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Knowledge, Attitudes and Practices of HIV Post-Exposure Prophylaxis Among Registrars at the University of the Witwatersrand

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements For the Degree of Masters in Medicine.

Johannesburg, November 2021

DECLARATION

I, Sipho Nkandlalalana, declare that this research report is my own unaided work. It is being submitted for the degree of Master of Medicine (MMed) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.



[Signature of Candidate]

12th Day of April 2022

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PUBLICATIONS AND PRESENTATIONS ARISING FROM THIS RESEARCH REPORT

The author intends to publish this research report in a peer reviewed journal.

ETHICS CLEARANCE

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M200931

Permission was obtained from the Academic Head of Internal Medicine, Dr Peter , at the University of the Witwatersrand, Department of Internal Medicine, Chris Hani Baragwanath Academic Hospital and Medical Advisory Committee.

ABSTRACT

Introduction:

According to the World Health Organization (WHO), 90% of occupational, percutaneous exposure to blood borne infections occur in developing countries. Doctors under training are highly susceptible to occupational hazards such as needle stick injuries. HIV Post-Exposure Prophylaxis (PEP) refers to administering antiretroviral drugs as an emergency measure after exposure to HIV infection to reduce its acquisition. This study assessed the knowledge, attitudes and practices of HIV PEP among registrars in all disciplines at the University of the Witwatersrand in South Africa.

Methods:

In this cross-sectional study, a structured questionnaire with self-administered questions was used. Convenience sampling was used to select first to final year registrars across all clinical specialities within the University of the Witwatersrand.

Results:

The majority (87.7%) of the respondents had an above average knowledge of HIV PEP and the difference in knowledge scores across the years was not statistically significant. Participants in the study showed a positive attitude towards HIV PEP. The majority (91%) of the registrars, who were exposed, took PEP. Of those, 74.2% completed the prescribed duration of 28 days.

Conclusion:

In this study, there was an association between above average knowledge, a positive attitude towards HIV PEP and there were good practices of HIV PEP among registrars.

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KEYWORDS:

- Human immunodeficiency virus
- Post-exposure prophylaxis
- Knowledge, attitude and practices
- Registrars

CHAPTER 1:

1. INTRODUCTION

Human immunodeficiency virus (HIV) Post-exposure Prophylaxis (PEP) is defined as the consumption of antiretroviral pills as a prophylaxis following exposure to HIV infection (1). Post-exposure Prophylaxis is issued to individuals with a HIV negative status and an unknown HIV status following exposure to HIV infection (2). Other high-risk groups that are eligible for PEP include sex workers, intravenous drug users (IDUs), transgender women, men who have sex with other men (MSM), victims of sexual assault, serodiscordant couples and health care workers (HCWs). Post-exposure Prophylaxis is commenced within 72 hours after exposure to HIV infection and continued for four weeks(3, 4), with high efficacy if taken for the full prescribed duration (1). The recommended regimen includes Tenofovir **(**TDF**)** and Lamivudine (3TC) or Emtricitabine (FTC) as the preferred backbone (5). Dolutegravir (DTG) is the preferred third drug for HIV PEP (6). Lopinavi/ritonavir (LPV/r), Atazanavir/ritonavir (ATV/r), Raltegravir (RAL) and Darunavir/ritonavir (DRV/r) are used as options in certain cases (6). South Africa follows similar HIV PEP regimen recommended by the World Health Organisation, which permits the translation of these guidelines into local PEP guidelines (7) and encourages countries to incorporate these guidelines in a manner that improves compliance to HIV PEP (5). These drugs come with various side-effects such as dyslipidaemia, diarrhoea, hyperpigmentation and renal impairment, hence the importance of monitoring for drug toxicity at recommended intervals (4).

South Africa has the highest HIV burden with an estimate of 7.7 million people living with HIV infection (8). According to the World Health Organization (WHO), 90% of occupational,

percutaneous exposure to bloodborne infections occur in underdeveloped countries (9, 10), with a 0.3% probability of contracting HIV infection after transdermal exposure to HIV (11, 12).

Studies done in animals support the efficacy of HIV Post-exposure Prophylaxis when initiated early (13, 14). There are no randomised controlled trials to date looking at the efficacy of PEP in humans because it is neither ethical nor practical. HIV PEP has been available since the mid-1990s, and evidence of its efficacy has been shown in animal models (13-15). A research trial assessing HIV PEP efficacy in non-human primates, showed animals who received PEP had a 89% less probability of contracting HIV(16). This meta-analysis and systematic review looked at studies done in non-human primates. A study conducted in rhesus monkeys, showed timely initiation of effective PEP regimen can successfully prevent HIV infection (14). However this study looked at an intravaginal route of HIV exposure and PEP was given subcutaneously, whereas in our clinical setting the mode of exposure is through percutaneous or needle stick injury and route of drug administration is via oral intake which might affect PEP efficacy in humans. The lack of human trials makes it difficult to directly apply the literature from animal models to humans and to clinical practice; however through observational experiences and research studies, PEP has been shown to be associated with reduced risk of HIV acquisition (17) (18). The noticeable benefit is that early PEP initiation has increased efficacy to prevent acquisition of HIV infection (19).

Registrars are a group of health care workers commonly exposed to occupational hazards through contact with infectious materials through needle stick injuries, mucocutaneous blood exposure, and contact with specific body fluids, medical equipment and environmental surfaces contaminated with HIV (1). Adequate knowledge and guideline-based practices of HIV PEP

among registrars is important in prevention of HIV acquisition. However, there is limited data and studies assessing knowledge, attitude and practices (KAP) of PEP among registrars in our setting despite the high HIV burden. This study aims to evaluate this among registrars in the different disciplines at the University of the Witwatersrand in South Africa.

Several different studies assessing KAP of HCWs regarding PEP have been done across Africa, India and other parts of the world (2, 20-26). Among KAP studies done in African countries and in India, there is significant lack of knowledge and inadequate practices; however these studies demonstrated positive attitudes towards HIV PEP. In India dentists lacked knowledge about the PEP drug regimen (interns 48.4% and postgraduate students 43.7%) and the timing for commencement of PEP (interns 20.4% and 43.7% postgraduate (PG) students) (24). There was a varying degree of poor knowledge towards PEP in Cameroon among nurses (73.7%) (21), in Ethiopia among HCWs (83.9%) (26) and in Lagos among HCWs, where only 32% of the participants were able to name at least two PEP drugs (23). Almost all participants in India had positive attitudes (98.4% interns and 100% PG students) (24) and in Gaborone, 82.2% of the respondents also showed positive attitudes towards PEP (22). Inadequate practices of PEP were observed in Lagos (93.7%) (23) and Cameroon (81.1%) (21), with those exposed to needle stick injury not taking ART or not completing the course of PEP medication.

