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ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICE OF POST-EXPOSURE PROPHYLAXIS AMONG HEALTHCARE WORKERS IN A TERTIARY HOSPITAL, SOUTH-EAST, NIGERIA

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ABSTRACT

Knowledge, attitude, and practice of post-exposure prophylaxis (PEP) among healthcare workers (medical doctors, nurses, medical/clinical students, and medical laboratory scientist) at Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH) were investigated. It was a descriptive, cross sectional study using semi structured questionnaires (217) which were distributed to the healthcare workers. Ethical approval was obtained. Results showed that 121 (55.76 %) of the participating healthcare workers were medical (clinical) students, 32 (14.75 %) were medical doctors, 45 (20.74 %) were nurses, 10 (4.61 %) were pharmacists, and 9 (4.15 %) were laboratory scientists. Males were 136 (62.67 %) while females were 81 (37.33 %). Those with 10 or more years of experience were 27 (12.44 %), 34 (15.67 %) had 5 to 9 years' experience, while 156 (71.89 %) had less than 5 years' experience. 78 (35.9%) of the 217 respondents were exposed to HIV. The result of the study showed a high awareness and positive attitude towards PEP. The practice of PEP was fair and needs improvement. PEP services and information should be made available to healthcare workers. This will help address the issue of occupational exposure to HIV and other blood-borne pathogens.

KEYWORDS: HIV, healthcare workers, practice, PEP, questionnaires.

INTRODUCTION

Occupational human immunodeficiency virus (HIV) transmission is very rare. Healthcare workers who are exposed to a needle stick involving HIV-infected blood at work have 0.23 % risk of becoming infected.[1] This means that 2.3 of every 1,000 such injuries, if untreated will result in infection. Risk of exposure due to splashes with body fluids is thought to be near zero even if the fluids are overtly bloody. Fluid splashes to intact skin or mucous membranes are considered to be extremely low risk of HIV transmission, whether or not blood is involved.[1]

However, certain conditions increase the risk of infections from blood-borne pathogens. These include: absence of fundamental personal protection equipment, poor adherence to safety procedures, excessive use of injectable therapy, and needle stick or sharp injuries.[2]

Post exposure prophylaxis entails a series of medical cum psychological services, encompassing first aid, risk assessment, counselling, relevant laboratory investigations– with consent of the exposed and the source – with procurement and administration of a 28 day course of antiretroviral therapy and adequate monitoring.[3] The efficacy of post exposure prophylaxis though difficult to quantify, has evidently been suggested to amount to 81% of reduction in HIV transmission among healthcare workers who were administered with zidovudin as PEP promptly after being exposed.[4,5]

Post exposure prophylaxis as the name implies offers an opportunity to minimise t1he risk of an exposed

individual from contracting HIV especially when initiated between 24hours to 72hours of exposure. The efficacy of PEP when appropriately administered has been reported[6] and is thus recommended for exposures to high risk sources both occupational and otherwise. Further findings showed that about 65% of healthcare workers are exposed to accidental sharp injuries during their practice time and 32% annually. This places them at a high risk of infections from blood borne diseases, including HIV.[7] Studies went further to report percutaneous injuries as the cause for 4.4% new HIV infections annually among healthcare workers.[8]

For post exposure prophylaxis to be adequately effective an appropriate combination of antiretroviral drug regimen determined after clinical evaluation of the exposed individual and exposure incident should be used. Minimal assessment data to be employed include a proper history of the exposure, HIV status of the source and the WHO clinical stage and viral load (if positive).[9] Also, the status of the exposed individual should be ascertained to ensure they test negative before commencement of the PEP.[9]

While on a 28 day course of HIV PEP, it is pertinent to adhere strictly to the prescription in other to avoid conditions that may render the medication ineffective thereby leading to transmission of the infection. Some of these avoidable conditions may include high risk behaviours that could expose one to the HIV infection such as sharing of sharps, unprotected intercourse, taking of other drugs that can cause drug-drug interaction with anti-retrovirals.[10]

There are several challenges to effective post exposure prophylaxis. Some of these include: limited human resources, poor compliance to the global precautions, overpopulation, and low perception of the risk and reuse of medical instruments.[11] Another challenge to post exposure management is the negligence of the healthcare workers to undergo HIV testing and counselling.[12,13] The aim of this research was to assess the knowledge, attitude, and practice of post exposure prophylaxis at Chukwuemeka Odumegwu Ojukwu University Teaching, Amaku, Awka, Anambra State. Nigeria.

