

**A STUDY ON THE VACCINATION STATUS OF PEOPLE LIVING
WITH HIV/AIDS IN 2 DISTRICTS OF PUNJAB**

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment of the award of the degree of
Master of Business Administration (MBA)

In

Hospital and Health Management

By

Baljot Kaur

Under the Supervision and Guidance of

Dr. Alok Kumar Mathur

2023

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DECLARATION BY STUDENT

I, Baljot kaur, hereby, declare that this dissertation entitled “A Study on the Vaccination Status of People Living with HIV/AIDS in 2 Districts of Punjab” is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature)

Baljot Kaur

Date

June 02, 2023

CERTIFICATE OF INTERNSHIP

This is to certify that Ms. Baljot Kaur has completed her internship with Jhpiego from February 20, 2023 till May 19, 2023.

She interned at India Country Office, New Delhi. She supported the Suvita Project in development of IEC materials; Project initiation report ; literature review and also coordinated with state teams for project implementation.

Baljot's performance was good and she was able to accomplish the assigned tasks timely and successfully. She worked diligently during this period and displayed positive attitude and effective interpersonal, communication and professional skills.

I wish her success in life.



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CERTIFICATE

This is to certify that the dissertation entitled “A Study on the Vaccination Status of People Living with HIV/AIDS in two Districts of Punjab is a record of the research work undertaken by Baljot Kaur in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur, under my guidance and supervision and his/ her approach to the research study has been sincere, scientific, and analytical.

Faculty Guide

IIHMR University, Jaipur

Date

School Dean

IIHMR University, Jaipur

Date

ABSTRACT

Anti-Retroviral Therapy has increased the survival of patients with HIV/AIDS, thus necessitating health promotion practices with immunization. Vaccines are critical components for protecting HIV-infected adults from an increasing number of preventable diseases.

A cross-sectional descriptive study with a quantitative approach was conducted during February 2023 to May 2023 which primarily aimed to analyse the vaccination status of PLWHA in two districts of Punjab, India.

The study aimed to assess the vaccination status and awareness levels regarding vaccinations among these patients through a specially designed and pre-tested questionnaire. Data was collected from the patients as well as interviewing the staff. On analysing the data, it was found that only two vaccines - Hepatitis B and COVID-19, were being administered to the PLWHA. Furthermore, out of the total interviewees, 20 each belonged to Patiala and Mohali. Among 40 respondents, all were fully vaccinated with the COVID-19 vaccination, whereas, in the case of Hepatitis-B, 23 were fully vaccinated, 8 were said to be Hepatitis- B dropouts, 6 had their booster dose due and 3 were found to be Hepatitis-B positive. On analysing the responses regarding the awareness of infectious diseases they are more prone to, it was seen that only 11 were aware of the infections. It was also seen that only 6 patients were aware of the vaccine available to prevent them from vaccine-preventable diseases. Lower education levels, and lower levels of awareness both regarding the available vaccines and diseases they are prone to as well as the absence of proper governmental guidelines were some of the factors observed that were associated with a lower vaccination rate.

Key Words: Antiretroviral, PLWHA, Hepatitis B.

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Any project is never an outcome of the work of a single person, it bears the imprints of several people who are directly or indirectly involved in the conduct and analysis of a study. I will be failing in my duties, if I don't acknowledge all those who made my training period educative and pleasurable.

At the outset, I am thankful to my institution, IIHMR, Jaipur and my mentor Dr. Alok Kumar Mathur for allowing me to join my internship with JHPIEGO.

I am thankful to JHPIEGO, for allowing me to do an internship in their esteemed Organization. I have been enriched by their experiences, learned a lot, and become more mature as an individual.

I am deeply indebted to my Project Guide Dr Prem Singh for giving me his valuable time, advice, guidance, encouragement and help during my Project.

Last but not the least, I am thankful for all divine light, my parents, and my brother, who kept my motivation and zest for knowledge consistently high through the tides of time.

BALJOT KAUR

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ABBREVIATIONS

S. No.	Abbreviation	Full-form
1	HIV	Human Immunodeficiency Virus
2	AIDS	Acquired Immuno-Deficiency Syndrome
3	ART	Anti-Retroviral Therapy
4	CD4	Clusters of Differentiation 4
5	PLWHA	People Living with HIV/AIDS
6	EPI	Expanded Programme on Immunization
7	UIP	Universal Immunization Programme
8	VPDs	Vaccine-Preventable Diseases
9	CSSM	Child Survival and Safe Motherhood
10	Hep- B	Hepatitis B

CHAPTER 1: Introduction

1.1 An Overview

Human Immunodeficiency Virus (HIV), first detected in homosexual men, targets and destroys the immune system's infection-fighting CD4 cells (CD4 T-Lymphocytes). This depletion of CD4 cells disrupts the ability of individual to effectively fight infections and some types of cancers. If left untreated, HIV progressively undermines the immune system, leading to the development of Acquired Immuno-Deficiency Syndrome (AIDS).

The transmission of HIV infection from one person to another is known as HIV transmission. HIV is primarily transmitted through specific body fluids from individuals infected with the virus. These fluids include semen, blood, pre-seminal fluid, vaginal fluids, rectal fluids, and possibly breast milk. HIV transmission can occur only through contact with these infected body fluids. In the United States, the primary methods of HIV transmission are:

1. Engaging in unprotected sex (anal or vaginal) with an HIV-positive individual without using protection or taking medications to prevent or treat HIV.
2. Sharing drug injection equipment, such as needles or syringes, with someone who has HIV.

Antiretroviral therapy (ART) means use of anti-HIV drugs to treat HIV infection. People on ART take a combination of HIV drugs daily (called an HIV treatment regimen).

ART is recommended for individuals suffering from HIV infection. ART stops HIV from multiplying, thereby, reducing the amount of HIV in the body (called viral load). Having less HIV load in the body protects the immune system and prevents HIV infection progression to AIDS. ART

cannot cure HIV, however, HIV drugs can help people living with HIV live longer and healthier.¹

More than 30 years after the discovery of Acquired Immuno-Deficiency Syndrome (AIDS), the Human Immuno-deficiency Virus (HIV) pandemic has changed its character.^{2,3} New infections and deaths from HIV/AIDS are declining year by year. The epidemic is on global scale due to significant progress in controlling its spread and the increasing number of people receiving antiretroviral therapy (ART).⁴

ART has increased the survival of people living with HIV/AIDS (PLWHA) leading to a chronic disease characteristic, and it is believed that health promotion practices have become of great importance for these patients requiring specialized care to maintain their quality of life. An important health promotion practice that may be considered is immunization. PLWHA should weigh the benefits and risks of vaccines, by analyzing the viral load and CD4+ T-cells count, because vaccines have an important role as they can protect against opportunistic diseases.⁵

Vaccination is a critical strategy for protecting HIV-infected adults from an increasing number of preventable diseases. However, there are many missed opportunities for vaccination among PLWHA, most likely due to concerns regarding the safety and efficacy of vaccines, as well as the frequent changing of vaccine guidelines.

The immunization programme in India has undergone significant evolution over the years. Though vaccines were being given to children earlier as well, a structured programme for immunisation was started in 1978 with the introduction of the Expanded Programme of Immunization (EPI), which initially had limited reach and primarily focused on urban areas. In 1985, India launched Universal Immunization Programme (UIP) with the aim of reducing mortality and morbidity caused by six vaccine-preventable diseases (VPDs). This phase witnessed enhancements in indigenous vaccine

production capacity, the establishment of a cold chain infrastructure, and phased implementation covering all districts by 1989-90. A monitoring and evaluation system was also put in place. In 1986, the Technology Mission on Immunization was initiated, monitoring coverage in infants under the Prime Minister's 20-point program. The year 1992 marked the integration of the UIP into the Child Survival and Safe Motherhood (CSSM) program, which included both immunization and safe motherhood initiatives. The Reproductive Child Health (RCH 1) program was introduced in 1997. The National Rural Health Mission (NRHM) implemented in 2005, further strengthened immunization efforts. Year 2012 was declared the "Year of Intensification of Routine Immunization" by the Government of India. In 2013, India, along with other countries in the South-East Asia Region, made a commitment to eliminate Measles and control Rubella and congenital rubella syndrome (CRS) by 2020. A major milestone was achieved in 2014, when India was certified as a "polio-free country" after no wild poliovirus cases were reported for three consecutive years, aligning with the other South East Asia Region (SEAR) countries recognized by the World Health Organization (WHO).⁶

Vaccines under UIP

- The following vaccines are provided under the UIP:
 1. BCG (Bacillus Calmette Guerin)
 2. DPT (Diphtheria, Pertussis and Tetanus Toxoid)
 3. OPV (Oral Polio Vaccine)
 4. Measles-Rubella (MR Vaccine)
 5. Hepatitis B
 6. TT (Tetanus Toxoid)
 7. JE vaccination (in selected high disease-burden districts)
 8. Hib-containing Pentavalent vaccine (DPT + Hep-B + Hib)
 9. RVV (Rota Virus Vaccine)
 10. Td Vaccine (Tetanus and Adult Dose Diphtheria Vaccine)

