HIV-RELATED KNOWLEDGE AND STIGMA
TOWARDS PEOPLE LIVING WITH HIV
AMONG COMMUNITY
IN TAWAU, SABAH

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SCHOOL OF HEALTH SCIENCES
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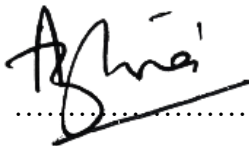
IN TAWAU, SABAH

by

ABDUL HALIM BIN SUDARMAN

Dissertation submitter in partial fulfilment of

the requirements for the degree of

Bachelor in Nursing with Honours

AUGUST 2024

CERTIFICATE

This is to certify that the dissertation entitled "HIV-Related Knowledge and Stigma Towards People Living With HIV Among Community In Tawau, Sabah" is the bona fide record of research work done by Mr Abdul Halim Bin Sudarman during the period from October 2023 to August 2024 under my supervision. I have read this dissertation and that in my opinion it confirms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation to be submitted in partial fulfilment for the degree of Bachelor of Health Sciences (Honours) (Nursing).

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DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated and duly acknowledged. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at Universiti Sains Malaysia or other institutions. I grant Universiti Sains Malaysia the right to use the dissertation for teaching, research and promotional purpose.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

PLHIV	-	People Living with HIV
HIV	-	Human Immunodeficiency Virus
AIDS	-	Acquired Immunodeficiency Syndrome
UNAIDS	-	Joint United Nations Programme on HIV and AIDS
STD	-	Sexual Transmitted Disease
MSM	-	Men Sex Men

TAHAP PENGETAHUAN DAN STIGMA BERKAITAN HIV TERHADAP PENGHIDAP HIV DALAM KALANGAN KOMUNITI DI TAWAU, SABAH

ABSTRAK

Virus Kurang Daya Tahan Penyakit (HIV) merupakan masalah kesihatan global utama dan pandemik yang paling ditakuti yang merosakkan atau menghalang sistem imun manusia apabila ia menjangkiti seseorang. Stigma HIV ialah keyakinan negatif, perasaan dan sikap terhadap penghidap HIV, kumpulan yang dikaitkan dengan orang yang tinggal dengan HIV dan populasi utama lain yang berisiko tinggi untuk jangkitan HIV, seperti orang yang menyuntik dadah, pekerja seks, lelaki yang mempunyai hubungan seks dengan lelaki dan orang transgender. Kajian ini bertujuan untuk menentukan tahap pengetahuan dan tahap stigma di kalangan masyarakat di Tawau, Sabah. Satu kajian di kalangan masyarakat (N=190) telah dilakukan di masyarakat di Tawau, Sabah. Kajian ini dijalankan menggunakan soalan-soalan yang dikendalikan sendiri. Data telah dianalisis menggunakan statistik deskriptif dan ujian Pearson Correlation menggunakan Statistical Package Social Science (SPSS) versi 27.0 perisian. Purata (SD) untuk tahap pengetahuan dalam kajian ini ialah 11.27 (SD 3.93) dan purata (SD) untuk tahap stigma dalam kaji selidik ini ialah 9.96 (SD 2.50). Kebanyakan peserta dalam kajian ini (N=118, 54.9%) mempunyai tahap pengetahuan yang sederhana dan (N = 121, 56.3%) mempunyai stigma yang sederhana. Ujian Pearson Correlation mendedahkan bahawa terdapat korelasi yang signifikan secara statistik antara tahap pengetahuan dan stigma terhadap PLHIV ($p<0.05$). Singkatnya, ia berkemungkinan boleh mengurangkan stereotip negatif mengenai individu HIV positif dengan mengurangkan stigma dan meningkatkan pemahaman awam tentang kebimbangan yang berkaitan dengan HIV.

HIV-RELATED KNOWLEDGE AND STIGMA TOWARDS PEOPLE LIVING WITH HIV AMONG COMMUNITY IN TAWAU, SABAH

ABSTRACT

Human Immunodeficiency Virus (HIV) is a major global health issue and of the most dreaded pandemic that damages or inhibits the human immune system when it infects a person. HIV stigma is negative belief, feelings and attitudes towards people living with HIV, groups associated with people living with HIV and other key populations at higher risk of HIV infection, such as people who inject drugs, sex workers, men who have sex with men and transgender people. This study is to determine the level of knowledge and the level stigma among community in Tawau, Sabah. A study among community (N=190) was done in community at Tawau, Sabah. This study was conducted using self-administered questionnaire. Data were analysed with descriptive statistics and Pearson Correlation test by using Statistical Package Social Science (SPSS) version 27.0 software. The mean for level of knowledge in this study is 11.27 (SD 3.93) and the mean for level of stigma in this study is 9.96 (SD 2.50). Most of the participants in this study (N=118, 54.9%) have moderate level of knowledge and (N=121, 56.3%) have moderate stigma. Pearson Correlation test revealed that there is statistically significant correlate between levels of knowledge and stigma towards PLHIV ($p<0.05$). In summary, it should be possible to decrease negative stereotypes about HIV-positive individuals by reducing stigma and increasing public understanding of HIV-related concerns.

CHAPTER 1

INTRODUCTION

1.1 Introduction

This researched proposal aims to assess HIV-related knowledge and stigma towards people living with HIV among community in Tawau, Sabah. This chapter would discuss the background of the studied, followed by the problem statement, researched questions and objectives, the hypothesis of the studied, the significance of the studied and lastly, the conceptual and operational of key terms used in the studied.

1.2 Background of the Study

The human immunodeficiency virus also known as HIV, was a retrovirus that infects the human immune system and destroys or impairs its function. In a simple word, HIV was a virus that targets the immune system. This makes it easier to get sick with diseases like tuberculosis, infections, and some cancers (WHO,2023). More than 1.5 million persons globally contracted HIV in 2020, and an estimated 37.7 million people were living with the virus. This was a public health risk. According to the UK's most recent data, 4139 new HIV diagnoses and 98,522 HIV care visits were made in 2019 (Cabecinha & Saunders, 2022). According to Centre of Disease Control and Prevention, HIV infection in humans came from a typed of chimpanzee in Central Africa. At the beginning, HIV was only known as acquired immunodeficiency syndrome (AIDS) in 1981. It was first recognised as a new disease in 1981 when increasing numbers of young homosexual men succumbed to unusual opportunistic infections and rare malignancies (Sharp & Hahn, 2011).

