales for indicators.

## 3. Results

Descriptive statistics, recode into different variables and compute variables features of SPSS were used to compute frequencies for background variables, knowledge, risky sexual behaviours and attitude indices and associated scales. The indices were developed to determine the extent to which various variables can be grouped together into a smaller number of indicators which summarizes the linear relationship between those variables. The scores of variables are set between 1 and 0. The numbers of variables selected for developing the indices are 11, 9 and 15 for knowledge, risky sexual behaviours and attitude respectively. The total scores are between 0 and 12 for knowledge, 0 and 10 for risky sexual behaviours and 0 and 16 for attitude. The indices for knowledge, risky sexual behaviours and attitude are as shown in Table 1.

Table 1. Indices for knowledge, sexual risk behaviours and attitude

Index of knowledge			Index of risk behaviours			Index of attitude		
	Frequency	Percent		Frequency	Percent		Frequency	Percent
1	2	3.4	0	2	3.4	1	1	1.7
2	5	8.6	1	13	22.4	4	1	1.7
3	10	17.2	2	12	20.7	5	3	5.2
4	19	32.8	3	12	20.7	6	2	3.4
5	14	24.1	4	10	17.2	7	8	13.8
6	7	12.1	5	6	10.3	8	1	1.7
7	1	1.7	6	3	5.2	9	3	5.2
<b>Total</b>	<b>58</b>	<b>100.0</b>	<b>Total</b>	<b>58</b>	<b>100.0</b>	10	7	12.1
						11	11	19.0
						12	3	5.2
						13	9	15.5
						14	5	8.6
						15	4	6.9
						<b>Total</b>	<b>58</b>	<b>100.0</b>

To develop the scale for knowledge, risky sexual behaviours and attitude towards HIV/AIDS the following score ranges were determined:

- 0-4 low knowledge and 5 and above high knowledge. In calculating the scale for index new score ranges redefined as Lowest through 4=1, 5 through Highest =2
- 4= low risk sexual behaviours and 5 and above = high risk sexual behaviours. In calculating the scale for index new score ranges redefined as Lowest through 4=1, 6 through Highest =2

- c) 0-7 =Negative attitude, 8 and above= Neutral attitude and 6 and above =positive attitude. In calculating the scale for index new score ranges redefined as Lowest through 7=1, 8 through Highest =2. The results are presented in Table 2.

Table 2. Scales for knowledge, risky sexual behaviours and attitude

<b>Scale for HIV/AIDS knowledge</b>	<b>Frequency</b>	<b>Percent</b>
Low knowledge	36	62.1
High knowledge	22	37.9
<b>Total</b>	<b>58</b>	<b>100.0</b>
<b>Scale for HIV/AIDS risk sexual behaviours</b>		
Low risk sexual behaviours	37	63.8
High risk sexual behaviours	21	36.2
<b>Total</b>	<b>58</b>	<b>100.0</b>
<b>Scale for attitude towards HIV/AIDS</b>		
Negative attitude	15	25.8
Positive attitude	43	74.2
<b>Total</b>	<b>58</b>	<b>100.0</b>

### 3.3 General Knowledge, Sexual Risk Behaviours and Attitude

Background variables and associated knowledge, risk sexual behaviours and attitude are shown in Table 3. With participation of 63.8% male and 36.2% female, knowledge of HIV/AIDS and risk sexual behaviours were generally low. Furthermore, there is no significant difference between male and female general knowledge on HIV/AIDS and risk sexual behaviours. Attitude towards HIV/AIDS was generally positive and there was a significant difference across sex with female having more positive attitude than male. In terms of married (57.1%) and others (42.9%) general knowledge on HIV/AIDS was low, risk sexual behaviours was low and attitude towards HIV/AIDS was positive and there was no significant difference on the assessed indicators between the two groups. Other background variables namely age group, experience and trade the results were similar to married and others with the exception of attitude towards HIV/AIDS in trade group. Attitude towards HIV/AIDS among skilled and unskilled respondents was significantly different with skilled exhibiting more positive attitude towards HIV/AIDS than unskilled.