11. IPV (Inactivated Polio Vaccine)
12. PCV (Pneumococcal Cell Vaccine)

Diseases prevented by Vaccination under UIP

1. Diphtheria
2. Pertussis
3. Tetanus
4. Polio
5. Tuberculosis
6. Measles
7. Hepatitis B
8. Japanese Encephalitis (commonly known as brain fever)
9. Meningitis and Pneumonia caused by Haemophilus influenzae type b
10. Rubella
11. Rota Virus Diarrhoea

India has the third-highest number of people living with Human Immunodeficiency Virus (HIV) infection in the world, after South Africa and Nigeria. HIV and the resulting Acquired Immuno-Deficiency Syndrome (AIDS) is a major public health concern in India and an estimated 2.4 million people living with HIV (PLHIV) were reported in the country in 2021. The state of Maharashtra has the highest PLHIV prevalence (0.39 million), followed by Andhra Pradesh (0.32 million) and Karnataka (0.28 million). While the number of PLHIV is relatively low in the northeastern states of Mizoram (23,802) and Nagaland (21,703), the percentage of adult HIV prevalence is relatively high, 2.7% and 1.36% respectively, as compared to the national average of 0.21%. Annually, the estimated AIDS-related deaths in the country were reported as 41,968 with the maximum deaths reported in the state of Andhra Pradesh (9186) followed by Karnataka (6742) and Maharashtra (5833).⁷

Due to impaired host defences, HIV-infected persons are at an increased risk and severity for a wide variety of infections many of which are vaccine-preventable infections. Immunization, therefore, remains an important strategy for the protection of this vulnerable population. In addition to immunologic reasons, HIV-infected persons are at higher risk due to frequent contact with the medical environment and shared routes of transmission with infectious pathogens such as Hepatitis B virus (HBV) and Human Papillomavirus (HPV). According to a study in India, it was seen that the leading cause of death of people living with HIV/AIDS was pulmonary tuberculosis (43%), followed by extrapulmonary tuberculosis (EPTB) (22%), Hepatitis (6%), Bacterial Pneumonia (5.5%) and other bacterial infections (4%).⁸

According to the WHO Clinical Protocol for Immunization of People Living with HIV, the general principles for vaccination of PLHIV include:

- **Killed or inactivated vaccines** - The killed/ inactivated vaccines do not represent a danger to immunocompromised people and generally should be administered as recommended for other people.
- **Live-virus or live-bacteria vaccines** - The live-virus or live-bacteria vaccines such as BCG, oral poliovirus, typhoid (Ty21a), varicella and yellow fever vaccines may pose a risk to HIV-infected people, who should not be given them without careful consideration of the risks and benefits, given their individual stage of HIV disease and level of immune suppression.

Additional considerations about vaccines include:

- Vaccines may increase viral load

- Vaccines may not work as well if the CD4 count is very low. If the CD4 count is low, it may help to take strong antiretroviral medications before receiving some of the vaccines.
- Vaccines made from a live virus may cause development of disease the vaccine is supposed to prevent. If the CD4 count is low, one should avoid live vaccines, such as chickenpox, measles/mumps/ rubella (MMR), and the flu vaccine in the form of a nose spray. Also, avoid close contact with anyone who has had a live vaccine in the past two or three weeks.
- Vaccines may increase viral load, although this is of little consequence in persons receiving antiretroviral therapy.

The vaccines that can be given to people living with HIV/AIDS include: a. COVID-19

b. Hepatitis A & B

c. Human Papillomavirus (HPV)

d. Influenza

e. Meningococcal ACWY

f. Pneumococcal

g. Tetanus

h. Diphtheria

i. Whooping cough (pertussis) (Tdap, Td), and

j. Zoster

Some vaccines like Hib (Haemophilus influenzae type b), Measles, Mumps, Rubella (MMR), Meningococcal B (Men-B), and Varicella (Chickenpox) may be given if, certain criteria are fulfilled.⁹

Studies have clearly demonstrated the protective benefit of vaccinations including influenza¹⁰ and *Streptococcus pneumoniae*¹¹ even among more

advanced patients. Studies also show that most HIV patients generate antibody responses post-vaccination (using post-vaccination antibody levels). Despite the increased risk for infections, the proven efficacy of vaccines and their widespread availability, vaccine coverage rates among HIV patients are reportedly low.¹² The low vaccine coverage rates among HIV patients are likely multifactorial including the lack of knowledge regarding currently recommended vaccinations, lack of necessary infrastructure required for vaccination at HIV clinics, concerns regarding vaccine safety and efficacy among HIV patients, etc. Vaccination of HIV patients is recommended, ideally early in the course of infection, and educational counselling should be provided in addition to vaccination for optimizing the prevention of vaccine-preventable infections.

In this study, the aim was to investigate the vaccination rate among People Living with HIV/AIDS and awareness about the infections they were more prone to as well as the awareness about the availability of vaccines for vaccine-preventable diseases. The study looked at the socio-demographic characteristics and their level of knowledge regarding the disease they were fighting against.

CHAPTER 2: Review of Literature

A systematic search was conducted using three electronic databases (PubMed, Scopus, and Google Scholar) to gather relevant articles on People Living with HIV/AIDS. The search was limited to articles published from 2000 to the present. The keywords used in the search included **Vaccination, Immunization, People Living with HIV/AIDS, HIV-positive patients, and Immunocompromised adults**. In addition to the databases, various HIV/AIDS websites were also consulted for relevant studies. The search process yielded a total of 75 articles, out of which 69 were not relevant to the objectives of this study. Consequently, eight articles were selected for this review as they contained valuable and pertinent information applicable to the study's objectives.

Authors (years)	Study Location	Sample Size	Salient Features
Dr Rekha.M.C, Dr Shivakumar.K.M, Dr G.M.Prakash, Dr Manju.B, Dr Suresh.C, Dr Ravikar.M.B.	Mandya, Karnataka, India	N= 200	Among individuals with HIV/AIDS, pulmonary tuberculosis was the most common cause of death, followed by extrapulmonary tuberculosis (EPTB), hepatitis, bacterial pneumonia, suicide, bacterial infection, liver disease, accidents, alcohol-related mortality, diarrhea, and cardiovascular disease, listed in descending order. In developing countries like India, opportunistic infections are the primary contributors to mortality in HIV patients. Among those with opportunistic infections, the majority

			(91%) had a CD4 count below 350/cmm, while only 9% had a CD4 count above 350/cmm.
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M.M. Angadi, Arun Pulikkottil Jose, Rekha Udgiri, K.A. Masali, and Vijaya Sorganvi	Bijapur, Karnataka, India	n= 309	Despite efforts, the immunization programme has not only failed in achieving its target, but is lagging far behind the 85% coverage mark. An unfortunate fact was that though a vast majority of the population recognized the importance of immunization, a superficial knowledge of the schedule and failure of the authorities in inculcating enough motivation in the target population for completing the schedule, has led to a large proportion of the children being partially immunized. Sociologists, behavioural scientists and health personnel should develop a
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			comprehensive strategy, to bring out effective changes in the attitudes and practices regarding immunization of children. This study goes out as a wakeup call for all policy makers and healthcare providers, in that, providing the resources for immunization alone is a job which is half done and that health education is also an essential component that can go a long way in improving the prevailing scenario of immunization in the country.
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Neelam Pasricha, Usha Datta, Yogesh Chawla, Surjit Singh, Sunil K Arora, Archana Sud, Ranjana W Minz, Biman Saikia, Haqeeqat Singh, Isaac James & Shobha Sehgal	India	n=60	Despite a double dose in patients, IL-4 and IL-10, which regulate antibody response, were also lower in patients, and this together with low CD4+ counts and lack of T help, accounted for low HBsAb levels. Vaccination in patients with CD4+ lymphocytes < 50/mm³ was ineffective. Thus early immunization is advocated in all HIV positive patients at a stage when they are still capable of mounting an adequate immune response
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Agrawal A, Hanspal R	Bhopal, India	n=240	The present study highlighted the knowledge of mothers on immunization. A better understanding of health issues associated with the immunization constituted a challenge for clinician and researchers. So there is a great lot scope for exploring this area. Research should be conducted to identify the attitude and practice of mothers on immunization. Low literacy level of mothers is a matter of worry. Some of them don't know about the diseases for which their child is being immunized, So there is a dire need to arrange for health education program sessions for mothers of Under five children with main
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			emphasis on importance of vaccination & Vaccine Preventable Diseases (VPDs).
Sunil Suhas Solomon 1, Aylur K Ganesh, Shruti H Mehta, Tokugha Yepthomi, Kavitha Balaji, Santhanam Anand, Joel E Gallant, Suniti Solomon	Chennai, India	n= 1754	This ART delivery model was associated with significant CD4 gains with no observable difference by how much patients paid. Importantly, gains were comparable to those in other free rollout programmes. Additional cost-effectiveness analyses and mathematical modelling would be needed to determine whether such a delivery programme is a sustainable

			alternative to free ART programmes.
Kumarasamy, Nagalingeswaran; Poongulali, Selvamuthu; Bollaerts, Anne; Moris, Philippe; Beulah, Faith Esthe; Ayuk, Leo Njock; Demoitié, Marie- Ange; Jongert, Erik; Ofori-Anyinam, Opokua	India	n= 240	The M72/AS01 vaccine demonstrated immunogenicity in both ART-stable and ART-naive adults, as well as HIV-negative individuals in India, with good tolerability. Our findings indicate that regardless of their ART status, HIV-positive individuals in this population can generate cellular and antibody responses to two doses of M72/AS01, and these responses persist for at least one year after vaccination.