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The rationale for inadequate practices in Botswana was attributed to drug side-effects, poor knowledge about the duration of PEP and doubt about drug efficacy (22). In Ethiopia, other factors included fear of reprimand, uncertainty regarding the confidentiality of the results, being unaware that protocols exist for reporting and dealing with the occupational exposure, lack of support and encouragement to report (26). This demonstrates that well-designed educational programmes and counselling services are needed to improve the knowledge,

attitude and practices of HCWs. Poor knowledge and practices towards HIV predisposes registrars to a high risk of getting HIV infection. This further emphasizes the importance of assessing knowledge, attitude and practice of PEP in our setting.

2. AIM

The aim is to assess knowledge, attitudes and practices of HIV post-exposure prophylaxis amongst registrars at the University of the Witwatersrand.

2.1 Objectives

- To document the demographics of the registrars participating in the study
- To determine their knowledge, attitudes and practices regarding HIV PEP using a questionnaire
- To compare scores of knowledge on PEP by year of registrar training

3. METHODS

3.1 Study design

This was a cross-sectional, observational questionnaire based study of knowledge, attitudes and practices amongst registrars in different specialities towards HIV PEP at the University of the Witwatersrand. Data collection started on the 11th of January 2021 and was completed on the 19th of January 2021. An online survey was used to gather the data.

3.2 Study population

The study included registrars at the University of the Witwatersrand from first year to fourth year across all clinical specialities. It was a convenience sample selection of registrars according to availability and those who consented to participate in the study during the study period.

3.3 Sample size

The study sample comprised 120 registrars from various departments at the University of the Witwatersrand. Due to the Covid-19 pandemic some healthcare workers could not participate in the study during this period due to the impact and devastating effects on individual lives. The majority of the registrars were experiencing high workloads, physical fatigue and mental strain. The timing of the study fell within this period which may have influenced the registrars' interest and participation in the study.

3.4 Eligibility criteria

Inclusion criteria included all registrars at the University of the Witwatersrand in all clinical disciplines.

3.5 Exclusion criteria

Exclusion criteria included incompletely filled questionnaire responses.

3.6 Study site

The study was conducted in the School of Clinical Medicine, Faculty of Health Sciences, at the University of the Witwatersrand in South Africa.

3.7 Data collection

A structured questionnaire with self-administered questions was used, accompanied by a consent form. This questionnaire was modified from a similar study done in Botswana (22). Permission to use the questionnaire was obtained from the author (see Appendix B). An online survey was conducted using a self-administered questionnaire sent to registrars' emails to increase access to a large number of participants. This was done through communication with departmental registrar representatives, who assisted in disseminating the data collection tool by emailing fellow registrars in their respective departments. The questionnaire contained questions on demographic information including gender, age, year of the participants' training, speciality, race, knowledge (6 questions), attitude (4 questions) and practices (8 questions) in a multiple-choice format. In assessing HIV PEP, six questions were generated to grade the knowledge of registrars. Knowledge was graded as 3/6 average, 4/6 abov**e** average, 5/6 good, 6/6 very good, respectively (27). Participants were requested to complete the survey, and to submit the completed questionnaire electronically to the online data collection tool (Survey Monkey). Participants were not required to document their personal details to ensure confidentiality, with exceptions of the year of study and department in which they were training.

4. DATA MANAGEMENT AND ANALYSIS

Data was analysed with SPSS version 26. Frequency tables were used to present the overall knowledge, attitude and practice scores of the registrars. A comparative analysis of the knowledge scores was carried out based on the different levels of registrar training. This analysis was carried out by using the Kruskal-Wallis test. The Kruskal-Wallis test is a non-parametric alternative to a one-way between groups ANOVA that compares a score for three or more groups. Upon testing for the homogeneity of variance, the significance value was less than 0.05 indicating that the homogeneity of variance was violated, thus the non-parametric test (Kruskal-Wallis) was used (Table 1).

Table 1: Test of Homogeneity of Variances

Knowledge Score

Levene Statistic	**df1**	**df2**	**Sig**
2.995	3	110	0.034

5. ETHICS

Ethics for the study was sought from the University of the Witwatersrand Human Research Ethics committee and the relevant hospital authorities.

6. RESULTS

6.1 Demographic Information

A survey was administered online and 120 registrars responded. Of the 120 respondents, 60% were female and 40% were male (Figure 1). The age distribution of the respondents was categorized into three groups: 25-34 years, 35-44 years and 45-54 years. The proportion of each group was 79.2%, 17.5% and 3.3%, respectively (Figure 2).