Table 3. Background variables and general knowledge, risk sexual behaviours and attitude

Factor	Knowledge				Risk sexual behaviours				Attitude towards HIV/AIDS			
	Low	High	Total	Sig	Low	High	Total	Sig	-Ve	+Ve	Total	sig
<i>Sex</i>												
Male	41.4%	22.4%	63.8%	.380	53.5%	10.3%	63.8%	.581	22.4%	41.4%	63.8%	.030*
Female	20.7%	15.5%	36.2%		31%	5.2%	36.2%		3.4%	32.8%	36.2%	
Total	62.1%	37.9%	100%		63.8%	36.2%	100%		25.8%	74.2%	100%	
<i>Marital status</i>												
Married	32.1%	25.0%	57.1%	.121	44.6%	12.5%	57.1%	.064	17.9%	39.3%	57.1%	.288
Others	32.2%	10.7%	42.9%		41.1%	1.8%	42.9%		8.9%	33.9%	42.9%	
Total	64.3%	35.7%	100%		85.7%	14.3%	100%		26.8%	73.2%	100%	
<i>Age group</i>												
15-24 years old	29.3%	13.8%	43.1%	.297	34.5%	8.6%	43.1%	.322	8.6%	34.5%	43.1%	.282
Over 24 years old	32.8%	24.1%	56.9%		50.0%	6.9%	56.9%		17.2%	39.7%	56.9%	
Total	62.1%	37.9%	100%		84.5 %	15.5%	100%		25.8%	74.2%	100%	
<i>Experience</i>												
Less than 5 years	38.5%	21.1%	59.6%	.492	49.1%	10.5%	59.6%	.468	19.3%	40.4%	59.7%	.171
Over 5 years	24.6%	15.8%	40.4%		35.1%	5.3%	40.4%		7.0%	33.3%	40.3%	
Total	63.1%	36.9%	100%		84.2%	36.8	100%		26.3%	73.7%	100%	
<i>Trade</i>												
Skilled	41.4%	29.3%	70.7%	.289	56.9%	13.8%	70.7%	.185	12.1%	58.6%	70.7%	.025**
Unskilled	20.7%	8.6%	29.3%		27.6%	1.7%	29.7%		13.8%	15.5%	29.3%	
Total	62.1%	37.9%	100%		84.5%	15.5%	100%					

3.4 General Knowledge, Risk Sexual Behaviours and Attitude for All Variables

Table 4 presents respondents general knowledge, risk sexual behaviours and attitude on individual indicators. Respondents’ knowledge on HIV and AIDS was significantly different in the following indicators: Are you aware of PMTCT Services (sig= 0.045); HIV can be spread through breastfeeding (sig= 0.000); HIV can be spread through injection (sig= 0.06), and HIV can be spread through unsafe sex (sig= 0.000). The HIV Knowledge of assessed indicators is daunting among those with low and high knowledge. Awareness of PMTCT Services is such that 36.2% and 12.1% of those with low and high knowledge respectively are not aware. HIV can be spread through breastfeeding, all 22% respondents with high knowledge agreed that a baby can contract HIV through breastfeeding while 62.1% and 15.5 % of both low and high knowledge did not. HIV can be spread through sharing injection was not acknowledged by 39.7% with low knowledge and 5.2% with high knowledge and almost the same trend (31% and 5.2%) was noted for HIV spread through unsafe sex.

Respondents risk sexual behaviours were significantly different in the following indicators: ever engaged in sexual relationship with a person who is not your spouse in the past three months (sig= 0.000); condom was used while having sex with a person who is not your spouse (sig= 0.000); do you have multiple sex partners? (sig= 0.000) and ever had anal sex with any of your multiple sex partners (sig= 0.022). Despite general low risk sexual behaviours determined in the present study, risk sexual behaviours is still rampant in some of the indicators. Engagement in sexual relationship with a person who is not one’s spouse in the past three months prior to the study was noted in 25.9% of those with low risk sexual behaviours and 15.5% of those with high risk behaviours. Majority (63.8%) of

those with low risk behaviours did not use condom during the first time of sexual intercourse. Multiple sex partners practice was revealed in 19% and 15.5% of those with low and high risk sexual behaviours respectively. Respondents with low risk sexual behaviours (44.8%) and high risk behaviours (12.1%) disclosed that it is common for fellow construction workers to have multiple sex partners.