There were two species of HIV that have been recognised that came from different origins, which were HIV-1 and HIV-2, which came from chimpanzees and sooty mangabey monkeys,

respectively. HIV-1 was found global pandemic and if untreated, it could lead to AIDS. The majority of this infection was caused by HIV-1, a closely related viral strain (Vijayan et al., 2017). HIV-1 could divide into group M, N, O and P. Group M was the responsible in the global pandemic (Melhuish & Lewthwaite, 2022). HIV-2 was mostly found in Western Africa and produces sickness comparable to HIV-1, however it is less virulent.

According to the World Health Organization, at the end of 2022, there was an estimated 39 million [33.1 –45.7 million] HIV-positive individuals worldwide, with 25.6 million of them residing in the WHO African Region. In Malaysia, HIV cases had been reported since 1986. Figure 1.1 shows that by the end of 2021, there was an estimated 81,942 people living with HIV in Malaysia; 67,822 of them were aware of their status and had received notification from the national monitoring system. In 2021, 2760 new HIV infections were reported, compared to 6,978 in 2002 (The Global Aids Monitoring, 2022). So far, with 40.1 million [33.6-48.6 million] deaths to date, HIV continued to be a serious worldwide public health concern. HIV-related deaths totalled 630 000 [480 000–880 000] in 2022, and 1.3 million [1.0–1.7 million] persons contracted the virus (The Global Aids Monitoring, 2022).

Figure 1.1: Reported HIV and AIDS, Malaysia 1986-2021 from The Global AIDS Monitoring,2022

Figure 1.2 shows that, Selangor showed the highest HIV cases recorded in 2021, followed by the Federal Territory of Kuala Lumpur. Sabah was ranked in the top 5 as the highest HIV case contributor in 2021, at 7%, after Sarawak (The Global AIDS Monitoring,2022). According to the Department of Statistics Malaysia, Sabah had a population of 3.9 million in 2019, of which Tawau was one of the three largest districts in Sabah with a population density of 514,000. This had resulted in Tawau being one of the districts that contributes the highest HIV cases in Sabah.
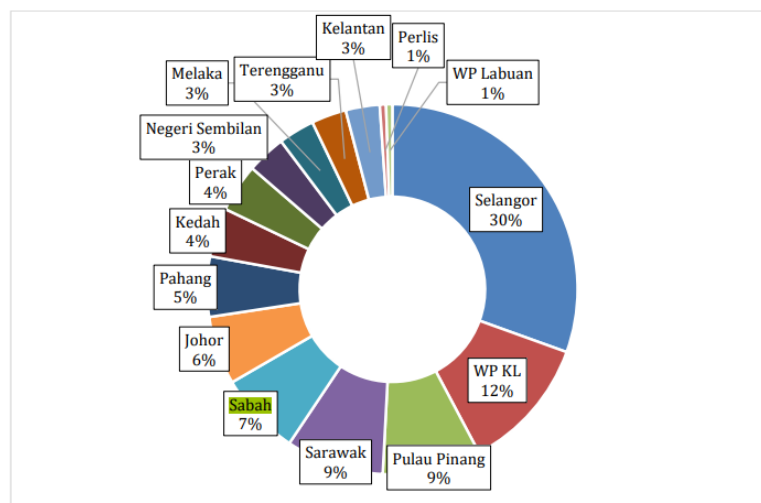
Figure 1.2: People living with HIV in Malaysia by state,2021 from The Global AIDS Monitoring,2022

HIV could transmit in many ways, according to the Joint United Nations Programme on HIV and AIDS (UNAIDS), there were 3 main transmissions of HIV; unprotected sexual relationship, sharing needles and maternal transmission. Sexual contact that penetrates the body might spread HIV. HIV transmission during a single act of vaginal intercourse was not highly effective, hence the chance of infection was modest. According to reports, anal intercourse had a transmission rate that was ten times higher than vaginal sex. In general, a person was six to ten times more likely to transfer or get HIV during intercourse if they had an untreated sexual transmitted disease (STD), especially if it causes ulcers or discharge. In addition, men having sex with men (MSM) also contributed to people becoming infected with HIV (Shaw & Hunter, 2012). Besides that, injection also could transmit HIV to another person. Sharing or reusing needles or

syringes was a very effective technique to spread the HIV virus. By constantly utilizing disposable needles and syringes or by thoroughly sterilizing reusable needles/syringes before reuse, the risk of transmission among drug users could be significantly reduced (Chen et al., 2019). In research from Felman (2020), it was stated that HIV could transmitted from mother to child through breast milk. However, the chance to the baby get HIV was low if the mother wass on antiretroviral therapy when she pregnancy and breastfeeding.

HIV consisted of four stages which were asymptomatic infection, acute infection, chronic infection and advanced HIV infection. Asymptomatic infection usually involved patient showing no clinical signs or symptoms and physical examination yielded normal results. However, laboratory tests might be done to measure the number of CD4 cells (Miedzinski, 1992). Next, stages were acute HIV infection where basically patients presented with fever, myalgia, nausea and pharyngitis 1 to 8 weeks after exposure (Miedzinski, 1992). In contrast, chronic HIV infection could be characterized by either without AIDS or with AIDS (Vaillant & Gulick., 2022). Patient who in chronic infection without AIDS usually showed signs and symptoms such as thrush, vaginal candidiasis, herpes zoster and more while with AIDS where CD4 cell count was less than 200 cells/microL showed signs and symptoms like recurrent pneumonia, candidiasis, cervical cancer and multiple bacterial infection. The last stage was an advanced HIV infection, defined as a CD4 cell count less than 50 cells/microL (Vaillant & Gulick., 2022).

Behaviours and conditions that put individuals at greater risk of contracting HIV included a number of factors had been identified, including drug abuse, commercial sex work, high-risk sexual conduct, access to healthcare, ignorance of HIV transmission, violence, stigma and discrimination, and mental health problems (De Santis, 2009). This made the increasing of stigmatization of HIV among the community towards people living with HIV, either internal stigma resulting in a refusal to ask for assistance and use available resources, or external stigma

causing discrimination based on an individual's HIV status or affiliation with an HIV/AIDS positive person.

