

**A comparative analysis of HIV/AIDS knowledge, attitude and
practices of healthcare practitioners with and without formal
training in Lahore, Pakistan**

By

ARSHAD Sarah

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DECLARATION

I, hereby declare that this thesis titled, the “A comparative analysis of HIV/AIDS Knowledge, attitude and practices of healthcare practitioners with and without formal training in Lahore, Pakistan” is my individual work under the supervision of Professor MEIRMANOV Serik. I have acknowledged all the sources that I used by following appropriate referencing method.

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List of Abbreviations

AIDS Acquired immune deficiency syndrome

CIS Central Intelligence Agency

FSWs Female sex workers

HASP HIV second-generation surveillance project

HCP Health care providers

HSWs Hijra sex workers

HIV Human immunodeficiency virus infection

HIV-K-Q HIV Knowledge Questionnaire

IDUs Injecting drugs users

MARPs most-at-risk populations

MSMs males who have sex with males

NACP National AIDS Control Programme

NSI needle stick injuries

OTT Operation Theatre Technician

PLWHIV People living with Human immunodeficiency virus infection

SIV Simian Immunodeficiency Viruses

WHO World Health Organization

UNAIDS United Nations Agency for AIDS

UNDP United Nations Development Programme

UNESCO United Nations Educational, Scientific and Cultural Organization

UNGASS UN General Assembly Special Session

Abstract

This study deals with the knowledge, attitude and practices of regarding HIV/AIDS amongst medical professionals with formal training (Doctors, Nurses, Dispensers) and other professionals without formal training (Acupuncturists, Clinical Assistants, Homeopathic, Dispensars, Lab Technicians, Lady Health Visitors, Nurse, OT technician, Pharmacists, Hakeem, and Jarrah) in Lahore, Pakistan. This study is the first of its kind in Pakistan on this subject concerning a catalyzing population of professionals practicing without medical training. A cross-sectional survey was conducted with 268 health practitioners who had contact with vulnerable low-educated people. We found that there were misconceptions on transmission routes 78.7% believed that sharing toilet seat cover with HIV infected person could transmit HIV infection (P value = .012); 42.9% believed that mosquitos can spread HIV, 78.4% answered incorrectly that a person can get HIV by sharing a glass of water with someone who has HIV. Both group of professionals' had satisfactory attitude towards PLWHIV. Nearly 50% answered that they would prefer to care for patients infected with HIV/AIDS. Furthermore, several recruits still practiced high-risk behavior such as disposing off used syringes in domestic trash cans. However, more than 90% of the studied population used autoclave for sterilization of instruments; received safe medical tools usage related training. In conclusion, the study highlighted that the majority of professionals have unsatisfactory knowledge but favorable attitude and practices regarding HIV/AIDS. It suggests the dire necessity of increasing and re-evaluating HIV/AIDS education for nurses, doctors, and all health care providers.

Chapter 1

Introduction

Four decades have passed since AIDS was first reported in Africa, even though remarkable progress has been made during the last decade yet the world is far from containing the pandemic caused by HIV. Many factors play a role in the spread of HIV virus, which is the major part of this study. For example, insufficient knowledge, casual attitude and precarious practices play a major role in the increased burden of infectious diseases within developing countries.

“HIV stands for Human immunodeficiency virus infection and AIDS stands for acquired immune deficiency syndrome (HIV/AIDS). It is a virus transmitted sexually or by inoculation with contaminated blood and maybe passed from mother to baby at birth” (Wilhelm, 2012). Human immunodeficiency virus infection (HIV) causes the virus acquired immune deficiency syndrome (AIDS). In other words, AIDS is the most advanced stage of HIV virus.

“HIV attacks the body’s immune system. Normally, the immune system produces white blood cells and antibodies that attack the germs” (Whiteside, 2008). The cells that fight the bacteria and viruses are called T-cells lymphocytes. After a person has been infected with the HIV virus, day-by-day this virus starts to destroy T-cell lymphocytes, which helps in the development of white blood cells. It immobilizes the immune system to protect one’s body against minor viruses such as influenza, common cold and major diseases like pneumonia and tumors. Numerous infections take this opportunity and take the body’s weak immune system to develop certain diseases. These opportunistic

infections don't cause fatal death or serious health problems but they will slowly and eventually cause the death if a person living with HIV (Satpathy, 2003).

1.1 Background of study

Pepin (2011) proposes that AIDS has its roots in Africa. "Simian Immunodeficiency Viruses (SIVs) closely linked to HIV, has almost exact counterpart in a virus of a type of African monkey" (Rohleder, 2009). Scientists have successfully found the origin of the most devastating and deadliest disease of modern times. "Zoonosis can be defined as a certain virus or diseases, which pass from animals to humans" (Goodman, 2001). Once an animal has infected humans, it is likely to spread from human to human.

In the early 1980s, early stages of HIV pandemic it was discovered that only men were infected with this virus but now this trend has reversed (WHO, 2003). Western powers have been fighting with HIV/AIDS since the early 1980s. They have not been successful in finding a cure but they have been successful in having equal life expectancy as the general population. United States and Canada have been the top most countries that have been able to increase mortality of people living with HIV, which seemed impossible two decades ago. It has given new hope to people who are currently living with HIV infection.

1.2 Global HIV/AIDS epidemic

According to UN estimates 34 million people were living with HIV at the end of 2011 (UNAIDS, 2012). An estimated 0.8% of adults aged 15-49 years worldwide are

living with HIV, although the burden of the epidemic continues to vary considerably between countries and regions.

Sub-Saharan Africa remains most severely affected, with nearly 1 in every 20 adults (4.9%) living with HIV and accounting for 69% of the people living with HIV worldwide. Although the regional prevalence of HIV infection is nearly 25 times higher in sub-Saharan Africa than in Asia, almost 5 million people are living with HIV in South, Southeast and East Asia combined. After sub-Saharan Africa, the regions most heavily affected are the Caribbean and Eastern Europe and Central Asia, where 1.0% of adults were living with HIV in 2011.

A recent study has found that some group of HIV positive people namely gay men and bisexuals aged 20 years who started their antiretroviral therapy (ART) before 350cells/mm³ and stayed on ART had a chance of seeing their 89th birthday if nothing else changed which means their life expectancy is higher than US women (Sami et al., 2013). However, in comparison HIV drug users who injected, their life expectancy remained the same, which is 29 years. Since HIV/AIDS is not the top disease in developing countries anymore, the funding for HIV/AIDS has decreased in the past few years (UNAIDS, 2013).

This achievement can be a humbling milestone but this news does not sit well for the developing nations, especially Pakistan, where people have lived in a cloud of ignorance about HIV/AIDS crisis throughout the past decades and where the fight against HIV/AIDS has just taken its baby steps.

1.3 Phases of HIV epidemic

All countries need information based on their data to control the spread of HIV. “An HIV/AIDS epidemic is described by the HIV prevalence in any general population and/or countries” (Isbell, 1993). HIV epidemic evolves in three phases. The first stage is “low prevalence” where HIV is over 1% in general population. In concentrated epidemics HIV is over 5% in any sub-populations, which is at a higher risk of infection for example sex workers, a drugs user, MSM (World Health Organization, 2004). In low-level epidemics HIV is measured in any group focusing largely on high-risk behaviors in a population, which is working towards a rapid increase in spread of infection (WHO, 2002). According to Pop Council (2007), Pakistan falls in the category of “concentrated epidemic” with the most vulnerable population being injecting drug users, truck drivers and male sex workers.

1.4 Statement of the Problem

Although the percentage of HIV infected individuals in Pakistan is low compared to its neighbor country India and sub-Saharan African countries, the actual number of people living with HIV is reported less due to careless monitoring of data and stigmatization. If concluding the number of HIV patients is a difficult task in Pakistan, concluding the rate of the spread of HIV is even more difficult.

Pakistan currently reports a low prevalence of HIV/AIDS. The fear of an expanded HIV epidemic is primarily due to segments of the Pakistani population engaging in high-risk practices, a low level of public knowledge about HIV/AIDS, and dangerous blood transfusion and inoculation practices. An additional concern is

Pakistan's geographic proximity to India, a country that has experienced a rapid rise of HIV/AIDS (by the end of 1994 the World Health Organization (WHO) estimated that there were 1 750 000 cases of HIV in India) (WHO, 2009).

65% of the population of Pakistan lives in the rural part of the country (Population Reference Bureau, 2015). There is a deep impact on health indicators due to poverty, high illiteracy rate, inadequate sanitary services, violation of women and uneasy access to medical care (Arif, 2013).

Hunte & Sultana (1992) concluded that there has been many obstacles interrelated to the establishment of an effective healthcare system such as inadequate and incomplete knowledge of health and disease, seeking alternative and household remedies and cost related barriers. Currently, there are two types of health care system in Pakistan – Public and Private sectors.

Khan (1996) explained that the public healthcare system of Pakistan is majorly under-utilized due to many unavoidable drawbacks such as inadequate prevention of disease, monopolization of management, political corruptness for funds, fragile human resource development, denial of the importance of public health and promotion strategies.

Bilal & Naeem (2014) concluded that there are a few recognized hospitals and clinics where most of the patients treated have considerable amount of money to finance their own treatment. However, there are many hospitals, which are unregulated by the government. They host general practitioners without a medical degree, *hakeems*, homeopaths, traditional healers such as *jarrah* (street surgeon) and quacks.

51.7% of the general population chooses complementary and alternative medicine while the other half use biomedicine. 16% of the urban and rural population seek homeopathy for many ailments (Shaikh, Malik, James & Abdul, 2009). Shaikh & Hatcher (2005) determined that cultural beliefs, practices and community pressure influence decisions of Pakistani population to seek a traditional healer for consultation. It is easier to consult traditional healers compared to doctors because of low fees especially in rural areas, availability and access to the healers.

Raglow et al. (2005) concluded that Pakistan has one of the highest rates of therapeutic injections globally. 51% respondents in an urban community had received an injection within the past week and 74% had received less than 10 injections in the past year. Janjua et al. (2005) determined that overuse of therapeutic injections for minors' diseases in medical practices were considered a norm.

Furthermore, general practitioners, roadside barbers and street-side teeth-extractors often use non-sterilized equipment. Due to marginalization from conventional medical facilities, many IDUs and their spouses (many of whom also receive their drug injections from non-formal provider) frequent these providers. While detailed studies are needed to understand the precise transmission dynamics via this route, it is concerning that the prevalence of Hepatitis B and C is 4-5% even in rural areas and among individuals who were most likely infected via these routes (National AIDS Control Programme, 2014).

1.5 Status of the HIV epidemic in Pakistan

Pakistan is alarmingly following the trend of other Asian countries where there is a similar HIV epidemic trend. Asia moved from 'low prevalence, high risk' to

‘concentrated’ epidemic in the early to mid-2000s among key populations. According to National AIDS Control Programme (2014) Pakistan had an estimated 83 468 people living with HIV by the end of 2013, with 7568 PLHIV registered in 18 HIV centers by end of 2013.

1.6 Medical Practices in Pakistan

In Pakistan, healthcare is expensive and incompetent. Recently, there has been strict following of medical rules and regulations in practices by medical professionals. There still remains a gap for medical and non-medical professionals who do not adhere to these regulations.

According to recent data by Pakistan Medical and Dental Council total number of registered GPs is 31768 and dental surgeons 1252. In the province of Punjab where Lahore is situated has the highest numbers of registered doctors 16134 and 550 dental surgeons (PMDC, 2015). Total number of people registered as General Practitioners with basic MBBS degree is 144933, BDS 14187 and 1090 Licentiate State Medical Faculty also known as LSMF (doctors who undergo summarized MBBS courses at various medical college and who are allowed to work in periphery hospitals and rural area). Again, the highest number of general practitioners with basic degrees was found in the province of Punjab (PMDC, 2015).

This shows there are more general practitioners all over Pakistan than total number of registered doctors and dentists. This puts in perspective Pakistan’s rural population of 65 percent have access to 22 percent of registered doctors (UNODC, 2010).

They have no other option but to go to general practitioners who have been working in their local area.

According to PMDC data, in August 2014 there were 600,000 non-medical doctors across the country, out of which 60, 000 were present in the city of Karachi. It means one third of all the quacks in Pakistan reside in Karachi, Sindh (Express Tribune, 2011).

There are over 800,000 quack clinics and maternity homes across Pakistan, according to an estimate by Pakistan Medical Association (PMA) (Daily Times, 2012).

1.7 Definition of Key Terms

“A health care provider is defined as: a doctor of medicine or osteopathy, podiatrist, dentist, chiropractor, clinical psychologist, optometrist, nurse practitioner, nurse-midwife, or a clinical social worker who is authorized to practice by the State and performing within the scope of their practice as defined by State law” (Berkeley, 2015). Health care workers provide preventive, curative, promotional or rehabilitative healthcare facilities in a systematic way to individuals, families or communities.

In this research, there are two groups, which have been compared for their knowledge, attitude and practices regarding HIV/AIDS. Group one is known as certified medical professionals with formal training such as:

Doctors, licensed to practice medicine and have trained in a school of medicine,

Nursing staff, formally educated and trained to care for patients in a hospital or clinic,

Dispensers known for running their own clinics for primary health care

The above-mentioned group have obtained degrees after graduating medical school and completed their training.

Group two is known as non-graduate healthcare professionals including traditional or allopathic healers and others such as:

Homeopathic doctor who have obtained their Diploma in Homeopathic Medicine and Surgery (DHMS),

Pharmacist, healthcare professionals dealing with the field of health sciences focusing on safe medical and effective medication use. It involves years of training to obtain skills and certifications (Carter & Slack, 2010),

Lady health visitor, provides door-to-door public health services in Pakistan including basic nursing care and maternal health services,

Operation Theatre Technician, manages the operation theatre which includes managing the patients in & out of operation theatre, other jobs include, sterilizing surgical instruments, arrangement of operation theatre table, dressing table, instrument table, anesthesia table as well as management of the staff,

Lab technician and clinical assistants, who collect, examine and test body fluids, tissue cells and other substances in a laboratory,

Acupuncturist, practices Chinese alternative medicine which involves thin needles to be inserted at acupuncture points,

Alternative medicine practitioners: *hakeem* practices traditional medicine and *jarah* also known street surgeons conducting dental or orthopedic work.

This group also includes medical healthcare professionals without any formal training working as nurses, doctors and dispensers. They have been providing healthcare at clinics and hospital but they have not completed their degrees or formal training.

According to WHO (2013) general practitioners and all medical personnel are sometimes unprotected towards blood and other medical instruments, which can easily make the blood transfusion even with the slightest touch of a syringe. These medical and traditional healers are at a threat in spreading HIV infection and other blood born viruses.

In Pakistan and this study healthcare providers mentioned above fall within this category. For the purpose of this study, healthcare professionals described above have been used to cover the demographic data as defined by the World Health Organization policy.

1.8 Knowledge

Knowledge is defined as “facts, information and skills acquired through experience or education; the theoretical or practical understanding of a subject” (Oxford Dictionaries, 2015). According to UNESCO and EDUCAIDS (2014), the global initiative on Education and HIV/AIDS education and knowledge plays a dynamic role in prevention and promotion of HIV/AIDS. Knowledge among has been surveyed in abundance. The majority of the students have good general knowledge about HIV infection transmission (Thanavanh, Harun-Or-Rashid, Kasuya & Sakamoto, 2013). However, the level of knowledge among students and medical professionals is low among developed country. UNAIDS (2010) voiced a vision called ‘A world with zero HIV infections, zero discrimination and zero AIDS-related deaths’. This mission also included a goal of reaching 95% knowledge of HIV by 2010. Lohrmann et al. (2001) concluded that positive attitudes have been correlated with high level of HIV/AIDS

knowledge. Our study will focus on finding if there is a correlation between high levels of knowledge and positive attitudes.

1.9 Attitude

“Attitude is based on information or personal experience related to object or person or environment. Our behavior is composed of so many attributes; one of them is attitude. The way we respond or react to a situation or person is very much related to the attitude we have towards another person or object” (Forgas, Cooper & Crano, 2010). Furthermore, attitude can take different formal contents such as stigma, discrimination and prejudice (Katz, 1981). People living with HIV/AIDS are still suffering from stigma and discrimination. This is also a reason why many HIV infected people hide their disease from friends and relatives. Pisal et al. (2007) demonstrated in their study that people who are less knowledgeable about HIV endorsed higher levels of HIV stigma. Stigmatization may negatively impact the uptake of HIV knowledge, hence potentially increasing the spread of HIV.

1.10 Practice

Practice is defined as an “act of rehearsing a behavior or engaging in an activity over and over for the purpose of improving or mastering it” (Stobo, 1996). Practice is an important part of this study as there is a huge difference between attitude and practices. Attitude is inner belief about a subject. Practice is your behavior. Attitude may be different than behavior or practice. Medical professionals might have biased attitude towards HIV infected people. However, their standard medical practices should not be affected by their attitude. Hanafi, Hamid Shalaby, Falatah & El-Ammari (2014) conducted a study in Saudi Arabia on knowledge, attitude and practices regarding

breastfeeding of new mothers, which concluded that many women have overall understanding (knowledge) of the advantages of breastfeeding, they have positive attitude towards breastfeeding but they lack information on how breastfeeding is actually done (practice). Hence, our study follows the same research structure it is important to know the knowledge, attitude and practices of medical professionals with a graduate degree and medical professionals without a graduate degree.

1.11 Research Statement

HIV/AIDS is a serious problem worldwide, which continues to grow. UNAIDS (2009) estimated that the number of people living with HIV infection worldwide was 35 million. HIV/AIDS is relatively a new disease. The knowledge about its routes of transmission, prevention, attitude, behaviors, and practices has changed since the first case was reported in the 80s. Research is still being done on these factors, previous research has shown that there is lack of knowledge among health care workers and medical professionals as well as discriminating attitudes against people living with HIV/AIDS. More improvement in learning about these factors is expressed repeatedly. Doctors play a vital role in care, prevention and treatment of people living with or without HIV/AIDS. Nurses have proved themselves to go from providing essential support care to leading clinical treatment worldwide (Dreher & Glasgow, 2011).

Guenter, Gillett, Cain, Pawluch & Travers (2010) revealed that the authority that comes with professional expertise can greatly influence a patients state of mind positively or negatively. They even have an impact on the decisions made by patients whether it is regarding optimal care or management on any disease. Hence, it is important to assess

doctors and nursing staffs' knowledge, attitude and practices towards PLWHIV as they have direct access to halting this epidemic in the years to come.

1.12 Aim

The aim of the study is to shed light on HIV-related knowledge, attitude and practices of certified medical professionals with formal training and other healthcare professionals with or without formal training. General populations visit these professionals frequently due many reasons such as illiteracy, low-socioeconomic status and accessibility.

1.13 Research Questions

- Is the knowledge of healthcare practitioners enough to let them treat vulnerable population?
- Do healthcare providers take precautions to protect themselves and others from HIV infection?
- Do they have correct and accurate information about routes of transmission of HIV/AIDS?
- Do they have enough knowledge to promote awareness of HIV/AIDS?
- What kinds of attitudes do the healthcare workers have towards people with HIV/AIDS?
- Do they exhibit stigma and discrimination against HIV/AIDS infected people?
- Do the healthcare providers follow guidelines for safe medical instruments in their practices?

Chapter 2

Literature review

HIV/AIDS epidemic has become a major global health crisis since 1980s and continues to be a serious public health threat all over the world. Since the first identified case of AIDS, medical scientists have been researching this complicated disease for a cure. Years of research has led to one conclusion, a cure for this fatal disease is far from discovered but various treatments can help cessation of spreading the disease. This chapter will provide a scientific literature overview of HIV/AIDS related to knowledge, attitude and practices to narrow down the current state of research, to identify and summarize various variables that synthesize the arguments and ideas of previous researches. This chapter will conclude with a description of research questions and hypotheses for this study.

2.1 Global Epidemiology of HIV/AIDS

According to recent statistics, United Nations Agency for AIDS concluded that over 35 million people were living with HIV in the year 2013 (UNAIDS, 2013). The burden of disease differs from various countries to regions.

This deadly disease has affected every nation and region of the world but the deadliest hit region is Africa for decades. Southern, Eastern and Western Africa rests as the most cruelly affected regions of the world since the disease was first discovered in 1980s. Twenty-eight million people are HIV positive in Africa. South Africa is the highest prevalent nation of people living with HIV. World Bank estimated two thirds of deaths related to HIV/AIDS are from Africa (World Bank, 2011). According to UNAIDS

estimates, Africa contributes to an overwhelming 71% of the people living with HIV worldwide which means approximately 1 in every 20 adults (4.9%) are living with HIV/AIDS (UNAIDS, 2012).

The sheer enormity of the magnitude of HIV/AIDS becomes clear when one brings into account that almost one in every ten adults in Africa is HIV positive (UNESCO, 2013). The territories most severely troubled after the Sub-Saharan Africa are the Caribbean, Eastern Europe and Central Asia where 1 percent of each adults are HIV positive since 2011 (UNAIDS, 2013). South Asia and South East-Asia joined in and soon became a part of fast growing number of HIV/AIDS cases in this region of the world. According to recent estimates 5.5 million to 6 million are living with HIV/AIDS of which 60 percent of HIV-positive people are living in densely populated neighboring country to Pakistan, India (UNGASS, 2014).

2.2 HIV Epidemiology of Pakistan

Majeed & Hashmi (1988) reported the first case of AIDS in the year 1987 in Lahore, Pakistan. He was a migrant worker, another concentrated epidemic in Pakistan in the late 80s and early 90s. In lieu of this and worldwide frenzy over global HIV pandemic, ministry of health set up Federal Committee on AIDS which later evolved into the National AIDS Control Programme (NACP) (National AIDS control Programme, 2007). During the early 1990s Pakistani's who were working aboard showed prevalence of HIV (Khawaja, S., 1997). Launched in 2004, a joint venture of Canada and Pakistan, the HIV second generation surveillance project (HASP) started mapping out latest data

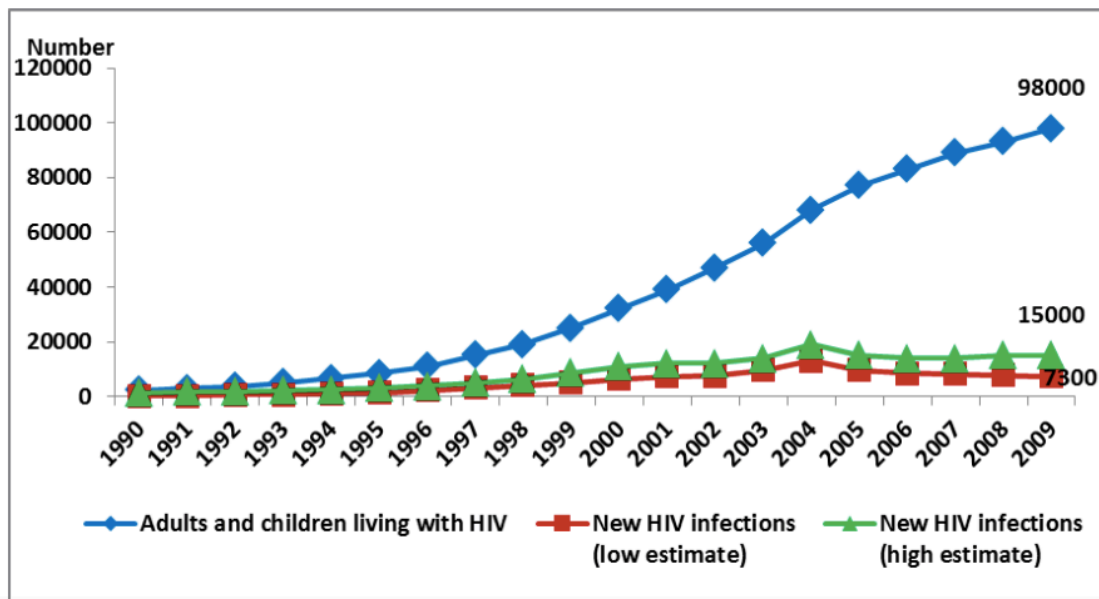
on numbers of HIV infections, numbers of people receiving antiretroviral treatments and AIDS related deaths (NACP, 2013).