Prabhat Jha, Rajesh Kumar, Ajay Khera, Madhulekha Bhattacharya, Paul Arora, Vendhan Gajalakshmi, Prakash Bhatia, Derek Kam, Diego G Bassani, Ashleigh Sullivan, Wilson Suraweera, Catherine McLaughlin, Neeraj Dhingra, Nico Nagelkerke,	India	n= 1.1 million homes in India	HIV attributable death and infection in India is substantial, although lower than previously estimated. The mortality results are consistent with the reported declines in prevalence of HIV infection between 2000 and 2007.
Bhumika Bhatt, Harashish Jindal, Shashikantha Sk, Jagbir Singh Malik, Kalpana Sangwan, and Junior resident			Immunization among individuals with HIV can have a positive impact on their overall well-being and quality of life. This aspect remains relatively understudied, presenting a knowledge gap in the field. However, vaccination holds significant potential in bolstering immunity against opportunistic infections. Further

			research is essential to address this area and promote improved health outcomes for people living with HIV.
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Chapter 3: Methodology

3.1 Research Question:

- a) What is the vaccination status of People Living with HIV/AIDS?
- b) What is the level of awareness regarding vaccines among People Living with HIV/AIDS?

3.2 Objectives:

Primary Objective: To analyse the vaccination status of PLWHA

Secondary Objective:

- Details of vaccinations administered to PLWHA
- To analyse the awareness of the infectious diseases they are prone to
- To analyse the awareness of vaccine-preventable diseases among PLWHA

3.3 Research Design:

A cross-sectional descriptive study with a quantitative approach was used for the study.

3.4 Study Setting:

There are 4 government and 6 private medical colleges in Punjab. There are 23 districts (district hospitals) in Punjab. Only Dr. B.R. Ambedkar Institute of Medical Science, Mohali has a district hospital attached to it for teaching purposes. All other medical colleges have their own attached hospitals separate from district hospitals. The study was conducted in two Medical

Colleges of Punjab i.e., Govt. Medical College and Rajindra Hospital, Patiala and Dr BR Ambedkar State Institute of Medical Sciences, Mohali.

3.5 Study Population:

The study was conducted on PLHIV in two medical college hospitals - Govt. Medical College/ Rajindra Hospital, Patiala and Dr. BR Ambedkar Institute of Medical Sciences/ District Hospital, Mohali.

- a) **Inclusion Criteria:** The inclusion criteria were People Living with HIV/AIDS of both sexes; age greater than or equal to 18.
- b) **Exclusion Criteria:** Exclusion criteria consisted of patients with the presence of mental disease or any other condition that would interfere with an individual's participation in research. Other exclusion criteria were: Expression of Desire to no longer participate in the study.

3.6 Duration of Study:

20th February 2023 to 19th May 2023

3.7 Sample Size:

After setting up the inclusion and exclusion criteria and analysing the patient load. The Sample Size was considered as 40 PLWHA.

3.8 Sampling Technique:

The sampling technique used was the Survey Sampling Technique, as the study was carried out using a questionnaire that was formed to obtain the necessary results.

3.9 Study Instruments:

The study tools included questionnaires, Record Observations (where applicable).

3.10 Data Collection Procedure:

The data was collected by visiting the Government Hospitals of the selected districts using the questionnaires that were designed (and pre-tested) to interview the patients as well as going through the records of the hospital.

3.11 Data Analysis Plan:

After the collection of relevant data, it was entered into Excel and analysed.

3.12 Operational Definitions:

- 1) HIV - Human Immuno-deficiency Virus (HIV) is an infection that attacks the body's immune system, specifically the white blood cells called CD4 cells.
- 2) AIDS - Acquired Immuno-Deficiency Syndrome (AIDS) is a term that applies to the most advanced stages of HIV infection. It is defined by the occurrence of any of the more than 20 life-threatening cancers or “opportunistic infections”, so named because they take advantage of a weakened immune system.
- 3) Anti-Retroviral Therapy- Anti-Retroviral therapy (ART) is the treatment of people infected with Human Immuno-deficiency Virus (HIV) using anti-HIV drugs.
- 4) Vaccines - A preparation that is used to stimulate the body's immune response against specific diseases.
- 5) Vaccination - Vaccination is a simple, safe, and effective way of protecting against harmful diseases before one comes into contact with them.

- 6) Immunization - A process by which a person becomes protected against a disease through vaccination.

3.13 Ethical Considerations:

- a) Consent from the State Health Department was taken as the data of HIV patients is confidential.
- b) Consent from the interviewees was obtained to use their data in the study.

3.14 Implications of Research:

1. The study was useful at the State/ District level to determine the vaccination status of PLWHA, and improvements required to improve their vaccination status.
2. The study was also helpful in understanding PLWHA awareness regarding vaccination.

Chapter 4: Results

A quantitative study was conducted in two different districts of Punjab. Only 40 people were included according to the inclusion and exclusion criteria. The majority of the 40 respondents were male ($n=26$, 65%), majority of the respondents belonged to the age group of 31-40 ($n=20$, 50%). Figures 1 to 15 represent the results after the analysis was conducted. Section 4.1 consists of the results/ analysis of the questions that were asked to the willing respondents along with the interpretations for both the districts individually and then combined.