Respondents' attitude towards HIV/AIDS was significantly different between those with negative and positive attitudes in almost all assessed indicators. Indicators which were statistically insignificant are: discussion of HIV/AIDS with family (sig= 0.172), discussion of HIV/AIDS with friends (sig= 0.151) readiness to buy food knowingly from an HIV infected food vendor (sig= 0.151) and refusing sex without condom with one's sexual partner (sig= 0.438). Disparity was noted between those with negative and positive attitude towards HIV/AIDS. Respondents with negative attitude (19%) and positive attitude (24.1%) cannot share food with HIV infected person). Nineteen per cent and 13.8% of respondents with negative and positive attitude respectively indicated that an HIV infected boss should not be allowed to continue working in the company. More than 36% of respondents with positive attitude wish it to remain a secret if one of the family members is HIV infected. Never tested for HIV was noted in 22.4% of those with negative attitude and 10.3% of those with positive attitude and nearly the same trend was noted in never given the HIV test results (24.1% negative attitude and 13.8% positive attitude). Disclosure of HIV test results were such that 24.1% of those with negative attitude and 22.4% positive attitudes never revealed HIV results to anyone and the trend was more or less the same with their readiness to disclose their HIV positive test results (20.7% negative attitude and 10.3% positive attitude). Furthermore, 13.8% of respondents with negative attitude and 34.5% of those with positive attitude never refused sex without condom.

Table 4. Knowledge, risk sexual behaviours and attitude indicators

S/N	Variable		Knowledge			Risk sexual behaviours			Attitude towards H&S		
			Low	High	Sig	Low	High	Sig	-Ve	+Ve	Sig
K1	Are you aware of HIV and AIDS?	Yes	60.3%	37.9%	.621						
		No	1.7%	0%							
K2	Can ARVs Cure AIDS?	Yes	6.9%	10.3%	.112						
		No	55.2%	27.6%							
K3	HIV positive mother can give birth to HIV negative baby	Yes	51.7%	36.2%	.170						
		No	10.3%	1.7%							
K4	Are you aware of PMTCT Services	Yes	25.9%	25.9%	.045*						
		No	36.2%	12.1%							
K5	HIV and AIDS can be spread through saliva	Yes	1.7%	3.4%	.319						
		No	60.3%	34.5%							
K6	HIV and AIDS can be spread through sharing food	Yes	1.7%	0%	.621						
		No	60.3%	37.9%							
K7	HIV and AIDS can be spread through sharing utensils	Yes	1.7%	0%	.621						
		No	60.3%	0%							
K8	HIV can be spread through breastfeeding	Yes	0%	22.4%	.000**						
		No	62.1%	15.5%							
K9	HIV can be spread through sharing injection	Yes	22.4%	32.8%	.000**						
		No	39.7%	5.2%							
K10	HIV can be spread through living with infected person	Yes	0%	1.7%	.379						
		No	62.1%	36.2%							