1.3   Problem Statement

The Joint United Nations Programme on HIV/AIDS (UNAIDS) defined stigma as a dynamic process of devaluation that seriously damages a person's reputation in the eyes of others. According to Vlassoff et al., (2012), stigma was a recognized barrier to early detection of HIV and caused great suffering for those affected. Stigma could be categorized into two perspectives, which were community stigma and self-stigma (Corrigan & Kleinlein, 2006). Community stigma occurred when the general public agreed with a person's bad stereotypes (Tristanto et al., 2022). It could be identified as a cause of discrimination towards people living with HIV (PLHIV), but stigma was neither defined nor quantified (Vlassoff et al., 2012). Meanwhile, self-stigma was a consequence of stigmatised people applying stigma to themselves (Tristanto et al., 2022).

Previous studies showed that HIV stigma and discrimination occured within families, communities, and healthcare settings. However, stigma and discrimination often occured within families, whether they were parents, siblings, relatives, or in-laws (Fauk et al., 2021). Factors associated with stigma in society were the low level of education and public knowledge about HIV and AIDS, as well as a lack of socialization or counselling (Tristanto et al., 2022). Besides that, it was also due to multiple domains, which were multiple relevant domains, including the fear of HIV infection, social judgement, anticipated stigma, perceived stigma, experienced stigma, internalised stigma, and discrimination (Institute for Public Health (IPH), 2021).

It could cause PLHIV to experience barriers in the treatment and care process because they might have remained isolated and confined in their own experience of stigma, suffering various social, physical, and mental health consequences (Tristanto et al., 2022). This could have

led to unfavourable outcomes for PLHIV, such as low adherence to highly active antiretroviral therapy, a decrease in help-seeking behaviours, and poor quality of life (Jimenez et al., 2010).

1.4   Research Questions

1) What was the level of knowledge towards people living with HIV among community in Tawau, Sabah?

2) What was the level of stigma toward people living with HIV among community in Tawau, Sabah?

3) Was there any correlation between knowledge and stigma on HIV among community in Tawau, Sabah?

1.5   Research Objectives

1.5.1   General Objective

To determine HIV-related knowledge and stigma towards people living with HIV among community in Tawau, Sabah.

1.5.2   Specific Objectives

1. To determine the level of knowledge towards people living with HIV among community in Tawau, Sabah.

2. To determine the level of stigma toward people living with HIV among community in Tawau, Sabah.

3. To examine the correlation between knowledge and stigma towards people living with HIV among community in Tawau, Sabah.

1.6   Research Hypothesis

Null hypothesis (H_0):

There was no correlation between knowledge and stigma towards people living with HIV among community in Tawau, Sabah.

Alternative hypothesis (H_A):

There was a correlation between knowledge and stigma towards people living with HIV among community in Tawau, Sabah.

1.7   Definitions of Conceptual and Operational Terms

Definition for operational terms used in this research proposal are as shown below:

Terms	Conceptual Definition	Operational Definition
HIV-related knowledge	The set of information that community had about HIV/AIDS to prevent its transmission (Richard et al., 2020; Sohn & Park, 2012).	This study assessed HIV-related knowledge among community using a self-administered questionnaire adopted from Dehghan et al., (2020).
HIV-related stigma	A process of devaluation of people either living with or associated with HIV and AIDS. Stigma could be divided into two, which were internal stigma that led to an unwillingness to seek help and access resources and external stigma that led to discrimination by HIV status or	This study assessed HIV-related stigma among community using a self-administered questionnaire adopted from Dehghan et al., (2020).

	association with someone living with HIV/AIDS (Dehghan et al., 2020).	
People living with HIV (PLHIV)	Individuals who had contracted HIV and developed AIDS were those whose immune systems had been compromised by HIV infection. They were incredibly prone to illness (Tristanto et al., 2022).	This study assessed knowledge and stigma towards PLHIV.
Community	A group of people with diverse characteristics who were linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings (MacQueen et al., 2001)	In this study, community who lives in Tawau, Sabah were assessed for their level of knowledge and stigma.

1.8   Significance of the Study

The study aimed to determine knowledge and stigma toward people living with HIV among the community in Tawau, Sabah. These study findings were significant because they could help identify the level of community knowledge that contributed to stigma toward PLHIV. In addition, this study provided information and findings to other researchers who were investigating similar topics about HIV-related knowledge and stigma toward people living with HIV among the community.

CHAPTER 2

LITERATURE REVIEW

2.1   Introduction

The chapter provided a general review of the literature about HIV-related knowledge, HIV-related stigma, and the correlation between knowledge and stigma. The final section in this chapter described the theoretical and conceptual framework that was used in this research.

2.2   HIV-Related Knowledge

Knowledge was an important prerequisite for the prevention of HIV transmission (Sohn & Park, 2012). The study stated that most of the national programs made efforts to increase knowledge about HIV, behaviors that led to the spread of the disease, methods to avoid and reduce stigma against PLHIV (Faust & Yaya, 2018). It was important because the improvement of HIV-related knowledge could lead to increased engagement in preventive behavior and a lower likelihood of HIV infection (Faust et al., 2018). Furthermore, a greater understanding of HIV transmission made it less likely for negative or stigmatizing attitudes towards PLHIV. This meant that the improvement of HIV-related knowledge through appropriate HIV education could reduce the social stigmatization of the disease as well as make it easier for facilities to access treatment and strengthen social support for PLHIV (Faust et al., 2018).

HIV-related knowledge among the community showed various findings. This was because the source of information regarding HIV affected their level of knowledge. Study from Sohn & Park, (2012) found that adolescents showed a low level of HIV knowledge in Korea. They believed that HIV could be transmitted through daily activities such as kissing, sharing toilets, and mosquito bites. Similarly, another study indicated that many people falsely believed that mosquito bites could transmit HIV, and there was a low understanding of HIV treatment,

which could reduce the chance of HIV spread (Shokoohi et al., 2016). However, people aged 25-29 had good knowledge related to HIV, possibly due to their educational backgrounds, with many being high school or medical students and university professors, which led to a higher level of HIV knowledge. Additionally, HIV knowledge was higher in urban settings compared to rural areas, possibly due to uneven distribution of HIV educational campaigns, with urban areas receiving more attention (Shokoohi et al., 2016). The limitation of knowledge related to HIV may be due to a lack of access to sexual health information (Shokoohi et al., 2016). More than 80% of people reported mass media as the main source of information on HIV (Dehghan et al., 2020). The second most common source of information was family members. However, parents often adhered to socio-cultural norms around sexuality and lacked sufficient knowledge to provide their children with education related to HIV (Shokoohi et al., 2016).