4.1 Result Bar graphs

Figure 1: Gender Distribution - Patiala

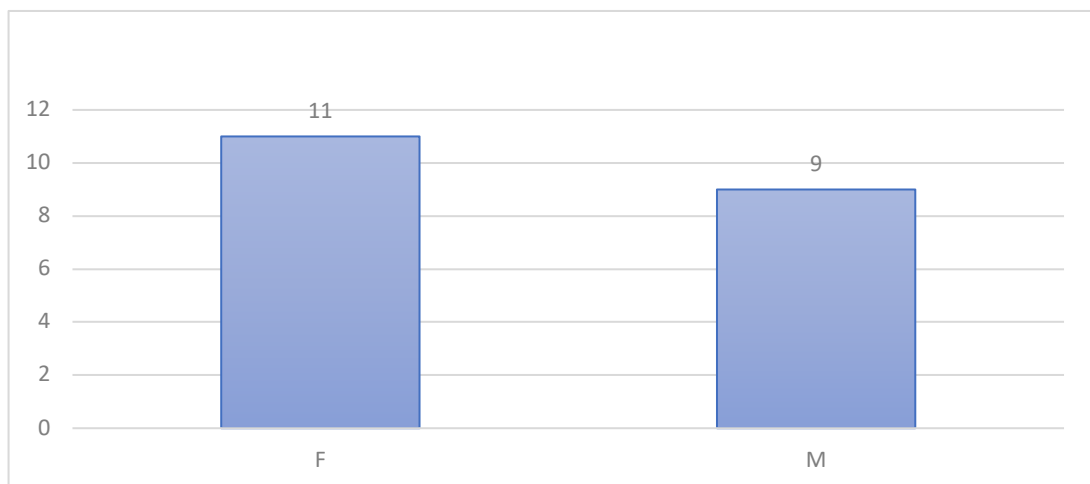


Figure 2: Gender Distribution - Mohali

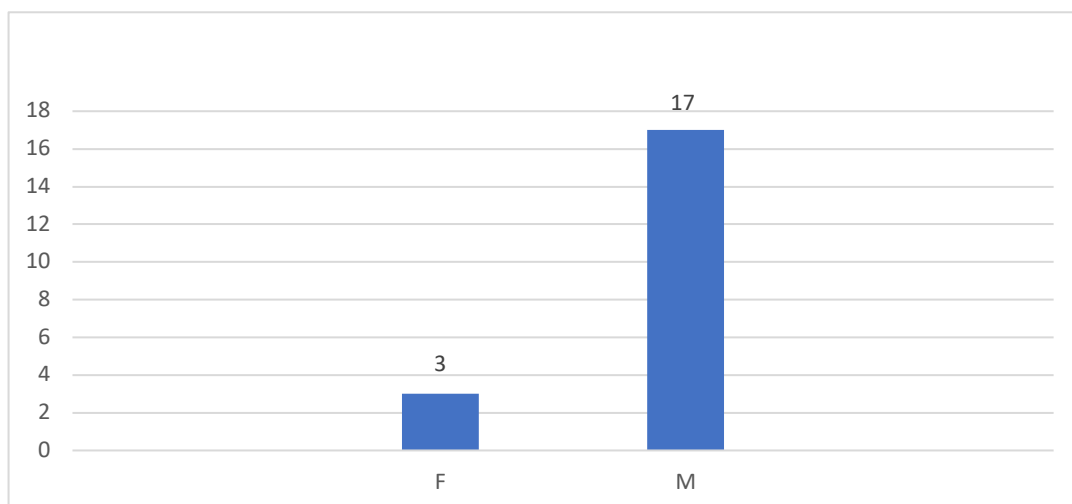
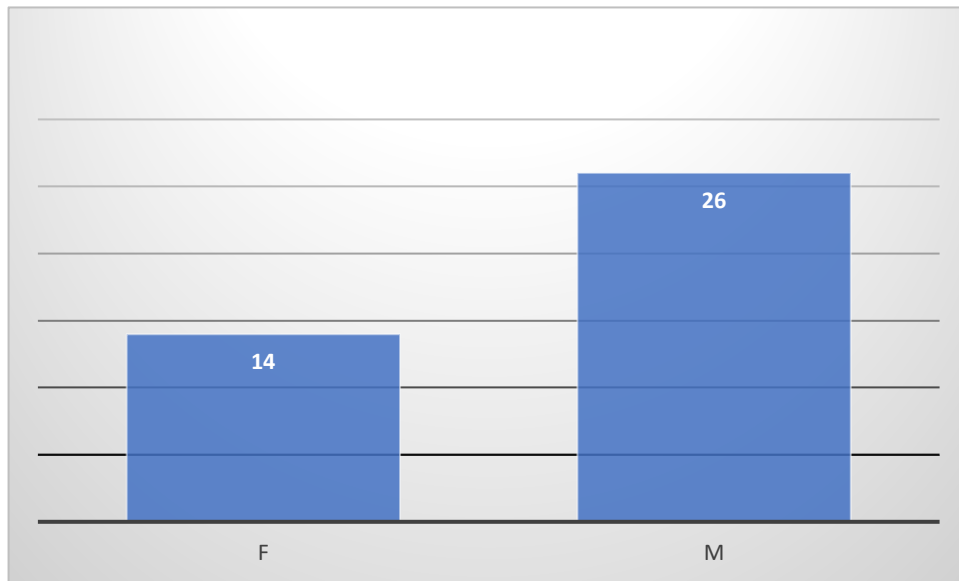


Figure 3: Total Gender Distribution (both districts combined)



Out of the total sample of 40 respondents 20 were from the Patiala district and 20 were from the Mohali district of Punjab. In Patiala, 11 were females and 9 males, whereas, at Mohali, the ratio reversed that is, Out of the 20 respondents, 17 were males and only 3 were females.

Figure 4: Age Distribution - Patiala

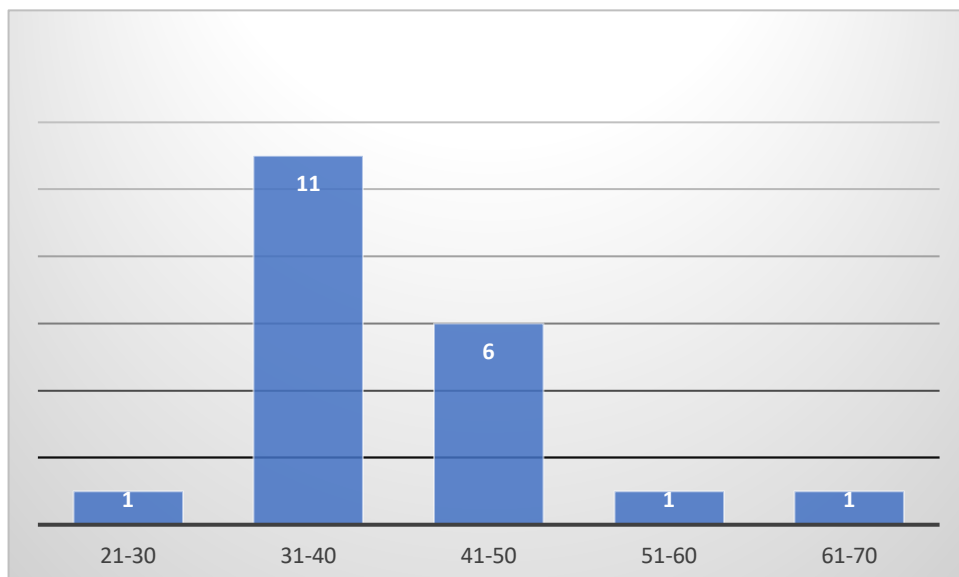


Figure 5: Age Distribution - Mohali

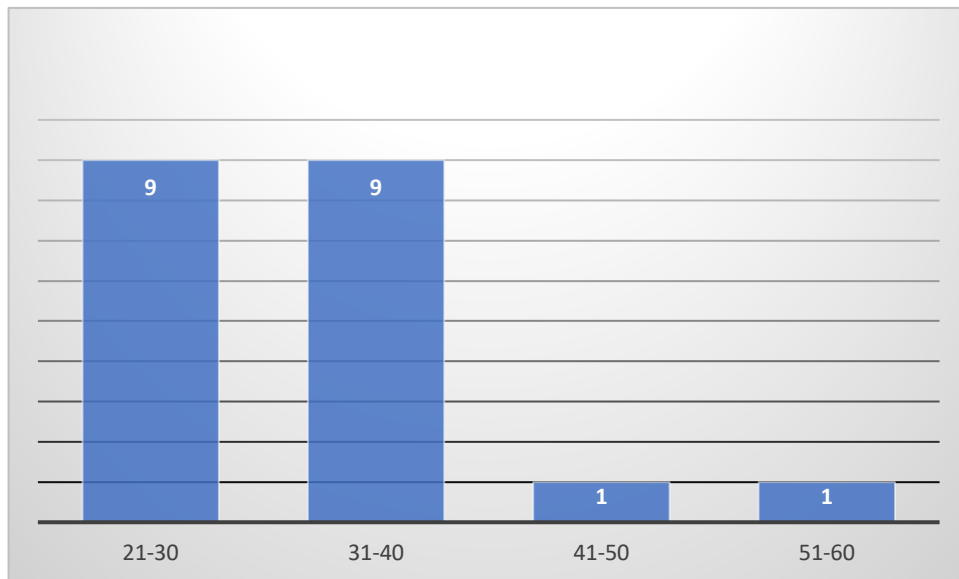
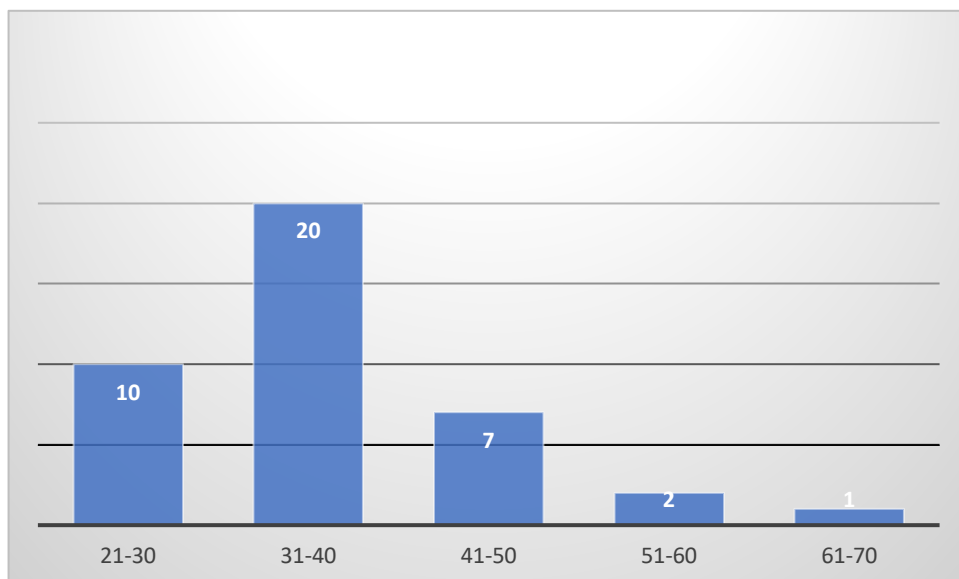


Figure 6: Total Age Distribution



The maximum number of respondents questioned at Patiala was in 31-40 age group (11) followed by 41-50 (6), whereas the distribution was equal for the age group of 21-30, 51-60 and 61-70 (1 each). In Mohali, the proportion of respondents was equal for the age groups 21-30 and 31-40 (9 each) whereas, the proportion was the same for the age group 41-50 & 51-60 (1 each)

Figure 7: Do you know you are more prone to suffer from infectious diseases - Patiala

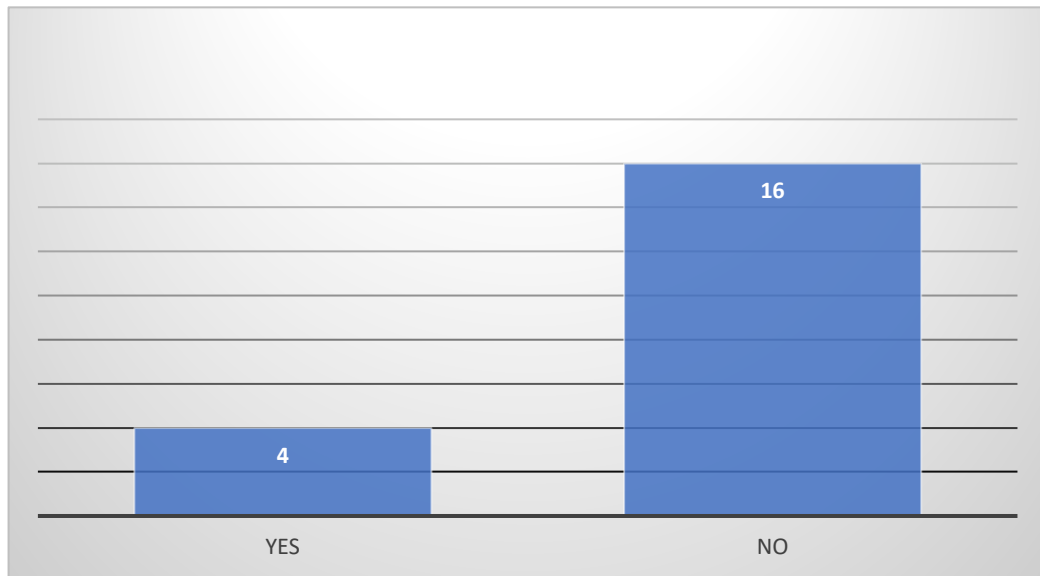


Figure 8: Do you know you are more prone to suffer from infectious diseases - Mohali

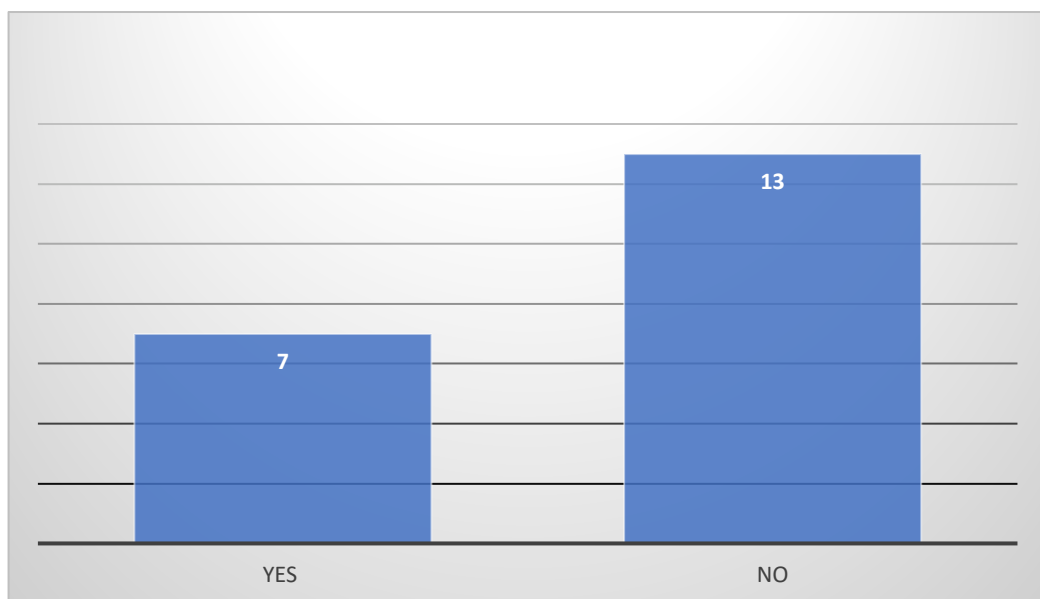
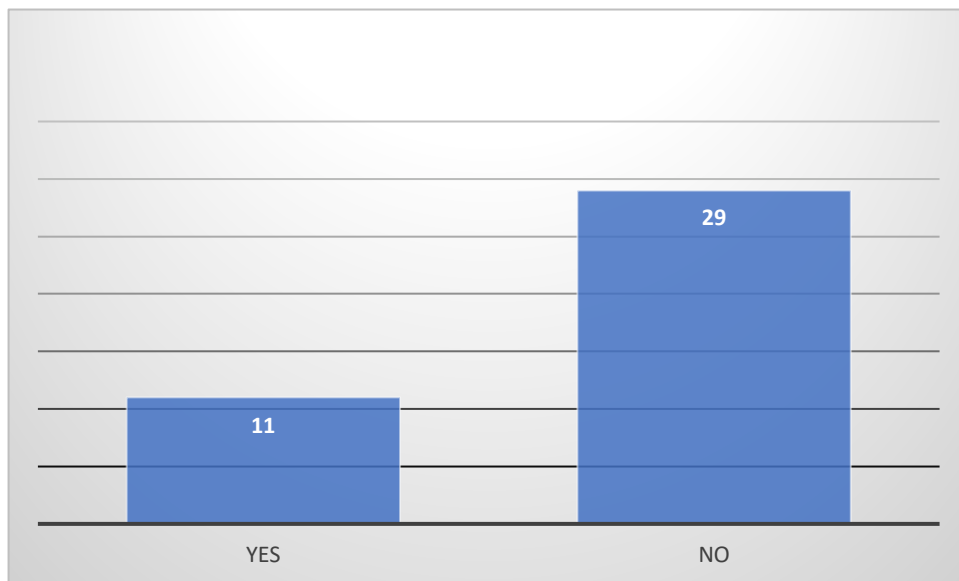


Figure 9: Do you know you are more prone to suffer from infectious diseases - Total



The awareness regarding being more prone to suffer from infectious diseases was very low in both districts as the respondents in both districts belonged to nearby areas that have low awareness and are unable to understand these concepts.

The rate of awareness regarding infectious diseases in Patiala is 4 out of 20 and that in Mohali is 7 out of 20.

Figure 10: Do you know that vaccines are available which can protect you against these infections - Patiala

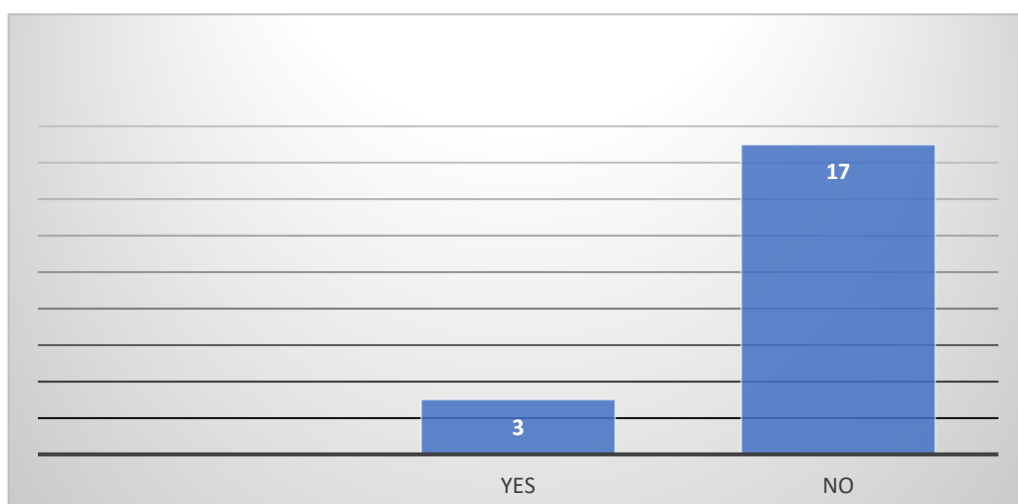


Figure 11: Do you know that vaccines are available which can protect you against these infections - Mohali