K11	HIV can be spread through unsafe sex	Yes	31.0%	32.8%	0.06**				
		No	31.0%	5.2%					
B1	The respondent never had sexual intercourse	Yes				10.3%	0%	.345	
		No				74.1%	15.5%		
B 2	First sexual intercourse was done willingly	Yes				62.1%	13.8%	.300	
		No				22.4%	1.7%		
B 3	Condom was used during the first time sexual intercourse	Yes				20.7%	10.3%	.425	
		No				63.8%	5.2%		
B 4	Ever had anal sex	Yes				0%	1.7%	.155	
		No				84.5%	13.8%		
B 5	Ever engaged in sexual relationship with a person who is not your spouse in the past three months	Yes				25.9%	15.5%	.000**	
		No				58.6%	0%		
B 6	Condom was used while having sex with a person who is not your spouse	Yes				72.4%	0%	.000**	
		No				12.1%	15.5%		
B 7	Do you have multiple sex partners?	Yes				19%	15.5%	.000**	
		No				65.5%	0%		
B 8	Ever had anal sex with any of your multiple sex partners?	Yes				0%	3.4%	.022**	
		No				84.5%	12.1%		
B 9	Is it common for fellow construction workers to have multiple sex partners?	Yes				44.8%	12.1%	.157	
		No				39.7%	3.4%		
A1	Do you discuss HIV / AIDS with family?	Yes					17.2%	62.1%	.151
		No					8.6%	12.1%	
A2	Do you discuss HIV / AIDS with friends?	Yes					20.7%	69.0%	.172
		No					5.2%	5.2	
A3	Do you know anyone who died from HIV?	Yes					13.8%	62.1%	.033**
		No					21.1%	12.1%	
A4	Are you ready to shared food with HIV and AIDS infected person?	Yes					6.9%	50.0%	.014**
		No					19%	24.1%	
A5	Are you ready to share working tools with HIV and AIDS infected person?	Yes					20.7%	72.4%	.049**
		No					5.2%	1.7%	
		No					19%	13.8%	
A6	An HIV infected boss should be allowed to continue working in the company?	Yes					6.9%	60.3%	.000**

A7	Are you ready to buy food knowingly from an HIV infected food vendor?	Yes	17.2%	62.1%	.151
		No	8.6%	12.1%	
A8	Would you wish it to remain a secret if one of the family member is HIV infected	Yes	5.2%	36.2%	.047*
		No	20.7%	37.9%	
A9	Have you ever tested for HIV and AIDS?	Yes	3.4%	63.8%	.000**
		No	22.4%	10.3%	
A10	Were you given results after testing for HIV	Yes	1.7%	60.3%	.000**
		No	24.1%	13.8%	
A11	Have you ever revealed the test results to anyone	Yes	1.7%	51.7%	.000**
		No	24.1%	22.4%	
A12	Would you wish to test again for HIV	Yes	20.7%	58.6%	.000**
		No	5.2%	15.5%	
A13	Are you ready to reveal your positive HIV results to another person	Yes	5.2%	63.8%	.000**
		No	20.7%	10.3%	
A14	Is it proper for unmarried women to buy condom whenever they need to have	Yes	13.8%	65.5%	.008**
		No	21.1%	8.6%	
A15	Have you ever refused sex without condom with your sexual partner	Yes	12.1%	39.7%	.438
		No	13.8%	34.5%	

#### 4. Discussion

The participation of male (63.8%) was more than female (36.2%) which is consistent with previous studies (Arora et al., 2014; Bowen et al., 2016a; Haupt et al., 2005; Purwaningsih et al., 2015; Bowen et al., 2016b; Bowen et al., 2015; Kassa et al., 2013; Pant et al., 2013; Kanda et al., 2009). This mirrors the male domination of the industry. The HIV/AIDS knowledge of respondents was generally low same as determined in the works of Arora et al. (2014), Qu et al. (2008), Purwaningsih et al. (2015) and Bowen et al. (2016a) contrary to those of Pant et al. (2013), Akinola et al. (2013), Haupt et al. (2005) and Kanda et al. (2009). The disparity in the findings of HIV knowledge in the current study and previous studies is mostly influenced by the indicators assessed. Risky sexual behaviours were generally low which supports the studies of Akinola et al. (2013) and Purwaningsih et al. (2015) but contradicts the works of Kassa et al. (2013), Arora et al. (2014), Haupt et al. (2005), Qu et al. (2008) and Zhuang et al. (2012). Furthermore, there is no statistical significance difference across groupings (i.e. male and female; married and others; age group; experience; and trade) on the general HIV knowledge, risk sexual behaviours and attitude except attitude in the sex and trade categories. Further to this finding, females are reported to have lower levels of HIV/AIDS knowledge compared to their male counterparts in studies of TACAIDS et al. (2013), Pant et al. (2013) and Arora et al. (2014) and higher risky sexual behaviors in the study of Kassa et al. (2013).