HIV-related knowledge among healthcare workers was associated with their profession (Shah et al., 2020). However, there was a statistically significant difference between HIV-related knowledge and profession, with doctors having a greater score on HIV knowledge regarding prevention, transmission, and treatment compared to other healthcare professions (Hani et al., 2021; Shah et al., 2020). Additionally, HIV-related knowledge significantly differed in terms of work experience of 10 years or more, attendance of HIV training, and experience of working with PLHIV. Moreover, a few healthcare workers believed that they were at high risk of getting infected, although the overall risk of occupational HIV infection and transmission is rare (Hani et al., 2021). Thus, according to the journal of the international association of provider of AIDS care state that education the healthcare provider on HIV pathogenesis, transmission, care of PLHIV and pregnancy may improve knowledge and decrease HIV related stigma.

2.3   HIV-Related Stigma

According to The Joint United Nations program on HIV/AIDS (UNAIDS), HIV-related stigma was defined as a process of devaluation of people either living with or associated with HIV and AIDS. It was considered as a barrier to an effective response to the HIV epidemic worldwide (Dehghan et al., 2020). HIV-related stigma could cause a negative impact on the psychological state, health outcomes, and social life of people living with HIV (PLHIV) (Fauk et al., 2021). It could result in increased stress, anxiety, depression, barriers to care, decreased access to care, and decreased quality of life of PLHIV (Fauk et al., 2021; Ng & Sullivan, 2018). HIV-related stigma often manifested as prejudice, stereotyping, and discrimination towards PLHIV (Fauk et al., 2021).

Stigma associated with HIV occurred in areas where people living with HIV frequently resided and worked. It could be connected to not having received HIV test results (Mokhtarabadi et al., 2020). This might result from a fear of being rejected because of one's HIV status by friends, neighbors, or the community. Participants in the research by Fauk et al., (2021) said that rejection of direct physical contact, such as shaking hands and consuming food that PLHIV had touched, was a common occurrence in communities due to HIV stigma. Additionally, additional research revealed that a significant degree of prejudice against HIV made people feel repulsed, preventing them from interacting with PLHIV and placing the blame on individuals who were infected (Sohn & Park, 2012). Furthermore, the stigmatization of PLHIV was impacted by the low moral standards in communities where the virus was linked to improper behavior, including having several sexual partners. Meanwhile, stigma associated with HIV frequently existed even among families. Family members reported experiencing significant unfair treatment or discrimination due to their fear of HIV infection. For example, keeping personal items like clothing and dining utensils apart from other family members (Fauk et al., 2021).

Subsequently, stigma around HIV also occurred throughout the healthcare system and may have impeded access in all settings. When a healthcare professional deliberately discriminated against a PLHIV, they might have given an excuse such as being unable to offer regularly scheduled services or being unwilling to complete the task and instead sent the person to another healthcare facility (Ng & Sullivan, 2018). The study by Fauk et al., (2021) claimed that there were still unfavorable attitudes and behaviors among healthcare professionals towards people living with HIV. PLHIV encountered a great deal of prejudice and stereotyping. For example, medical professionals disseminated information about their HIV status to others and expressed displeasure with them. PLHIV chose to conceal their HIV status as a result of feeling traumatized and let down by the healthcare system. Besides that, stereotyping also occurred in healthcare, where the provider might not have assessed or educated the PLHIV or other patients related to preventable HIV-risk behaviors such as unprotected sex or HIV pre-exposure prophylaxis prevention medicine (Ng & Sullivan, 2018). Additionally, the previous study showed that prejudice did not often occur in a group that had worked in a healthcare setting for more than 10 years. It was more likely among younger providers under the age of 25. This might have been because they were less educated and experienced, making them tend to avoid providing care to PLHIV.

2.4   Correlation between HIV Knowledge and Stigma

HIV-related knowledge was associated with HIV-related stigma (Dehghan et al., 2020; Sohn & Park, 2012) where more knowledge on HIV regarding transmission, prevention, and treatment could decrease the stigmatizing attitude towards PLHIV (Sohn & Park, 2012). It was because knowledge, attitude, and practice played an important role in decreasing the stigmatization of HIV and reducing risky behavior that could endure into adulthood, despite the controversial estimates across different studies (Shokoohi et al., 2016).

According to Sohn & Park, (2012), stigmatizing attitudes were strongly associated with misconceptions about HIV transmission, where negative attitudes towards social groups, homosexuals, and sex workers prevailed. On the other hand, studies found that females had a higher level of HIV-related stigma due to experiencing greater social, cultural, and contextual barriers that might affect their level of knowledge as well as attitudes (Dehghan et al., 2020). Thus, it was required that governments and policymakers made more attempts to scale up and implement stigma-reduction strategies. For instance, HIV education and prevention campaigns aimed to improve knowledge and reduce HIV-related stigma among the general population (Dehghan et al., 2020; Sohn & Park, 2012).

2.5   Theoretical and Conceptual Framework

According to the literature mentioned above, a high level of HIV knowledge impacted stigma toward people living with HIV (PLHIV) in the community. As a result, HIV education and prevention had to be implemented as soon as possible by the government and policymakers to reduce stigmatizing and discrimination, wherein covering a broad range of the population was considered an important strategy (Dehghan et al., 2020).

The Theory of Planned Behavior was a theoretical approach to provide a better understanding and explanation of a diverse range of social behaviors and health-related behaviors, including eating behavior, exercise behavior, addictive behavior, and HIV-related behavior shows in figure 2.1. This theory was developed by Icek Ajzen in 1991 (Luzzi & Spencer, 2008). The theory of planned behavior predicted intention to perform behavior and also perception of behavioral control when behavior was not under full volitional control. The intention to perform a behavior was determined by the relative importance of three factors: attitudes toward behavior, which were defined as a favorable or unfavorable evaluation of behavior; subjective norm, which was the perceived social pressure to perform or not perform the behavior; and perceived

behavioral control, which was the perception of the extent to which behavior was under one's control, measured in terms of self-efficacy and controllability in relation to behavior (Kan & Fabrigar, 2017).
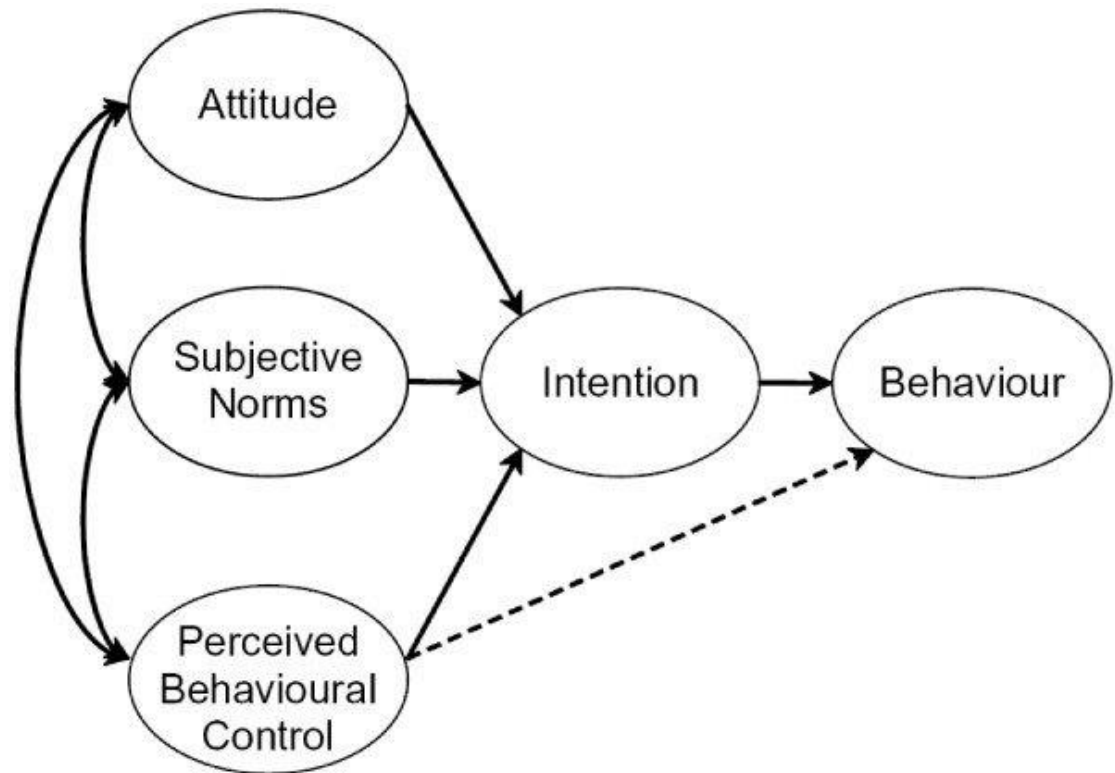
Figure 2.1: Theory of Planned Behaviour adopted from Liana & Spencer, 2008.

The current study aimed to investigate the relationship between HIV-related knowledge and HIV-related stigma toward PLHIV among the community in Tawau, Sabah. Figure 2.2 showed a conceptual framework adapted from the theory of planned behavior that would guide the research process. The Theory of Planned Behavior would enable the researcher to explore the stigma toward people living with HIV by analyzing the association between HIV-related knowledge and stigma. Overall, HIV-related stigma was the dependent variable in this study, affected by the independent variable, which was HIV-related knowledge.
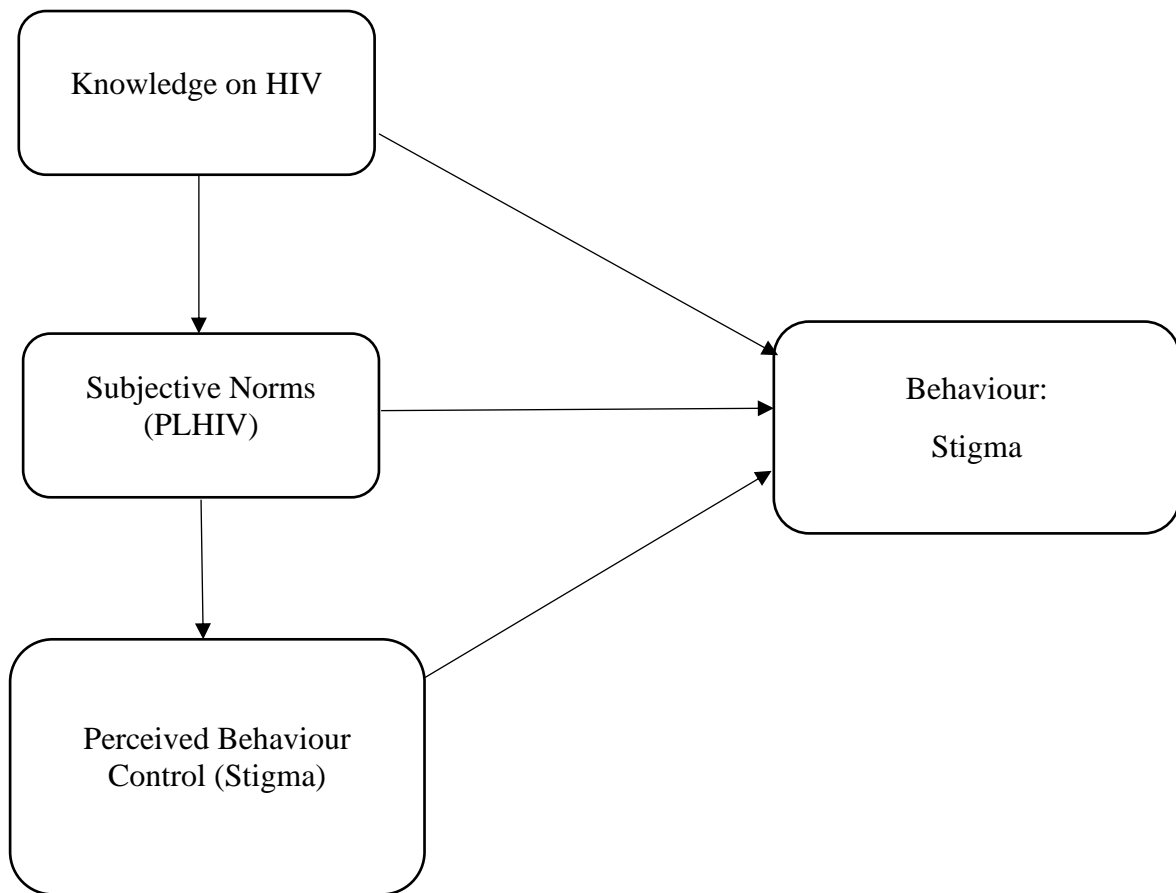
Figure 2.2: Conceptual Framework of Study: HIV-related stigma. Adapted from Theory of Planned Behavior.

CHAPTER 3

METHODOLOGY AND METHODS

3.1 Introduction

This chapter explained the approach and rationale used to support the chosen research methodology. The section was followed by a description of the study setting, population, participant selection criteria, sampling plan, sample size determination, and instrumentation, including ethical considerations right through data collection methods. This chapter also involved a section that explained the proposed statistical analyses used with the quantitative data.

3.2 Research Design

The study used a cross-sectional design. It was characterized by the collection of relevant information at a given point in time. This design was frequently used to draw conclusions about potential connections or to collect initial data to enable future study and testing (Kesmodel, 2018).

3.3 Research Location

The study was conducted in Tawau,Sabah which is one of the 3 largest districts in Sabah after Kota Kinabalu and Sandakan. It is divided into seven zones: Apas, Balung, Merotai, Sebatik, Tanjung Batu, Sri Tanjung and Kukusan.

3.4 Research Duration

The duration of this study started in October 2023 and ended in August 2024 which is six months after obtaining approval from the Human Ethics Committee, USM.

3.5 Research Population

The communities that lived in Tawau,Sabah consisting of various tribes of Kadazandusun, Bajau, Tidung, Chinese, Lundayeh, Murut, Suluk, Bulungan, Bugis and others.

3.6   **Subject Criteria**

3.6.1 Inclusion Criteria

1.   Adult age $\geq$ 18 years old
2.   Able to understand and respond in Malay or English language

3.6.2 Exclusion Criteria

1.   Individual with mental disability

3.7   **Sampling Plan**

3.7.1 Sampling Method

This study used non-probability sampling where selected subjects in the population did not have an equal chance to be selected as research respondents. Convenience sampling method was used in this study for the collection of data in Tawau, Sabah. Convenience sampling was the process of gathering samples by selecting ones that were in convenient proximity to a facility or online service. A convenience sample simply asked friends, relatives, colleagues in the workplace, or people on the street to take part in answering the questionnaire of this research through Google Form or paper.

3.7.2 Sample Size Estimation

The sample size for Objectives 1 and 2 was computed. The study sample size was chosen to be a respectable number. The population percentage used in Objectives 1 and 2 was calculated using the single mean formula. The standard deviation of this study for HIV-related knowledge and HIV-related stigma was 2.3 and 6.71 respectively. According to a similar survey conducted in South Korea (Sohn & Park, 2012).

$$n = \left[\frac{Z\sigma}{\Delta}\right]^2$$

Where,

n = Sample size

σ = Standard deviation

Z = Value of standard normal distribution = 1.96

Δ= Precision = 1

Objective 1:

The standard deviation for HIV-related knowledge was 2.3 (Sohn & Park, 2012). Thus,

$$n = \left[\frac{1.96 \times 2.3}{1}\right]^2$$

$n = 21$

After considering 10% of drop out,

$21 \times 10\% = 2$

$n = 21 + 2$

$n = 23$

Therefore, total sample size for objective 1 was 23 samples.

Objective 2:

The standard deviation for HIV-related stigma was 6.71 (Sohn & Park, 2012).Thus,

$$n = \left[\frac{1.96 \times 6.71}{1}\right]^2$$

$n = 173$

After considering 10% of drop out,

$173 \times 10\% = 17$
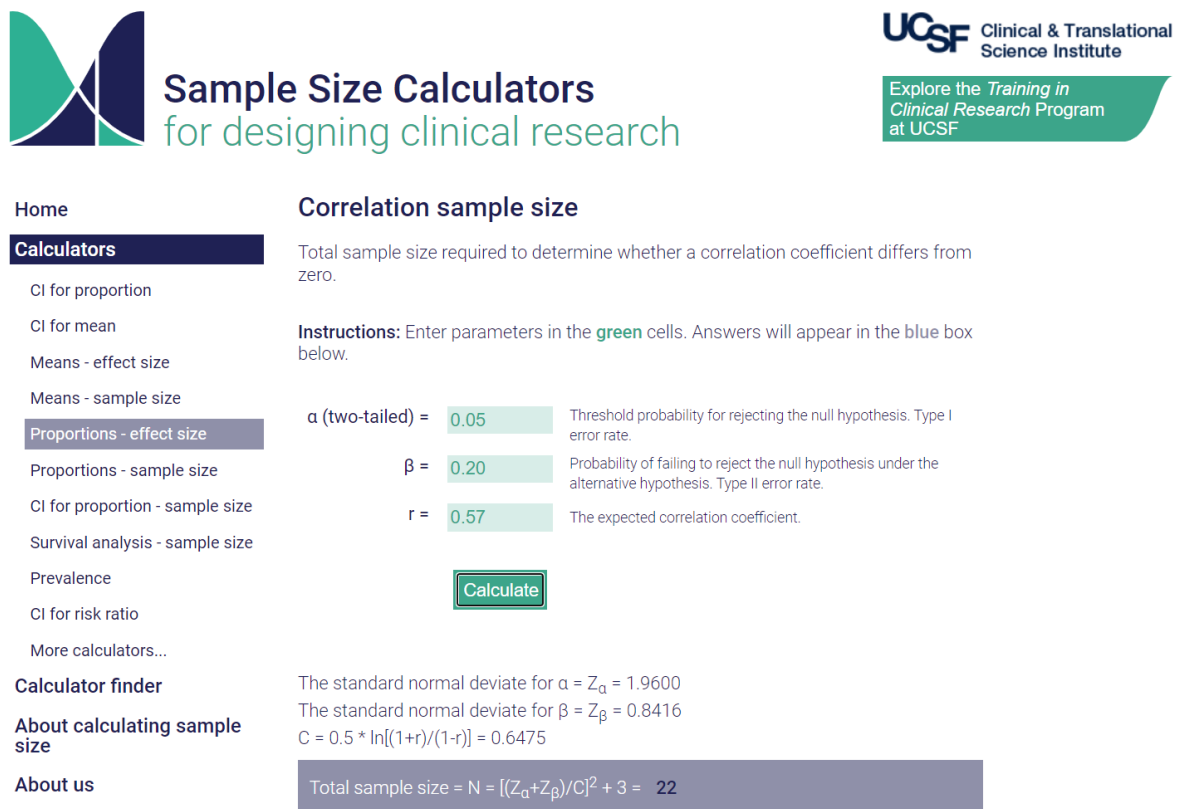
$n = 173 + 17$

$n = 190$

Therefore, total sample size for objective 2 was 190 samples.