A sizeable number of Pakistani citizens are employed in the Gulf States such as Kuwait, UAE, Oman, and Saudi Arabia. Pakistani nationals have to go through a process of evaluation of visa before temporary or permanent citizenship is approved for a working permit for example foreign citizens entering Gulf states are accustomed to test for HIV in their home countries along with other tests for example, TB. Visas are rejected if citizens are HIV positive (Kandela, 1994). In addition to this, after every two years of being in the country of their residence, it is mandatory for foreign nationals to renew their work permit visa and their HIV test. Gulf has strict rules and attitudes about HIV/AIDS. During these tests, if someone is HIV positive, they are deported immediately to their home country (Kandela, 1994).

Yusufzai (2004) concluded that in Pakistan HIV epidemic is not only spread by the key populations such as truck drivers, MSMs or female sex workers. There is another dangerous hidden concentrated epidemic, which is becoming of its own but not given much attention. This group is known as the wives of the husbands that were migrant workers in the Gulf who has sexual relations outside marriage. Husbands do not mention the reason why they got deported. The knowledge of husband's disease is non-existent to the wife. Wives are usually less educated and have never been out of their hometown geographical area. Unfortunately, the wife finds out about being HIV positive while pursuing treatment for another disease.

Professor Fazle Rafique, a haematologist, head of pathology department in Kyber Pakhtun Khwa said “most of the HIV positive people were migrant workers deported from the Middle East, with some of them staying away from home for as long as 15 to 20 years”. In Khyber Pathkunkhwa (KPK), among 1257 registered people living with HIV 41.8% are migrants (NACP, 2013).

Figure 2.1: estimated number of people living with HIV 1990-2009 in Pakistan



Source: UNAIDS, Report on the Global AIDS epidemic, 2010

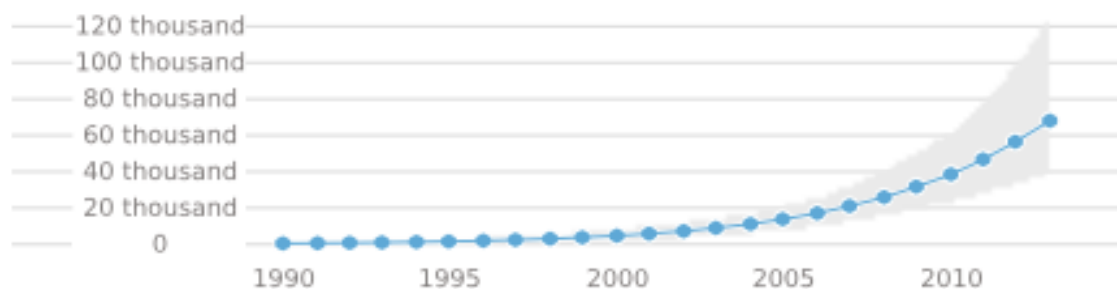
2.3 Impact of HIV/AIDS in Pakistan

In the early 1980s, while the Western part of the world was initiating to deal with serious consequences of HIV and AIDS epidemics, Asia remained unharmed. By the early 1990s, AIDS slowly made its way through various Asian countries and before the blink of an eye HIV was spreading more rapidly than a jungle fire in many areas of this region. Late 1990s brings a grave picture of the start of HIV epidemic in South Asia.

According to UNAIDS regional fact sheet, in South and South-East Asia nearly 5 million individuals were living with HIV by 2012 (UNAIDS, 2012). According to National AIDS Control Program, at least 60 percent of HIV-positive people in Asia live in Pakistan's neighboring country India alone (NACP, 2013).

In recent updated statistics by UNAIDS country coordinator, current number of HIV positive people in Pakistan is 68 000 by 2013 (UNAIDS, 2013). It is a big decrease from 85 000 people living with HIV/AIDS in the year 2005 (UNAIDS, 2006). Nonetheless, the statistics about HIV prevalence in Pakistan are overwhelming.

Figure 2.2: Number of people living with HIV/AIDS (2015) in Pakistan



Source: *UNAIDS* country data

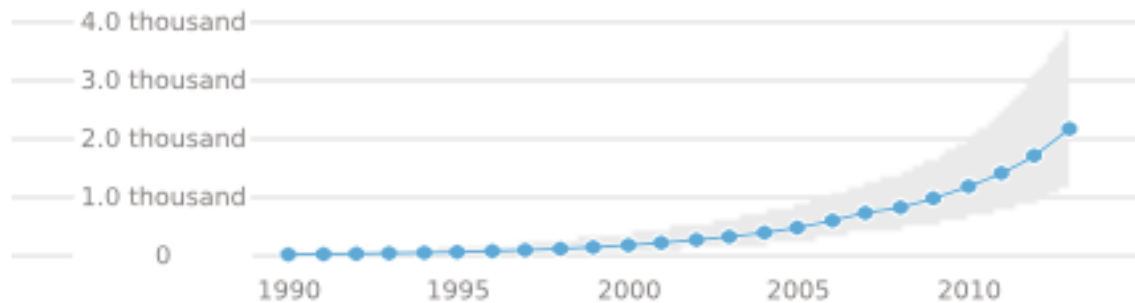
2.4 AIDS mortality rate rising in Pakistan

According to recent UNAIDS estimates, there has been 11 percent increase in mortality rates from HIV/AIDS in Pakistan. The total number of deaths due to AIDS has been 2200 (UNAIDS, 2013). Globally, HIV/AIDS related deaths have decreased at a rate of 1.5 percent between 2000-2013. However in Pakistan, many people have died due to

AIDS since early 1990s. This can be explained by the fact that there has been an annual increase of 15 percent in HIV/AIDS cases (WHO, 2013).

Central Intelligence Agency (2014) estimates that HIV/AIDS mortality rates were higher than Afghanistan but remained considerably lower than India. Tuberculosis and other infectious diseases have mortality rates, which are still high in Pakistan that is the reason the rise in the rates of HIV/AIDS is overshadowed.

Figure 2.3: Annual number of AIDS related (2015) in Pakistan



Source: *UNAIDS* country data

2.5 Overview of the epidemic Pakistan

Pakistan is the world's seventh highly populated nation settling at 196 million people as of July 2014 estimates. Most of the population is young adults and adults with 33.3% males and females falling in the category 0-14 year, 21.5% between the ages of 15-24 years and 35.7% population falling in 25-54 years (Central Intelligence Agency, 2014). Pakistan consists of four main provinces: Punjab, Sindh, Baluchistan and Khyber Pathunkhwa, which was previously known as the North West Frontier Province and Azad

Kashmir, a self-governing state under Pakistani federation. All of Pakistan's provinces and regions present their own multi-cultural and socio-demographic physiognomies. Punjab and Sindh are the most populated provinces with the largest urban cities, Lahore and Karachi housing high HIV prevalent cases among key populations (National AIDS Control Programme, 2013).

2.6 Key populations at risk of HIV in Pakistan

In Pakistan, the estimated prevalence of HIV among general population of 190 million is less than 0.1% for adults between 15-49 years of age (UNAIDS, 2014). Survey results reveal that the epidemic has become more established among key populations, which means Pakistan is shifting from “low prevalence” category to a concentrated epidemic.

First generation surveillance system collected data for disease outbreaks and gave health personnel to do a preemptive strike to protect the country against HIV/AIDS. It focused mainly on collecting data. Reported number of cases was low because of stigmatization. However, second generation surveillance while collecting new data also focused on finding information which was valuable in reducing the spread of HIV/AIDS, to concentrate data collection in key population that are at higher risk of HIV/AIDS and compare information on HIV behaviors and help build a step up to change the epidemic over time (World Health Organization, 2013).

Recent surveys reveal that the epidemic is present and steadily snowballing among key affected populations. Following the trend of other South and South-Asian

nations, Pakistan is confronting a “concentrated epidemic” among most-at-risk populations (MARPs) injecting drugs users (IDUs) and Hijra sex workers (HSWs), both have a prevalence of 5 percent. In addition to these, there are other concentrated groups such as males who have sex with males (MSMs), prostitutes, and needle stick injuries (NSI) (National AIDS control Program, 2010). Furthermore, the spread of virus from these vulnerable groups to bridging and general population is accounted for.

HASP, with its partners, National AIDS control Programme and Punjab AIDS control Programme, has conducted one pilot and four surveillance rounds identified among concentrated epidemic key populations such as IDUs, FSWs, Hijra sex workers, and MSMs.

Figure 2.4: HIV prevalence trend amongst most-at-risk populations in Pakistan

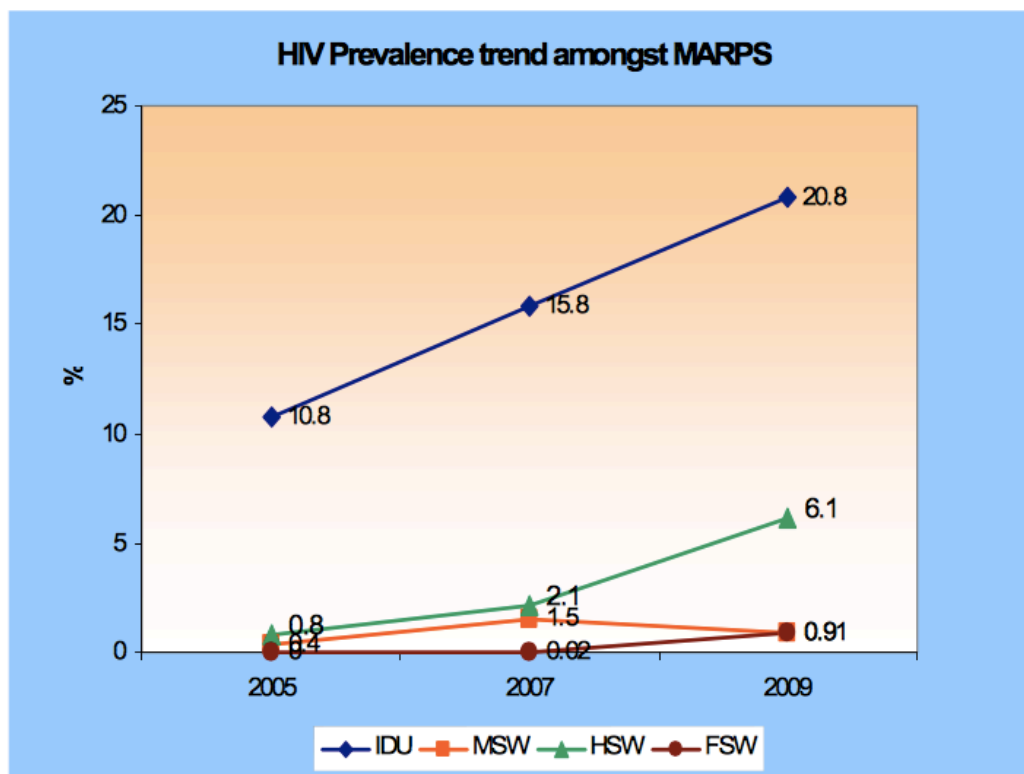


Figure 2.4 explains diagramming of MARPs from 8,728 spots in 12 major cities from four provinces was estimated at a total population of 114,637, amid which 31,555 (27.5) were injected drug users, 49,037 (42.8%) Female sex workers, 14,725 (19.9%) hijra sex workers and 10,320 (16.9%) were male sex workers. One third of half the MARPs live in major metropolitan cities and provincial capitals. However, the geographical trend of the epidemic has shown an increase from smaller cities and towns. Prevalence among IDUs was as high as 30% and 27% in Hyderabad and Larkana respectively. Larkana also has the largest HIV positive population of HSW (27%) even though Larkana is not an urban city like Hyderabad or Lahore (National AIDS Control Programme, 2010).

2.7 Overview of Key Populations

2.7.1 Sex workers

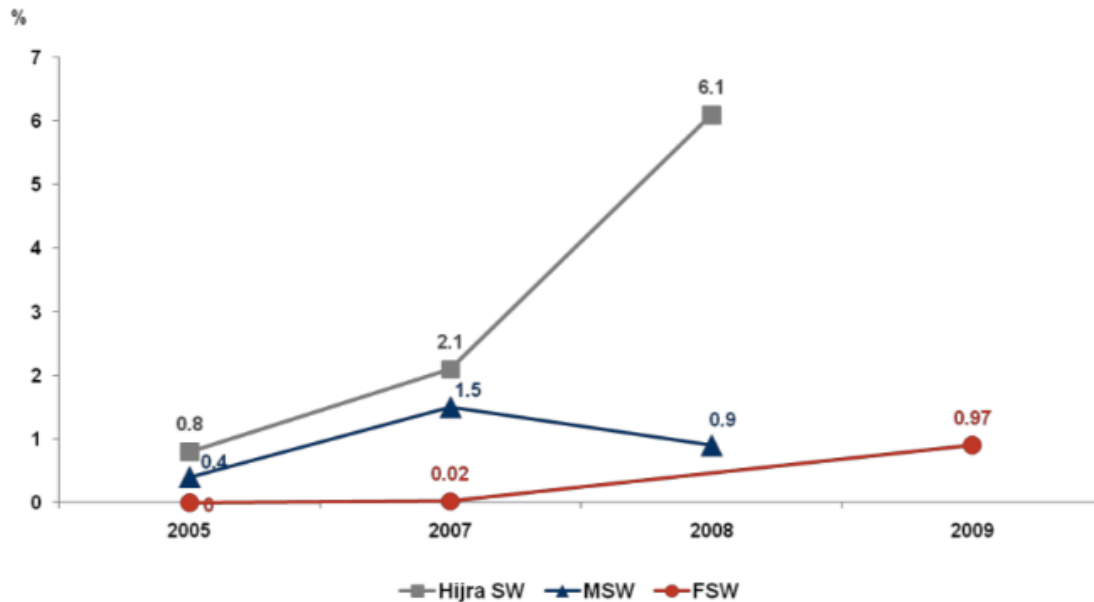
In Pakistan, there are three types of sex workers such as female sex workers (FSWs) also known as prostitutes, male sex workers also known as men who have sex with men (MSMs), and *hijra* sex workers (HSWs).

In 2001, IBBS directed by the Government of Pakistan's HIV Surveillance Project (HASP), which is maintained through Canadian International Development Agency (CIDA) (2007) found that HIV prevalence is highest for female sex workers with an estimate of 49,000 from 12 major cities. Moreover, estimates suggest 19,000 male sex workers and 14,000 *hijra* sex workers.

National AIDS Control Program, Canada-Pakistan HIV/AIDS Surveillance Project & Canadian International Development Agency (2005) concluded in their round 1

and 2 reports that HIV prevalence is very low among female sex workers between 0-0.2%. In 2009, a special round was piloted which a different picture, female sex workers HIV prevalence was now 0.97%.

Figure 2.5: HIV prevalence among key population 2005-2008 in Pakistan



Source: HIV/AIDS Surveillance Project (IBBS round I, II, III).

Figure 2.5 shows in 2005 and 2007 female sex workers prevalence was low as compared to male 0.4% - 1.5% or *hijra* sex workers 0.8%-2.1%. In 2005 *hijra* sex workers were the highest prevalent group amongst sex workers. In 2008, HIV prevalence among male sex workers was 0.9 percent and 6.1 percent for *hijra* sex workers (NACP, 2012).

Figure 2.6: HIV prevalence among key population 2005-2011 in Pakistan

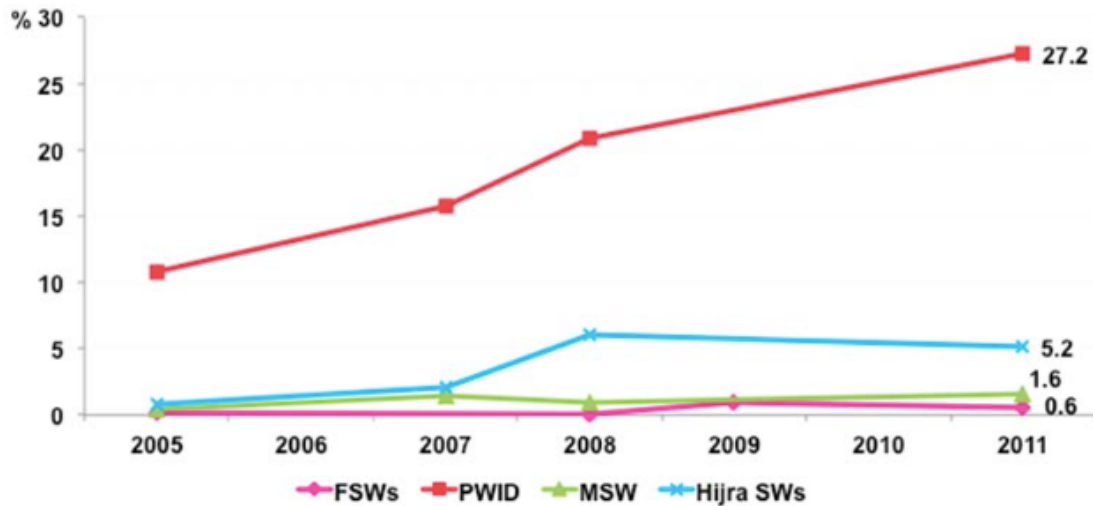
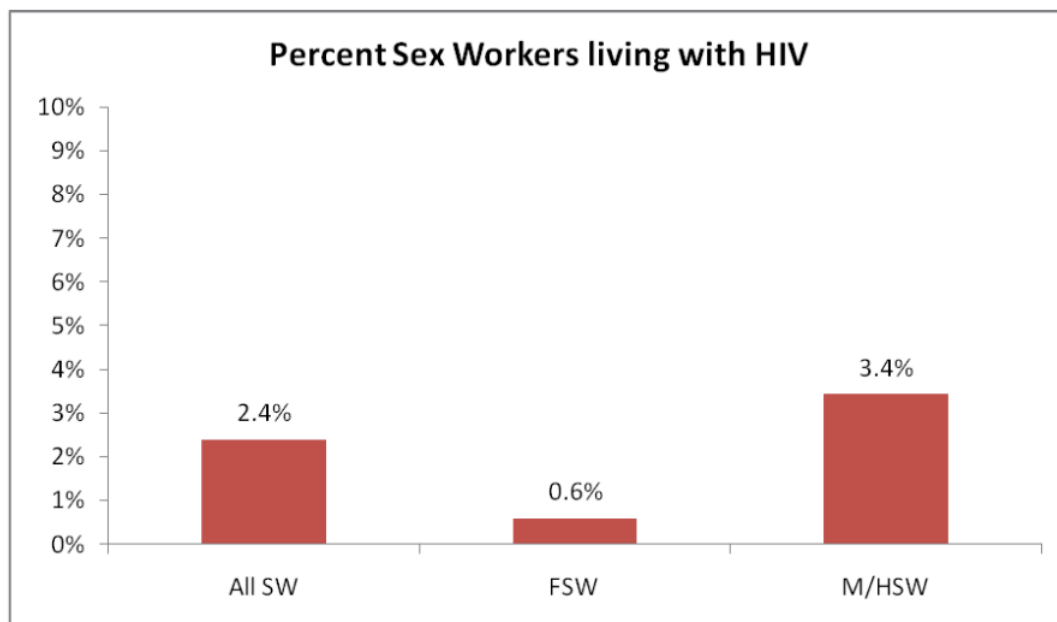


Figure 2.6 shows graphical rise in the prevalence of HIV positive cases for IDUs also known as people who inject drugs (PWID). Since 2005-2011 prevalence of HIV positive have mildly dropped for all key populations settling at 0.6 percent except for people who inject drugs. Female sex workers were found to be 0.97% in 2009. People who inject drugs had a high rise since the beginning of 2005 from 11 percent to 20.8 percent in 2008 and 27.2 percent in 2011. Male sex workers HIV prevalence was 1.6 percent by 2011, a slight increase from 0.9 percent in 2008. Hijra sex workers HIV prevalence slightly decreased from 6.1 percent in 2008 to 5.2 percent in 2011. Over all, this graph shows a slight rise in male sex workers and female sex workers key populations, with a slight decrease in transgendered sex workers but a significant rise in prevalence of IDUs.

Figure 2.7: Percentage of sex workers living with HIV in Pakistan



Source: AIDS data hub

According to National AIDS Control Programme negating the classical Asian Epidemic Model, after HIV being a major transfer route for IDUs, spreads to female sex workers – in Pakistan it is partly bridging to transgender sex workers and male sex workers. IBBS (2011) HIV surveillance concluded that HIV prevalence among all sex workers was 2.4 percent. They made male and transgender sex workers as one key population and the HIV prevalence for this population was recorded to be 3.4 percent. As previous surveillance rounds, female sex workers HIV prevalence remained low at 0.6 percent.