Attitude towards HIV/AIDS was generally positive which is consistent with the previous studies of Pant et al. (2013) and Purwaningsih et al. (2015) and contrary to those of Qu et al. (2008) and Kanda et al. (2009). However, there was statistical significant difference across sex with female having more positive attitude than male. This contradicts other studies such as Pant et al. (2013) and TACAIDS et al. (2013) which report that females have more negative attitude towards HIV/AIDS than males. Similarly, attitude towards HIV/AIDS among skilled and unskilled respondents was significantly different with skilled exhibiting more positive attitude towards HIV/AIDS



than unskilled. This finding supports the study of Kanda et al. (2009) which found that those with lower levels of education had negative attitude.

Previous studies have assessed various indicators of HIV/AIDS knowledge, risky sexual behaviours and attitude. In the present study it was established that HIV knowledge among respondents with low and high HIV knowledge differ significantly on awareness of PMTCT Services, HIV spread through breastfeeding, and HIV spread through sharing injection and having unsafe sex. There are noted lower HIV knowledge areas for both respondents categorized with low and high general knowledge. About 50% of respondents are not aware of PMTCT Services. Respondents, 44.9% and 36.2% indicated that HIV cannot spread through sharing injection and having unsafe sex.

Respondents with low and high risky sexual behaviours had significant differences of behaviour on involvement in sexual relationship with a person who is not one's spouse in the past three months, use of condom while having sex with a person who is not one's spouse, having multiple sex partners, and or having anal sex with any of one's multiple sex partners. Risky sexual behaviours were noted across indicators for both respondents with low and high risk behaviours. Engagement in sexual relationship with a person who is not one's spouse in the past three months prior to the study was noted in 41.4% respondents. Majority (63.8%) of those with low risk behaviours did not use condom during the first time sexual intercourse. Multiple sex partners practice was revealed in 34.5% of respondents. More than 50% of respondents disclosed that it is common for fellow construction workers to have multiple sex partners.

Respondents with negative and positive attitudes towards HIV/AIDS, their attitude was significantly different in almost all indicators except for discussion of HIV/AIDS with family and friends, readiness to buy food knowingly from an HIV infected food vendor and refusing sex without condom with one's sexual partner. Negative attitude was noted among respondents with both general negative and positive attitude in some of the indicators. More than 40% respondents are ready to share food with HIV and AIDS infected person. An HIV infected boss should not be allowed to continue working in the company was noted in 32.8% of the respondents. Wishing it to remain a secret if one of the family members is HIV infected was indicated by 36.2%. Respondents who never tested, never given results, not revealed HIV results to anyone and not ready to reveal their positive HIV results to another person account for 32.7%, 37.9%, 46.% and 31% respectively. Furthermore, 48.3% of the respondents never refused sex without condom.

## 5. Conclusion

The construction workers HIV knowledge, risk sexual behaviours and attitude towards HIV/AIDS in Tanzania were evaluated. General knowledge of HIV/AIDS is low and the alarming indicators are: awareness of PMTCT Services, HIV spread through breastfeeding, HIV spread through injection, and HIV spread through unsafe sex. Risk sexual behaviours were generally low but disparity was noted in engagement in sexual relationship with a person who is not one's spouse in the past three months prior to the study, use of condom during the first time sexual intercourse, multiple sex partners practice, noted behaviours of construction workers to have multiple sex partners. Attitude towards HIV/AIDS is generally positive but there are few areas that have remained of concern such as readiness to shared food with HIV and AIDS infected person, an HIV infected boss to be allowed to continue working in the company, wishing to remain a secret if one of the family members is HIV infected, testing for HIV, seeking for results after HIV testing, revealing HIV results to anyone, readiness to reveal positive HIV results to another person, and, refused sex without condom.

## Ethical Considerations

Permission to conduct the study was provided by the Directorate of Postgraduate Research and Publications of Ardhi University. No other personal information such as name and address was obtained. The respondents were clearly informed of the objective of the study as well as requested consent in participating in the research through an introductory note on the questionnaire. Filling in the questionnaire indicated acceptance of participation.

## Competing Interests Statement

The authors declare that they have no competing or potential conflicts of interest regarding the publication of this paper.

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