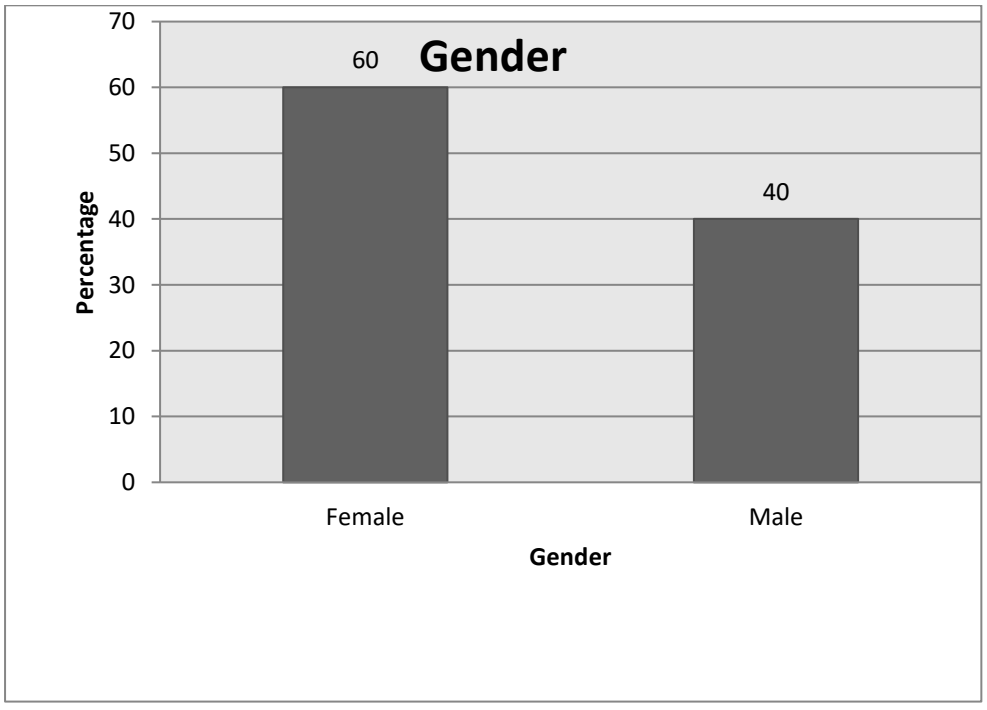


Figure 1: Gender

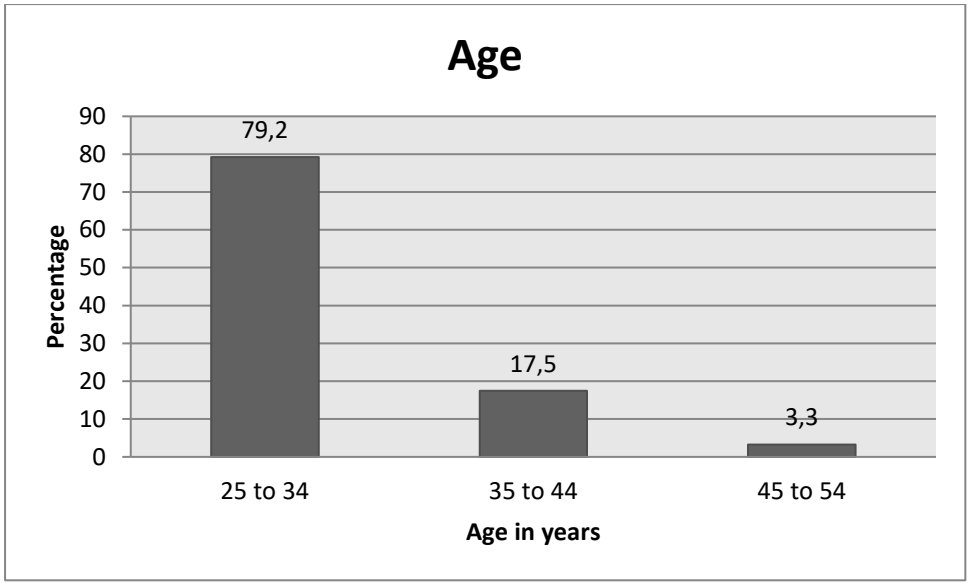


Figure 2: Age

The respondents were from various departments within the University of the Witwatersrand registrar programme, independent of their year of training. Respondents also had different years of experience as qualified doctors. Of the departments, 15% were from Anaesthesiology, 5.8% from Emergency Medicine, 15% from General Surgery, 40% from Internal Medicine, 10% from Obstetrics and Gynaecology, 0.8% from Orthopaedics, 8.3% from Paediatrics, 0.8% from Surgical subspecialties, 2.5% from Urology and 1.7% from other departments (Figure 3). Respondents were from each of the years of registrar training: 1st year (17.5%), 2nd year (29.2%), 3rd year (29.2%) and 4th year (24.2%) (Figure 4). In terms of experience, 37.5% of the respondents had qualified as doctors for between 4 to 6 years, 42.5% had qualified as doctors for between 7 to 9 years and 20% had been qualified for more than 10 years (Figure 5).