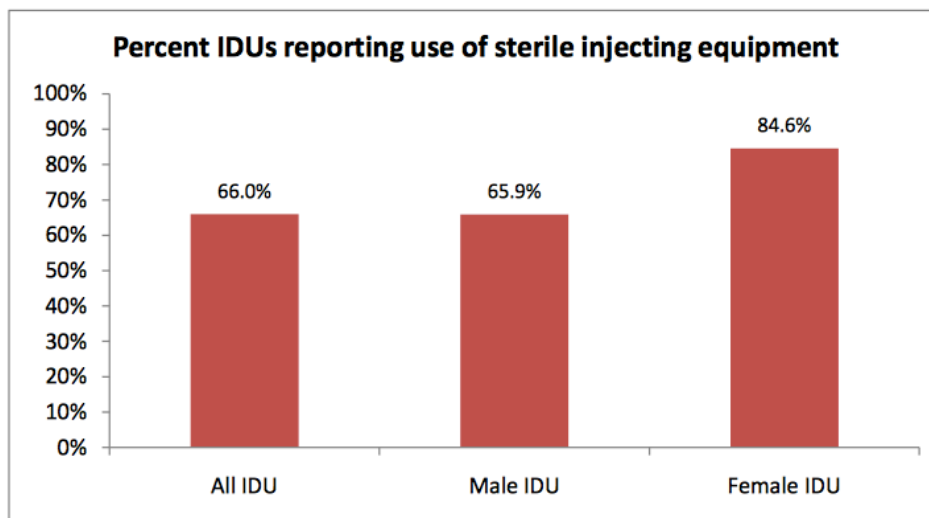
2.7.2 Men who have sex with men (MSMs)

National AIDS Control Programme (2014) country progress report concludes total number of male sex workers 63,000. UNGASS (2014) reported 1.96% HIV prevalence in MSMs. Their average age is below 30 years and majority are unmarried living at home. Condom use was reported to be as very low. Only 15 percent MSMs reported regular condom use with paid partners. Condom use is significantly less in younger population than compared to older age groups. 9.5 percent under 20 years used condoms with clients regularly and 13.8% among 20-24 year olds. As their education level about HIV/AIDS was increased their condom use increased as well. There are mapping and documentation difficulties about this key population due to socio-cultural difficulties, some MSMs roam around streets in specific areas and find their clients, or use cellphones. In contrast to female sex workers who work in brothels (a house in a neighborhood for sex work services).

2.7.3 Injecting Drug Users

According to Integrated Biological and Behavioral Surveillance Surveys (IBBS) in 2011, IDUs are the second largest key affected population in Pakistan. HIV prevalence among IDUs was 20.8 percent in 2008. This concludes an increase of 15.8 percent since 2007 and 10.8% in 2005(National AIDS Control Programme, 2011). Figure 2.9 shows prevalence of HIV to be as high as thirty percent in Hyderabad, 28 percent in Larkana, and 15% in Lahore.

Figure 2.8: IDUs percentage of use of sterile injecting equipment

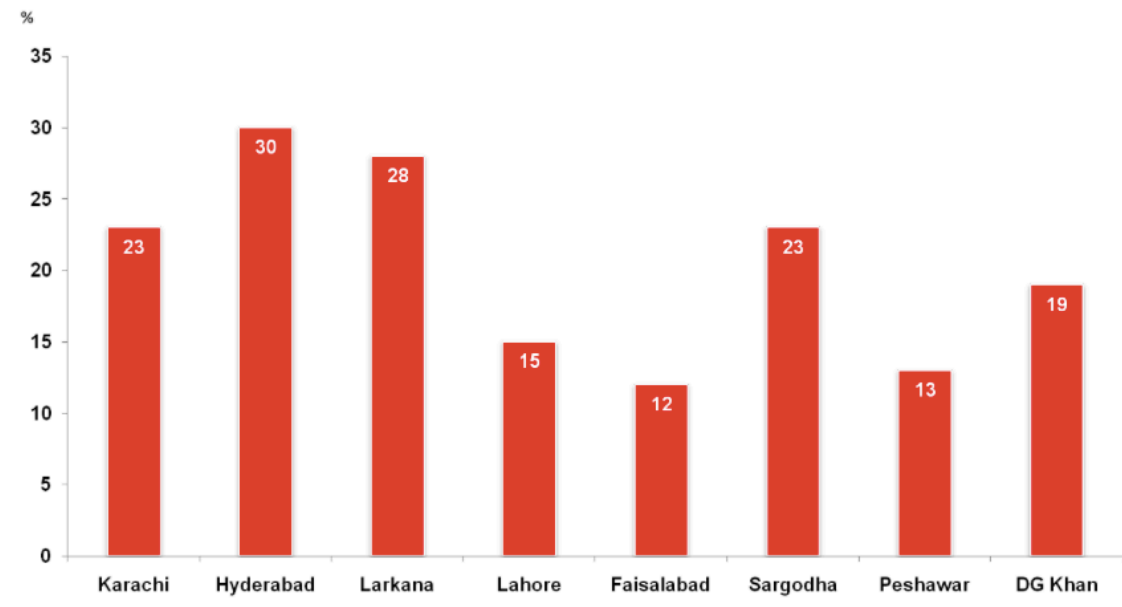


IBBS (2011) HIV surveillance surveys show drugs such as opiates, narcotics, heroin in Pakistan being popular drugs inject by PWID. 66 percent reported using sterile injecting equipment the last time they injected. Female (84.6 %) proportion was higher than compared to male (65.9%) PWID.

2.7.4 Spouses of IDUs

A recent Country Progress report prepared by National AIDS Control Programme concluded the wives of IDUs as vulnerable and bridging population in the spread of HIV/AIDS. 15% of the wives of IDUs are living with HIV. 80 percent report not having use condom in their last sexual encounter with their husbands, 50 percent had never heard of HIV/AIDS (Nai Zindagi, 2008).

Figure 2.9: Percentage of spouses of IDUs living in urban cities of Pakistan



Source: IBBS Report Round III 2008

2.7.5 Miners

HIV Second Generation surveillance in Pakistan prepared a survey about bio-behavioral parameters among mine workers in Baluchistan, Pakistan. A total of 1200 interviews were conducted. Almost 90 percent of mine workers had had sexual intercourse. 55 percent reported having a regular female sex partner. Condom use was as low as 2 percent of mine workers who reported they always used condom with their regular sex partners, 3.1% with paid female partner and 4% with male and/or *hijra* sex workers. Very few mine workers were drug users and only did drugs like opium (2%), bhang (1.4%) and few did alcohol 5% (NACP, 2014).

Their knowledge was relatively high about HIV/AIDS and STDs. Approximately 70.5% had heard of HIV and 79 percent were aware of STDs. 50 percent reported burning of itching when passing urine in past 6 months and 37 percent reported abnormal discharge. 28 percent sought treatment from hospital and 27 percent from *hakim* (NACP, 2014). This data shows a clear urgent need for information collection and data monitoring to halt the spread of HIV/AIDS. None of the mineworkers tested reported to be seropositive for HIV.

2.7.6 Internally displaced people (IDPs)

The intense military operation launched on militants in Pakistan by the Government since 2010 has resulted in over 1.5 million IDPs (International Displacement Monitorigin Centre, 2014). This has given an undue rise in commotion of prevention and care services to IDPs especially HIV positive (NACP, 2012). Government and UNHRC are continually providing services for key populations, assessing HIV related information and providing services for those in need among internally displaced persons.

2.7.7 Uncontrolled quackery

In Pakistan, the prevalence of HIV/AIDS has firmly risen in the past two decade targeting the vulnerable groups such as injected drug users and sex workers. A decade ago, a new defenseless group emerged yet not much attention was paid to it. This concentrated group is known as *uncontrolled quackery*.

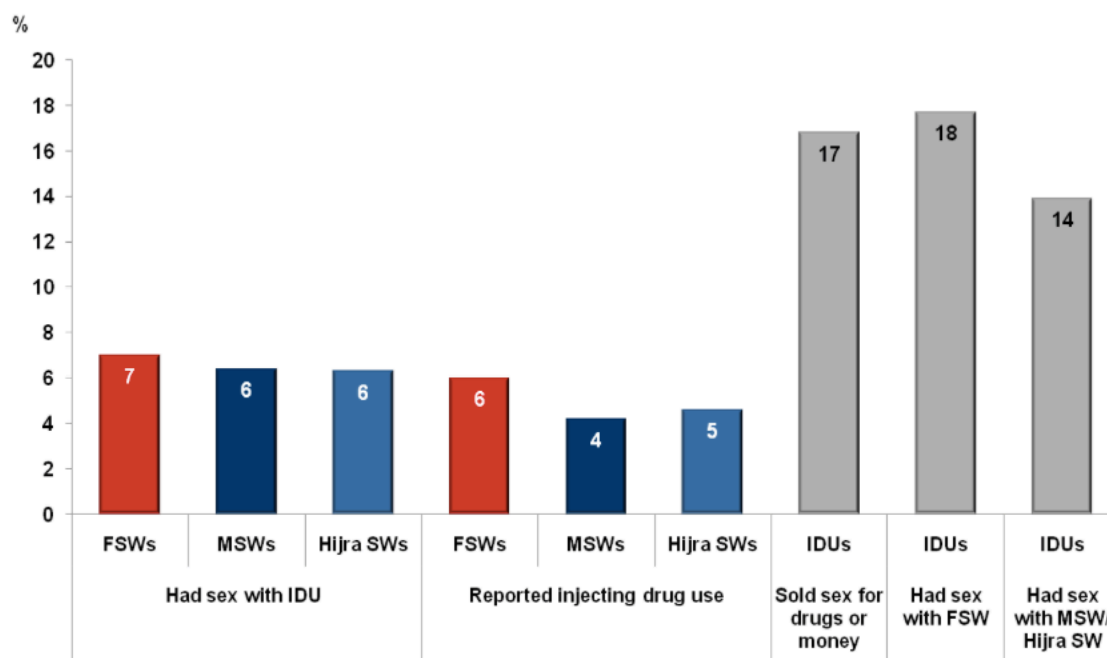
Uncontrolled quackery has been like an underground drug-activity for years. There has been clear disobedience of Pakistan's strict standards of infection-control by

using unsterilized medical tools and procedures, which have been slandered by most of these non-medical professionals. Pakistani's spend their little incomes on products that do little for them or even harm them in the future. With the low income and their naivety has also led them to doubt modern medical science – they believe in finding simple solutions and shortcuts to better healthcare, which is hard for them to resist.

2.7.8 Overlapping risk behaviors

In Pakistan, HIV/AIDS key population have overlapping risk behaviors such as sexual practices among injecting drugs users and sex workers and vice versa, sex workers who inject drugs and injecting drug users who work and professional sex workers (NACP, 2007). The city of Lahore and Larkana show especially high levels of networking among key affected populations.

Figure 2.10: Interactions between IDUs, FSWs, HSWs, and MSMs



Source: IBBS Round II & III

IBBS (2011) reported 6% female sex workers mentioned injecting drugs in the past six months in 2009, where as 4% of male sex workers and 5% of *hijra* sex workers reported injecting drug use in the last six months in 2008. Seven percent of FSWs reported having sex with an IDU in the past six months in 2009 while 6 percent of both MSMs and HSWs reported the same in 2008 (National AIDS Control Programme, 2012).

Another overlapping and less research risk behavior is searching for treatment from a local quack. Afsar et al. (2002) concluded that a district in Sindh named Khairpur paid visits to local quacks especially adolescents. Male adolescents having homosexual relations, contract a sexually transmitted disease for which they cannot talk to their family about since homosexuality is a taboo subject. Therefore, looking for a cure for these STIs, this vulnerable population of male adolescents visits quacks. Hence, while seeking cure for a curable STI, they might be at a risk of another disease from treatment from a quack.

2.8 Iatrogenic hazards and nosocomial infections

In a study on iatrogenic risks and maternal health issues in Pakistan, it was observed that some women were referred to the tertiary hospital from a rural hospital where the pregnant women's condition got worsened due to negligence from general practitioners in their areas; common iatrogenic factors were misuse of oxytocin. These maternal morbidities with iatrogenic factors were high and majority of these could be easily avoided (Khaskheli, M., Baloch, S., Sheeba, A., 2014).

A descriptive study done in a hospital in Jamshoro/Hyderabad, Pakistan on nosocomial infections in medical wards those patients had infections, which did not instigate from patients original disease at the time of admittance to the hospital. The research says the most common hospital acquired infections were Urine tract infection, bloodstream and respiratory tract infection, including other infections such as gastrointestinal (Devrajani, Qureshi, & Shah, 2015).

According to a study conducted on HIV epidemic in Pakistan the misuse of injection practices in Pakistan is a remedial norm in the practices of general practitioners. 4.5 injections per capita are administered annually. 94 percent of injection administered with used equipment exposing the patients to infectious diseases such as hepatitis B and C, HIV/AIDS (Emmanual, F., Akhtar, N., Blanchard. J., 2009). Furthermore, in Pakistan 15% of the existing HIV cases are attributed to indiscriminating use of blood transfusion, use, misuse and re use of needles and other medical tools and low level of attention to standard infection control procedures (Luby et al., 2000).

Recent studies in Pakistan have shown unsupervised and unqualified roadside barbers, dentists and doctors are accountable for the spread of HIV/AIDS as well as hepatitis B and C, which is common in Pakistan (IRINNEWS, 2007).

A study conducted by an NGO in Pakistan reported a serious outbreak of HIV/AIDS in Jalalpur Jattan, Gujrat. Use of injections, dental procedures and barbershop visits were common risk factors for contracting Hepatitis B and/or C as well as HIV/AIDS (Ansari et al., 2013).

2.9 Knowledge, attitude and practices

Inadequate knowledge about HIV/AIDS has led to spreading of the disease virally not only by the general population but also by medical staff, healthcare providers, general practitioners and non-medical professionals. HIV/AIDS knowledge regarding its etiology and modes of transmission may fuel the spread of the virus.

Khan (2009) conducted on knowledge attitudes and practices regarding HIV/AIDS and sexually transmitted infections among private and public health care providers in Lahore, Pakistan, concluded that 45 percent of the health care providers had accurate knowledge about transmission and prevention of HIV. Furthermore, it specified along with low level of knowledge about HIV/AIDS and treatment of STIs, there was damaging attitude found towards patients who had HIV/AIDS.

Khandwalla (2000) conducted a similar research on knowledge attitudes and practices regarding sexually transmitted infections among general practitioners and medical specialists in Karachi, Pakistan, which determined that the physicians in Karachi, both general practitioners and experts required sufficient knowledge of STI symptoms, knowledge about diagnosis and treatment. They concluded a major breakthrough that since HIV prevalence is low in Pakistan, now is the time to make investment in prevention and awareness about this disease. Postgraduate training of physicians and education should start from undergraduate level.

Gorar (2014) concluded that healthcare workers in Pakistan along with patients are at an additional risk of exposure to blood borne diseases through needle stick injuries

and recapping of needle after use. Needle stick injury was reported to be associated with Hepatitis and HIV/AIDS. Furthermore, healthcare workers in surgeries were at an increased rate to contract Hepatitis C rather than Hepatitis B because 80% of the staff was vaccinated against hepatitis B. Moreover, infectious waste managers were at an increased risk of contracting hepatitis B.

It should be noted that Brown & Peerapatanapokin (2011) made an influential discovery that the HIV epidemic in Pakistan has followed the Asian Epidemic model, where HIV initially distresses injecting drug users before passing on the virus to general population through the bridging populations of men who have sex with men and women who are prostitutes.

HIV/AIDS knowledge and attitude at grass roots level is questionable as well. Shaikh, F., Khan, S., Ross, M., & Grimes, R. (2007) concluded in their study about knowledge and attitude of medical students in Karachi, Pakistan that only 15% of students had ample knowledge on symptoms, indicators and the modes of spread of HIV/AIDS. 10 attitudes were correlated with knowledge and none of these showed an association. Moreover, these scores sharply indicated that education at medical colleges about HIV/AIDS should be dually integrated in the syllabus so as to avoid poor medical treatment outcomes for these future public health professionals.

Hussain et al. (2011) evaluated knowledge, attitude and practices of 103 general practitioners in Karachi, Pakistan who treat cases with sexually transmitted diseases in private clinics. 40.8% of the general practitioners mentioned that if there was patient who was HIV positive they would refer them to the National AIDS control programme, which

is a project of ministry of health (MOH) and federal government. According to this study knowledge and attitude of general practitioners was good but development is needed for managing patients with HIV and sexually transmitted diseases.

Siddiqui, Khan & Majeed (1995) conducted a knowledge, attitude and practices survey of AIDS among paramedics in a tertiary hospital in Pakistan. 54 percent of paramedic, 33 percent nurses and 13 percent auxiliary staff was interviewed. 10% of subjects had not heard about AIDS, 43 percent could not identify the principal causes of AIDS. Knowledge on routes of transmission 14 percent mentioned sex, blood transfusion and syringes. 13 percent named the HIV virus as the cause. None of them mentioned mother to fetus transmission of disease. 50 percent of the hospital staff did not know about HIV/AIDS. 90 percent of the hospital staff new routes of transmission for example, sex and other to fetus. However, their knowledge about how it could not be transmitted was adequately low, 64 percent of the staff thought HIV could be transmitted through a mosquito bite. Similarly, 40 percent of the subjects mentioned that wearing clothes of an AIDS patients could transmit AIDS, 12 percent had no clue about the mode of transmission. 34 percent of the hospital staff presumed that touching could transmit HIV infection. Knowledge about AIDS was associated with low level of education. Analysis of Attitudes and behaviors of the subjects suggested 50 percent individuals mentioned that at present AIDS poses no threat. 26 percent mentioned that in the future that HIV/AIDS will be a threat to our community. 4 percent of the hospital staff mentioned that have serious risk of contracting the disease, 13 percent admitted to having some risk and 11 percent did not know about it.

Afsar et al. (2002) explored knowledge, attitude and practices regarding sexually transmitted infections of a district named Khairpur in Sindh, Pakistan. They assessed that there was little awareness regarding causes and routes of transmission of sexually transmitted diseases. The neighborhood did not consider themselves at risks of contracting this disease. They believed that “STIs are a problem among sub population of male adolescents especially those who have homosexuals relations”. Due to societies norms these health problems are rarely discussed. Thus, these adolescents seek sexual health treatments from Hakims and quacks in their town. They might have a STI, which cannot be HIV/AIDS for example gonorrhea or chlamydia. Looking for a cure for these STIs, this vulnerable population of male adolescents is at risk of contracting HIV from quacks. This study concluded that the government should imperatively start public health interventions in this area not simply educating the public but also community health workers should be trained and educated especially quacks.

Chapter 3

Methodology

A cross sectional survey was conducted of the targeted groups i.e. medical and non-medical professionals regarding their knowledge, attitude and practices on HIV/AIDS in Lahore, Pakistan.

3.1 Research Design

Research methodology is equally important in all types of social research. A social research is almost trifling till it has its own way of collecting information. It is important to find organized answers with a definite set of procedures and steps, which we followed in this research in order to get the most accurate results. Research is an art of scientific exploration. “Research methodology is a way to systemically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study various steps that are generally adopted by a researcher to know not only research problem methods/techniques but also the methodology” (Kothari, 2004). By this definition, it would be appropriate to say that there are as many methodologies as there are projects; most projects are distinctive in their approach.

The methodology of this study constitutes of study, sample survey, questionnaire, data collection and data analysis.

3.2 Cross sectional Study

In this study, a cross sectional survey was used in order to perform a fairly quick and easy study for testing the hypothesis. “A cross sectional survey is a survey of a population at a single point in time” (Jekel & Jekel, 2007). They are suitable for defining

the prevalence of risk factors. In this case, we are determining the frequency of prevalence of knowledge, attitude and behavior regarding HIV/AIDS for a defined population. It will be valuable for measuring current health status and planning for HIV/AIDS health services, including setting priorities for controlling HIV/AIDS spread and health promotion.

3.3 Design Method

This study was a quantitative research. “The use of sampling technique (such as consumer surveys) whose findings may be expressed numerically, and are amenable to mathematical manipulation enabling the researcher to estimate future events or quantities” (Business Dictionary, 2015). Quantitative research produces numerical data or information that can be converted into numbers. In this study, the respondents were asked to answer a modified questionnaire called HIV Knowledge Questionnaire (HIV-K-Q)” developed by Carey et al. in 1997. It has been validated and tested previously (Volpe, Nelson, Kraus & Morrison-Beedy, 2007). The knowledge questionnaire was divided into three subscales i.e. transmission routes, prevention and management of HIV/AIDS.

Along with knowledge, attitude and practices were also measured. Attitude of respondents was measured by using self-developed 10-item questionnaire, which was focused on two sub-scales such as ‘stigma’ and ‘bias’. It focuses on respondents’ attitude towards HIV infected people.

8-item questionnaires for practices were developed with the help of supervisor. The questionnaire used in this study was designed with structured close-ended dichotomous choice such as “Yes” or “No”.

3.4 Type of study

This study was designed to discover the knowledge, attitude and practices of medical professionals with or without training regarding HIV/AIDS belonging to the urban city of Lahore. It is a cross sectional survey intended to know HIV awareness among healthcare providers in Lahore, Pakistan. The present study, following factors were researched:

- a) The multiple factors related to HIV awareness among health care providers.
- b) Sensitivity & substantial concern about attitudes and practices of health care providers
- c) Acceptances of HIV/AIDS prevention and awareness guidelines in solving the spread of this disease.

Its comparatively quick study time, frequently available data and the easy check influence of variables on one another were the major determining factors for using this method. The data available was from the primary source consisting of questions influencing the knowledge/perceptions, attitudes and practices. Can the results of this study about knowledge, attitudes, and practices differences be used to create policies addressing the HIV/AIDS epidemic at provincial or domestic level in Pakistan?

3.5 Rationale of the study

After extensive literature review of studies conducted on medical professionals and traditional healers, it has been found that none of the studies cover the knowledge, attitude and practices of the traditional healers because they are not considered a key population in the spread of HIV/AIDS. In addition to incongruences across this study's methodology, diverse researchers have collected risk behaviour data using altered

questions, variables or concept definitions; respondent age groups and time frames for reported behaviours. It is therefore difficult to compare studies to have an extrapolated national view on HIV related risk behaviours of traditional, as a result of which a mapping and survey was conducted by this study that exclusively focused on traditional healers commonly known as quacks.

3.6 Objective of the study

The main purpose of the study was to obtain information about the knowledge, attitude and practices of medical and non-medical professionals in the urban city of Lahore; their geographical distribution and HIV related risk behaviours. The purpose was to determine basic HIV/AIDS education among health care providers that contributes to the spread of accurate information & promoting awareness, whether health care provider's and workers took precautions during treatments of patients that will protect them & others from HIV infection.

3.7 Goals and Objectives of the Sampling

The goal was to collect, analyse and disseminate accurate information on the sampling of health practitioners and their risky behaviours with context to the spread of HIV in Lahore in order to guide the development of prevention and care programs and policies in Pakistan for vulnerable populations.

The objectives for the sampling exercise were:

- To conduct geographical sampling of health practitioners in Lahore.

- To collect socio demographic and risky behavioural information of sampled population through self-administered survey questionnaire.
- To determine prevention initiatives within the work place.
- To analyse data and generate a report for further research for National AIDS Control Programme in Pakistan.

3.8 Definitions of medical professionals with or without training

Medical professionals are classified as healthcare providers who have finished their doctoral or medical training from a university and have considerable experience. They have been working in public or private hospitals and/or clinics in Lahore. Medical professionals have been classified as those who work fulltime or part time as a *doctors and nurses*. Also *dispensars*, they are known for running their own clinics for primary health care and they been formally trained after graduating medical schools. They are in direct contact patients for treatment.