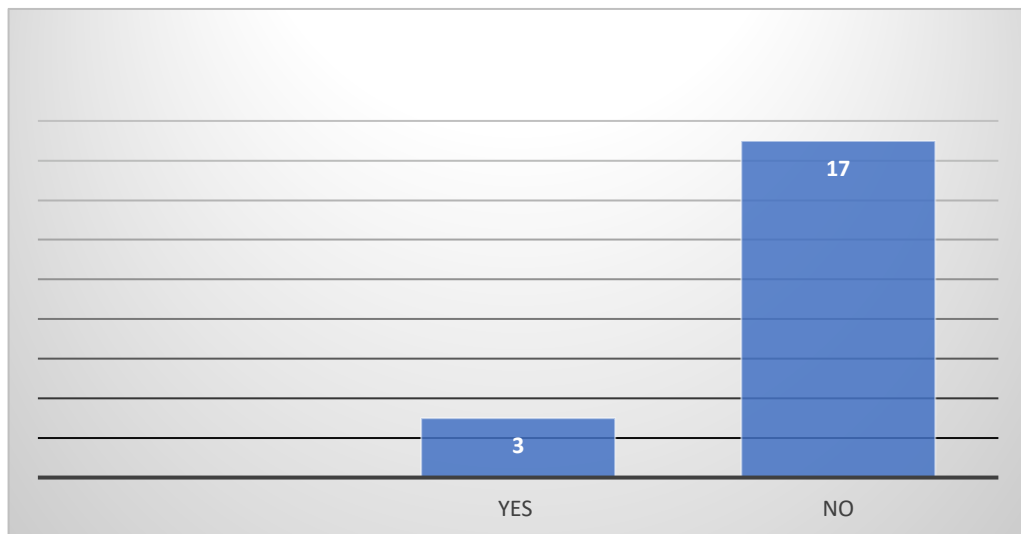
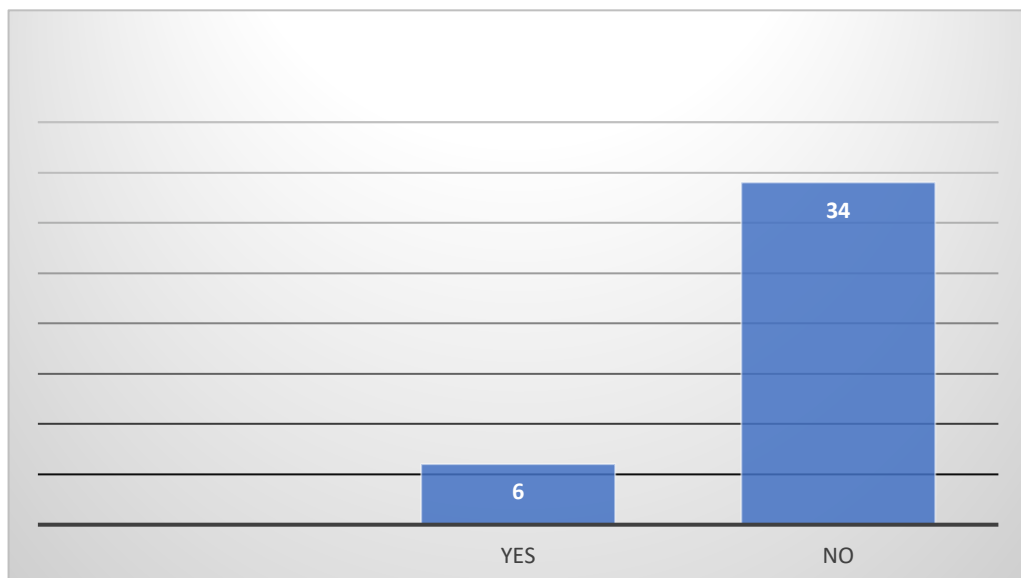


Figure 12: Do you know that vaccines are available which can protect you against these infections



On questioning awareness regarding the vaccines that are important for them, the awareness was very low in both districts. In Patiala as well as Mohali, only 3 out of 20 were aware of the availability of vaccines that could protect them against various opportunistic infections.

Figure 13: Total Vaccine doses for people living with HIV/AIDS - Patiala

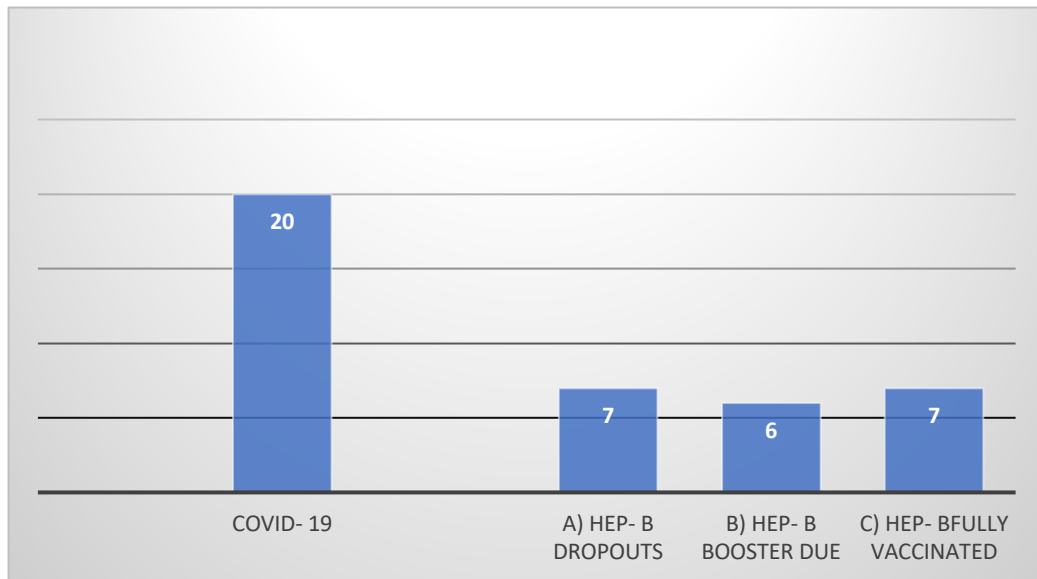


Figure 14: Total Vaccine doses for people living with HIV/AIDS - Mohali

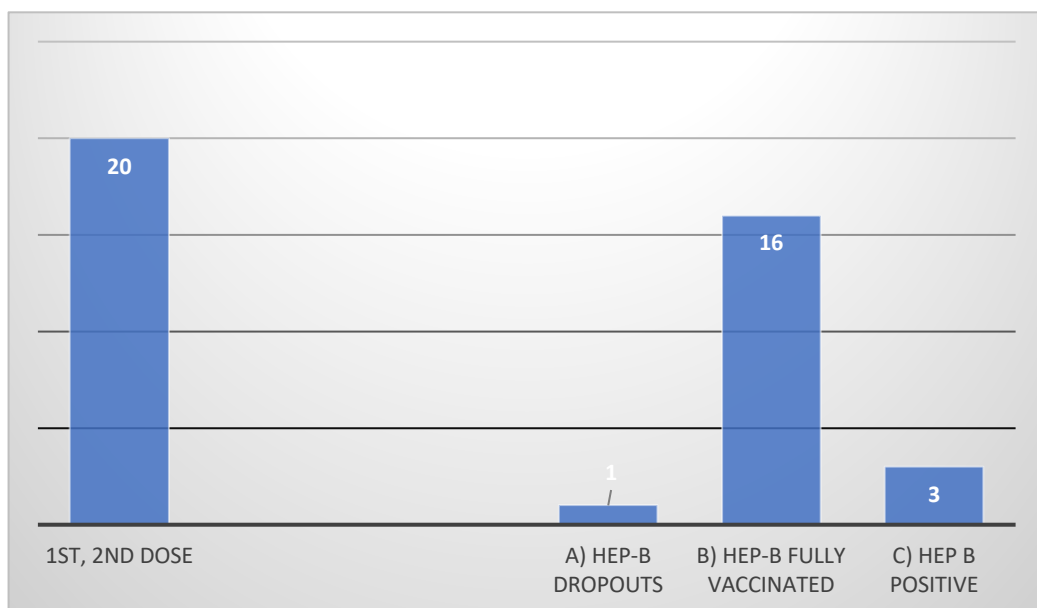
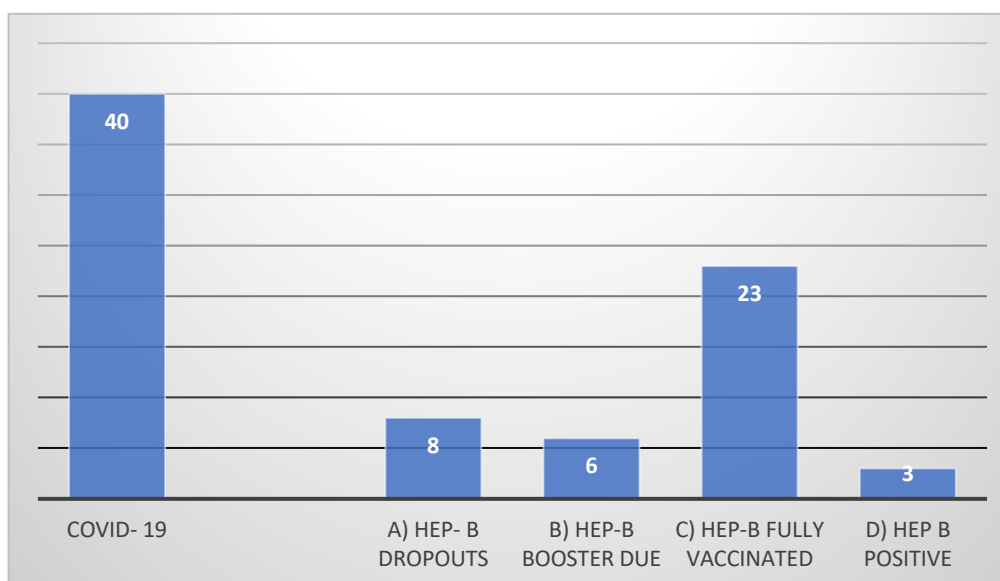


Figure 15: Total Vaccine doses for people living with HIV/AIDS



Currently, the vaccines being given to the respondents are Hepatitis B and COVID-19.

In Patiala, all the respondents had received all three doses (2 primary doses + 1 booster) of COVID-19 and in the case of Hepatitis-B out of the selected population 7 were fully vaccinated (Dose 1-0 months, dose 2-1 month, Booster dose-6 months), 6 respondents had their booster dose due in coming days and 7 respondents were dropouts/ not willing to take the vaccination.

In Mohali, only two doses of COVID-19 and 3 doses of Hepatitis B had been given. All the respondents were fully vaccinated for COVID-19, whereas, the proportion of fully vaccinated was high as compared to the Patiala district. 16 respondents were fully vaccinated, and 3 were detected as Hepatitis B positive, hence, they were not given the Hepatitis B vaccination and 1 person dropout.

Chapter 5: Discussion

5.1 Interpretation of the Results:

Out of the overall interviewed respondents, 65% were males. Half of the respondents (n=20, 50%) belonged to the age group of 31-40 whereas the rest of the respondents belonged to the age group of 21-30 (n= 10, 25%), 41-50 (n= 7, 17%), 51-60 (n= 2, 5%), 61-70 (n= 1,2%). Other interpretations were that out of the study population that was a part of this survey, a large number of individuals (n=29, 72%) were not aware of the infectious diseases they were more prone to as well as the diseases that could be prevented with the help of vaccination. Even though most of them (n=34, 85%) were not aware of the importance of vaccination, most of them were fully vaccinated with the COVID-19 vaccine as well as the Hepatitis B vaccine.

5.2 Limitations Of the Study

The limitations of the study are:

- a. The review of the literature was exceptionally restricted in the quantity of companion assessed articles given information, conviction, and disposition of individuals about the vaccination status of People Living with HIV/AIDS.
- b. **Small Sample Size:** Although the sample size utilised in this survey was very small, it was definitely not irrelevant. A bigger sample size would have helped in deeper research.
- c. **Imbalanced Gender Distribution:** In Patiala, there were more females (11) than males (9), while in Mohali, the reverse was observed, with more males (17) than females (3). The gender imbalance in the sample may affect the representativeness of the findings, particularly, if there are gender-related differences in vaccination status or awareness.
- d. **Awareness regarding infectious diseases:** The study found that the level of awareness regarding the risk of infectious diseases was low in both

districts. Since the respondents questioned were mainly truck drivers and sex workers, hence, it was assumed that the low literacy rates may have contributed to this low awareness level. This limitation might affect the general understanding and interpretation of vaccination-related information provided by the respondents.

e. Awareness of important vaccines: The study found low awareness regarding the vaccines important for the respondents in both districts. Only a small proportion of the respondents were aware of the vaccines. This limited awareness may impact the participant's understanding of vaccination's significance and potential benefits.

f. Limited vaccine coverage: In Patiala, all respondents had received three doses of the COVID-19 vaccine, while in Mohali, respondents had received only two doses of the COVID-19 vaccine. Only a few respondents were fully vaccinated against Hepatitis B in both districts. The limited vaccine coverage may restrict the generalizability of the findings to populations with different vaccination schedules or those with varying vaccine availability.

It's important to consider these limitations while interpreting the findings of the study and to be cautious when generalizing the results to a larger population. Future studies with larger and more diverse samples are needed to overcome these limitations and provide more robust and representative findings.

5.3 Strengths Of the study:

The Strengths of the study are as follows:

a. Sample size: Although the sample size is relatively small (40 respondents), the equal distribution of patients between Patiala and Mohali (20 each) allows for a balanced comparison between the two districts. This

balanced distribution enhances the study's ability to detect potential differences and draw comparisons between the districts.

b. Geographic diversity: The study was conducted in two different districts of Punjab, Patiala and Mohali. This geographic diversity increases the transferability of results to similar areas within the region.

c. Gender representation: Both men and women were included in the sample in this study, and the gender distribution was different in Patiala and Mohali. Hence, gender inclusion helped us understand the level of awareness among both genders.

d. Age group representation: The study included respondents of different age groups falling between the age group of 21-30, 31-40, 41-50, 51-60, and 61-70, which further allowed us to analyse the vaccination status and awareness of vaccination among different age groups. This age group differentiation helped us provide insight into possible age-based differences in vaccination knowledge and behaviour.

e. Vaccination coverage assessment: The study assessed the immunization status of respondents in both districts for two specific vaccines, Hepatitis B and COVID-19 where it was seen that there was full vaccination coverage for COVID-19 and in the case of Hepatitis- B only 23 respondents out of 40 were fully vaccinated. This assessment provided knowledge about valuable information on immunization coverage and adherence to vaccination schedules and helped identify gaps in vaccination and areas for improvement.

f. Identification of awareness levels: This study assessed the level of awareness of infectious diseases and the importance of vaccines which was relatively very low in both cases among respondents. This information was useful to highlight the knowledge level and awareness needs of the population, especially those with low literacy rates.

Chapter 6: Conclusion

6.1 - Findings:

- a. A quantitative study was conducted in two different districts of Punjab for a total sample of 40 respondents (20 each at Patiala and Mohali in Punjab) to check their vaccination status and their level of awareness regarding vaccination. The ratio of respondents was 11 females and 9 males in Patiala, and 3 females and 17 males in Mohali.
- b. The age distribution of respondents questioned at Patiala was highest in 31-40 years age group (11) followed by 41-50 (6), whereas the distribution was equal for the age group of 21-30, 51-60 and 61-70 (1 each). In Mohali, the proportion of respondents for the age groups 21-30 and 31-40 was equal (9 each) whereas, it was similar for the age group 41-50 & 51-60 (1 each).
- c. The awareness regarding susceptibility to suffering from infectious diseases including vaccine-preventable diseases was low in both districts (27.5%). The situation was though somewhat better in Mohali (35%) as compared to Patiala (20%)
- d. On questioning awareness regarding the vaccines that are important for them, the awareness was very low in both districts. In Patiala as well as Mohali, only 3 out of 20 were aware of the vaccines.
- e. Currently, only two vaccines Hepatitis B and COVID-19 are being administered to the PLHWA.

In Patiala, all the respondents were given all three doses (2 primary doses + 1 booster) of COVID-19 and in the case of Hepatitis-B out of the selected population 7 were fully vaccinated (Dose 1- 0 months, dose 2- 1 month, Booster dose- 6 months), 6 respondents had their booster dose due in coming days and 7 respondents were dropouts/ not willing to take the vaccination.

In Mohali, only two doses of COVID-19 and 3 doses of Hepatitis B are being given. All the respondents were fully vaccinated for COVID-19, whereas, the proportion of fully vaccinated was high as compared to the Patiala district. 16 respondents were fully vaccinated, and 3 were detected as Hepatitis B positive, hence, they were not given the Hepatitis B vaccination and the dropout was only 1 person.

f. The leading causes of death among individuals with HIV/AIDS are pulmonary tuberculosis, followed by extrapulmonary tuberculosis (EPTB), hepatitis, bacterial pneumonia, suicide, bacterial infection, liver disease, accidents, alcohol-related mortality, diarrhoea, and cardiovascular disease, listed in descending order. In developing countries like India, opportunistic infections are the main contributors to mortality in HIV patients.

g. HIV accounts for a substantial number of deaths and infections in India, although lower than previously estimated. The mortality results align with the reported decline in HIV infection prevalence between 2000 and 2007.

h. Immunization among individuals with HIV can positively impact their overall well-being and quality of life. However, this aspect remains relatively understudied, creating a knowledge gap in the field. Vaccination holds significant potential in strengthening immunity against opportunistic infections. Further research is necessary to address this area and promote improved health outcomes for people living with HIV.

Although there are not many studies in line with the topic. But on comparing the cited studies with mine, there is an urgent need to create awareness regarding the infections HIV patients are more prone to, including vaccine-preventable diseases.

6.2 - Implications:

1. The current study gives a fairly good idea of vaccination of PLWHA at the state/ district level and points out the actions needed to improve the vaccination status as well as improve the level of awareness among the patients.
2. The study also outlines the need for policy formulation at the National level for the introduction of vaccination for PLWHA.