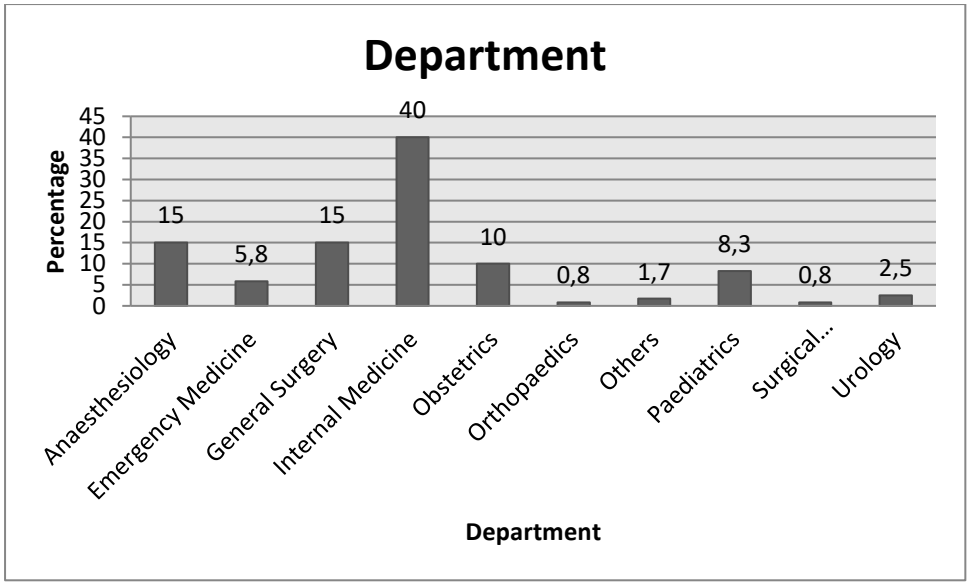


Figure 3: Departments

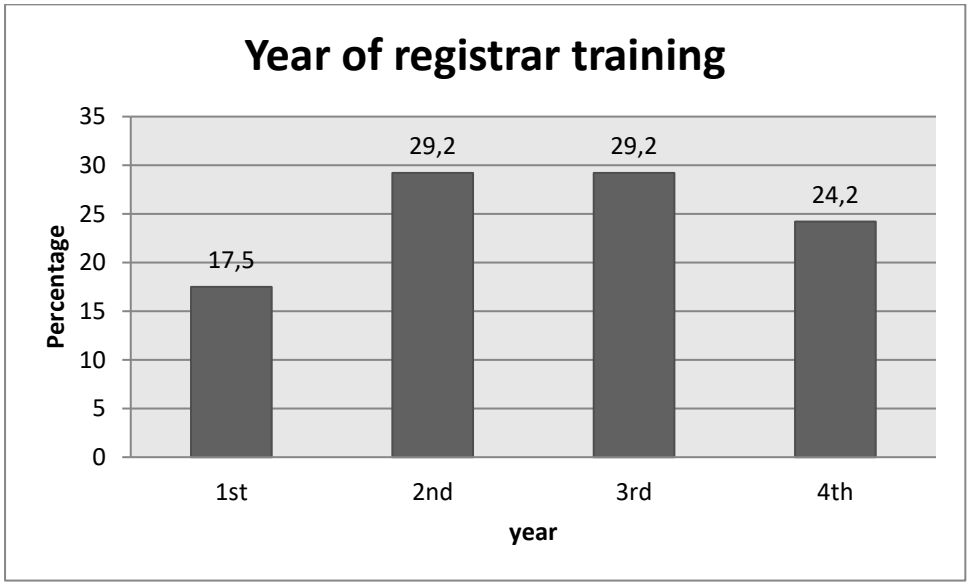


Figure 4: Year of registrar training

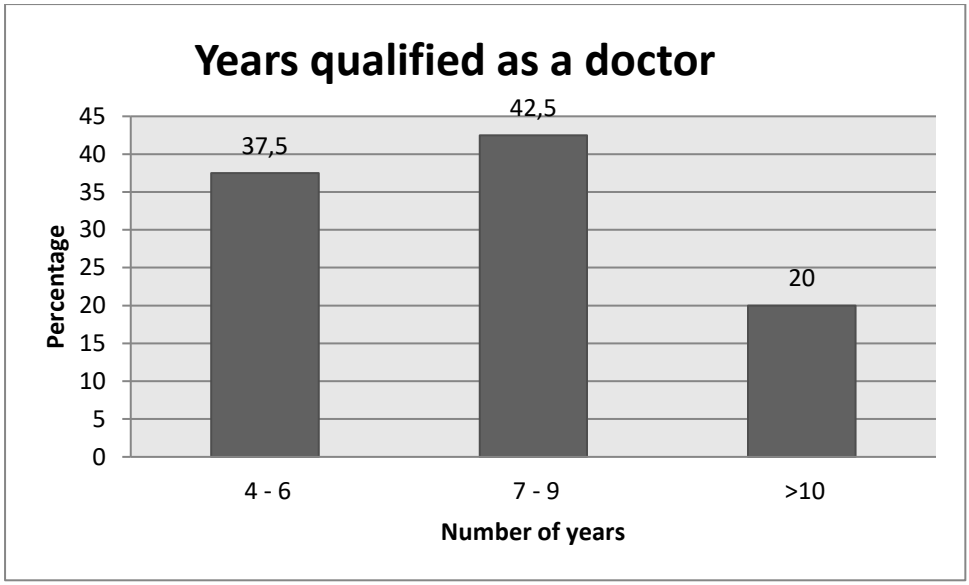


Figure 5: Years qualified as a doctor

6.2 Knowledge

To assess the level of knowledge among registrars at the University of the Witwatersrand regarding PEP, registrars answered 7 questions. Of the 120 respondents to the survey, 114 (95%) answered this section. Due to the ambiguity of questions 10 and 11, both of which assessed knowledge of the PEP regimen, only 6 questions were considered in the analysis of knowledge. The majority (87.7%) of the respondents scored above 3, indicating an above average knowledge of PEP.

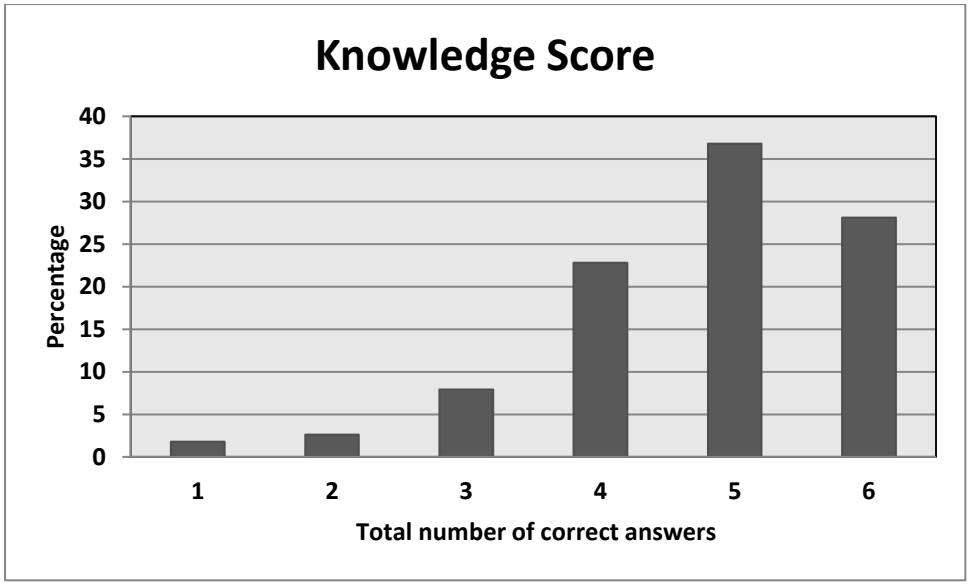


Figure 6: Knowledge Score

The table below provides a summary of the manner in which registrars answered the questions on knowledge;

Table 2: Knowledge of HIV PEP among the registrars (n=114)

Question	Frequency	Percentage
When should PEP be given?		
For any needle stick injury in the workplace	8	7
When the HIV status of the source patient is unknown	5	4.4
When the patient is known to be HIV positive	10	8.8
When the source patient is high risk for HIV seropositivity	1	0.9
All of the above	90	78.9
In cases of delays in taking PEP, what is the acceptable maximum duration?		
12 hours	12	10.5
24 hours	11	9.6
48 hours	8	7
72 hours	83	72.8
When is the best recommended time to start PEP?		
Within 1 hour of exposure	77	67.5
Within 6 hours of exposure	19	16.7
Within 12 hours of exposure	7	6.1
Within 72 hours of exposure	11	9.6
What is the effectiveness of PEP?		
60-70%	7	6.1
80-100%	95	83.3
100%	12	10.5
What is the recommended duration of PEP?		
28 days	114	100
What is the ideal HIV PEP regimen following needle stick injury?		
One drug regimen	5	4.4
Two drug regimen	29	25.4
Expanded 3 drug regimen	75	65.8
Not sure	5	4.4

Table 3: Knowledge Mean Ranks

Department	N	Mean Rank
Anaesthetics	16	57.31
Internal Medicine	46	71.29
Others	2	54.25
General Surgery	17	48.32
Emergency Medicine	7	57.07
Surgical sub/specialities	1	27.50
Obstretics	12	39.17
Urology	3	27.17
Paediatrics	10	45.00
Total	114	

Test Statistics

Knowledge

Kruskal-Wallis H	19.458
df	8
Asymp. Sig	.013

The p-value is less than 0.05 indicating a statistically significant difference across departments in the knowledge of PEP. The mean rank indicates that the highest scores are within Internal Medicine and the lowest knowledge scores are in Urology.

Table 4: Average Knowledge score per department

Department	**N**	**Mean**
Anaesthetics	16	4.625
Internal Medicine	46	5.239
Others	2	4.5
General Surgery	17	4.47
Emergency Medicine	7	4.86
Surgical sub/specialities	1	4
Obstretics	12	4
Urology	3	3.67
Paediatrics	10	4.4
Total	114	

Knowledge Score and year of registrar training

A comparative analysis was run to determine if the difference in the knowledge score across year of registrar training was statistically significant. Table 5, below indicates the knowledge scores per year of registrar training. The statistical test that was run to compare the knowledge score across the years of registrar training was the Kruskal-Wallis.

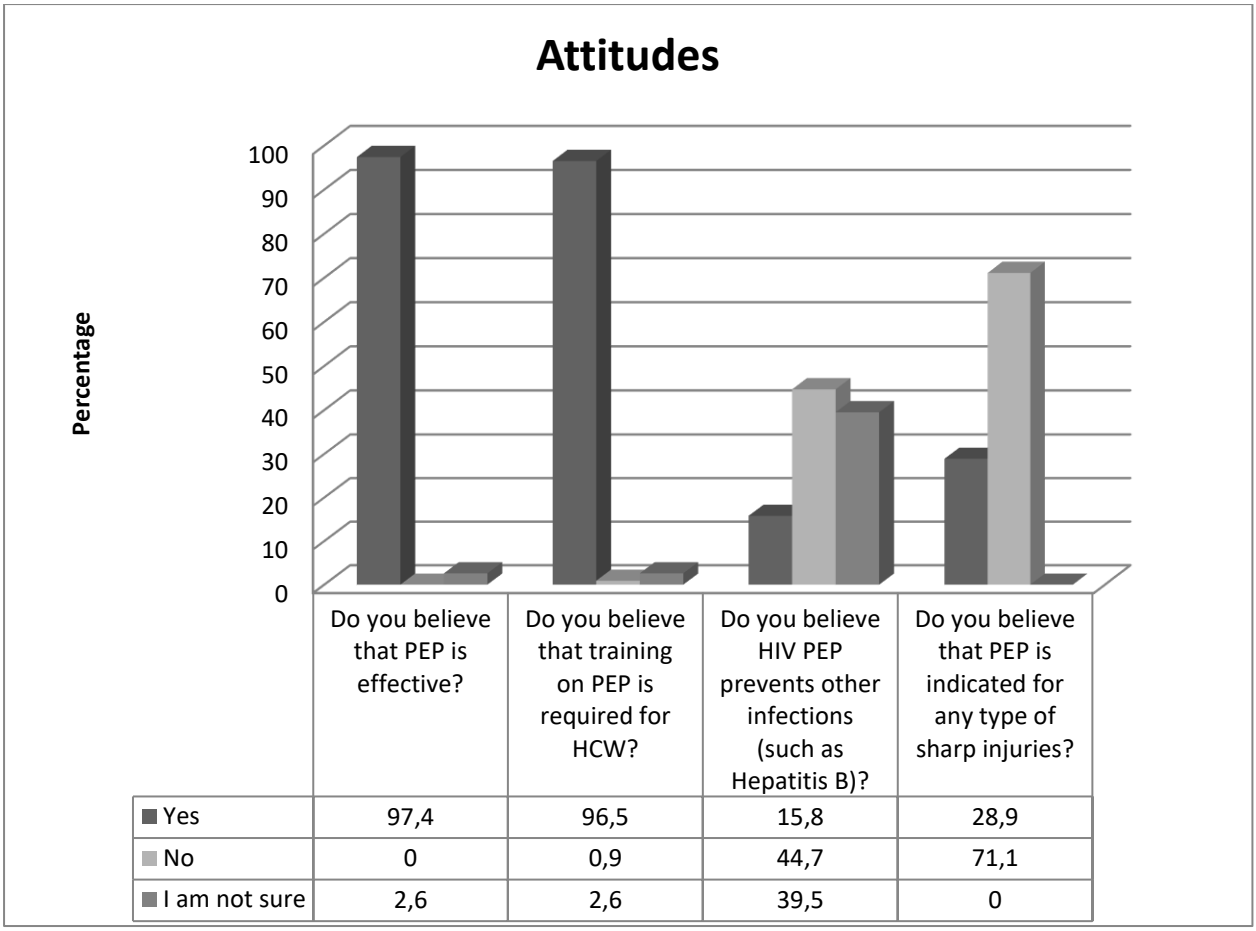
Table 5: Knowledge score per year of registrar training

		Year of registrars training				Total
		1	2	3	4	
Knowledge Score	1	0	1	1	0	2
	2	0	0	2	1	3
	3	1	1	2	5	9
	4	5	6	8	7	26
	5	11	14	9	8	42
	6	3	11	10	8	32
Total		20	33	32	29	114

The Kruskal-Wallis test revealed that the difference in the knowledge score across the years was not statistically significant (n=20: year1, n=33: year 2, n=32: year 4, n=29, year 4), Kruskal-Wallis H (3, n= 114) = 2.330, p=0.507.

6.3 Attitude

The registrars were also assessed on their attitude regarding PEP; 114 of the 120 registrars responded to this section. The majority of the registrars (97.4%) believed that PEP is effective and 2.6% indicated that they were not sure of its effectiveness. When asked whether they believed that training on PEP is required for HCW, 96.5% of the respondents indicated that it is, 0.9% of the respondents indicated that it is not and 2.6% were not sure. In response to the question regarding whether HIV PEP prevented other infections such as Hepatitis B, 15.8% indicated that they believed PEP did prevent other infections, 44.7% indicated that it did not and 39.5% indicated that they were not sure. When asked if they believed if PEP was indicated for any type of sharp injury, 28.9% indicated it was and 71.1% indicated it was not. Figure 7 below shows this:



	Do you believe that PEP is effective?	Do you believe that training on PEP is required for HCW?	Do you believe HIV PEP prevents other infections (such as Hepatitis B)?	Do you believe that PEP is indicated for any type of sharp injuries?
Yes	97,4	96,5	15,8	28,9
No	0	0,9	44,7	71,1
I am not sure	2,6	2,6	39,5	0

Figure 7: Attitudes

6.4 Practices

Of the 114 registrars who completed the section on practices, the majority, (97.4%) had been exposed to risky HIV exposure conditions such as sharp object injuries. The majority of the registrars (91%), who were exposed, indicated that they had taken HIV PEP treatment. Blood exposure from a known HIV positive patient was indicated by 64% of the registrars as a reason for taking PEP. Other reasons that were given were: contact with patients' body fluids (3%), injury from any sharp object (9%) and exposure to blood (e.g. blood splash) from a patient with an unkwown HIV status (24%). The time interval between the exposure and HIV PEP was indicated as within 1 hour of exposure by 50% and the other 50% took it within 72 hours. One

respondent did not indicate how long it took him/her to commence PEP. Of the respondents who took PEP, the majority (74.2%) managed to take it for 28 days, indicating that they completed PEP for the prescribed duration. Twenty-six percent of the registrars did not complete PEP as prescribed, with 14% of the registrars taking the treatment for between 1-7 days, and 12% taking it for 8-14 days. Reasons given by those that discontinued treatment included adverse effects, assumption that the treatment was enough, and discontinued for no particular reason. Fear of adverse effects, and a patient's negative HIV status were some of the factors given for not initiating HIV PEP.

Table 6 below summarizes these practices.

Table 6: Registrars practices of PEP

Question	Frequency (Percentage)
Have you ever been exposed to HIV risky conditions (i.e. sharp object injuries, body fluids /splashes) at the workplace? (n=114)	
Yes	111 (97.4)
No	3 (2.6)
If yes to the above, did you take PEP after exposure? (n=113)	
Yes	101 (89.4)
No	12 (10.6)
What was the reason for you to take PEP? (n=101)	
Contact with patients body fluids	3(3)
Exposure to blood from a known HIV positive patient	65 (64)
Exposure to blood from a patient whose HIV status was unknown	24 (24)
Injury from any sharp objects	9 (9)
What was the reason for not taking HIV PEP following exposure?(n=114)	
Fear of adverse effects of ARV's	5(4.4)
Patient was HIV negative	22 (19.3)
Not applicable	81 (71)
Other	6 (5.3)
What time did you commence PEP following exposure? (n=100)	
Within 1 hour of exposure	50 (50)
Within 72 hours of exposure	50 (50)
What was the duration you took PEP for? (n=101)	
1-7 days	14 (13.9)
8-14 days	12 (11.9)
28 days	75 (74.2)
What was your reason for discontinuation of PEP drugs? (n=114)	
Assumption that it was enough	11 (9.6)
Due to adverse side effects	26 (22.8)
No particular reason	5 (4.4)
Not applicable	72 (63.2)

7. DISCUSSION

The results have shown that most of the registrars from various departments at the University of the Witwatersrand have above average knowledge of HIV PEP with the majority of the respondents scoring between 60%-75%. This knowledge was independent of the year of training that the registrars were in. Many of the registrars showed a positive attitude towards PEP as the majority indicated that they believed that PEP is effective and that training of HCWs on PEP is required. In terms of practices, the majority indicated that they had commenced PEP treatment upon exposure, although some of them discontinued treatment. Part of the rationalization for discontinuation was adverse effects. This reason was also indicated by those that never began the treatment. The majority however did commence treatment and took it for the maximum days recommended.

The knowledge, attitude, as well as practices of registrars regarding HIV PEP are crucial to the management of HIV PEP within health care facilities. This study was able to assess the knowledge, attitudes and practices of HIV post-exposure prophylaxis amongst registrars at the University of The Witwatersrand. A comparison of the knowledge of registrars at different levels of training was also determined.

The mean ranks across different departments were determined with the p-value of less than 0.05 indicating a statistically significant difference across departments in the knowledge of PEP. The mean rank indicates that the highest scores are within Internal Medicine and the lowest knowledge scores are in Urology.

A comparison of HIV PEP knowlegde was ran between Internal medicine and general surgery, where the Mann-Whitney U test indicates a statistically significant difference $p < 0.05$ in the knowledge score of Internal medicine and general surgery with internal medicine having the higher scores . The comparison was also ran between internal medicine and obstetrics and gyaenecology where Mann-Whitney U test indicates a statistically significant difference $p < 0.05$ in the knowledge score of Internal medicine and obstetrics with internal medicine having the higher scores .

The health care workers under consideration in this study were registrars across various departments at the University of the Witwatersrand; these departments included Anaesthesiology, Emergency Medicine, General Surgery, Internal Medicine, Obstetrics and Gyaenecology, Orthopaedics, Paediatrics, Surgical subspecialties, Urology as well as other. The majority (40%) of the respondents were from the Internal Medicine department. Internal Medicine registrars are more exposed to managing HIV positive patients in their daily practice, and are thus more likely to prescribe antiretroviral medication and have knowledge of HIV PEP during their training. The assumption is that such an exposure could have influenced their interest in participating in this survey.

The majority of our respondents (87.7%) had a knowledge score about HIV PEP that was above average. This could be attributed to their experience as medical registrars, where they encounter and manage HIV positive patients in a HIV endemic South Africa. Since the respondents were medical registrars, their background knowledge acquired during their years of training, as well as in practice, may have contributed to their knowledge of HIV PEP. This finding is contrary to that of Aminde *et al*. (21), where 73.7% of nurses in a health district in Cameroon had poor knowledge about HIV PEP. In our study the health care workers were medical doctors who are

more exposed to managing patients with HIV infection and more likely to prescribe HIV PEP. The poor knowledge noted in Aminde *et al*.'s study could be attributed to only 12.5% of the respondents having received training in HIV PEP. In instances where poor knowledge of HIV PEP was noted, respondents had an awareness of HIV PEP through their work in the medical field but lacked the knowledge thereof (28). The study done in Botswana noted the same trend as this study, where 70.7% of the health care workers (doctors and nurses) surveyed were found to have adequate knowledge of HIV PEP (22). Although the respondents in the Botswana study (22) knew of HIV PEP, details regarding PEP regimens, when to commence treatment and the duration of treatment were scarcely known, whereas in this study, the respondents were knowledgeable about such details.

A comparative analysis was carried out to assess the difference in knowledge of HIV PEP across different years of registrar training. The results indicate that the difference observed was not statistically significant. This outcome is similar to findings by Karat *et al*. (24), who found no statistically significant difference in responses given by dental interns and postgraduate dental students regarding their knowledge of HIV PEP. Therefore, seniority or the level of training of HCWs does not correlate with knowledge on HIV PEP. Factors such as having enrolled for training on HIV PEP and attending seminars may be considered as major contributors to one's knowledge of PEP.

In contrast to this study which showed good knowledge score (87.7%) Ajibola *et al.* study in Lagos revealed inadequade knowledge of PEP, with only 32% of the respondents able to name at least two of the recommended drugs for PEP and only 54.0% of the respondents knew when to commence PEP following occupational exposure to HIV (23). An association between knowledge and attitude was established in a study done Barbados, where these attributes

resulted in favourable blood transfusion and donation practices amongst the participants (29). This was also evident in this study where participants demonstrated good knowledge and showed positive attitude towards training of HIV PEP. Since registrars are continuously at risk of exposure to HIV infection due to occupational exposure, a positive attitude towards HIV PEP accompanied by good knowledge is likely to prevent HIV infection once they are exposed.

South Africa has a high HIV/AIDS burden and HIV positive patients are found across all departments. Thus all HCWs irrespective of speciality, have a chance of being exposed whenever a medical procedure is being performed. These may range from minor procedures like venepuncture, insertion of intravenous lines, during surgical procedures such as caesarean sections and laparatomies. The majority of the respondents in this study (97.4%) have had HIV exposure through occupational injuries such as needle stick injuries and eye splashes during surgery. Needle stick injuries in particular have been noted as the most likely manner in which HCWs get exposed to HIV (23). In this study, those exposed (91%) reported that they had taken HIV PEP; this finding is consistent with the findings of the Botswana study where 74.8% of the respondents who were exposed took HIV PEP (22). Some studies however have reported low level of use of HIV PEP after exposure (23), with reasons stated as lack of knowledge about HIV PEP, HIV PEP unavailability within the unit or hospital, not wanting to go through the process of HIV PEP, not wanting to test for HIV infection and patients' results being negative for HIV infection (25). In this South African study, respondents showed an above average knowledge of HIV PEP and when respondents were exposed, the majority took HIV PEP. Thus knowledge of HIV PEP maybe be associated with a favourable attitude as well as encouraging use of HIV PEP.

In this study the known HIV positive status of a patient was noted by most respondents (64%) as the reason for starting HIV PEP. An unknown HIV status of a patient was the second most cited reason for starting HIV PEP. This finding is the same as in Mathewos' study (30) that was carried out in Ethiopia in which an assessment of knowledge, attitude and practices towards PEP for HIV infection among HCWs was carried out. Although the majority of the respondents took HIV PEP upon exposure, there were registrars who did not complete the prescribed duration of HIV PEP. Many studies have found that not everyone completes the treatment and the main reason is the adverse drug effects of the treatment (22, 23, 25). In this study this trend was also observed, but some of the participants stated no particular reason. This further emphasises the importance of HIV PEP education and the need to develop support structures which should be easily available to all health care workers. This will help improve adherence to PEP and will reduce the risk of HIV acquisition by HCWs.

8. CONCLUSION AND RECOMMENDATIONS

The importance of the knowledge of HIV PEP cannot be understated as the results of this study have shown that there is a correlation between the degree of knowledge that the respondents have and the attitude they hold, as well as their practices with regards to PEP. In this study, there was an association between above average knowledge, a positive attitude towards HIV PEP and good practice thereof. In historical studies where there was low level knowledge of HIV PEP, it was also found that the attitudes were unfavourable and the practices of PEP were poor. It is therefore recommended that training for HIV PEP be made available for health care workers, where the importance of completing the course of treatment is explained and emphasized, and support systems are put in place for those struggling to comply with prescribed medication due to adverse effects.

9. LIMITATIONS

The limitations of this study included the inability to gain face-to-face access to participants due to the SARS-COV2 restrictions. In addition health care workers of interest in this study were under a lot of pressure when data collection was taking place, thus impacting on their willingness to participate. There was a limited number of participants from departments other than Internal Medicine, which made it difficult to compare Knowledge, Attitude and Practices of HIV PEP among different departments.

Data collection through an online survey tool is participant dependent and the rate of participation was unpredictable.

10. GANTT CHART

	Oct Dec 2019	Jan Mar	Apr May	Jun	Jul Dec	Jan	Feb April	May Sept 2021
Literature review								
Preparing Protocol								
Protocol								
Assessment								
Ethics Application								
Collecting Data								
Data analysis								
Writing up thesis								
Writing up paper								

11. FUNDING

None

12. CONFLICT OF INTEREST

None

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APPENDIX A- DATA COLLECTION TOOL

DATA COLLECTION TOOLS AND DATA DICTIONARY

Questionnaire for the study on "The knowledge, attitude and practices of registrars regarding HIV post exposure prophylaxis in the University of The Witwatersrand, South Africa''

This is a survey to assess KAP of HIV PEP amongst registrars at university of the Witwatersrand.

Please answer all the questions as best as you can and remember that all answers are anonymous. Please tick the correct answer (s)

Section A: DEMOGRAPHIC DATA

1. Age

2. Gender □ Male □Female

3. Department □ Internal Medicine □Emergency medicine □Surgery □Obstetrics and gynaecology □Paediatrics □orthopaedics □urology □anaesthesia □surgical spec □others

4. Year of registrar training

5. Year of under graduate qualification

Section B KNOWLEDGE

5. When should PEP be given?

□When the source patient is high risk for HIV

□When the patient is known to be HIV positive

□When the HIV status of the source patient is unknown

□ for any needle stick injury in the work place

6. In cases of delays in taking PEP, what is the acceptable maximum duration?

□12 hours

□24 hours

□48 hours

□72 hours

7. When is it best recommended time to start PEP?

□Within 1 hour of exposure

□Within 6 hours of exposure

□Within 12 hours of exposure

□Within 72 hours of exposure

8. What is the effectiveness of PEP?

□100%

□80-100%

□60-70%

□30-50%

9. For how long should the drugs be taken?

□For 28 days

□For 40 days

□For 6 months

10. What is the ideal HIV PEP regimen following needle prick injury?

□One drug regimen

□Two drug regimen

□Expanded three drug regimen

□Not sure

11. Which of the following drugs are used in PEP (multiple answers are acceptable)

□Zidovudine

□Co-amoxyclav

□Tenofovir

□Azithromycin

□Lamivudine/ Emtricitabine

□Stavudine

□Dolutegravir/ Raltegravir

□Lopinavir/ Atazanavir/ ritonavir

□Darunavir

Section C: ATTITUDE AND PRACTICES

12. Do you believe in the effectiveness of PEP?

□Yes

□No

□ I am not sure

13. Do you believe that training of PEP is required to HCWs?

□ Agree

□ Disagree

□ Maybe

14. Do you believe HIV PEP to prevent other infections (Hepatitis B & C)?

□Agree

□Partially agree

□Disagree

15. How do you see the saying that, "PEP is indicated for any type of sharp injuries"?

□Agree

□Disagree

16. Have you been exposed to HIV risky conditions (i.e. sharp object injuries, body fluids splashes) at the workplace?

□Yes

□No

□I don't know

17. Did you take PEP after exposure?

□Yes

□No

18. What is the reason you took PEP?

□Exposure to blood from known HIV positive patient

□Exposure to blood from patient whose HIV status is unknown

□Injury from any sharp objects

□Contact with patient body fluids

19. What is the reason for not taking HIV PEP?

□Patient was HIV negative

□Because of adverse side effects of ARV's

20. What time you commenced PEP?

□Within 1 hour of exposure

□Within 72 hours of exposure

□Within 2-6 hours of exposure

□Within 6-10 hours of exposure

21. What is the duration you took PEP?

□1-7 days

□8-14 days

□28 days

22. Did you complete the prescribed drugs for PEP?

□Yes

□No

23. What was your reason for discontinuation of PEP drugs?

□Fear of adverse side effects

□Assuming that it was enough

□No particular reason

Thank you for participating in this survey

APPENDIX B- DATA COLLECTION TOOL PERMISSION LETTER

Gmail

Sipho Nkandlalalana <nkandlalalanasipho@gmail.com>

permission letter

Tenego Tenego <tenego.tenego@yahoo.com> Tue, Jul 28, 2020 at 11:18 PM
To: Sipho Nkandlalalana <nkandlalalanasipho@gmail.com>

Dear Dr Nkandlalalana

I acknowledge that I have received a request to use a questionnaire tool from our research.
Kindly feel free to use the questionnaire.
All the best in your research and i will be looking forward for your findings

Kind regards
Dr Tenego Tenego
[Quoted text hidden]

APPENDIX C- PROTOCOL APPROVAL

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172076

Reference: Mrs Sandra Benn
E-mail: sandra.benn@wits.ac.za

06 January 2021
Person No: 2300021
PAG

Dr S Nkandlalalana
2 Sturdee Avenue
Rosebank
2196
South Africa

Dear Dr Sipho Nkandlalalana

Master of Medicine in Internal Medicine: Approval of Title

We have pleasure in advising that your proposal entitled *SURVEY OF KNOWLEDGE, ATTITUDES AND PRACTICES OF HIV POST EXPOSURE PROPHYLAXIS AMONG REGISTRARS AT THE UNIVERSITY OF THE WITWATERSRAND: A QUESTIONNAIRE BASED CROSS SECTIONAL STUDY* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

APPENDIX D-ETHICS APPROVAL

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

R14/49 Dr Sipho Nkandlalalana

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M200931

NAME: (Principal Investigator)	Dr Sipho Nkandlalalana
DEPARTMENT:	Health Sciences Wits University
PROJECT TITLE:	Knowledge, attitudes and practices of HIV post exposure prophylaxis among registrars at the University of the Witwatersrand
DATE CONSIDERED:	02/10/2020
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Dr M. Tsitsi
APPROVED BY:	Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	01/12/2020

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions.Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.** The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in **October** and will therefore be due in the month of **October** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature _____ Date _____

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

APPENDIX E- SUPERVISORS APPROVAL

CHRIS HANI BARAGWANATH ACADEMIC HOSPITAL – UNIVERSITY OF THE WITWATERSRAND
DEPARTMENT OF MEDICINE ☎ +27 11 933 2040 • 🖷 +27 11 938 1454 • ✉ P.O. Bertsham, 2013 • jean.johnstone@wits.ac.za

27 July 2020

Postgraduate Office
Examinations Department

re: **DR. S. NKANDLALALANA**

This is to certify that I am happy that all corrections has been done as requested, on the MMed Dissertation of Dr. Nkandlalalana titled: "Survey Of Knowledge, Attitudes And Practices Of Hiv Post Exposure Prophylaxis Among Registrars At The University Of The Witwatersrand: A Questionnaire Based Cross Sectional Study".

Yours sincerely,

DR. J.M.L. TSITSI
Head: Department of Medicine

APPENDIX F- DEPARTMENT APPROVAL

Signatures:
NKandlalana Sipho

Date: 24/08/2020 Applicant's Signature:

WHO WILL SUPERVISE THE PROJECT? (Where applicable)

Name JML Matsi Department: Internal Medicine

Telephone No: 0824144489 Email: merikatsitsio@gmail.com

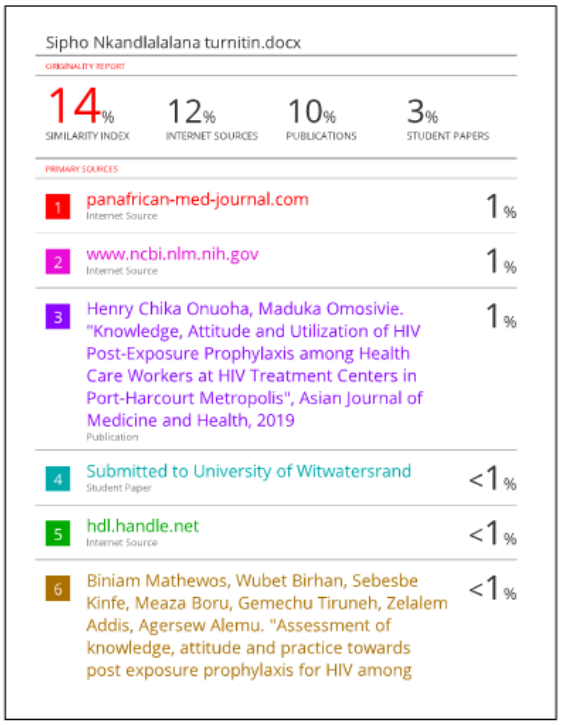
Signature: Date: 25/08/2020

HEAD / RESEARCH COORDINATOR OF DEPARTMENT / ENTITY IN WHICH STUDY WILL BE CONDUCTED (Where applicable) (Wits Students Academic HOD must sign)

Name: Dr. AJ Peter Department / Entity Internal Medicine
Tel No: 0119338940 Email: alanpeter@ymail.com

Signature: Alan Peter Date: 25/8/2020.

APPENDIX G- TURN-IT-IN REPORT



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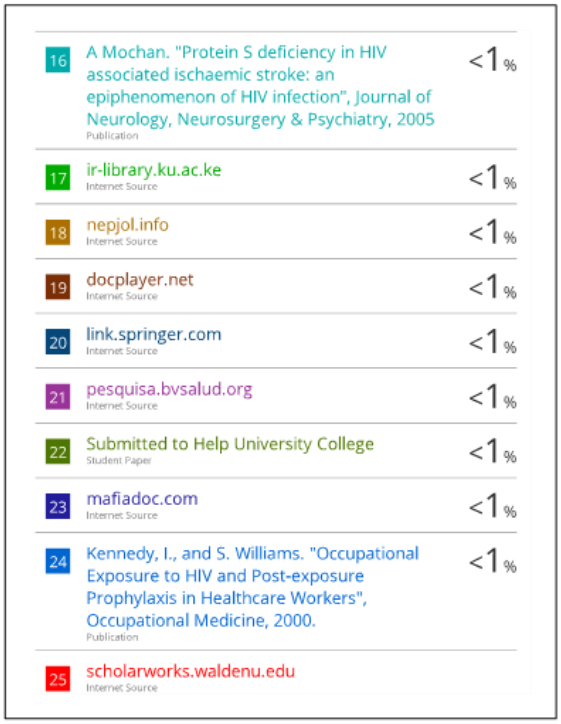

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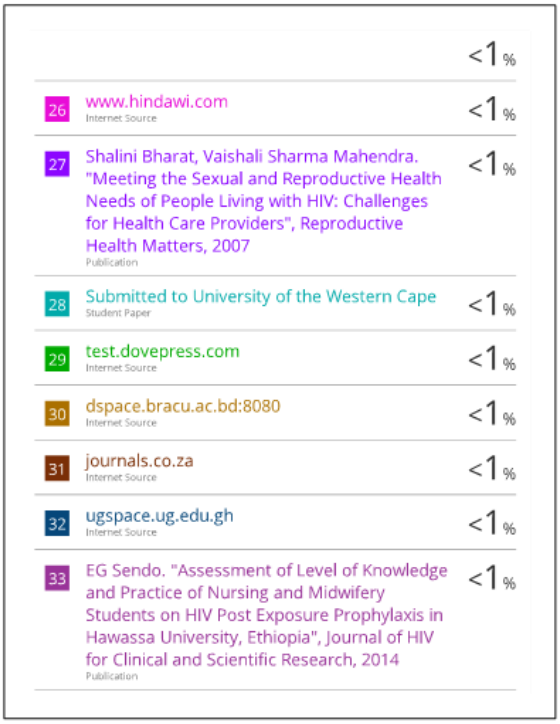

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