The other category of health care providers was classified as other professionals with or without training who work as *acupuncturists, pharmacists, lady health visitors* (provides door-to-door healthcare services and consultations), *nurses, technicians, homeopathic, jarrah and hakeem* in private clinics set up at their homes or shops. They also participate in high-risk activities such as not using sterilized equipment at their work place. They are considered to be especially vulnerable population in spread of HIV due to lack of HIV knowledge, monitoring, disposable income, low literacy rates and other factors.

3.9 Sampling Methodology

To map the medical and traditional healers in private and public hospitals and clinics, a geographical mapping approach was used. This approach divided the target city of Lahore into zones, with each zone comprising of a total population of 150,000 – 200,000 people. Within the zones, spots were identified where the study populations of medical and traditional healers were found; it was at these locations that primary informers were interviewed to profile and estimate their HIV knowledge, attitude and practices of this targeted population.

3.9.1 Sample size

Sample sizes for the study were designed based on expectations in which standard prevalence and expected change in prevalence were varied to get a maximum sample size.

Based on the calculations, a total sample size of 250 was set, which included 10% data error rate as well. The total sample size was then divided between the city Lahore using ‘simple random sampling’. Random Integer Generator allowed us to generate random samples.

3.9.2 Key Informants

Primary Key Informants: There are two primary key informants for this study. Firstly, the medical professionals such as doctors and nurses working in hospitals and private clinics were categorised as Primary Key Informants. Moreover the dispensars were also categorised as Primary Key Informant.

Other professionals without training working in their private clinics or road-side such as acupuncturists, pharmacists, lady health visitors, nurses, technicians, homeopathic, *hakeem*, *jarrah* were categorized as primary key informants as well.

Data was gathered to quantify number of locations and the size of the studied population. The data collected was positioned on a geographical map, to comprehend the context of person, place and time. The outputs of the geographical mapping were as follows:

1. Identification of all the spots where any type of medical and traditional healers were working in the public hospital or private clinic.
2. Highlighting such spots on the geographical map of each city
3. Estimates of medical professionals
4. Estimates of traditional healers involved in medical activities and private clinics at each location/spot

All the medical professionals with or without training working at private and public clinics and hospitals were sampled in the target city. The sampling study instruments were developed in such a way that they covered the entire studied population of doctors and nurses (medical professionals) and homeopathic, acupuncturists, pharmacists, lady health visitors, technicians, nurses, dispensars *hakeem* and *jarrah* (other professionals with or without training) found in the city.

3.9.3 Data collection duration

The mapping exercise for medical professionals with graduate degrees and traditional healers was taken up in the city simultaneously. Specific period of 2013-2014 for the mapping exercise was from August 2014 – November 2014. Pre-mapping exercise

(development of questionnaires, collection of maps, zoning, development of field work guide) was taken up from April 2014 – June 2014.

3.9.4 Acquiring of Geographical Maps

The geographical map of the city was acquired from the Geological Survey of Pakistan and District Council Offices.

3.10 Sampling

In this study, the sample is not too large keeping in mind the cost. The sample size for this study consists of 250 participants. It is possible to learn almost as much by studying only a portion of the study population within the sampling frame. “Sampling may be defined as the selection of some part of an aggregate or totality on the basis of which a judgment or interference about aggregate of totality is made. In other words, it is the process of obtaining information about an entire population by examining a part of it” (Kothari, 2004).

3.10.1 Heterogeneous sampling

This study is based on a heterogeneous sample i.e. it explored the perceptions of medical professionals and traditional healers regarding HIV/AIDS. These two groups and their sub groups form a heterogeneous sample. “A heterogeneous sampling contains individuals or groups of individuals who differ from each other in major aspect.” (Holloway, Wheeler & Holloway, 2010).

The sampling frame comprised of all the para medical practicing persons, alternative medicine practitioners, associated but not certified medical quacks of Lahore

city.

Lahore was divided in 9 zones. Every town was divided into 5 union councils.

Each union council was divided into 5 locations. They are as follows:

Name of town:

1. Iqbal Town

Union Council #	Union Council Name	Locations				
110	Awan Town	Awan Town	Green Park	Hajvery Town	Main Bazar Pecco Road	Duban Pura
111	Said Pur	Yateem Khana	Rehbar Adda	Dhollan Wall	Saidpur	Aqil Pura
112	Sabza Zar	Jamil Town	Karim Din Park	Rasool Park	Shah Freed Chowk	Kharrak Nallah
114	Bakkar Mandi	Truck Stand	Pehlwan Chowk	Lakshmi Chowk	Kot Komboh	Nagra Road
116	Johar Town	Khyban e Ferdos	Bhalla Chowk	Millat Park	Samsani Pind	Ayubia Town

2. Gulberg Town

Union Council #	Union Council Name	Locations				
75	Bibi Pak Daman	Dacis Road	Jang Office	Ralway Headquarter	Naulakha Church	Railway Hospital
76	Ghari Shahu	Ghari Shahu Main Bazar	New Abadi Ghari Shahu	Barni Road	Railway Colony	
95	Al-Hamra	Qaddafi Stadium	Canal Road	Canal Park Abadi	Main Market Gulberg	Mian Mir Drain
96	Zaman Park	Sunderdas Road	Davis Road	Habib ullah Road	Mall Road	Club Chowk
97	Gulberg	Ghalib Market	Hussain Chowk	Mini Market	M.M.Alam Road	Ghous e Azam Bazar

3. Ravi Town

Union Council #	Union Council Name	Locations				
1	Kot Begum	Shama Colony	Mehraj Park	Shahdara	Saggian Road	Sharaqpur Road
7	Shahdara	Jahangir Tomb	Aslam Park	Mohallah Kakay Zai	Shahdra Town	Old GT Road
3	Aziz Colony	Galla Mandi GT Road	Main Wandala Bazar	Dolat Khan Bazar	Feroz Park	Hameed Park
4	Faisal Park	Allama Iqbal Colony	Alam Din Colony	Kashmir Park	Machis Factory	Abbas Nagar
5	Qaiser Town	Rasul Park	Main Road Shahdara	Kachari Road	Shahdara Railway Station	Abbas Nagar

4. Shalamar town

Union Council #	Union Council Name	Locations				
16	Gujjar Pura	Chohal Colony	Haider Town	Gulshan Town	Bara Dari	Afzaal Town
18	Begum Pura	GT Road, Sukhi Talli Graveyard	Suki Talli Graveyard	Begum Pura	Darbar Bibi Aysha	UET Lahore
20	Bilal Park	Ghoray Shah Darbar	Sher Shah Road	Shah Noor Park	Waggon Wala Adda	
21	Gujjar Pura	Chah Meeran	Abdullah Park	Lahori Mohallah	Ghoray Shah	Dak Khana Road
22	Kot Khuwaja Saeed	Jamia Handia	Wassan Pura Scheme 2	Nadeem Chowk	Makhan Pura	Nawaz Sharif Hospital

5. Wahgha Town

Union Council #	Union Council	Locations
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	Name					
37	Muslim Abad	Sultan Mehmood Road	Lakhodher Road Bazar	Asif Colony	Green Park	New Saggian Mohalla h
39	Sultan Mehmood	Naqshbandia Bazar	GT Road	Band Road	Rajbah Road	Lybia Colony
40	Salamat Pura	Moman Pura Pind	Christian Colony	Gulbahar Colony	Karim Nagar	Chowk Takkia Salamat Pura
38	Muhamma d	Wapda Housing Complex	Barkat Pura	Dhobi Ghat Road	Akhri Mint Stop	Ghass Mandi (No. 01)
42	Daroghaw ala	Siraj pura	Bilal Colony	Usman Park	Mohallah Ghosia	Sunny Biscut Fectory

6. Aziz Bhatii Town

Union Council #	Union Council Name	Locations				
41	Harbans Pura	New Canal Park	Afzal Pully	Hajvery Housing Sheme	Taj Scheme bagh	Harbans Pura
43	Rashid Pura	Hameed Pura	Hassan Ahmed Chowk	Shah Din Park	Akbar Park	Gulshan e Farooq Park
44	Fateh Garh	Shalimar Houosing Scheme	Salamat Pura	Habib Park	Bismillah Park	Fateh Garh
45	Nabi Pura	Nabi Pura Bazar	Kotli Pir Abdul Rehman	Railway Phatak Laal Pull	Gulshan Park	Sarey Jora Pir
48	Mughal Pura	Shalimar Link Road	Main Bazar Ganj	Lal Pul Canal Road	Main Bazar Ram Garh	Sweekar no Bazar

7. Data Gunj Town

Union Council #	Union Council	Locations
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	Name					
67	Kasur Pura	Main Ravi Road	Kasurpura	Malipura	Gahu Shala	Amin Park Main Bazar
68	Amin Pura	Main Ravi Road	Mecca Road	Rehmat Flour Mill	Karim Park	Ameen Park Main Bazar
70	Ganj Kalan	Malik Park Main Bazar	Gilani Park	Mani Road	Main Bazar Ibraheem Road	Malik Park
71	Bilal Gunj	Mohni Road	Hajvery Mohallah	Karim Road	Mooni Park	Outfall Road
73	Gwalmandi	Nisbat Road	Railway Road	Missiom Road	Main Bazar Gawalmandi	Chamber Lane Road

8. Samanabad Town

Union Council #	Union Council Name	Locations				
84	Abu Bakar Siddique	Cuoubri Chowk	Zaman Park	Khawaja Faridf Road	Touheed Park	Jamal Road
87	Shamnagar	Main Boulevard Gulshan Ravi	Moon Market Gulshan Ravi	Muqaddas Park	Shamnagar	
88	Gulgasht Colony	Gulgasht Colony	Rustam Park	New Shalimar Road	Ghori Street	Main Urdu Nagar
89	Gulshan e Ravi	Gulshan Ravi Block A, G, H, F	Jinnah Market	Zubair Park	Usman Park	Mussarat Colony
91	Rizwan Park	Jafria Colony	Shezan Factory	Ghausia Park	Niazi Adda	Are Wali Galli

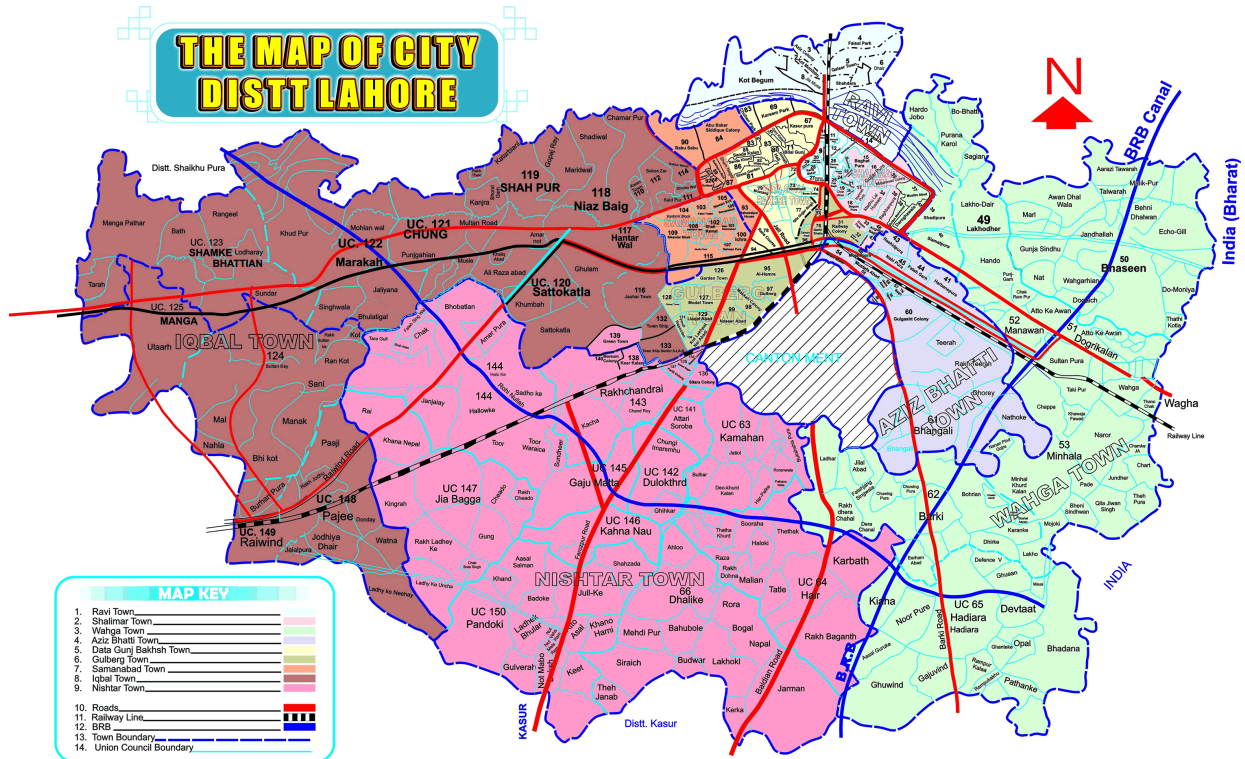
9. Nishtar Town

Union Council #	Union Council Name	Locations				
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63	Kamahan	Kerian wala Pind	Kamahan Village	State Life Society	Anmol Society	Nishat Mill
134	Boston Colony	Main Kanchi Bazar	Abid Market	Jahangir Park	Mohallah Faisalabad	Shabnum Colony
135	Ismail Nagar	Tariq Abad	Mohallah Rasul Park	Zubair Colony	Mohallah Makhdoom Abad	Baba Fried Colony
138	Keer Kalan	Green Town	Marium Colony	Nala Road	Keer Kalan	Factory Area
141	Attari Saroba	Attari Saroba	Venus Colony	Nishtar Colony	Gawala Colony	Chandroy Road

The overall population in each of the zone varied from 300,000 to 500,000. It was considered to conduct one interview of each category from each zone. The major cluster of the clinics was found in Shahdara, Data Sahib, Samanabad, Nishtar towns of Lahore. Reason of the same is having low-income groups in the areas. Therefore more interviews were conducted from the same.

Figure 3.1: The map of the city of Lahore



Snowball technique was used to identify a new respondent. Following types of practitioners were identified;

Certified Medical Professionals with a medical degree

- 20 Doctors (MBBS)
- 40 Nursing Staff
- 28 Dispensars

Other associated Certified and Non- Certified Professionals

Traditional healers and non-graduate medical service providers

- 43 Homeopathic Doctor

- 5 Acupuncturist
- 59 Lady Health Visitor
- 2 OT Technician
- 2 Lab Technician
- Pharmacist
- Clinical Assistant

Alternative Medicine Practitioner including Herbal Medicine

- 14 *Hakim*
- 4 *Jarah* (Street surgeon)

Other Professionals without training

- 11 Dispensars
- 3 Doctors
- 23 Nurse

6 field workers conducted a total of 210 interviews within a period of 15 days during October – November 2014.

3.11 Data Collection

Questionnaire was developed in consultation with the Supervisor. The interview schedule and the data collection, entry and analysis and report writing were time lined.

Following steps were followed for field data collection:

- Questionnaire development;

- Translate the questionnaire into Urdu language;
- Pre-test the questionnaire, and finalize the same;
- Fill the questionnaire according to the guidelines;
- Data entry was conducted and dummy tables were made and approved by the supervisor;
- Present the data following the analysis framework
- Analyze data following the above-mentioned framework.

3.11.1 Data Entry, Processing and Analysis

Compilation of the quantitative data was initiated as soon as the edited forms were received in Word Excel. Data was then imported to SPSS. Coding was done prior to the entry of data.

3.11.2 Training

The interviewers were imparted two days training. The training sessions included simulated interviewing exercises and interviewing skills. A guideline was also provided to the interviewers for facilitation in the field.

3.11.3 Field Team

Special care was taken that the interviewers selected should be experts in the related field and familiar with the local language, culture and the social matrix of the target population of the project areas.

3.11.4 Simple random sampling

In order to generate satisfactory information of the knowledge, attitude and practices of health practitioners, a simple random sampling method was implemented.

3.11.5 Methods of Data Collection

For the purpose of data collection, the use of instrument that may be suitable for the operation of research was considered. The instrument selected for data collection in this study was survey questionnaire.

3.11.6 Data Collection Instruments

It is a self-administered, written questionnaire, which will comprise of 30 items. The questionnaire is divided into 2 main sections:

- a) Demographic and Socio-Economic Section (DEM)
- b) HIV/AIDS Related Knowledge, attitude and practices (KAP)

The main data collection tools for this investigation are comprised of:

3.12 Questionnaire

3.12.1 Knowledge, attitude and practices questionnaire

In this study for finding out the knowledge of study population, a self-administered, validated and structured 48-item questionnaire modified from the validated “HIV Knowledge Questionnaire (HIV-K-Q)” used for this study. Carey et al. developed this questionnaire using developmental work, item and factor analysis to assess knowledge needed for HIV prevention and promotion. It was divided into four main parts evaluating the following different areas of HIV/AIDS

- a) General knowledge of risk factors,
- b) Knowledge of modes of transmission,
- c) Knowledge of HIV prevention and

d) Knowledge of HIV testing.

The answers are divided into three categories ‘correct’, ‘incorrect’, and ‘I don’t know’. Questionnaire was designed in English & translated into Urdu. Urdu version was used to collect the required data. Questionnaires will include socio-demographic such as age and gender were collection, personal characteristics & knowledge base/awareness, attitude and practices of HIV & AIDS. In addition, primary role at workplace, education status, and professional education were also collected.

Data Collection of attitude and practices for study population was made with the use of self-developed questionnaire. In total, knowledge had 45-items, attitude had 10-items and practices had 10 items.

3.12.2 List of key variables

- **Dependent variable:**

- Knowledge of HIV awareness among HCPs.
- Attitude
- Practices of HCPs

Independent variables:

a) Socio-Demographic Variables:

- The respondent's age (continuous variable), education (categorized as secondary, intermediate, graduate and masters), gender, living status (dichotomized as ‘other city’ or ‘same city’), workplace of respondents (categorized as hospital, clinic/polyclinic, own practice, medical store, NGO), primary role at workplace

(acupuncturists, clinical assistants, psychologist, dentist, homeopathic, dispenser, doctor, lady health visitor, nurse, pharmacist, *jarrah*, *hakeem*).

b) Knowledge about HIV

c) Attitude and practices about HIV

3.12.3 Pre-testing

Prior to the collection of actual data a pilot study was done in order to pre-test the questionnaire and to test its functional validity.

3.13 Statistical method of analysis

The most crucial stage of research design is the analysis and interpretation of the data. In the current study, chi-square was useful to prove the relationship between variables.

3.13.1 Chi square test

The use of chi-square is the powerful and widest form of application for versatile statistics than any of the statistical tools used in scientific research. Karl Pearson devised it in 1899. It is central and popular for analyzing educational data because of its aptitude to allocate with qualitative or discontinuous data (Buam, Gable & List, 1987).

In statistics, chi-square is written as X^2 – “It is generally used with discontinuous data involving counts of separate individuals or units classified into mutually exclusive categories e.g. numbers of candidates in an examination classified as fail or pass” (Salkind & Rasmussen, 2007).

When to use Chi-Square

In this study, we met the following conditions for which chi-square was the most appropriate statistical analysis to be used.

- The sampling method is *simple random sampling*.
- Each population is at least 10 times as large as its respective sample.
- The variables under study are each categorical
- The data displayed in the contingency table, the expected frequency count for each cell of the table is at least 5.

3.12.2 Tests of Independence or homogeneity

Chi-square is used in two problems. In our study it was used as a test of independence. Subjects were classified according to one attribute i.e. Profession and then sub-classified according to another attribute i.e. medical professionals (doctors and nursing staff) and traditional healers (homeopathic, acupuncturist, dispensars, hakeem, jarrah). We tested the hypothesis that the two aspects are not related i.e. they are independent. The hypothesis we tested were:

H₀: Medical professionals with training have better knowledge of HIV/AIDS than other health professionals without training

H₀: Medical professionals with training show fewer stigma and discrimination towards HIV/AIDS than other health professionals

H₀: medical professionals with training observe strict preventive measures to protect patients from HIV/AIDS than other professionals without training

3.14 Ethical consideration

Before the survey was conducted, study population was well versed about the general aims and purposes of the study and it was mentioned that anonymity would be top priority in order to safeguard discretion and privacy of the knowledge provided. The informed consent was obtained by signature.

Chapter 4

Results and Findings

4.1 Demographic Data

A total of 268 health care providers participated in the study. Participants returned the completed questionnaire in full (response rate 77.5%). Respondents were predominantly females 172 (64.2%), males were 76 (28.4%), 20 (7.5%) did not mention their gender. The mean age of respondents was 34.46 ± 8 years with the range of 18-59. The mean of the monthly income (in Pakistani Rupees) was 30947.65. Most of the respondents belonged to the city of Lahore 261 (97.5%) and were working in hospitals 114 (42.5%).

Table 1.1 Socio-demographic characteristics of the sampled population

Variable	Mean	Median	Standard Deviation
Age	34.46	35.00	8.506
Monthly Income (in PKR)	30947.65	25000.00	36402.771

Table 1.2 Socio-demographic characteristics of the sampled population

Variable	n	%
Gender		
Male	76	28.4
Female	176	64.2
Missing	20	7.5
Total	268	100.0
Belongs to Lahore		
Yes	261	97.4
No	7	2.6
Total	268	100.0

Place of fulltime employment		
Hospital	114	42.5
Clinic/ Poly Clinic	85	31.7
Own Practice	64	23.9
Medical Store	4	1.5
NGO	1	.4
Total	268	100.00

Table 2.1 Profession related characteristics of the sampled population

Variable	n	%
Main Profession		
Acupuncturist	5	1.9
Clinical Assistant	5	1.9
Homeopathic	43	16.0
Dispensar	39	14.6
Doctor	23	8.6
Lab Technician	2	.7
Lady Health Visitor	59	22.0
Nurse	63	23.5
OT Technician	2	.7
Pharmacist	9	3.4
Hakeem	14	5.2
Jarrah	4	1.5
Total	268	100.0
Formally trained		
DHMS	27	10.1
Dispenser	28	10.4
Technician	4	1.5
LHV	28	10.4
Nurse	40	14.9
Pharmacy	9	3.4
Hikmat/Tib	8	3.0
MBBS & Equivalent	20	7.5
No formal training	104	38.8
Total	268	100.0

The majority of respondents' were nurses 63 (23.5%), lady health visitors (LHV) were 59 (22%), 43 (16%) homeopathic, dispensers were 39 (14.6%) and doctors 23 (8.6%). Acupuncturist (5) and clinical assistants (5) were 1.9%. Others included, 2 lab

technicians and 2 OT technicians (.7%). Pharmacists were 9 (3.2%), Hakeem 14 (5.2%) and *jarah* 4 (1.5%). Majority 164 (61.2) of the studied population were trained healthcare workers such as nurses 40 (14.9%), MBBS and equivalent 20 (7.5%), lady health visitors 28 (10.4%), dispensers 28 (10.4%), diploma in homeopathic medicine and surgery (DHMS) were 27 (10.1%), pharmacists 9 (3.4%), Hakeem 8 (3%). Health care workers with no formal training comprised of 38.8% (104) of the total studied population. The contained nurses who did not complete their education, technicians who worked with a trained doctor for a while and opened their own health clinic.