6.3 - Recommendations:

- a. Awareness campaigns:** Given the low awareness levels regarding infectious diseases and the importance of vaccines, enhancing awareness campaigns in both districts is crucial. The campaigns should include knowledge about the HIV/AIDS disease, infections related to it, and vaccines that are available for vaccine-preventable diseases apart from all the other related information. Conducting the awareness campaign plays a crucial role in increasing vaccine awareness, and infectious disease awareness (which was seen to be quite low in our study) as well as decreasing the drop-out rate to zero.
- b. IEC materials usage-** On visiting the ART centres, it was seen that there were not many IEC materials regarding vaccination of HIV-infected individuals pasted on the premises of the Centres, which can be one way to increase the level of awareness of the patients.
- c. Monitoring and follow-up:** Strengthening the monitoring and follow-up system on vaccination status and completion would help increase the factors that were included in the study. This includes identifying and reaching out to individuals who have missed booster doses or dropped out of the vaccination process. More efforts should be made to address barriers and provide the necessary support to ensure full compliance with the vaccination schedule.

d. Designing a Vaccination Card and Record maintenance - During the study, it was observed that the vaccination status of the respondents (only of Hepatitis-B) was only mentioned on the cover page of the file and that too with a stamp. Hence, a proper vaccination card, as well as a proper record, should be maintained even in the case of individuals.

e. Counselling Sessions - Counselling sessions especially for the dropouts, and less knowledgeable sufferers should be conducted to boost their morale, increase their knowledge regarding vaccinations and convince them to get the vaccine shots in time.

f. Formulating Guidelines: Government should formulate guidelines regarding the vaccinations that should be given to HIV patients in order to protect them from vaccine-preventable diseases.

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Annexures

Fig. 16- National Immunization Schedule

National Immunization Schedule						
for PREGNANT WOMEN						
Vaccine	When to give	Dose	Diluent	Route	Site	
TT-1	Early in pregnancy	0.5 ml	NO	Intramuscular	Upper Arm	
TT-2 #	4 weeks after TT-1	0.5 ml	NO	Intramuscular	Upper Arm	
TT-Booster#	If received TT doses in a pregnancy within the last 3 yrs.	0.5 ml	NO	Intramuscular	Upper Arm	
for INFANTS						
Vaccine	When to give	Max. Age	Dose	Diluent	Route	Site
BCG ##	At birth as early as possible	Till one year of age	0.1 ml (0.05 ml until 1 month age)	Sodium Chloride	Intra-dermal	Left Upper Arm
Hepatitis B Birth Dose ###	At birth as early as possible	within 24 Hours	0.5 ml	NO	Intramuscular	Anterolateral side of mid-thigh LEFT
OPV-0*#	At birth as early as possible	within the first 15 days	2 drops	NO	Oral	-
OPV 1, 2 & 3	At 6, 10 & 14 weeks	Till 5 years of age	2 drops	NO	Oral	-
Rota Virus Vaccine*	At 6, 10 & 14 weeks	Till 1 year of age	5 drops	NO	Oral	-
IPV (Inactivated Polio Vaccine)	At 6 & 14 weeks	Up to 1 yr. of age	0.1 ml	NO	Intradermal	Right Upper Arm
Pentavalent** 1, 2 & 3	At 6, 10 & 14 weeks	Till one year of age	0.5 ml	NO	Intramuscular	Anterolateral side of mid-thigh LEFT
Measles - 1 st Dose	9 - 12 completed months	Given till 5 yr of age	0.5 ml	Sterile Water	Subcutaneous	Right Upper Arm
Japanese Encephalities 1 st dose	9 - 12 completed months	Till 15 yrs.	0.5 ml	Phosphate Buffer	Subcutaneous	Left Upper Arm
Vitamin A (1 st Dose)	At 9 completed months with measles	Till 5 years of age	1 ml (1 lakh IU)	NO	Oral	-
for CHILDREN						
DPT Booster - 1	16-24 months	7 years	0.5 ml	NO	Intramuscular	Anterolateral side of mid-thigh LEFT
Measles 2 nd dose	16-24 months	Till 5 years of age	0.5 ml	Sterile Water	Subcutaneous	Right upper Arm
OPV Booster	16-24 months	Till 5 years of age	2 drops	NO	Oral	-
Japanese Encephalities 2nd dose	16-24 months	-	0.5 ml	Phosphate Buffer	Subcutaneous	Left Upper Arm
Vitamin A (2nd to 9th dose)	16 months. Then, 1 dose every 6 months	Till 5 years of age	2 ml (2 lakh IU)	NO	Oral	-
DPT Booster - 2	5-6 years	7 years	0.5 ml	NO	Intramuscular	Upper Arm (Left)
TT	10 years & 16 years		0.5 ml	NO	Intramuscular	Upper Arm

Fig.17- Immunization Schedule Adults

Vaccine	19-21 Yrs	22-26 Yrs	27-49 Yrs	50-59 Yrs	60-64 Yrs	>=65 Yrs
Influenza	1 Dose Annually			1 Dose Annually		
Tetanus, Diphtheria, Pertussis (Td/Tdap)	Substitute Tdap for Td once, then Td booster every 10 years					
Varicella	2 doses at 4 to 8 weeks gap					
Human Papillomavirus (HPV) Female	3 Doses					
Human Papillomavirus (HPV) Male	3 Doses					
Zoster				1 Dose		
Measles, Mumps, Rubella (MMR)	1 or 2 Doses depending on indication			1 Dose		
Pneumococcal 13-valent Conjugate (PCV13)	1 Dose					1 Dose
Pneumococcal Polysaccharide (PPSV23)	1 or 2 Doses					1 Dose
Hepatitis A	2 or 3 doses depending on indication					
Hepatitis B	3 Doses					
Meningococcal 4-valent Conjugate (MenACWY) or Polysaccharide (MPSV4)	1 or more doses depending on indication					
Meningococcal B (MenB)	2 or 3 doses depending on vaccine					
Haemophilus Influenzae Type b (Hib)	1 or 3 doses depending on indication					

Fig- 18 Research Questionnaire

Questionnaire for Research	
Name (optional)	
Gender	
Age	
When and how did you learn about your HIV status	
Do you know, you are more prone to suffer from infectious diseases	
Do you know that vaccines are available which can protect you against these infections	
Have you taken any vaccine.	
If yes, name the vaccine.	
How many number of doses taken.	

Figure 19 - Consent Form- Hindi

मरीजों / उत्तरदाताओं के लिए सहमति

मैं (नाम) "पंजाब में एचआईसी/एड्स के टीकाकरण की स्थिति" विषय पर अध्ययन के लिए नैदानिक सूचना सामग्री का उपयोग करने की अनुमति देता हूं . मैं समझता हूं कि मेरी व्यक्तिगत जानकारी गोपनीय रखी जाएगी।

हस्ताक्षर

Figure 20 - Consent Form- Punjabi

ਮਰੀਜ਼ਾਂ/ਜਵਾਬਦਾਰੀਆਂ ਲਈ ਸਹਿਮਤੀ

ਮੈਂ (ਨਾਮ) “ਪ੍ਰਜਾਬ ਵਿੱਚ HIV/ AIDS ਦੀ
ਟੀਕਾਕਰਣ ਸਥਿਤੀ” ਵਿਸ਼ੇ 'ਤੇ ਅਧਿਐਨ ਲਈ ਕਲੀਨਿਕਲ ਜਾਣਕਾਰੀ ਸਮੱਗਰੀ ਦੀ ਵਰਤੋਂ ਕਰਨ ਦੀ
ਇਜਾਜ਼ਤ ਦਿੰਦਾ/ ਦਿੰਦੀ ਹਾਂ। . ਮੈਂ ਸਮਝਦਾ/ਸਮਝਦੀ ਹਾਂ ਕਿ ਮੇਰੀ ਨਿੱਜੀ ਜਾਣਕਾਰੀ ਨੂੰ ਗੁਪਤ ਰੱਖਿਆ
ਜਾਵੇਗਾ।

ਦਸਤਖਤ

Figure 21 - Vaccines that are recommended for All Adults Who Are HIV-Positive

Vaccine/disease	Dosage	Recommendations
Hepatitis B virus (HBV)	three shots over six months	- Receive unless you are a hepatitis B carrier or immunity is present. - After the series is completed, get a blood test to check for immunity. If it's too low, you may need extra shots.
Influenza  (flu )	one shot	- Receive injectable flu vaccine  only. - Repeat every year by mid-November for best protection.
Measles  , mumps, and rubella (MMR) (live virus vaccine)	two shots over one month	- Not needed, if you were born before 1957 - Receive only if your CD4 cell count is above 200. - You can receive individual components separately.
Polysaccharide pneumococcal (pneumonia)	one or two shots	- Receive soon after HIV diagnosis, unless you've been vaccinated within the last five years. - Effective within two to three weeks. - If given when CD4 count is less than 200, repeat once CD4 count reaches 200. - Repeat every five years.
Pneumococcal (pneumonia) conjugate vaccine (PCV13)	one shot	Receive soon after HIV diagnosis
Pneumococcal (pneumonia) polysaccharide vaccine(PPSV23)	one shot	- Receive soon after HIV diagnosis, but wait 2 months after receiving PCV13 - If your CD4 count is less than 200, consider waiting to receive this vaccine until your CD4 count is above 200 on antiretroviral therapy. - Repeat after five years and one more time (if 5 years have elapsed since the last dose) at age 65
Tetanus and diphtheria toxoid (Td) or Tdap (Tetanus, diphtheria and pertussus)	one shot	- Repeat every 10 years. - Get it earlier if you have an injury such as a cut that requires stitches.

(Source: <https://www.webmd.com/vaccines/aids-hiv-immunizations>)