Objective 3:

Objective 3 was identified to determine whether there was an association between HIV-related knowledge and HIV-related stigma towards people living with HIV among the community in Tawau, Sabah. Sample size was calculated using the two-means formula from the UCSF Clinical and Translational Science Institute website. The correlation was 0.57 according to the study from Dehghan M et.al, (2020).

The minimal sample size was 22, and after considering a 10% drop out, the sample size calculated is:

$$22 \times 10\% = 2$$

$$n = 22 + 2$$

$$n = 24 \text{ participants per group,}$$

$$n = 48 \text{ participants per 2 group.}$$

Therefore, the sample size required for objective 3 in this study was 48 participants who fulfilled the inclusion and exclusion criteria.

Based on the sample size calculation for all 3 objectives, the sample size for this study was based on the largest sample size, which was 190 participants.

3.8   Research Instrument

3.8.1   Questionnaire

One set of questionnaires was used to obtain relevant data on HIV-related knowledge and stigma towards people living with HIV (PLHIV) among the community in Tawau, Sabah (Appendix A). This questionnaire was adapted from Dehghan et al., (2020) and permission was granted (Appendix B). The questionnaire was divided into three parts as explained as follows:

SECTION A: SOCIO-DEMOGRAPHIC

This section included age, gender, marital status, degree of education, and current employment or vocation. Additionally, it gathered details about any diseases suffered, knowledge about HIV, and the sources from which one learned about HIV.

SECTION B: HIV-RELATED KNOWLEDGE

This section had 24 items in the questionnaire: 10 questions dealt with knowledge about HIV diagnosis, prevention, and therapy, and 14 questions focused on HIV routes of transmission. The response options "yes," "no idea," and "no" were used to determine knowledge.

SECTION C: HIV-RELATED STIGMA

This section consisted of 18 items with four dimension, which were used to quantify stigma associated with HIV. The subscales included the patient's social position (five items), social support (four items), social disease viewpoint (seven items), and social harassment (two items). A five-point Likert Scale was used to assess HIV-related stigma (1=Strongly disagree, 2=Disagree, 3=No idea, 4=Agree, 5=Strongly agree).

3.8.2 Translation of Instrument

The questionnaire used in this study was originally written in English. Due to some people not having a high education level, the questionnaire was translated into Bahasa Malaysia by School of Language, Literacies and Translation (SoLLaT), Health Campus, USM. Thus, the instrument was administered in two languages, English and Bahasa Malaysia, for easy understanding among the communities in Tawau, Sabah.

3.8.3 Validity and Reliability of Instrument

Validity refers to the extent to which a concept or measurement accurately corresponds to the real world (Snow,2013). Besides, reliability refers to the degree of consistency in measurement and the lack of error (Gidron, 2013). Authors often used Cronbach's alpha as a statistic to show that scales and tests created or used for research projects are appropriate for their intended use (Taber, 2018)

The reliability coefficient of the instrument will be tested for its quality with the acceptable values of alpha, ranging from 0.70 to 0.95.

A pilot test was defined as a small-scale test of the methods and procedures to be used on a larger scale (Leon et al., 2011). It was used to examine the feasibility of an approach intended to ultimately be used in a larger scale study. This applied to all types of research studies (Leon et al., 2011). 10% of the study's expected sample participated in a pilot test of the modified questionnaire. In order to prevent sampling contamination, a total of 19 Kota Bharu, Kelantan residents were selected for the pilot study. This is due to several things such as the use of everyday language as the medium of communication which is Malay. In addition, the same lifestyle is applied by the community in Kota Bharu Kelantan. A pilot test was conducted, and the Cronbach's alpha is 0.728.

3.9   Variable

The variable of the study was measured by using a self-administered questionnaire.

Table 3.1: Independent and Dependent variables

Independent variable	• Knowledge towards PLHIV
Dependent variable	• Stigma towards PLHIV

3.9.1   Measurement of Variables and Variable Scoring

Nine questions made up the background information section, asking about age, gender, marital status, degree of education, and current employment or vocation. In addition, background characteristics such as suffering from any disease, self-reported awareness of high-risk behavior, and the sources from which one learned about HIV were obtained from the questionnaire.

HIV-related knowledge had three items on the scale, including the following response options: yes, no idea, no. The purpose of the scale was to test people's knowledge about HIV transmission, which was scored by summing the scores to yield a final score ranging from 0 to 24. Then, it was standardized based on a value from 0 to 20, with higher scores indicating higher knowledge of HIV (Dehghan et al., 2020). The standardized scores were categorized as follows:

Table 3.2: Knowledge Scoring

Knowledge	Range
Poor	Less than 10
Moderate	10-14
High	More than 14

Besides that, the HIV associated Stigma Index used five Likert scales to rate the items, with values ranging from 1=Strongly disagree to 5=Strongly agree. HIV-related stigma yielded an overall score ranging from 18 to 90, with high scores indicating a higher level of HIV-related stigma towards PLHIV. For the analysis, the scores were standardized based on a value of 0 to

20, with higher scores indicating higher HIV-related stigma (Dehghan et al., 2020). The scores were categorized as below:

Table 3.3: Stigma Scoring

Stigma	Score
Poor	Less than 6
Moderate	6-10
High	More than 10

3.10   Data Collection

The ethical approval from the Human Research Ethical Committee (HREC) USM was granted (Appendix G). Data collection commenced in Tawau, Sabah from January 2024 to March 2024. Data for this study was gathered. A technique for gathering data is shown in Figure 3.1. After choosing qualified respondents who satisfied the inclusion requirements, the researcher gave the participants a thorough explanation of the study's objectives and gained their informed permission. Data was collected through convenience sampling by simply asking friends, relatives, colleagues in the workplace, or people in the street such as a mall or community center to take part in answering the questionnaire of this research through Google Form or paper. Besides that, the poster related to this study also distributed through social media such as WhatsApp, Facebook and Instagram. The self-administered questionnaire took around 10 to 15 minutes to complete, and participants were informed that their participation was voluntary. The researcher then gathered the questionnaire when it had been finished. The researcher had access to every piece of data information.
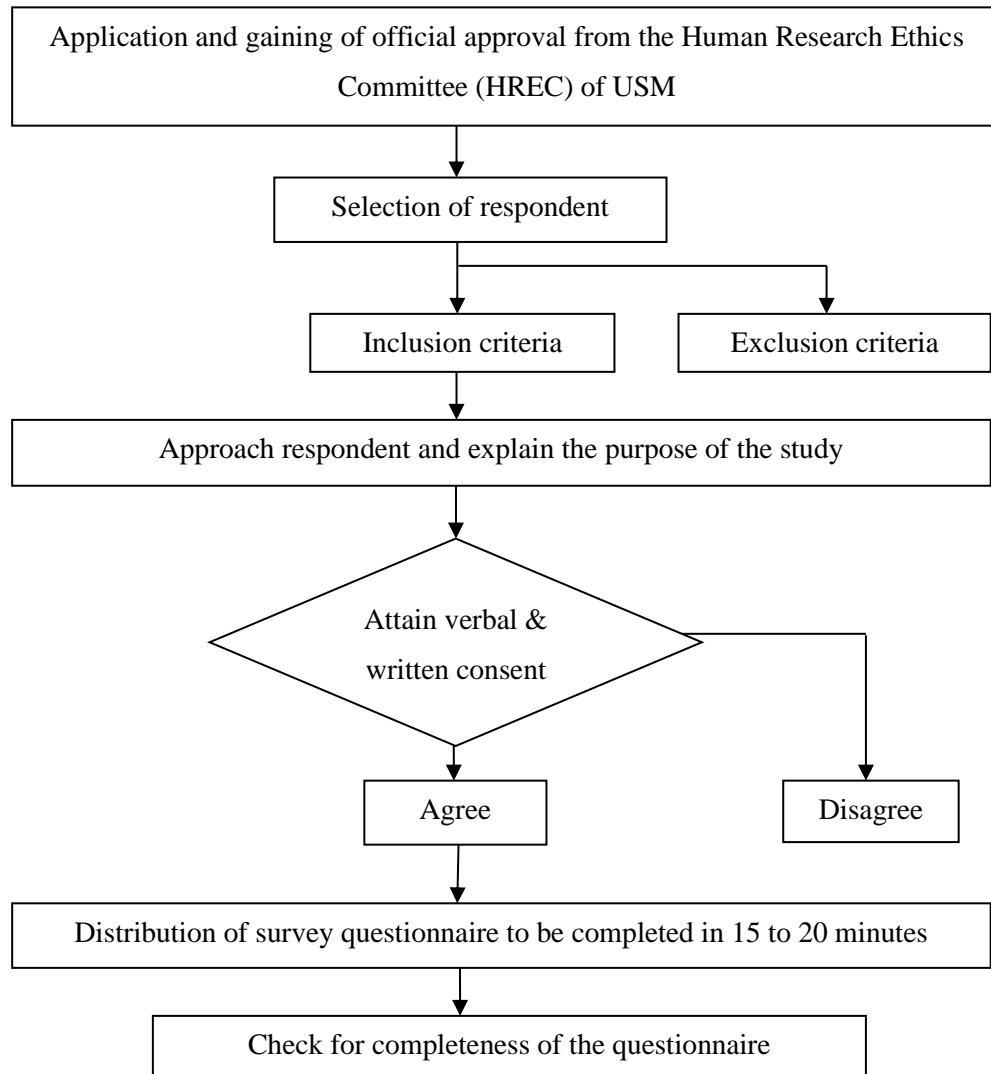
3.10.1 Flow Chart of Data Collection

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┌─────────────────────────────────────────────────────────────────────┐
│ Application and gaining of official approval from the Human Research  │
│                      Ethics Committee (HREC) of USM                    │
└─────────────────────────────────────────────────────────────────────┘
                                  │
                                  ▼
                   ┌──────────────────────────┐
                   │  Selection of respondent  │
                   └──────────────────────────┘
                         │              │
                         ▼              ▼
              ┌──────────────────┐  ┌──────────────────┐
              │ Inclusion criteria│  │ Exclusion criteria│
              └──────────────────┘  └──────────────────┘
                         │
                         ▼
┌─────────────────────────────────────────────────────────────────────┐
│      Approach respondent and explain the purpose of the study          │
└─────────────────────────────────────────────────────────────────────┘
                                  │
                                  ▼
                        ◇ Attain verbal &
                          written consent ◇ ──────────┐
                                  │                    │
                                  ▼                    ▼
                           ┌──────────┐         ┌──────────┐
                           │  Agree   │         │ Disagree │
                           └──────────┘         └──────────┘
                                  │
                                  ▼
┌─────────────────────────────────────────────────────────────────────┐
│  Distribution of survey questionnaire to be completed in 15 to 20 minutes │
└─────────────────────────────────────────────────────────────────────┘
                                  │
                                  ▼
              ┌───────────────────────────────────────┐
              │  Check for completeness of the questionnaire │
              └───────────────────────────────────────┘
```

Figure 3.1: Flow Chart of the data collection method

3.11   Data Analysis

The Statistical Package for Social Sciences Software (SPSS) software of version 27.0 with descriptive and inferential statistics was used to analyze the data collected. The data collected was screened and checked to ensure its accuracy and to identify any data errors, outliers, or data inconsistencies.

Descriptive statistics were used to analyze the level of knowledge and stigma. Frequencies, percentages, and means were presented in the descriptive statistics analysis for categorical variables of level of knowledge (yes, no, no idea) and level of stigma (strongly agree, agree, no idea, disagree, strongly disagree).

A contingency table was generated, and inferential analysis was conducted to assess the correlation between variables. Pearson's correlation coefficient (r) was used to demonstrate the correlation between the variables for specific objective 3 (HIV-related knowledge and stigma). The significance level of all tests was set at $\alpha=0.25$, and null hypotheses were rejected if the p-value < 0.05.

3.12   Ethical Consideration

The Human Research Ethics Committee (HREC), USM, was consulted for permission to carry out the study. Eligible responders were educated about the aim of the study, the procedures, potential risks, and the advantages of participating through the participant information sheet. After the research study's clarification procedure, informed consent was sought. (Appendix C and D). The permission to use the original questionnaire had been approved by original author through email (Appendix B).

When solicited for this study, participants had the choice of volunteering for or rejecting participation. Additionally, individuals were free to stop their studies at any moment without