Table 2.2 Profession related characteristics of the sampled population

Variable	Mean	Median	Standard Deviation
Duration of medical practice	8.71	9.00	6.448
Number of patients/ day	28.09	25.00	17.229

Table 2.2 shows the mean of the duration of respondents' medical practice as 8.71 years \pm 8 years. The mean of number of patients per day for the health care workers is 28.09.

4.2 Bivariate Analysis

The relationship between knowledge, attitude and practices scores was assessed using bivariate correlational analysis. Following two groups were formed:

Group 01: Medical professionals with formal training (Doctors 20 (27.75), Nurses 40 (45.5%) and Dispensars 28 (31.8%) with formal training)

Group 02: Other professionals with or without any formal training (Acupuncturists 5 (2.8%), Clinical Assistants 5 (2.8%), Homeopathic 43 (23.9%), Dispensars 11 (6.1%), Lab Technicians 2 (1.1%), Lady Health Visitors 59 (32.8%), Nurse 23 (12.8%), OT technician 2 (1.1%), Pharmacists 9 (5%), Hakeem 14 (7.8%), and Jarrah 4 (2.2%).

Table 3 Bivariate correlational analyses of the two groups according to their primary role

Primary Role * GROUPS Cross tabulation					
					Total
			Medical professionals with Formal training	Other professionals with or without any Formal training	
Primary Role	Acupuncturist	Count	0	5	5
		% within GROUPS	0.0%	2.8%	1.9%
	Clinical Assistant	Count	0	5	5
		% within GROUPS	0.0%	2.8%	1.9%
	Homeopathic	Count	0	43	43
		% within GROUPS	0.0%	23.9%	16.0%
	Dispensar	Count	28	11	39
		% within GROUPS	31.8%	6.1%	14.6%
	Doctor	Count	20	3	23
		% within GROUPS	22.7%	1.7%	8.6%
	Lab Technician	Count	0	2	2
		% within GROUPS	0.0%	1.1%	0.7%
	LHV	Count	0	59	59
		% within GROUPS	0.0%	32.8%	22.0%
	Nurse	Count	40	23	63
		% within GROUPS	45.5%	12.8%	23.5%

	OT Technician	Count	0	2	2
		% within GROUPS	0.0%	1.1%	0.7%
	Pharmacist	Count	0	9	9
		% within GROUPS	0.0%	5.0%	3.4%
	Hakeem	Count	0	14	14
		% within GROUPS	0.0%	7.8%	5.2%
	Jarrah	Count	0	4	4
		% within GROUPS	0.0%	2.2%	1.5%
	Total	Count	88	180	268
		% within GROUPS	100.0%	100.0%	100.0%

4.3 Knowledge

Using the 45-item version of the “HIV Knowledge Questionnaire” (HIV-K-Q) developed by Carey and Morrison et al. (1997), knowledge of the respondents regarding the routes of transmission of HIV/AIDS was determined. Respondents had deficient knowledge about the modes of HIV transmission.

As illustrated in Table 3, overall the knowledge about route of transmission of HIV was high for some factors and relatively low for other factors. 40.3% of the respondents believed that HIV and AIDS is the same thing. In group 1, 47.7% medical professionals with formal training answered yes while in comparison 36.7% of other professionals with or without any formal training answered yes. More trained and formally trained and medical professionals answered this incorrectly. When knowledge was compared for both these groups using Pearson Chi-square test, p-value was 0.151, which is greater than 0.05 only which means this test was insignificant. Although one group has slightly better knowledge it is not statistically significant. In conclusion, both

groups have similar knowledge of this question. Accordingly, similar insignificance was found when 19% of the respondents answered incorrectly to the question if there was a cure of AIDS?

Significant differences were found between two groups in knowledge about routes of HIV transmission. 71.3% of the participants answered correctly that coughing and sneezing does not spread HIV. In this case, 80.7% of the medical professionals answered more correctly. P value was 0.037, which is less than 0.05 making it a significant test.

Similarly, 78.7% incorrectly believed that a person could get HIV from toilet seat cover. 88.6% of the medical professionals formally trained answered this incorrectly more than other professionals with or without formal training (73.9%). P value was .012, making this a significant test.

86.6% answered correctly that a pregnant woman with HIV could give virus to her unborn baby. 93.2% of the medical professionals formally trained answered this correctly more than other professionals with or without formal training (83.3%). P value was .031, making this a significant test.

32.1% answered correctly that bleach kills HIV. 44.3% of the medical professionals formally trained answered this correctly more than other professionals with or without formal training (26.1%). P value was .0006, making this a significant test.

38.8% believed incorrectly that pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex. 53.4% of the trained medical professionals answered this incorrectly more than other medical professionals without formal training. P value was .001, making this a significant test.

More than half of the respondents' (89.6%) correctly mentioned that a woman could get HIV by having anal sex with a man, 94.4% answered correctly that a person could get HIV when getting a tattoo. However, there was clear misperception about some routes of transmission. For example, nearly half (42.9%) of the respondents incorrectly answered that mosquitos can spread HIV, 78.4% answered incorrectly that a person can get HIV by sharing a glass of water with someone who has HIV, 39.9% incorrectly believed that AIDS is the cause of HIV,

38.4% of participants answered incorrectly that showering or washing ones genitals/private parts after sex keeps a person from getting HIV. 50% of the medical trained professionals answered this incorrectly more than 32.8% of the other professionals without formal training. P value was .021, making this a significant test.

Although only 29.5% of the participants answered incorrectly that eating healthy food can keep a person from getting HIV. P value was .021, showing a significant difference between the two groups. 39.8% of the medical trained professionals answered this incorrectly more than 24.4% of the other professionals without formal training.

More than half of the participants' (82,5%) responded incorrectly to the question that all pregnant women infected with HIV will have babies born with AIDS. 92% of the medical trained professionals answered this incorrectly more than 77.8% of the other professionals without formal training. P value was .004, making this a significant test.

Nearly half of respondents' had good understanding about prevention from HIV. It was revealed when 74.3% of respondents' answered correctly that latex or rubber condom can lower person's chances of getting HIV. Similarly, 61.6% of the respondents' answered correctly that a person with HIV can look and feel healthy.

32.1% of the participants answered incorrectly that people who have been infected with HIV quickly show serious signs of being infected. 48.9% of the trained medical professionals answered this incorrectly more than 23.9% of the other professionals without formal training. P value was .000, making this a significant test.

36.2% of the participants answered correctly that a person can be infected with HIV for 5 years or more without getting AIDS. Here, 52.3% of the trained medical professionals answered this correctly more than 28.3% of the other professionals without formal training. P value was .000, making this a significant test.

36.2% of the participants answered correctly that a person can be infected with HIV for 5 years or more without getting AIDS. Here, 52.3% of the trained medical professionals answered this correctly more than 28.3% of the other professionals without formal training. P value was .000, making this a significant test.

Nearly half of the respondents' (47.8%) incorrectly mentioned that there is a vaccine that can stop adults from getting HIV. More than half of the trained medical professionals (51.1%) answered this incorrectly more than other professionals without training (46.1%). P value was .019, making this a significant test.

Significant test was also found when 41% of the participants answered correctly that some drugs have been made for the treatment of AIDS and P value was .019. 51.1% of the trained medical professionals answered this correctly more than 36.1% of the other professionals without formal training.

Only 28% of the respondents' answered incorrectly to the question that women are always tested for HIV during their pap smears. However, 40.9% of the trained

medical professionals answered this incorrectly more than other professionals without training (21.7%). P value was .003, making this a significant test.

Less than half of the respondents' 46.3% incorrectly mentioned that a person cannot get HIV by having oral sex, mouth-to-penis, with a man who has HIV, 77.6% answered correctly that having one time sex with HIV person can get the virus. There was clear confusion about modes of transmission of HIV. For example, more than half of the respondents (59%) incorrectly answered that people are likely to get HIV by deep kissing, putting tongue in their partners mouth, if their partner has HIV, only 31.3% answered incorrectly that a person can get HIV by giving blood, 33% incorrectly believed that a woman can get HIV if she has sex during periods.

22.6% incorrectly mentioned that usually you could tell if a person has HIV by looking at them. 22.6% trained medical professionals answered this incorrectly more than other professionals without training (19.1%). P value was .005, making this a significant test.

32.8% incorrectly answered that getting blood test after one week of having sex with HIV partner will tell you if you contracted the disease. 45.5% trained medical professionals answered this incorrectly more than other professionals without training (26.7%) P value was .001, making this a significant test.

More than half of the respondents' 80.1% correctly mentioned that there is a female condom that can help in decreasing a woman's chance of getting HIV. 14.6% answered incorrectly that person would not get HIV if they were taking anti biotic. Furthermore, good knowledge was observed about modes of prevention of HIV. For

example, more than half of the respondents (78%) correctly answered multiple sex partners can increase the chance of getting HIV.

63.4% answered incorrectly that a person can get HIV by sitting in the same hot tub and swimming in the pool with a person who has HIV, 63.4% incorrectly believed that a person can contract HIV through saliva, sweat, tears or urine. However, 81.7% answered correctly a person can get HIV from a women's vaginal secretions/wetness from her vagina, 87.7% correctly believed that a person can get HIV from oral sex [mouth-to-vagina].

34.3% incorrectly believed that a person lowers the risk of HIV if they put baby oil condom or Vaseline with condom, 26.1% incorrectly answered that washing drug use equipment with cold water kills HIV. 91.8% of the respondents' correctly answered that athletes who share needles for steroids can contract HIV.

91% of the respondents' answered correctly to the question that a woman can get HIV after having vaginal sex with a man who has HIV. 91% of the trained medical professionals answered this correctly more than other professionals without training (90%). P value was .045, making this a significant test.

32.6% of the respondents' answered incorrectly to the question douching after sex can prevent a woman from getting HIV. 47.7% of the trained medical professionals answered this incorrectly more than other professionals without training (25.1%). P value was .001, making this a significant test.

28% of the respondents' believed that vitamins could keep a person from contracting HIV. 43.2% of the trained medical professionals answered this incorrectly

more than other professionals without training (20.6%). P value was .001, making this a significant test.

Table 4. A comparison of Knowledge of HIV/AIDS in the two groups of respondents who answered, “yes” to the questions

Variable	Overall N(%)	Group 01 Medical professionals with formal training N(%)	Group 02 Other professionals with or without any formal training N(%)	P value*
HIV and AIDS is the same thing	108 (40.3%)	42 (47.7%)	66 (36.7%)	0.151
Is there a cure for AIDS?	51 (19%)	13 (14.8%)	38 (21.1%)	.015
A person could get HIV from toilet seat cover?	211 (78.7%)	78 (88.6%)	133 (73.9%)	.012
Coughing and sneezing DO NOT spread HIV?	191 (71.3%)	71 (80.7%)	120 (66.7%)	.037
Mosquitos can spread HIV?	115 (42.9%)	45 (51.1%)	70 (38.9%)	.138
AIDS is the cause of HIV?	107 (39.9%)	43 (48.9%)	64 (35.6%)	.084
A person can get HIV by sharing a glass of water with someone who has HIV?	210 (78.4%)	74 (84.1%)	136 (75.6%)	.074
Bleach kills HIV?	86 (32.1%)	39 (44.3%)	47 (26.1%)	.006
A person can get HIV when he/she gets a tattoo?	253 (94.4%)	83 (94.3%)	170 (94.4%)	.934
A pregnant woman with HIV can give virus to her unborn baby?	232 (86.6%)	82 (93.2%)	150 (83.3%)	.031
Pulling out the penis before a man	104 (38.8%)	47 (53.4%)	57 (31.7%)	.001

climaxes/cums keeps a woman from getting HIV during sex?				
A woman can get HIV by having anal sex with a man?	240 (89.6%)	81 (92%)	159 (88.3%)	.539
Showering or washing ones genitals/private parts after sex keeps a person from getting HIV?	103 (38.4%)	44 (50%)	59 (32.8%)	.021
Eating healthy food can keep a person from getting HIV?	79 (29.5%)	35 (39.8%)	44 (24.4%)	.020
All pregnant women infected with HIV will have babies born with AIDS?	221 (82.5%)	81 (92%)	140 (77.8%)	.004
A latex or rubber condom can lower person's chances of getting HIV?	199 (74.3%)	66 (75%)	133 (73.9%)	.957
A person with HIV can look and feel healthy?	165 (61.6%)	53 (60.2%)	112 (62.2)	.195
People who have been infected with HIV quickly show serious signs of being infected?	86 (32.1%)	43 (48.9%)	43 (23.9%)	.000
A person can be infected with HIV for 5 years or more without getting AIDS?	97 (36.2%)	46 (52.3%)	51 (28.3%)	.000
There is a vaccine that can stop adults from getting HIV?	128 (47.8%)	45 (51.1%)	83 (46.1%)	.019
Some drugs have been made for the treatment of AIDS?	110 (41.0%)	45 (51.1%)	65 (36.1%)	.019

Women are always tested for HIV during their pap smears?	75 (28%)	36 (40.9%)	39 (21.7%)	.003
A person cannot get HIV by having oral sex, mouth-to-penis, with a man who has HIV?	124 (46.3%)	46 (52.3%)	78 (43.3%)	.333
Having one time sex with HIV person can get the virus?	208 (77.6%)	67 (76.1%)	141 (78.3%)	.898
People are likely to get HIV by deep kissing, putting tongue in their partners mouth, if their partner has HIV?	158 (59%)	46 (52.3%)	112 (62.2%)	.091
A person can get HIV by giving blood?	84 (31.3%)	29 (22%)	55 (30.6%)	.679
A woman cannot get HIV if she has sex during periods?	88 (33.0%)	29 (33%)	59 (33%)	.160
Usually you can tell if a person has HIV by looking at them?	60 (22.6%)	26 (29.5%)	34 (19.1%)	.005
There is a female condom that can help in decreasing a woman's chance of getting HIV?	214 (80.1%)	71 (80.7%)	143 (79.9%)	.812
A person will not get HIV if they are taking anti biotic?	39 (14.6%)	17 (19.3%)	22 (12.2%)	.114
Multiple sex partners can increase the chance of getting HIV	209 (78%)	70 (79.5%)	139 (77.2%)	.833
Getting blood test after one week of having sex	88 (32.8%)	40 (45.5%)	48 (26.7%)	.001

with HIV partner will tell you if you contracted the disease?				
A person can get HIV by sitting in the same hot tub and swimming in the pool with a person who has HIV?	170 (63.4%)	54 (61.4%)	116 (64.4%)	.254
A person can contract HIV through saliva, sweat, tears or urine?	170 (63.4%)	56 (63.6%)	114 (63.3%)	.945
A person can get HIV from a women's vaginal secretions/wetness from her vagina?	219 (81.7%)	67 (76.1%)	152 (84.4%)	.243
A person can get HIV from oral sex [mouth-to-vagina]?	235 (87.7%)	72 (81.8%)	163 (90.6%)	.123
A person lowers the risk of HIV if they put baby oil condom or Vaseline with condom?	92 (34.3%)	33 (37.5%)	59 (32.8%)	.333
Washing drug use equipment with cold water kills HIV?	70 (26.1%)	28 (31.8%)	42 (23.3%)	.256
A woman can get HIV after having vaginal sex with a man who has HIV?	244 (91%)	81 (91%)	163 (90%)	.045
Athletes who share needles for steroids can contract HIV?	246 (91.8%)	81 (92%)	165 (91.7%)	.749
Douching after sex can prevent a woman from getting HIV?	87 (32.6%)	42 (47.7%)	45 (25.1%)	.001
Vitamins can keep a person from contracting	75 (28%)	38 (43.2%)	37 (20.6%)	.001

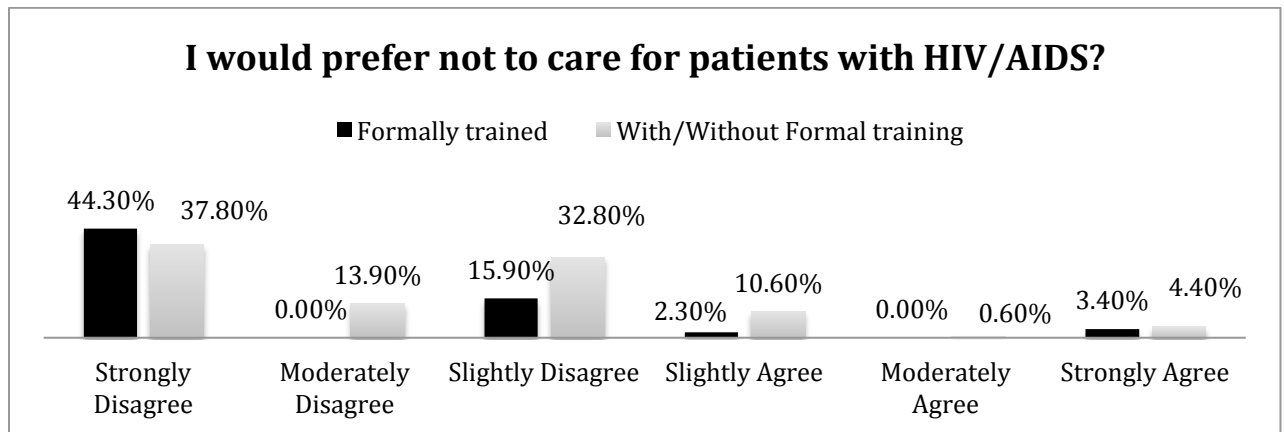
HIV?

* χ^2 test of significance

4.4 Attitude

Stigmatization and discrimination against PLWHA has been one of the hallmarks of the global HIV/AIDs pandemic. Discrimination against PLWHA has profound impact on the care and support required for their optimal management particularly in resource-constrained settings.

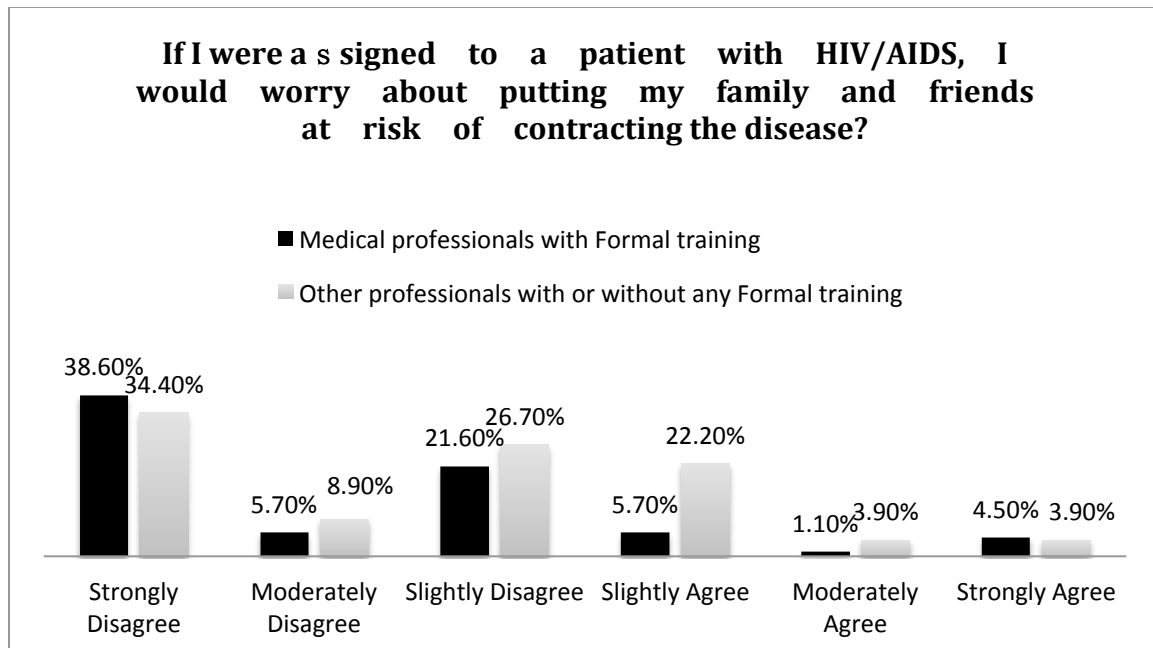
Figure 4.1: I would prefer not to care for patients with HIV/AIDs



44.3% of medical professionals with formal training and 38.9% of other professionals with or without formal training stated that they strongly disagree to not to care for HIV positive patients, 11.4% of medical professionals with formal training and 13.9% of other professionals with or without formal training moderately disagreed, 15.9% medical professionals with formal training and 32.8% of other professionals with or without formal training slightly agreed to not to care for HIV positive patients. However, 3.4% of medical professionals with formal training and 4.4% of other professionals with or without formal training stated that they strongly agree to not to care for HIV positive patients, 0% of medical professionals with formal training and 0.6% of

other professionals with or without formal training moderately agreed, 2.3% medical professionals with formal training and 10.6% of other professionals with or without formal training slightly agreed to not to care for HIV positive patients.

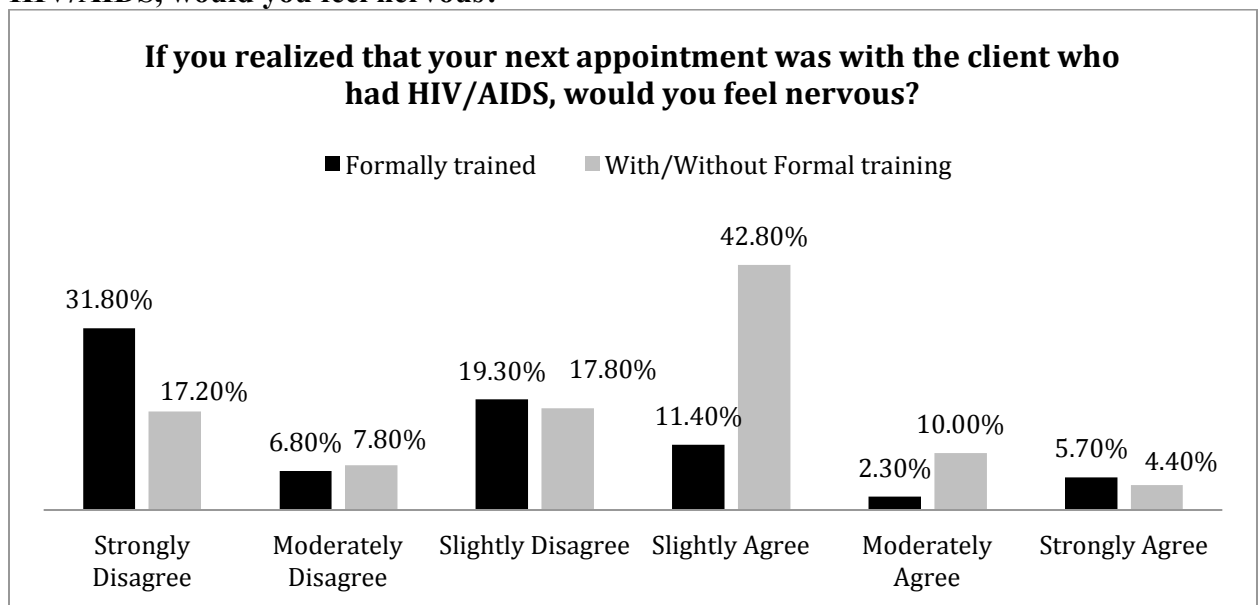
Figure 4.2: If I were assigned to patients with HIV/AIDS, I would worry about putting my family and friends at risk of contracting the disease?