METHODOLOGY

Description of Study Area

The study was conducted at Chukwuemeka Odumegwu Ojukwu University Teaching Hospital. It is one of the campuses of Chukwuemeka Odumegwu Ojukwu University. It is located in Amaku, Awka, Anambra State. Nigeria.

Study Design

This study was a descriptive, cross sectional study using semi structured questionnaires which were distributed to healthcare workers (medical doctors, nurses, medical laboratory scientists, and clinical students) of chukwuemeka Odumegwu Ojukwu University, Teaching Hospital, Amaku Awka campus from January to April, 2024. Questionnaire was pretested among 25 health workers for completeness, correctness and necessary modification. The questionnaire used as pre-test was not included in the main study.

Inclusion Criteria

- All health workers exposed to risks of being infected while working
- Medical doctors
- Nurses
- Med. lab scientists
- Pharmacists
- Medical students in clinical classes (500 level and 600 level)
- Willingness to participate.

Exclusion Criteria

- Those unwilling to participate
- Those not available at the time of the study
- All health workers that are not directly at risk of being exposed e.g. Medical health record workers, security men, accountants, administrative workers.
- Medical Student in Basic Medical science and Basic clinical classes (100 levels, 200 levels, 300 levels and 400 levels).

Study population

The study population included the health workers at Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Amaku Awka.

Sample Size Determination

Using

- $n = z^2pq/ d^2$

Where

n = desired sample size (when population is greater than 10,000

z= standard normal deviate usually set at 1.96 which corresponds to the 95% confidence level

p= proportion of the target population estimated to have a particular characteristics. If none use 50% (0.50)

$q = 1.0 – p = 1- 0.5 = 0.5$

d = degree of accuracy desired usually set at 0.05 or 0.02[14]

Therefore,

$n = 1.96^2 \times 0.5 \times 0.5 /0.05^2$

0.96/0.0025 =384

Since the sample size is less than 10,000 the final sample size will be

- $nf = \underline{n/1+(n)}/(N)$
- (*nf*) = the desired sample size when population is less than 10,000
- *n* = the desired sample size when population is > 10,000
- N= the estimate of the population size

nf = 384/1+384/500

=384/1+0.768

=384/1.768

= 217

Sample Technique
This study was carried out using multistage sampling method.

Data Collection Methods
The validity and credibility of the questionnaire was ascertained before use. For the sake of compliance, questionnaires were administered to the clinical students after their lectures during free periods and attempts were made to collect them the same day.

The Questionnaire Has Four Sections
1. Precursory section possesses description of the study as well as the informed consent and instructions on answering the questions.
2. Section A: possesses the socio demographic data.
3. Section B: evaluates the depth of knowledge of post exposure prophylaxis
4. Section C: evaluates the attitude towards PEP.
5. Section D: evaluates the practice of use of PEP

Sample Instruments
The research instrument that was used in this study was a semi-structured self-administered questionnaire.

Data Collection
The semi structured questionnaire was distributed to the respondents after seeking consent from them. The answered questionnaires were collected same day.

Data Analysis
The data obtained from the study were analysed using statistical package for social sciences (SPSS, version24). Data analysis included appropriate tables of; frequencies, percentages, proportions, mean, and diagram of relevant variables (bar charts, pie charts).

Ethical Consideration
Ethical clearance was obtained from Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Amaku, Awka. The aim of this study was explained to the participants, consents were obtained and questionnaires were distributed.

RESULTS

Section A: Socio-Demographics
A total of 217 questionnaires were administered randomly to health workers of Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka. 217 health workers responded, giving a response rate of 100%.

Figure one below shows that a total of 217 questionnaires were recovered from the field. Out of which 121 (55.76%) medical students, 32 (14.75 %) medical doctors, 45 (20.74%) nurses, 10 (4.61%) pharmacist and 9 (4.15%) lab scientists responded to the study.

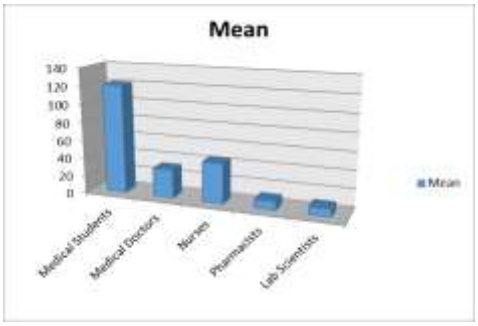

Figure 1: Healthcare Workers.

Out of the 217 respondents, 136 (62.67%) were females and 81(37.33%) were males.