38.6% of medical professionals with formal training and 34.4% of other professionals with or without formal training stated that they strongly disagreed to the question that if they were assigned to a patient with HIV/AIDS, they would worry about putting their family and friends at risk of contracting the disease, 5.7% medical professionals with formal training and 8.9% of other professionals with or without formal training moderately disagreed, 21.6% of medical professionals with formal training and 26.7% of other professionals with or without formal training slightly disagreed. However, 4.5% of medical professionals with formal training and 3.9% of other professionals with or without formal training stated that they strongly agreed to the question that if they

were assigned to a patient with HIV/AIDS, they would worry about putting their family and friends at risk of contracting the disease, 1.1% medical professionals with formal training and 3.9% of other professionals with or without formal training moderately agreed, 5.7% of medical professionals with formal training and 22.2% of other professionals with or without formal training slightly agreed.

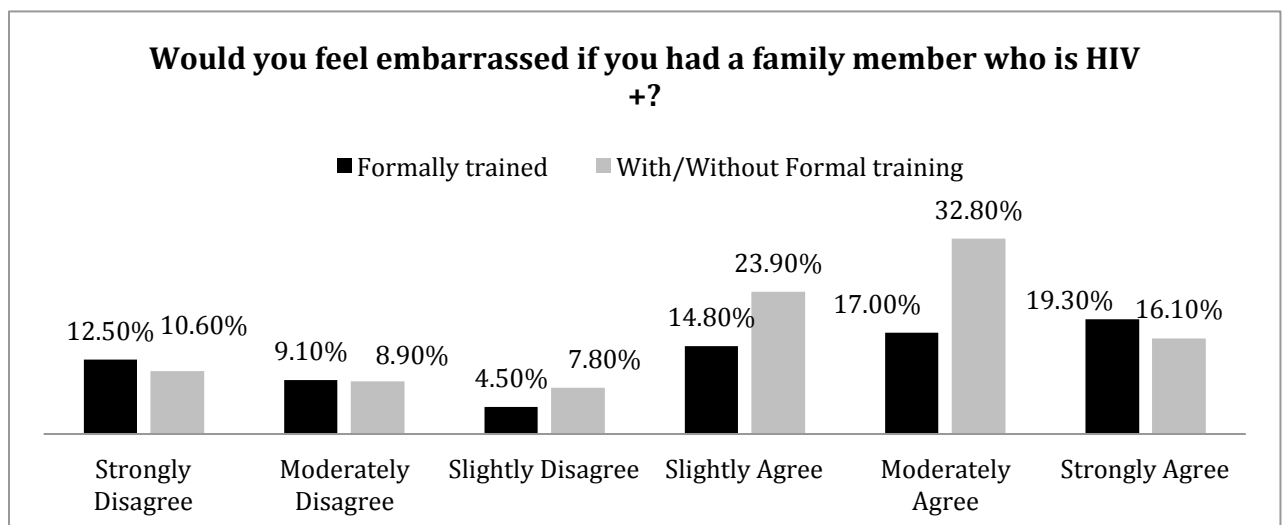
Figure 4.3: If you realized that your next appointment was with the client who had HIV/AIDS, would you feel nervous?



31.8% of medical professionals with formal training and 17.2% of other professionals with or without formal training stated as strongly disagreeing to feeling nervous if they realized that their next appointment was with a client who has HIV/AIDS, 6.8% medical professionals with formal training and 7.8% of other professionals with or without formal training moderately disagreed, 19.3% of medical professionals with formal training and 17.8% of other professionals with or without formal training slightly disagreed. However, 5.7% of medical professionals with formal training and 4.4% of other professionals with or without formal training stated as strongly agreed to feeling

nervous if they realized that their next appointment was with a client who has HIV/AIDS, 2.3% of the medical professionals with formal training and 10% of other professionals with or without formal training moderately agreed, 11.4% of medical professionals with formal training and 42.8% of other professionals with or without formal training slightly agreed.

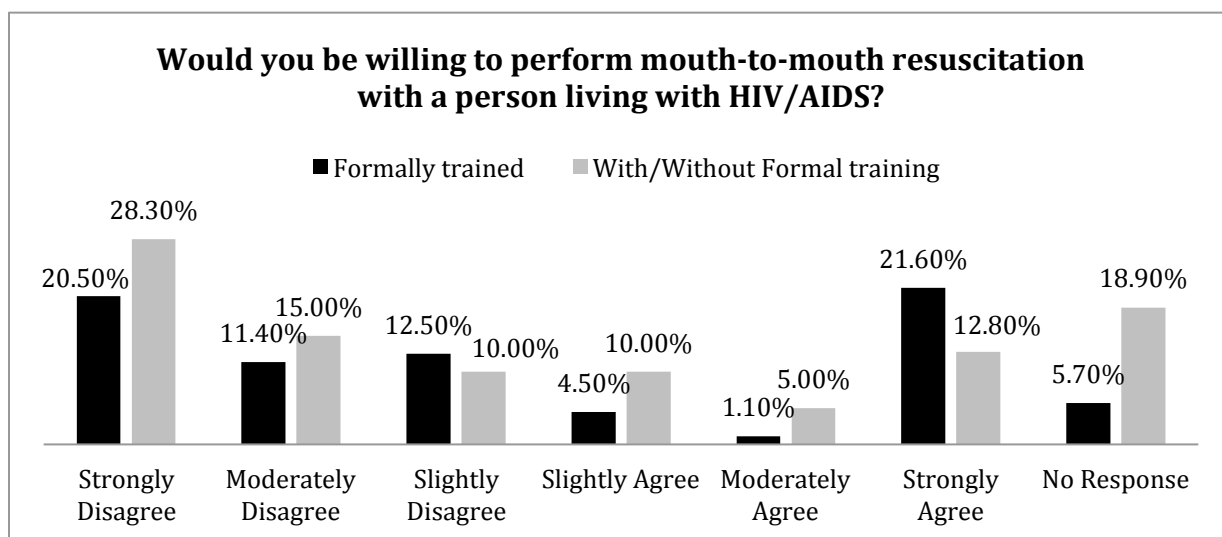
Figure 4.4: Would you feel embarrassed if you had a family member who is HIV+?



12.5% of medical professionals with formal training and 10.6% of other professionals with or without formal training strongly disagreed to feeling embarrassed if they had a family member whose HIV positive, 9.1% of medical professionals with formal training and 8.9% of other professionals with or without formal training moderately disagreed, 4.5% of medical professionals with formal training and 7.8% of other professionals with or without formal training slightly disagreed whereas 19.3% of medical professionals with formal training and 16.1% of other professionals with or without formal training strongly agreed to feeling embarrassed if they had a family member whose HIV positive, 17% of medical professionals with formal training and

32.8% of other professionals with or without formal training moderately agreed, 14.8% of medical professionals with formal training and 23.9% of other professionals with or without formal training slightly agreed.

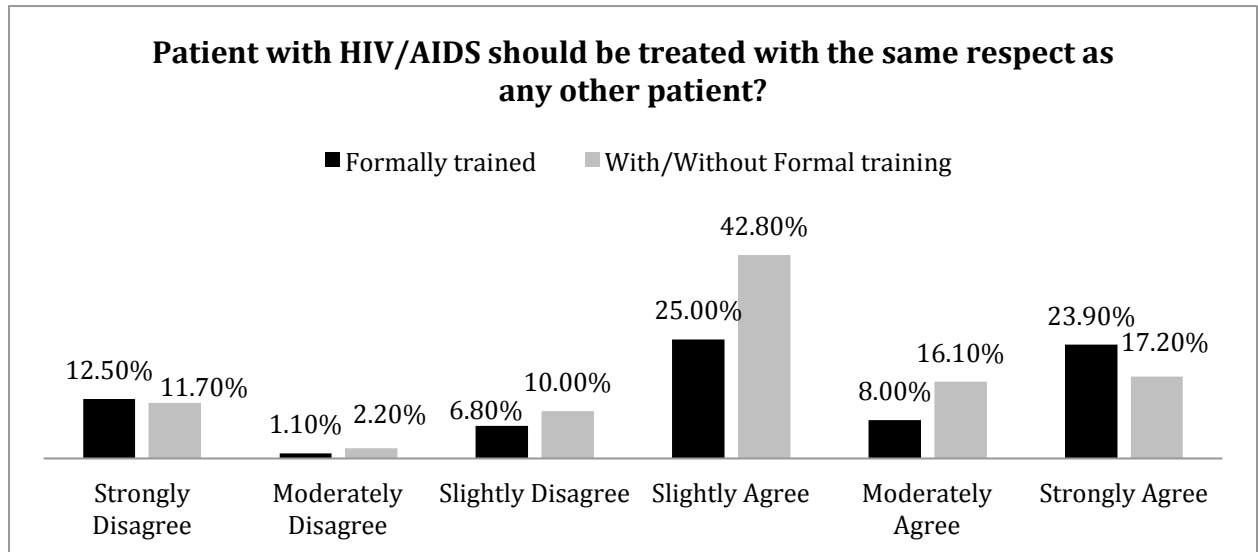
Figure 4.5: Would you be willing to perform mouth-to-mouth resuscitation with a person living with HIV/AIDS?



20.5% of medical professionals with formal training and 28.3% of other professionals with or without formal training strongly disagreed to performing mouth-to-mouth resuscitation with Person Living with HIV/AIDS (PLHIV), 11.4% of medical professionals with formal training and 15% of other professionals with or without formal training moderately disagreed, 12.5% of medical professionals and 10% of other professionals with or without formal training slightly disagreed where as 21.6% of medical professionals with formal training and 12.8% of other professionals with or without formal training strongly agreed to performing mouth-to-mouth resuscitation with Person Living with HIV/AIDS (PLHIV), 1.1% of medical professionals with formal

training and 5% of other professionals with or without formal training moderately agreed, 4.5% of medical professionals and 10% of other professionals with or without formal

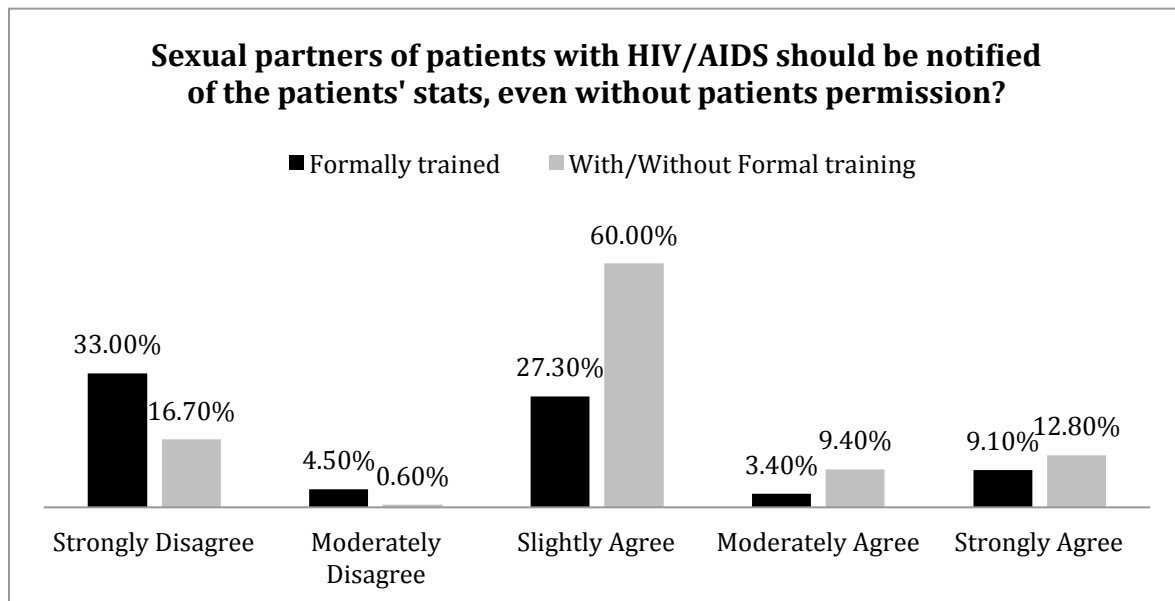
Figure 4.6: Patients with HIV/AIDS should be treated with the same respect as any other patient?



12.5% of medical professionals with formal training and 11.7% of the other professionals with or without formal training strongly disagreed to the question that patients with HIV/AIDS should be treated with the same respect as any other patient, 1.1% of medical professionals with formal training and 2.2% of the other professionals with or without formal training moderately disagreed, 6.8% of medical professionals with formal training and 10% of the other professionals with or without formal training slightly disagreed whereas 23.9% of medical professionals with formal training and 17.2% of the other professionals with or without formal training strongly agreed to the question that patients with HIV/AIDS should be treated with the same respect as any other patient, 8% of medical professionals with formal training and 16.1% of the other

professionals with or without formal training moderately agreed, 25% of medical professionals with formal training and 42.8% of the other professionals with or without formal training slightly agreed.

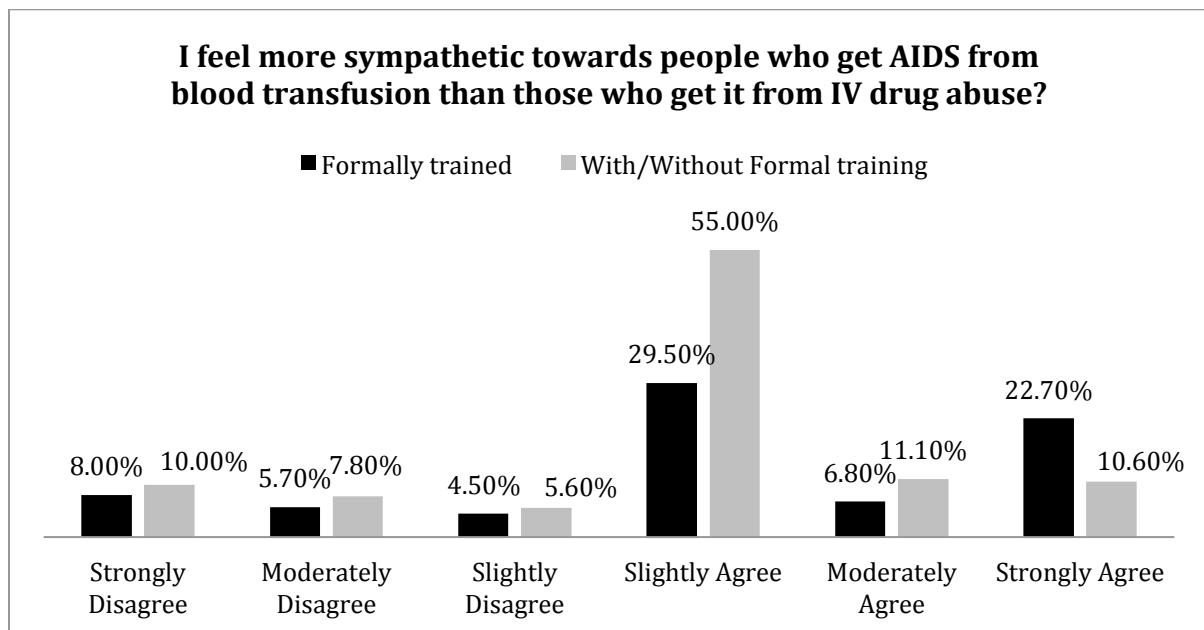
Figure 4.7: Sexual partners of patients with HIV/AIDS should be notified of the patients' stats, even without the patient's permission?



33% of medical professionals with formal training and 16.7% of other professionals with or without formal training strongly disagreed that sexual partners of patients with HIV/AIDS should be notified of the patients' stats, even without the patients permission, 4.5% of medical professionals with formal training and 0.6% of other professionals with or without formal training moderately disagreed whereas 9.1% of medical professionals with formal training and 12.8% of other professionals with or without formal training strongly agreed that sexual partners of patients with HIV/AIDS should be notified of the patients' stats, even without the patients permission, 3.4% of

medical professionals with formal training and 9.4% of other professionals with or without formal training moderately agreed, 27.3% of medical professionals with formal training and 60% of other professionals with or without formal training slightly agreed.

Figure 4.8: I feel more sympathetic toward people who get AIDS from blood transfusion than those who get it from IV drug abuse?



8% of medical professionals with formal training and 10% of other professionals with or without formal training strongly disagreed to the fact that they feel more sympathetic towards people who get AIDS from blood transfusion than those who get it from IV drug abuse, 5.7% of medical professionals with formal training and 7.8% of other professionals with or without formal training moderately disagreed, 4.5% of medical professionals with formal training and 5.6% of other professionals with or without formal training slightly disagreed whereas 22.7% of medical professionals with formal training and 10.6% of other professionals with or without formal training strongly

agreed to the fact that they feel more sympathetic towards people who get AIDS from blood transfusion than those who get it from IV drug abuse, 6.8% of medical professionals with formal training and 11.1% of other professionals with or without formal training moderately agreed, 29.5% of medical professionals with formal training and 55% of other professionals with or without formal training slightly agreed.

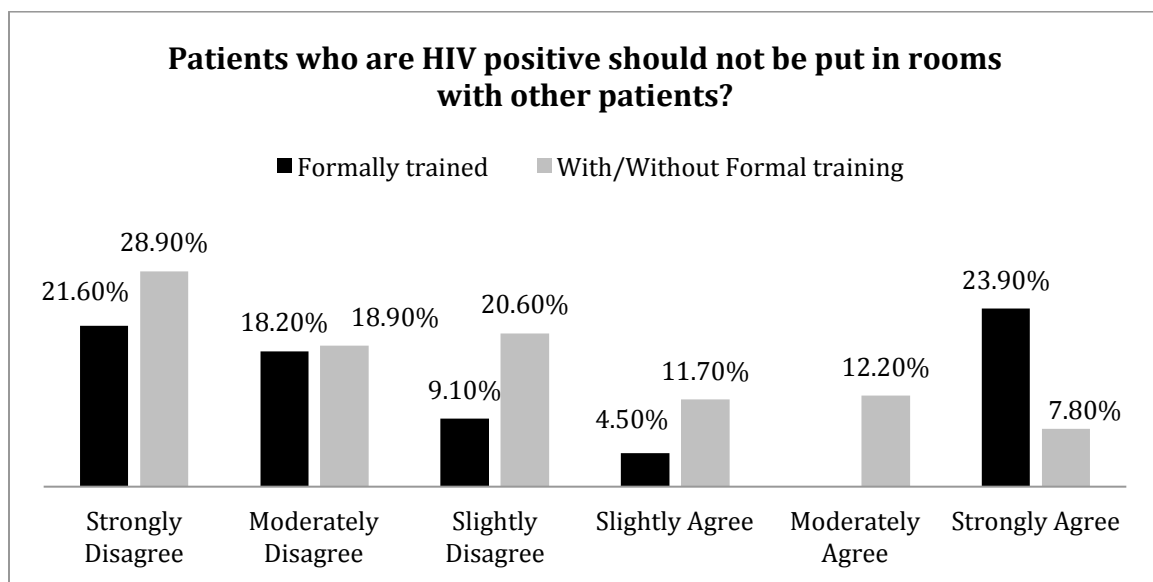
Figure 4.9: I am worried about getting AIDS from social contact with someone?



33% of medical professionals with formal training and 33% of other professionals with or without formal training strongly disagreed that they are worried about getting AIDS from social contact with someone, 14.8% of medical professionals with formal training and 16.1% of other professionals with or without formal training moderately disagreed, 15.9% of medical professionals with formal training and 31.1% of other professionals with or without formal training slightly disagreed whereas 1.1% of medical professionals with formal training and 1.1% of other professionals with or without formal training strongly agreed that they are worried about getting AIDS from social contact

with someone, 4.5% of medical professionals with formal training and 6.1% of other professionals with or without formal training moderately agreed, 8% of medical professionals with formal training and 12.2% of other professionals with or without formal training slightly agreed.

Figure 4.10: Patients who are HIV positive should not be put in rooms with other patients?

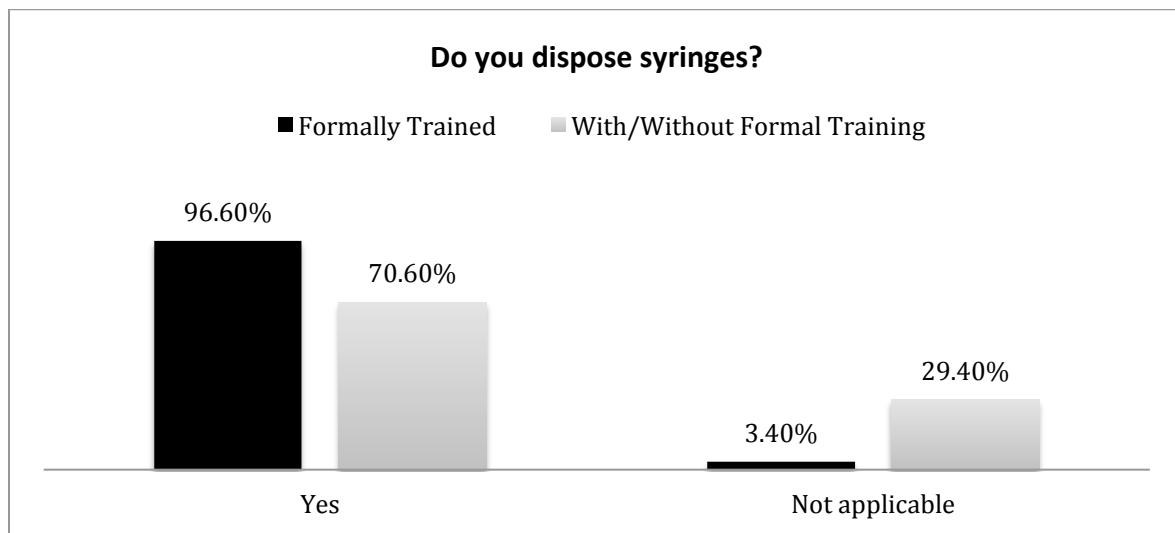


21.6% medical professionals with formal training and 28.9% of other professionals with or without formal training strongly disagreed that patients who are HIV positive should not be put in rooms with other patients, 18.2% of medical professionals with formal training and 18.9% of other professionals with or without formal training moderately disagreed, 9.1% of medical professionals with formal training and 20.6% of other professionals with or without formal training slightly disagreed whereas 23.9% medical professionals with formal training and 7.8% of other professionals with or without formal training strongly agreed that patients who are HIV positive should not

be put in rooms with other patients, 0% of medical professionals with formal training and 12.2% of other professionals with or without formal training moderately agreed, 4.5% of medical professionals with formal training and 11.7% of other professionals with or without formal training slightly agreed.

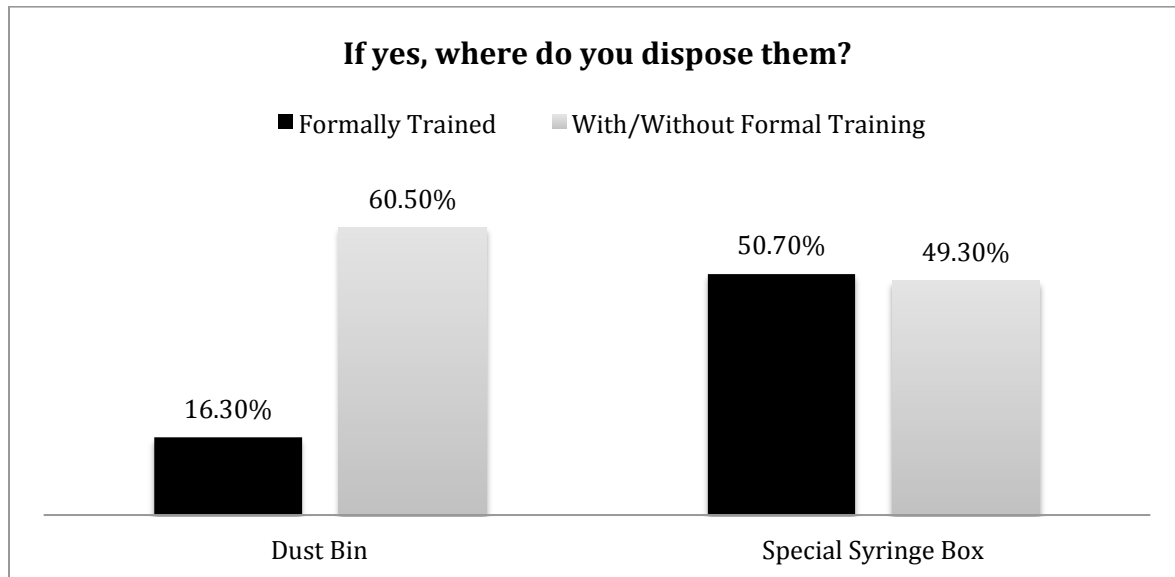
4.5 Practices

Figure 4.11: Do you dispose syringes?



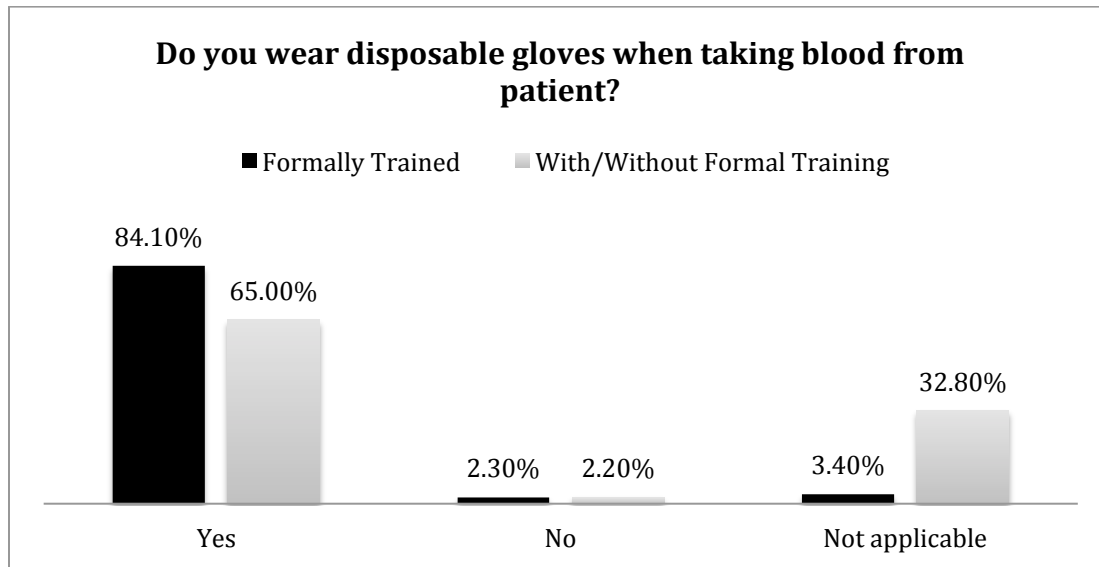
Compared to the knowledge, practices of medical professionals with formal training and other professionals with or without formal training were better. For example, 96.6% of the medical professionals said they disposed off their syringe after using it. 3.4% medical of the medical professionals mentioned that this it was not applicable to their line of work. Hence they did not use a syringe in their practice. 70.6% of the other professionals with or without medical training disposed off the syringes after using it. 29.4% of the other professionals with or without medical training mentioned that it was not applicable to their line of work.

Figure 4.12: If yes, where do you dispose them?



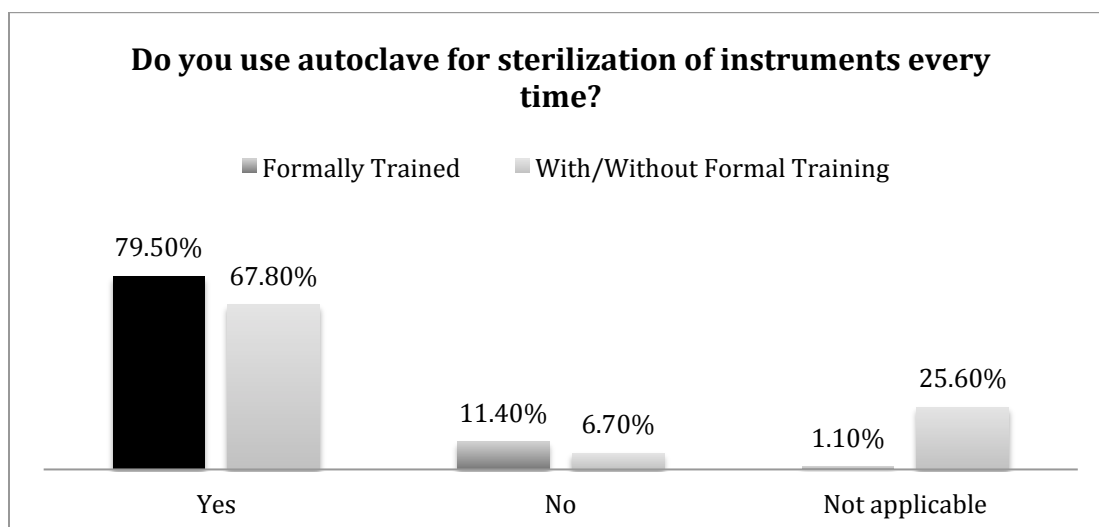
16.3% of the medical professionals with formal training disposed of their syringes in a domestic dustbin. 50.7% medical professionals with or without formal training disposed of their syringes in a domestic dustbin. In comparison between the two groups, there is a huge number of medical professionals with or without formal training who are not following proper laws. 60.5% of the medical professionals with formal training are disposing syringes in a special syringe box. 49.3% of the medical professionals with or without formal training are disposing syringes in a special syringe box.

Figure 4.13: Do you wear disposable gloves when taking blood from patients?



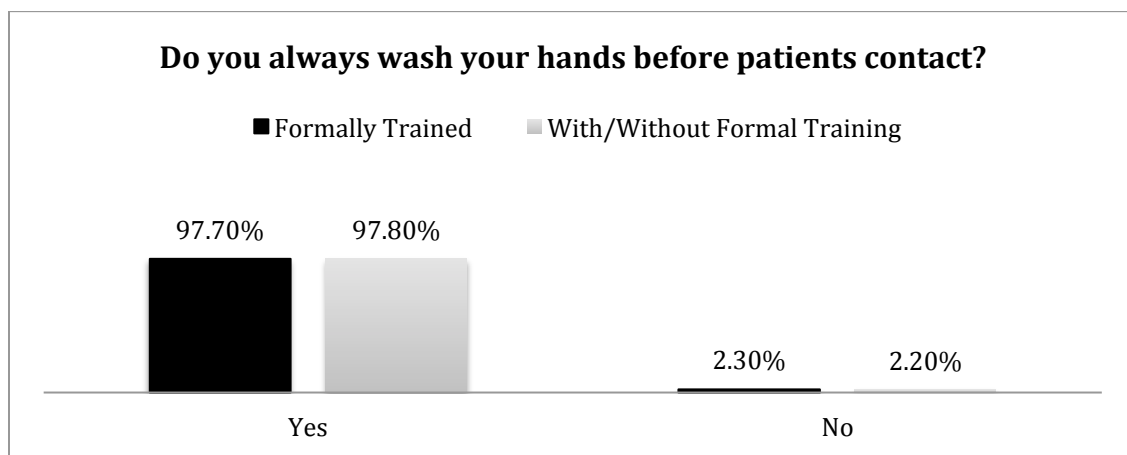
84.1% of the medical professionals with formal training respondents answered yes to the question if they wear disposable gloves when taking blood from patients whereas 2.3% said they did not, 3.4% said this does not apply to their line of work whereas 65% of the medical professionals with or without formal training respondents wore disposable gloves when taking blood from a patient whereas 2.2% said they did not and 32.8% mentioned this does not apply to their line of work.

Figure 4.14: Do you use autoclave for sterilization of instruments every time?



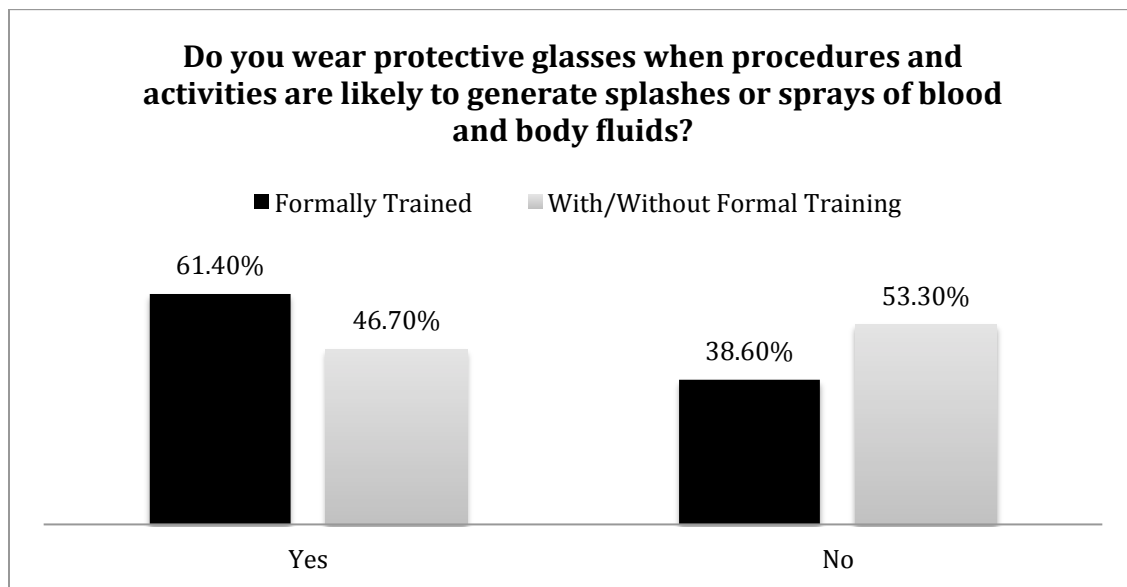
79.5% of the medical professionals with formal training answered yes to the question if they used autoclave for sterilization of instruments every time whereas 11.4% said they did not, 1.1% answered this does not apply to their line of work whereas 67.8% of the medical professionals with or without formal training used autoclave for sterilization of instruments every time whereas 6.7% said they did not and 25.6% mentioned this does not apply to their line of work.

Figure 4.15: Do you always wash your hands before patients contact?



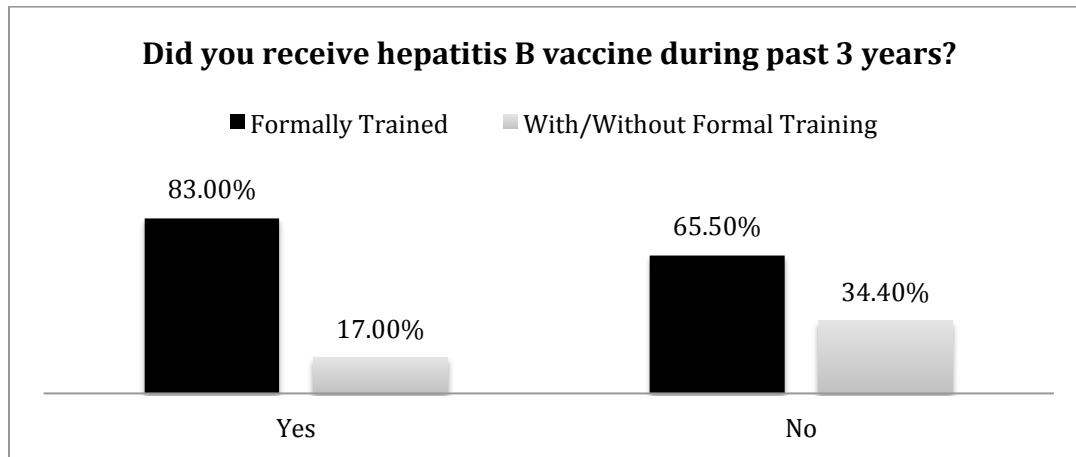
97.7% of the medical professionals with formal training answered yes to the question if they always washed their hands before patient contact whereas 2.3% answered they did not. 97.8% of the medical professionals with or without formal training said they always washed their hands before patient contact whereas 2.2% said they did not.

Figure 4.16: Do you wear protective glasses when procedures and activities are likely to generate splashes or sprays of blood and body fluids?



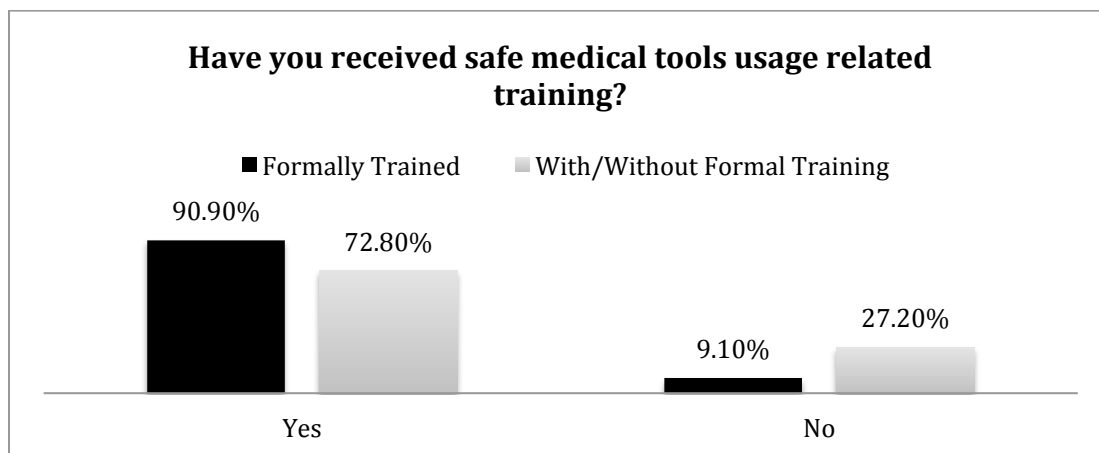
61.4% of the medical professionals with formal training answered yes to the question that they wear protective eyeglasses when procedures and activities are likely to generate splashes or sprays of blood and body fluids whereas 38.6% said they did not. 46.7% of the medical professionals with or without formal training answered yes to the question that wear protective glasses when procedures and activities are likely to generate splashes or sprays of blood and body fluids whereas 53.3% said they did not.

Figure 4.17: Did you receive hepatitis B vaccine during past 3 years?



83% of the medical professionals with formal training answered yes to the question if they received hepatitis B vaccine during past 3 years whereas 17% said they did not, 65.5% medical professionals with or without formal training mentioned that they received hepatitis B vaccine during past 3 years whereas 34.4% of the non-medical respondents said they did not.

Figure 4.18: Have you received safe medical tools usage related training?



90.9% of the medical professionals with formal training answered yes to the question that they received training regarding safe medical tools usage whereas 9.1% said they did not. 72.8% of the medical professionals with or without formal training yes to

the question that they received safe medical tools usage related training whereas 27.2% said they did not.

Chapter 5

Discussion

This study revealed that a considerable proportion of medical professionals with formal training and other professionals with or without any formal training do not have satisfactory level knowledge but satisfactory attitudes and relatively safe practices regarding HIV/AIDS. In comparison between the two groups, several defects were identified in their knowledge, attitude and practices of HIV/AIDS. In certain vital areas, such as basic knowledge and routes of transmission, deficit knowledge was found for both groups. Similarly, lack of knowledge of HIV has been found in Kuwait and other countries in the Middle East (Fido, 2002).

Pakistan has a low prevalence of HIV patients. After this study, low level of HIV knowledge among healthcare workers was found but their practices were satisfactory. It is clear from the results that the knowledge of healthcare providers regarding HIV is not enough but they can treat vulnerable populations, as their practices are satisfactory. It is clear from this study that Pakistani medical profession is more focused on improving practices rather than basic knowledge and education.

Inadequate knowledge on HIV/AIDS was found in a study conducted on knowledge, attitude and practices regarding HIV exposure and protection among healthcare workers by Wu et al. (2014) in a rural area in China where HIV prevalence was also low. They found that healthcare workers had insufficient basic knowledge on HIV/AIDS as well as exposure and transmission of the disease. They also lacked universal precautions in their practice unlike the results of our study. In conclusion, it can

be assumed that healthcare workers have low knowledge of HIV/AIDS where there is low prevalence of HIV infected people.

The reason medical professionals with training have an alarmingly low level of knowledge regarding HIV/AIDS is that there is no HIV curriculum developed for them during their medical student years. This study sheds light on the fact that rigorous and intensive courses should be developed for HIV/AIDS knowledge before the practices of healthcare professionals begin. Gray et al., (2014) developed a competency-based HIV curriculum for final years medical students as a part of 12-week clinical medicine attachment. Similar initiatives should be taken for development and enhancement of knowledge of Pakistani medical students.

Healthcare professionals without training also have an unsatisfactory knowledge of HIV/AIDS. These healthcare professionals have low-level education. Most of them have dropped out of college and opened their own clinics without receiving any formal training. They work with professionals for a few months that have been practicing in the same line of work such as acupuncturists, pharmacists, or nurses. In Pakistan, public recognition of the danger of HIV epidemic is recent. Professionals without training do not consider themselves as a threat to vulnerable population. Moreover, governmental recognition towards this key population is also recent. There are no workshops and educational programmes given to this key population, which is treating many vulnerable populations. Hence, there is a dire need for prevention workshops, seminars, and educational programmes focusing on HIV/AIDS. After receiving these workshops and seminars on HIV/AIDS which will not only benefit them, these healthcare workers can

educate and promote awareness of HIV/AIDS to low-level educated patients who come to them for treatment.

In a similar study conducted by Khandwalla (2002), it was revealed that both general practitioners and specialists in Pakistan had insufficient knowledge of STIs including HIV/AIDS and advocated rigorous education in management and counseling in helping to halt the transmission of HIV/AIDS. Dissimilar to these studies, a related study by Ooi (2004) conducted in Sydney, Australia revealed high knowledge of HIV/AIDS among general practitioners.

There was inaccuracy found in some transmission routes: 88.6% of medical professionals with formal training and 73.9% of other professionals with or without any formal training believed HIV/AIDS could be transmitted through toilet seat cover. This result was in concordance with Quach, Mayer, McGarvey, Lurie & Do (2005) research about knowledge, attitude and practices among health care workers regarding HIV/AIDS in Quang Ninh, Veitnam where it was reported, 12.1% of health care workers thought sharing the toilet with people living with HIV/AIDS could transmit HIV infection.

Another misconception about prevention of HIV transmission was found in this study, which was also present in another study. 39.8% of medical professionals with formal training (group one) and 24.4% of the other professionals with or without formal training (group two) thought that eating healthy food could keep a person from getting HIV. In this case, group one answered more incorrectly. This result was also similar to the study conducted in Veitnam (Quach, Mayer, McGarvey, Lurie & Do, 2005) where 39.9% of health care providers thought that good nutrition could protect from HIV infection. Possible reasons for the unsatisfactory HIV knowledge in this study are that

many of the professionals may have or may not have received standardized HIV/AIDS information or curriculum to guide them through their practice. Intensive HIV in-service programmes should be altered to focus on risk factors of HIV transmission.

Lack of knowledge for risk factors of HIV was also exhibited in this study. 63.6% of medical professionals with formal training and 63.3% of the other professionals with or without formal training believed that HIV could be transmitted through saliva, sweat, tears and urine. This finding is higher compared to a study conducted by Ofoli, Asuzu & Okijie (2002) on healthcare workers knowledge on HIV/AIDS in Nigeria where it was verified that more than 25% of the healthcare providers thought that HIV could be transmitted through saliva, vomit and urine. This could be attributed to the fact that there is a lack of focused HIV information available in the formal training of medical professional in Pakistan.

Poor knowledge about prevention and management was also revealed when 51.1% of medical professionals with formal training and 46.1% of the other professionals with or without formal training demonstrated that there is a vaccine that can stop adults from getting HIV. This number is significantly higher than reported by Meena, Pandey, Rai, Bharti & Sunder (2013) in their study on knowledge, attitude and practices on HIV/AIDS among HIV patients and caregivers in northeastern part of India where it was testified 22.9% of the caregiver thought that with medication HIV is curable.