Figure 2: Gender

Out of the 217 respondents, 27 (12.44%) have more than 10 years or greater than 10 years' experience, 34 (15.67%) have 5 to 9 years' experience, and 156 (71.89 %) have less than 5 years' experience.

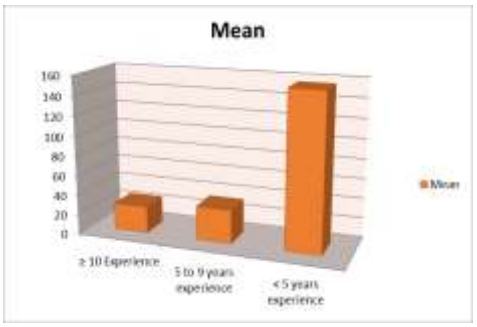

Figure 3: Years of Experience.

Section B: Knowledge of PEP
199 respondents said that they have heard about PEP which made up to 91.71% and 18 respondents said they have not heard about PEP which was 8.29%.

130 (59.91%) respondents said that they heard about PEP through school, 24 (11.1%) said that they heard it from the internet, 6 (2.76%) respondents said they read about it from books, 20 (9.22%) said they heard about it from seminars and 19 (8.76%) said they heard about it from colleagues.

75 respondents agreed that they had attended seminars on PEP which made up 34.56% of the sample population, 124 respondents said that they had not attended seminars on PEP which made up 57.14%.

60 (27.65%) respondents agreed that their reason for taking PEP was due to needle stick injury, 33 (15.21%) agreed that it was due to splashing of body fluid, 48 (22.12%) respondents agreed that they took PEP because of both needle stick injury and splashing of body fluids, 58 (26.73%) respondents agreed that it was due to other reasons.

59 (27.19%) respondents agreed that PEP should be commenced 24hrs after exposure, 12 9 (5.53%) agreed it should be commenced after 48hours, 28 (12.9%) agreed it should be after one hour, and 100 (46.08%) agreed it should be within 72 hours.

33 (15.21%) respondents agreed that PEP should be taken only for 2 weeks, 143 (65.9%) agreed that it should be taken for 4 weeks, and 23 (10.6%) agreed that it should be taken for 8 weeks.

109 (50.23%) respondents agreed that they were aware of hospital policy on PEP for HIV while 90 (41.49%) said they were not aware of hospital policy.

Section C: Attitude towards PEP

165 (76.04%) respondents agreed that training on PEP can bring behavioural changes while 34 (15.67%) did not agree 198 (91.24%) of the respondents agreed that taking PEP was necessary while 1 (0.46%) agreed that it was not. The rest of the respondents did not respond to the question.

195 (89.86%) agreed that PEP reduces the risk of acquiring HIV after occupational exposure while 4 (1.84%) did not. The rest of the respondent did not agree.

192 (88.30%) agreed that there was need for 24hr accessible PEP service centre in the hospital while 7 (3.23%) agreed that there was no need.

196 (90.32%) agreed that PEP works while 3respondents (1.38%) said that they do not believe it works.

197 (90.78%) agreed that it was important to have a PEP guideline in the hospital while 2 (0.92%) agreed that it was not.

Section D: Practice of PEP

78 (35.94%) agreed that they have been exposed to HIV risky conditions while 121 (55. 76%) said they have not been exposed and 20 (9.22%) would rather not disclose.

47.4% (37/78) said they were exposed to needle prick injury, 24.4% (19/78) said the exposure was via splashing of body fluid and 28.2% (22/78) agreed it was via both.

17.7% (13/78) said the exposure was due to lack of protective barriers, 78.2% (61/78) said it was accidental, no respondent said it was because of poor knowledge of PEP and 5.1% (4/78) said it was due to others 30.8% (24/78) said their source of exposure was positive, 57.7% (45/78) reported that their source was negative while 11.5% (9/78) said they did not know the status of the source of exposure.

76.9% (60/78) checked the status of the patient from whom they had exposure from, 23.1% (18/78) did not.

53.8% (42/78) took PEP after exposure while 46.2% (36/78) did not. However, in relation to the study population 19.35% (42/217) took PEP.

42.3% (33/78) completed their prescribed ARV drugs for PEP while 57.7% (45/78) did not.

51.3% (40/78) said they did not commence PEP after exposure because the source tested negative, 10.3% (8/78) said it was due to no PEP services, 17.9% (14/78) did not take PEP because they were worried about the side effects, 15.4% (12/78) felt it wasn't important to take and 5.1% (4/78) said it was due to personal reasons.

DISCUSSION

This study which assessed the knowledge, attitude and practice of PEP revealed that the majority of the respondents (91.7%) were aware of PEP irrespective of the source of information. Interestingly, the same percentage of respondents agreed that PEP should be commenced 72 hours post-exposure, which is in keeping with the UK Guideline for the use of HIV Post-Exposure Prophylaxis 2021 and global recommendation.[15]

144 (66%) of our respondents knew the right indications for PEP and 81.87% were aware of appropriate first aid measures in the event of exposure to HIV-contaminated body fluid. This is in contrast to the findings of the 2020 study in Bhutan which showed that 77.8% of their study participants failed to identify the indications of PEP and more than half (60.6%) were unaware of appropriate first aid measures following needle stick injury.[16] Studies have shown that the optimal duration of PEP that confers effective protection is up to 28 days (4 weeks) as effectiveness declines if taken less than 28 days.[16,17] This knowledge was demonstrated by 65.9% of our participants which was higher than the 30% and 35% awareness reported by.[16,18] In terms of the effectiveness of PEP, early initiation and adequate use including adherence have been reported to prevent transmission of infection by up to 80%,[19] and the awareness of this efficacy is a key factor in predicting acceptance and compliance among medical workers who are exposed. This study revealed that two-thirds of our respondents concur with the reported efficacy of PEP; however, this was in contrast to a 2015 study in a health district in Cameroon which reported a low percentage.[20]

Although just 50% of the respondents in this study were aware of the hospital policy on PEP for HIV, their acceptable overall knowledge of the subject was good (64.6%) which is higher than similar studies earlier

conducted in Nigeria[21,18] and other countries as earlier reported. The higher percentage of respondents in our study with knowledge of PEP and who agreed with its efficacy could potentially be due to the continued rise in regional and global awareness of its use and positive outcomes.

An even more encouraging finding from this study is the attitude of the respondents to PEP with over 85% acknowledging that the use of PEP reduces the risk of transmission and were willing to receive additional training on the subject. Moreover, the need for a 24-hour accessible PEP service center in the hospital was accepted by 88% of the respondents. This data in addition to the 197(91%) of them that acknowledged the importance of having a PEP guideline in the hospital demonstrates a strong positive attitude. This is similar to the 92.3% overall positive attitude towards PEP reported by Tshering et al.[16] in their study, but contrary to the 30.2% positive attitude by participants reported in Egypt.[22]

Despite a significantly high percentage of respondents in our study with good knowledge and positive attitudes towards PEP, the same cannot be said about their practice. Forty-two (19.35% of the sample population) received PEP, while 36 (16.59%) did not. This is because unlike a vaccine (e.g. hepatitis B vaccine) where you encourage as many healthcare workers as possible to take whether likely exposed or not, PEP is mainly for those exposed. In our study 78 (35.9%) respondents were exposed and a little above half of them (53.8%) took PEP after exposure. The course of the PEP medication as prescribed was completed by 42.3% (33/78) which is equivalent to 15.2% of the respondents, with the remainder not completing the course. Worthy of mention is the fact that reasons for the 78 exposed not taking PEP were: due to the source testing negative (51.3%), unavailability of PEP services (10.3%), concerns about side effects (17.9%), regarded as unimportant (15.4%), and due to other personal reasons (5.1%). These findings are lower than the Egyptian report by,[23] where 76.3% of their study participants did not take PEP after exposure and 32.5% were unaware of any existing PEP service and protocol. Furthermore,[16] reported in their study that poor PEP services in the hospital and a lack of support to report exposures were the leading causes which resulted in low uptake of PEP after exposure.[16]

To mitigate the challenges associated with acceptance and adherence to PEP such as concerns about medication side effects and unavailability of PEP services as observed in this study, there is a need to carry out proper PEP ARVPre-medication counseling and assessment. This should be done within the first 24 hours post-exposure by trained medical personnel and should include exploring and documenting existing drug allergies and setting up a follow-up post-medication plan for review and serological testing according to established guidelines.

Additionally, we recommend that the hospital management in collaboration with its occupational health department should ensure that regular seminars and awareness campaigns are conducted to further sensitize the health workers on the subject.

CONCLUSION

The global recommendations and institutional policies on PEP should be well displayed in clinics, and wards and made available to the most at-risk workers as part of employment and induction materials. Finally, regular audits should be done as quality improvement projects focused on boosting compliance by members of staff to the policies in place, and practices that encourage the reporting of exposure, acceptance of PEP and adherence.

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