A main gap in knowledge was related to successful use of condoms. For example, 37.5% of medical professionals with formal training and 32.8% of the other professionals with or without formal training thought that a person lowers the risk of HIV if they put baby oil or Vaseline with condoms. Balfour et al. (2010) reported in a study in Guyana,

South Africa that 20% of the pharmacists were also unaware of the fact that using Vaseline with condoms can actually increase the chance of HIV transmission. The results in our study show that there is a need for HIV education. The current medical curriculum needs to be altered so that it specifically targets medical professionals regarding HIV transmission routes, HIV risk factors and sexual acts that can spread HIV. This information should be easily available to them through educational seminars as talking about HIV/AIDS and sexual behaviors are taboo in Pakistan due to cultural, social and religious beliefs. Information about HIV/AIDS is easily available in newspapers and television in developed nations. In contrast, Pakistan can cater this issue by having private workshops and seminars regarding HIV education that will help in increasing general practitioners knowledge, which will eventually change their attitudes and practices.

In terms of comparing HIV knowledge levels between medical professionals with formal training (group 1) and other professionals with or without formal training (group 2), group one had lower levels of HIV knowledge. Overall, they were less informed about complex HIV transmission routes, treatment, and prevention and drug resistance. This implies that the STD control programme, which was initiated by NACP, has helped in increasing knowledge about HIV/AIDS for other professionals with or without formal training (group 2). More than 1000 clinicians have been trained as master's trainers on management of HIV/AIDS through 40 workshops (National AIDS Control Programme, 1998).

Factually, stigma and discrimination have always been paired with any disease that is associated with detrimental qualities of the individual, has no cure, or is considered

exceedingly infectious. Unfortunately, for people living with HIV/AIDS, this disease is associated with all of these factors. Chesney & Smith (1999) reported stigma and discrimination as having substantial impact on the lives of PLWHIV. In our study, group one and group two had better attitude towards PLWHIV. More than 90% of respondents claimed that PLWHIV should be treated with the same respect as any other patient. This was contrary to Bharat, Aggleton & Tyrer (2001) study conducted in India, which concluded that significant levels of both overt and covert stigma by healthcare professionals and physicians was determined. The study cited in India showed lack of HIV knowledge among staff, thereby also suggesting predisposing factors for stigma. A reason our study shows better attitude and low level of stigma is because recent campaigns on television and newspapers about HIV/AIDS have opened minds of the masses. These campaigns clearly show that touching, eating, working or treating a PLWHIV does not spread HIV/AIDS.

More than 80% of the respondents' reported they are not worried about getting AIDS from social contact with someone. This was contrary to study conducted by Uwakwe (2002) where student nurses indicated great fear for contracting HIV/AIDS while treating patients. McCann & Shakey (1998) also reported that less fear was found among subjects who were more knowledgeable about HIV/AIDS and thereby had better attitudes. Hence, this establishes the fact that providing educational programs could help in assisting those with high fear of contracting HIV/AIDS during patient care could enrich positive attitudes.

Generally, respondents had positive and sympathetic attitude towards HIV/AIDS patients and against isolating the patient from society. In our study, a large number of

respondents felt they had ethical obligation to treat patients who are living with HIV/AIDS. Only 20% of studied population agreed not to care for patients with HIV/AIDS. Chan, Khoo, Goh & Lam (1997) also had similar results in their study on knowledge, attitudes, beliefs and practices on HIV/AIDS among all registered medical and dental practitioners in Singapore. Positive attitude towards patients with HIV/AIDS were displayed despite fear of contagion in a study conducted in Uganda on knowledge and attitudes of nurses caring for patients with HIV/AIDS (Walusimni, 2004).

In this study, the majority of the respondents answered yes when asked if they felt sympathetic towards people who get HIV infection from blood transfusions more than those who get from injective drug abuse. This result was similar to a study conducted by Hedayati-Moghaddam, Marjaneh & Mashhadi (2012) on knowledge and attitude of physicians in private practice towards HIV/AIDS in Mashad, Iran where it was determined that 38% of the physicians sympathized less with people who were infected via IV drug abuse or extramarital sex. It should be noted that the attitude of the studied population towards HIV/AIDS in this survey is not favorable in this case and is an area that compels devotion and consideration to enable effect management of HIV infection in Pakistan.

21.6% of medical professionals with formal training and 28.9% of other professionals with or without formal training strongly disagreed that patients who are HIV positive should not be put in rooms with other patients. In contrast, in a study conducted in by Reis et al., (2005) in about discriminatory attitudes and practices by healthcare workers towards HIV patients, it was revealed that 59% healthcare workers agreed that people with HIV/AIDS should be in a separate ward.

While the strength of comprehensive HIV educational programs must always focus on knowledge about HIV risk factors, modes of transmission and clinical symptoms it should be noted that they should consider highlighting the emotional impact of HIV stigma. Regrettably, most HIV educational training programs neglect the emotional aspects of healthcare workers who will be treating or managing patients with HIV without any discrimination or fears. In Pakistan, HIV/AIDS are taboo subjects which is why social rejection and stigma influence full scope healthcare workers attitude.

Although the Ministry of Health and Federal Government have given clear guidelines for medical professionals with formal training and of other professionals with or without formal training signifying that needles from used syringes should not be re used and be disposed in special syringe boxes but this is by no means a standard practice. In this study, 60% of other professionals with or without formal training disposed off syringes in a regular domestic dustbin. More than 80% of the medical professionals with formal training implied they wore disposable gloves before taking blood from patients. In contrast, 65% of other professionals with or without formal training mentioned that they wore disposable gloves. This relatively unsatisfactory low number of respondents from group two not wearing gloves other professionals with or without formal training can be attributed to the fact that more than 32% answered that taking blood from patients did not apply to their line of work. This illustrates a certain amount of confusion. Gloves do not protect against needle-stick inject but they do offer protection from blood spills (WHO, 2015). Boyd, Kerr, Finnighan & Kilbane (1990) also reported that diverse responses were given from general practitioners with regard to the use of gloves. They also reported that 89.7% of the subjects wore gloves if they suspected that patient exhibited high-risk

behavior for HIV infection. All features of the safe use and disposal of needles has been covered by the Ministry of Health in their guidelines but the information gathered in our study shows that new methods of informing general practitioners about HIV/AIDS are essential.

Results of this study suggest that medical and non-medical professionals have alarmingly low levels of knowledge of HIV/AIDS but satisfactory attitude and practices in Lahore, Pakistan despite their level of education. However, problems have been highlighted in this study where education is still needed and the Ministry of Health and National AIDS Control Programme should address them for betterment of medical students as well as other professionals with or without formal training who are responsible for treating populations, which have a generally low literacy rate and low socioeconomic status.

5.1 Strengths of study

There are several **strengths** of this study; the findings of this study determined the high-risk group, which was previously ignored i.e. other professionals with or without formal training and quacks because they have social contact with the vulnerable population who cannot afford to go to a public or private hospital. It may lead to transfer of HIV infection from high-risk groups to low risk groups (uneducated and low socioeconomic status population). Quacks play an important role in Pakistan as many people visit them due to low-income. Future longitudinal studies should assess healthcare workers HIV knowledge levels before and after formal medical trainings so as to find out if the trainings have any effect in their practices. All these developments should be

considered from the outset when planning and developing future HIV educational programs.

5.2 Limitations of study

The finding of this study should be considered in the light of the following **limitations**. Due to social and cultural reasons, subjects may have hidden some risk behaviors and knowledge and our measures of association may be underestimating the true effect. A large cross-sectional survey, focuses on many clinics and roadside quacks in multiple cities may provide further insights and identify issues that could not be highlighted in this study.

Considerable time and care was taken while developing the questionnaire to avoid bias and ambiguity. Instructions were given clearly on the questionnaire form. However, many limitations occurred while conducting this research. The time frame of this study was not enough to collect more sample size. Ideally, 150 participants were to be selected for each group but due to restriction of time and money it was not manageable.

In the field, there was high non-response rate from all groups' especially medical professionals with a graduate degree. More than 75 interviewees refused to participate in this study due to insecurity that this information might be used against them, as there is political unrest in Pakistan at the moment.

Another major limitation to this study was that the participants could not be observed. If finances and time permitted, it would have been ideal to observe subjects. Practitioners also refused to be observed during their work hours.

Chapter 6

Conclusion

The purpose of this study was to discover the knowledge, attitude and practices of medical professionals with training and other professionals with or without training regarding HIV/AIDS in Lahore, Pakistan. This study shed light on many vital study populations which for medical professionals with training i.e. doctors, nurses, dispensers and other professionals with or without training such as homeopathic, lady health visitors, pharmacists, *hakeem*, *jarrah*, acupuncturists.

The research questions were: (a) Is the knowledge of Healthcare Providers enough to let them treat vulnerable population? (b) Do the healthcare Providers take precautions that will protect them and others from HIV infection? (c) Do they have correct and accurate information about routes of transmission of HIV/AIDS? (d) Do they have enough knowledge to promote awareness of HIV/AIDS? (e) What kinds of attitudes do the healthcare workers have towards people with HIV/AIDS? (f) Do they exhibit stigma and discrimination against HIV/AIDS infected people? (g) Do the healthcare providers follow guidelines for safe medical instruments in their practices? The study showed exposed many vital findings about the correlation between the two studied groups regarding knowledge, attitude and practices regarding HIV/AIDS. These factors could increase the epidemic of HIV in Lahore, Pakistan.

We reject our null hypothesis i.e. Medical professionals have better knowledge of HIV/AIDS than other health professionals without training. We fail to reject the second hypothesis medical professionals show fewer stigma and discrimination towards

HIV/AIDS than other health professionals. Lastly, we fail to reject the third null hypothesis i.e. medical professionals with training observe strict preventive measures to protect patients from HIV/AIDS than other professionals without training.

Based on the findings taken from the respondents. The study determined many factors, which are associated with the spread of HIV/AIDS. The risk factors include: lack of knowledge about HIV including risk factors, prevention, treatment; illiteracy and education level, no formal training, absence of focus on HIV education in medical schools, nonexistent seminar and workshops for other professionals without training and unlicensed practitioners treating vulnerable population.

It appears that the majority of general populations who seek medical treatment from other professionals without formal training do are not aware of the risks and dangers of getting medical treatment from them. Therefore, the illiterate population of the country is more vulnerable to spreading HIV virus without acknowledging. Moreover, they are the target population, which is the focus of these professionals without training also known as quacks. Base of the study results, it emerges that, unlicensed practitioners and lack of knowledge, play an important role towards the spread of HIV/AIDS.

In conclusion, Pakistan has been privileged until now in having avoided a major HIV epidemic unlike Sub-Saharan and Western countries. Knowledge, attitude and practices play a vital role in order to decrease the rates of infectious disease such as HIV/AIDS. Medical staff and general practitioners can be mediators of change by spreading what they learned in their trainings and seminars and apply that to their practices in order to drop HIV infection rates in the community. Simple measure such as improved, inclusive knowledge about needle stick injuries, proper sterilization of tools at

their clinics and proper counseling of patients regarding HIV/AIDS epidemic can be used to develop low-cost but highly effective and operational programs that will profoundly diminish the burden of HIV infection among key populations especially in rural and remote settings of Pakistan.

6.1 Recommendations

There is huge epidemiological evidence available, which clearly shows that the most efficient means for reducing epidemic spread is through targeted interventions for most at risk populations. This study targets two key issues that must be addressed when creating health and HIV promotion programs. Firstly, there is a need to develop concrete strategic plan for each vulnerable sub-population, as well as a plan for general population efforts; focus prevention resources more strongly on those with higher risk or vulnerability initially and subsequently expanding these prevention efforts outward to reach those with lower risk of HIV. At the same time, prevention and treatment needs to be understood as mutually reinforcing components of controlling HIV/AIDS and a national strategy that links prevention to treatment is needed. Secondly, having a central surveillance and research unit is a must to keep a close check on the epidemic progression, and also evaluate the effectiveness of focused interventions.

At this time in the epidemic we do not have the extravagance of examining the relative assets of accumulating an all-inclusive deterrence reply for HIV/AIDS. The existing course of the epidemic is unlikely to change unless the people affected, and those at risk, make a concerted effort to adopt preventive measures. The government must change the way it views HIV/AIDS by rearranging priorities for spending, and overcome the inertia that surrounds implementation of prevention strategies.

This study provides the first information on attitudes towards HIV infected among the other professionals without training in Pakistan. Knowledge may be needed to neutralize negative attitudes towards HIV. This study can be a stepping-stone towards further studies, which are needed to validate the findings in this survey and illuminate their mechanisms. Moreover, this study emphasizes the importance of continuing education among healthcare providers to minimize the impact of stigmatization and judgment.

Professional education and counseling for the groups will lead to better knowledge of HIV in turn they will have better attitudes and practices. Better hygiene and availability of protective gears at clinics and hospital will reduce HIV infection. Rigorous enforcement of existing and new laws is imperative in increasing knowledge, diminishing HIV stigma and improved practices. Extra burden should be placed on bio-medical system, which is struggling with insufficient human resources for health especially healthcare practitioners who are working in villages and rural areas in Pakistan. Development of training programs on HIV infection will be a vital step forward; full commitment from non-medical professionals and other medical representatives is needed in development of reducing impact of HIV.

Pakistan is lucky enough to be in a situation to halt the spread of HIV. However, the biggest challenge faced by Pakistan now is the ambiguity of the structure of HIV response. In this time of political unrest and internal terrorist activities, governments' main focus is to stabilize the nation. However, the threat of HIV cannot be avoided. Despite a relatively satisfactory level of knowledge overall, certain areas should be

stressed in future. Educational programs should balance knowledge with health awareness for successful intervention.

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Appendix I Questionnaire used for survey

Knowledge, attitude practices of medical professionals with training and other professionals with or without training regarding HIV/AIDS in Lahore Pakistan

QUESTIONNAIRE FOR HEALTHCARE PROFESSIONALS

Interviewer Name: Date of Interview:

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DD/MM/YY

Was the Interview completed? ☐ Y ☐ N Signature: _____

Section 1: Socio-Demographic Characteristics

No.	Questions and filters	Coding categories	Skip to	Code
101	What is your age? <i>(In completed years)</i>	Years _____		
102	How many years of professional education have you Completed?	<div>Illiterate/ uneducated</div> <div>1</div> <div>Primary</div> <div>2</div> <div>Middle</div> <div>3</div> <div>Metric</div> <div>4</div> <div>Intermediate 5</div> <div>Graduate</div> <div>6</div> <div>Other _____</div> <div>No response</div>		
103	Gender	<div>Male</div> <div>Female</div>		
104	Are you from Lahore?	This _____ city		

		96 Name of the city_____		
105	How long have you lived in this ---- (City name)?	Number Of Years _____ Less than 1 year 88		

Section 2: EXPERIENCE

No.	Questions and filters	Coding categories	Skip to	Code
201	How long have you worked in your current profession?	Years----- Less than 1 year 88 No response 98		
202	What is your average monthly income the job?	Rs. _____ No response 98 Don't have any 99		
203	Where do you work?	Hospital 1 Clinic 2 Polyclinic Own practice/clinic 3 Others _____		
204	Do u have other jobs related to treatment?	No of patients/per day _____		
205	Do you have assistant staff with you?	Yes No		
206	What is your primary role within this organization? <i>(Please mark only one answer)</i>	Doctor Nurse Technician Dentist Other _____		
207	What is professional degree have you obtained	MBBS FCPS Other _____		
208	What is your area of medicine	Acupuncture Hakeem Ayurvedic Traditional medicine Specific _____ Contemporal medicine Specific _____		

HIV Knowledge Questionnaire (HIV-K-Q)
(45 item version)

Carey, M. P., Morrison-Beedy, D., & Johnson, B. T. (1997). The HIV-Knowledge Questionnaire: Development and evaluation of a reliable, valid, and practical self-administered questionnaire. *AIDS and Behavior*, 1, 61-74.

HIV-KQ-45

For each statement, please circle True (T), False (F), or I Don't Know (DK). If you do not know, please do not guess; instead, please circle "DK."

	True	False	Don't Know
1. HIV and AIDS are the same thing.	T	F	DK
2. There is a cure for AIDS.	T	F	DK
3. A person can get HIV from a toilet seat.	T	F	DK
4. Coughing and sneezing DO NOT spread HIV.	T	F	DK
5. HIV can be spread by mosquitoes.	T	F	DK
6. AIDS is the cause of HIV.	T	F	DK
7. A person can get HIV by sharing a glass of water with someone who has HIV.	T	F	DK
8. HIV is killed by bleach.	T	F	DK
9. It is possible to get HIV when a person gets a tattoo.	T	F	DK
10. A pregnant woman with HIV can give the virus to her unborn baby.	T	F	DK
11. Pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex.	T	F	DK
12. A woman can get HIV if she has anal sex with a man.	T	F	DK
13. Showering, or washing one's genitals/private parts, after sex keeps a person from getting HIV.	T	F	DK
14. Eating healthy foods can keep a person from getting HIV.	T	F	DK
15. All pregnant women infected with HIV will have babies born with AIDS.	T	F	DK
16. Using a latex condom or rubber can lower a person's chance of getting HIV.	T	F	DK

	True	False	Don't Know
17. A person with HIV can look and feel healthy.	T	F	DK
18. People who have been infected with HIV quickly show serious signs of being infected.	T	F	DK
19. A person can be infected with HIV for 5 years or more without getting AIDS.	T	F	DK
20. There is a vaccine that can stop adults from getting HIV.	T	F	DK
21. Some drugs have been made for the treatment of AIDS.	T	F	DK
22. Women are always tested for HIV during their pap smears.	T	F	DK
23. A person <u>cannot</u> get HIV by having oral sex, mouth-to-penis, with a man who has HIV.	T	F	DK
24. A person can get HIV even if she or he has sex with another person only one time.	T	F	DK
25. Using a lambskin condom or rubber is the best protection against HIV.	T	F	DK
26. People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV.	T	F	DK
27. A person can get HIV by giving blood.	T	F	DK
28. A woman cannot get HIV if she has sex during her period.	T	F	DK
29. You can usually tell if someone has HIV by looking at them.	T	F	DK
30. There is a female condom that can help decrease a woman's chance of getting HIV.	T	F	DK
31. A natural skin condom works better against HIV than does a latex condom.	T	F	DK
32. A person will NOT get HIV if she or he is taking antibiotics.	T	F	DK
33. Having sex with more than one partner can increase a person's chance of being infected with HIV.	T	F	DK

	True	False	Don't Know
34. Taking a test for HIV one week after having sex will tell a person if she or he has HIV.	T	F	DK
35. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.	T	F	DK
36. A person can get HIV through contact with saliva, tears, sweat, or urine.	T	F	DK
37. A person can get HIV from a woman's vaginal secretions/wetness from her vagina.	T	F	DK
38. A person can get HIV if having oral sex, mouth on vagina, with a woman.	T	F	DK
39. If a person tests positive for HIV, then the test site will have to tell all of his or her partners.	T	F	DK
40. Using Vaseline or baby oil with condoms lowers the chance of getting HIV.	T	F	DK
41. Washing drug use equipment/"works" with cold water kills HIV.	T	F	DK
42. A woman can get HIV if she has vaginal sex with a man who has HIV.	T	F	DK
43. Athletes who share needles when using steroids can get HIV from the needles.	T	F	DK
44. Douching after sex will keep a woman from getting HIV.	T	F	DK
45. Taking vitamins keeps a person from getting HIV.	T	F	DK

Section 4: Attitude

No.	Questions	Coding categories						Skip to	Code
401	I would prefer not to care for patients with	Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree		

	HIV/AIDS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
402	If I were assigned to a patient with HIV/AIDS, I would worry about putting my family and friends at risk of contracting the disease	Strongly disagree <input type="checkbox"/>	Moderately disagree <input type="checkbox"/>	Slightly disagree <input type="checkbox"/>	Slightly agree <input type="checkbox"/>	Moderately agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>		

403	If you realized that your next appointment was with a client who had HIV/AIDS, would you feel nervous?	Strongly disagree <input type="checkbox"/>	Moderately disagree <input type="checkbox"/>	Slightly disagree <input type="checkbox"/>	Slightly agree <input type="checkbox"/>	Moderately agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>		
404	Would you feel embarrassed if you had a family member whose HIV+?	Strongly disagree <input type="checkbox"/>	Moderately disagree <input type="checkbox"/>	Slightly disagree <input type="checkbox"/>	Slightly agree <input type="checkbox"/>	Moderately agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>		
405	Would you be willing to perform mouth-to-mouth resuscitation with Person Living with HIV/AIDS (PLHIV)?	Strongly disagree <input type="checkbox"/>	Moderately disagree <input type="checkbox"/>	Slightly disagree <input type="checkbox"/>	Slightly agree <input type="checkbox"/>	Moderately agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>		

406	Patients with HIV/AIDS should be treated with the same respect as any other patient?	Strongly disagree <input type="checkbox"/>	Moderately disagree <input type="checkbox"/>	Slightly disagree <input type="checkbox"/>	Slightly agree <input type="checkbox"/>	Moderately agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>		
407	Sexual partners of patients with HIV/AIDS should be notified of the patients' stats, even without the patients permission?	Strongly disagree <input type="checkbox"/>	Moderately disagree <input type="checkbox"/>	Slightly disagree <input type="checkbox"/>	Slightly agree <input type="checkbox"/>	Moderately agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>		
408	I feel more sympathetic toward people who get AIDS from blood transfusion than those who get it from IV drug abuse	Strongly disagree <input type="checkbox"/>	Moderately disagree <input type="checkbox"/>	Slightly disagree <input type="checkbox"/>	Slightly agree <input type="checkbox"/>	Moderately agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>		
409	I'm worried about getting AIDS from social contact with someone	Strongly disagree <input type="checkbox"/>	Moderately disagree <input type="checkbox"/>	Slightly disagree <input type="checkbox"/>	Slightly agree <input type="checkbox"/>	Moderately agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>		
410	Patients who are HIV positive should not be put in rooms with	Strongly disagree <input type="checkbox"/>	Moderately disagree <input type="checkbox"/>	Slightly disagree <input type="checkbox"/>	Slightly agree <input type="checkbox"/>	Moderately agree <input type="checkbox"/>	Strongly agree <input type="checkbox"/>		

	other patients?								
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Section 5: Practices

No.	Questions and Filters	Coding categories	Skip to	Code
500	Do you dispose syringes?	Yes No Not applicable		
501	If yes, where do you dispose them?	Bin A special box for syringes Other		
502	Should you be wearing disposable gloves when taking blood from patient?	Yes No Not applicable		
503	Do you use autoclave for sterilization of instruments every time?	Yes No Not applicable		
504	Do you always wash your hands before patient contact?	Yes No		
505	Do you wear protective glasses when procedures and activities are likely to generate splashes or sprays of blood and body fluids?	Yes No		
506	Did you receive hepatitis B vaccine during past 3 years?	Yes No		
507	Have you received safe medical tools usage related training?	Yes No		

Note the Interview end time:

am / pm

Thank you very much for your kind cooperation and spending your valuable time with me.

Interviewer comments: