

# HIV Non-Occupational Post-Exposure Prophylaxis Awareness Among Undergraduate Students of a Private University in South-West Nigeria

Elikwu CJ<sup>1,2</sup>, Ajani TA<sup>1,2</sup>, Nwadike VU<sup>1</sup>, Tayo B<sup>1</sup>, Okangba CC<sup>1</sup>, Shonekan OA<sup>1</sup>, Omeonu AC<sup>1</sup>, Faluyi B<sup>1</sup>, Enyi BI<sup>1</sup>, Nwamannah FO<sup>1</sup>, Takon EP<sup>1</sup>, Obaya FD<sup>1</sup>, Paul AO<sup>1</sup>, Coker AO<sup>1</sup>

<sup>1</sup> Department of Medical Microbiology, Faculty of Basic Clinical Sciences, Ben Carson College of Health and Medical Sciences, Babcock University, Ilishan-Remo, Nigeria.

<sup>2</sup> Department of Medical Microbiology, Babcock University Teaching Hospital, Ilishan-Remo, Nigeria.

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## Abstract

**Objectives:** The Human Immunodeficiency virus causes an infection of public health importance with about 71% of the global burden in Sub-Saharan Africa. In Nigeria, 3.2 million people are living with HIV, and 838,000 - 1.3 million of the cases are found among youths. Although Non-Occupational Human Immunodeficiency Virus (HIV) post-exposure prophylaxis (nPEP) is a safe and efficacious method of HIV prevention, it remains an underutilized prevention strategy in Nigeria. This study aimed to determine the awareness level of nPEP after sexual and other non-occupational exposure to HIV among undergraduate students of a private University.

**Methods:** A descriptive cross-sectional survey was conducted among 395 undergraduates' students. Data was collected by pre-tested structured self-administered questionnaires. Data obtained from the study were analyzed using the IBM SPSS Statistics version 20 software program and Frequency distribution tables with percentages and cross-tables were used for data description.

**Results:** About 42.8% were aware of nPEP. Most of the respondents 361 (91.4%) knew that PEP is to be given after HIV exposure risk following sexual intercourse. Although 79.5% of the respondents indicated that they will see their physician after unprotected sexual intercourse and other non-occupational exposure to HIV, the majority neither knows about nPEP initiation time, 247 (62.5%) nor its duration, 286 (72.4%).

**Conclusions:** A low level of awareness was observed among our study participants, therefore, consistent health education and promotion of nPEP will improve its awareness, uptake, and possibly reduce the prevalence of HIV among our youths.

**Keywords:** HIV, Nigeria, Non-Occupational Exposure, Post-exposure prophylaxis, Sexual intercourse, Undergraduates

**Plain English Summary:** Human immunodeficiency virus (HIV) is a public health problem that is ravaging significant proportions of the global community and more also in Sub-Sahara Africa. One of the interventions to prevent the transmission of HIV is the use of Post-exposure prophylaxis (PEP) in occupational and non-occupational (NPEP) settings. PEP is a short-term treatment with anti-HIV drugs given to uninfected persons within 72 hours following exposure to genital secretions, potentially-infected

**Correspondence:** Elikwu, Charles, J

Department of Medical Microbiology, Faculty of Basic Clinical Sciences,  
Benjamin Carson College of Health and Medical Sciences, Babcock University, Ilishan-Remo, Nigeria  
+2348101746252; [elikwuc@babcock.edu.ng](mailto:elikwuc@babcock.edu.ng)

blood, or other bodily fluid to reduce the likelihood of HIV infection either in occupational setting or through sexual intercourse or non- occupational (NPEP) settings. The study was conducted to determine the awareness level of nPEP among undergraduates after sexual and other non-occupational exposure to HIV. Pretested structured self- administered questionnaires were shared among our Undergraduates students. Participants were from across the various schools of Babcock University. A low level of awareness of HIV nPEP was observed among our study participants; consistent health education and promotion of NPEP will improve its awareness, uptake, and possibly reduce the prevalence of HIV among our youths.

## Background

Human immunodeficiency virus (HIV) is a public health problem that is estimated to affect thirty-five million people worldwide (1) and about 71% of the global burden is found in Sub-Sahara Africa (1, 2). It has also been estimated that 90 million people will eventually be infected with HIV in Africa (3). In Nigeria, 3.2 million people are estimated to be living with HIV (4) while between 838,000 and 1.3 million cases are found among the youths (5). Although prevention of exposure to HIV remains the most effective method of preventing infection (6), some studies have shown that the use of post-exposure prophylaxis (PEP) is efficacious in preventing HIV infection within 72 hours of exposure (7, 8, 9). Yet it remains an underutilized prevention strategy in Nigeria. This is true in occupational and non-occupational (nPEP) settings (10). According to the World Health Organization, PEP is a short-term antiretroviral treatment to reduce the likelihood of HIV infection after potential exposure either occupationally or through sexual intercourse (11).

The Centre for Disease Control (CDC) defines HIV PEP as taking a 28-day course of antiretroviral (ARV) drugs within 72 hours of exposure to prevent HIV infection (6). When administered specifically following non-occupational exposure like following exposure to genital secretions, potentially-infected blood, or other bodily fluid in the setting of significant sexual or injection-drug encounters with a known HIV positive individual (12), it is referred to as non-occupational post-exposure prophylaxis (nPEP) (6).

NPEP has been described as a safe, cost-effective, and practical method of HIV prevention, and every individual especially those with risky sexual behaviors should be aware of it (12). A lot of data has been published on the awareness of PEP in Occupational settings but the data on nPEP awareness is sparse especially in Nigeria (12, 13). Considering the high prevalence of risky sexual behavior and HIV infection among the youth (14), determining the awareness of NPEP with the provision of relevant information will reduce the burden of HIV among this age group.

Therefore, this study aimed to determine the awareness of nPEP after sexual and other non-occupational exposure to HIV among undergraduate students of Babcock University.

## Methods

### Study site and design

The study was conducted in Babcock University Ilishan Remo, Ogun State (6°53'32.406" N, 3°42'49.2588" E). It is a private Christian university-owned and operated by the Seventh-day Adventist Church in Nigeria. Babcock University offers Foundation studies, Pre-degree programs, Undergraduate programs, and Post-graduate programs.

This was a descriptive cross-sectional study undertaken among 395 undergraduates of Babcock University, Ilishan- Remo, Ogun State, Nigeria. The study was conducted from November 2016 till March 2017. Only single undergraduate students and those that gave consent for participation in this study were recruited for the study. Babcock University postgraduate students and married undergraduate students were excluded from the study.

### Sampling

The sample size was calculated according to the formula for determining the minimum required sample size in a prevalence study (15),  $n = N/1+N(e)^2$ , with confidence interval set at 95%,  $n$  signifies the sample size,  $N$  is the population size under study (Babcock University has an undergraduate population that was slightly below 10,000) and  $e$  is the level of precision (margin of error 5%) set at 0.05, the least sample size required for the study was 385. After correcting for missing or incomplete data entry with an expected response rate of 90% (0.9), the sample size increased to 424. However, at the time of data entry, only 395 were available for analysis. The stratified sampling technique was used for this study.

### Data collection

Data was collected using a pretested structured self-administered questionnaire and it contained 20 questions. The questionnaire assessed the knowledge and perception of post-exposure prophylaxis after sexual and non-occupational exposure to HIV. The questionnaire was grouped into 3 sections. The first section, Section A, titled Social Demographics Characteristics sought to harvest information about the participants such as the gender, age, school or college, course of study, department of study, level of study, religion and ethnicity. Section B (Awareness), sought to find out the knowledge of the participant concerning the study. This included knowledge about HIV, its transmission and prevention, knowledge of PEP. The last section, Section C, sought to know the perception of the participant concerning HIV and its prevention.

#### Data analysis

Data was inputted and analyzed using IBM SPSS Statistics version 20 software program. Frequency distribution tables with percentages and cross-tables were used to represent and described data.

## Results

### *Sociodemographic characteristics*

A total of 395 undergraduate students responded in this study. Of this, 168 (42.5%) were males and 227 (57.5%) females. The minimum age was 15years, while the maximum age was 30 years. The mean age was  $19.8 \pm 0.12$  years. One hundred and two (25.8%) were from Medical school, 15 (3.8%) from Nursing school, while the others (70.4%) were from other departments of the University. The other socio-demographic characteristics of the participants are presented in Table 1 below.

**Table 1. Socio-demographic characteristics of the respondents**

Characteristics	Frequency (f)	Percentage (%)
<b>Gender</b>		
Male	168	42.5
Female	227	57.5
Total	395	100
<b>Religion</b>		
Christian	365	92.4
Muslim	26	6.6
African Traditional Religion	0.0	0.0
Total	395	100
<b>Ethnicity</b>		
Yoruba	201	50.9
Igbo	115	29.1
Hausa	14	3.5
Others	65	16.5
Total	395	100
<b>School</b>		
Benjamin Carson School of Medicine	102	25.8
School of Science and Technology	26	6.6
School of Computing and Engineering Science	25	6.3
School of Education and Humanities	31	7.8
School of Law and Security studies	43	10.9
School of Nursing	15	3.8
School of public and Allied Health	19	4.8
School of Management Science	73	18.5
Veronica Adeleke School of Social Science	61	15.4
<b>Total</b>	<b>395</b>	<b>100</b>

### *Knowledge of HIV, Its modes of transmission and Its Preventive Strategies*

Almost all our respondents were aware of HIV, while (5.3%) had not heard about HIV. Almost all the respondents, 96.5% knew the modes of HIV

transmission while only 3.5% did not. Among those who knew the modes of transmission of HIV, 94.6% believed that sexual intercourse is the dominant mode of HIV transmission, while other non-occupational HIV transmissions methods like

getting a haircut (66.4%), pedicuring/Manicuring (56.7%), and sharing of needles or sharp objects

(91.6%) were represented. The other outcomes are presented in Table 2 below.

**Table 2: Knowledge of HIV and Its modes of transmission**

Questions	Frequency (f)	Percent (%)
<b>Have you heard of HIV</b>		
Yes	374	94.7
No	21	5.3
Total	395	100
<b>Do you know the modes of transmission of HIV</b>		
Yes	381	96.5
No	14	3.5
Total	395	100
If yes (N=381)		
Sexual intercourse	361	94.8
Hugging	9	2.4
Shaking hands	10	2.6
Hair cut at the saloon	253	66.4
Pedicuring/Manicuring	216	56.7
Sharing needles or sharps	349	91.7
Pregnancy and lactation	272	71.4
Touching common objects touched by an infected person	36	9.5
Sharing of toothbrushes with an infected person	237	62.2
Sharing of cutleries with an infected person	120	31.5

Multiple responses were allowed

The majority of the respondents (95.4%) knew how HIV can be prevented; only 4.6% did not. Among respondents' choices of perceived prevention strategies, the use of condoms (84.3%) and avoidance of sharing of hair clippers and other sharp objects (86.6%) were high, while the use of antiviral drugs (nPEP) came last, (30.1%). Only a few of the respondents, 30/395 (7.6%) had ever utilized post-exposure prophylaxis after an

exposure to HIV, while the majority, 365/395 (92.4%) had not used HIV PEP. Most (78.4%) of them had not used post-exposure prophylaxis before because they have not been exposed to HIV, while 21.9% claimed they have not been informed about nPEP before. Only five (1.4%) of these respondents had not utilized nPEP due to lack of support and encouragement and another eight (2.2%) due to fear of stigma and discrimination. Refer to Table 3 for details.

**Table 3: Knowledge of HIV and Its Preventive Strategies**

Questions	Frequency (f)	Percentage (%)
<b>Do you know HIV can be prevented?</b>		
Yes	377	95.4
No	18	4.6
Total	395	100
If yes (N=377)		
Use of condom	333	88.3
Avoiding hugging	5	1.3
Avoiding of shaking of hands	8	2.1
Personal manicure/pedicure kit	280	74.3
Avoid sharing of hair clippers and other Objects that can easily spread infections	342	90.7
Use of antiviral drugs	119	31.6
<b>Have you used post-exposure prophylaxis after exposure to HIV?</b>		
Yes	30	7.6

No	365	92.4
If No why?		
Haven't been exposed to HIV before	286	72.4
Have not been informed of one	80	20.3
Lack of support and encouragement	5	1.3
Fear of stigma and discrimination	8	2

**Awareness level of the respondents about nPEP for HIV**

About 42.8% of our respondents were aware of nPEP for HIV, while the majority, 57.2% were not aware of nPEP. Out of those who were aware of nPEP, 51.5% obtained the information from School and Hospital. Most of the respondents, 91.4% knew that PEP is to be given after HIV

exposure risk, following sexual intercourse. Although 79.5% of the respondents indicated that they will see their physician after unprotected sexual intercourse and other non-occupational exposure to HIV, the majority neither knew PEP initiation time (62.5%) nor its duration (72.4%). This is further illustrated in Table 4 below.

**Table 4: nPEP awareness, Initiation time and Duration of Therapy**

Questions	Yes	%	No	%
Have you heard of Post-exposure prophylaxis to HIV after sexual intercourse or non-occupational exposures (sex, blood transfusions, etc.)	169	42.8	226	57.2
<b>If Yes, Source of information (N= 169)</b>				
Hospital	87	51.5	82	48.5
School	87	51.5	82	48.5
Seminars	46	27.2	123	72.8
Family	30	17.8	139	82.2
Friends	30	17.8	139	82.2
Internet	43	25.4	126	74.6
Other sources	21	12.4	148	87.6
<b>Initiation time for NPEP</b>				
Within 72 hours of exposure	20	5.1	375	94.9
After 72 hours of exposure	117	29.6	278	70.4
After 2 days of exposure	11	2.8	384	97.2
I don't know	247	62.5	148	37.5
<b>Duration of nPEP</b>				
I don't know	286	72.4	27.6	
28 days	8	2.0	387	98.0
40 days	80	20.3	315	79.7
8 months	21	5.3	374	94.7
<b>nPEP is prophylaxis with antiretroviral drugs to uninfected persons following exposure risk to the following</b>				
Sexual intercourse	361	91.4	34	8.6
Hugging	9	2.3	386	97.7
Shaking hands	10	2.5	385	97.5
Hair cut	253	64.1	142	35.9
Pedicuring/Manicuring	216	54.7	179	45.3
Injection- drug abuse	349	88.4	46	11.6
Pregnancy and lactation	272	68.9	123	31.1
Touching common objects touched by an infected person	36	9.1	359	90.9
Potentially-infected blood	237	60.0	158	40.0
Sharing of cutleries with an infected person	120	30.4	275	69.6

**Discussion**

The rising number of individuals infected with HIV/AIDS in sub-Saharan Africa is a source of

concern and non-occupational exposure to HIV is a common means of infection among young people (16, 17). The knowledge of the awareness of HIV prophylaxis among undergraduates was low compared to the knowledge of HIV infection itself. Ensuring adequate awareness of HIV post-exposure prophylaxis among young people is vital to limiting and preventing the spread of HIV. A Systematic Review of research evidence and practice of HIV non-occupational post-exposure prophylaxis in Nigeria (17) highlights the paucity of research evidence on nPEP use in Nigeria, especially among young people. Hence, our study was designed to determine the awareness level of undergraduate students of Babcock University to HIV nPEP because young adults are known to be more involved with risky sexual behaviors (18, 19). In this study, we recorded about 42.8% awareness level of undergraduate students to nPEP. This was lower than 89% reported among Medical students in Cameroun (20), 67.1% reported among Nursing and Midwifery students in Ethiopia (21), and 20% among Pharmacy students in Malaysia (22). The lower prevalence observed in our study may have due to the heterogeneity of our study population compared to the homogenous study population of the other studies involving only Medical and Nursing students; though, this was not observed in the Malaysian study. However, the prevalence reported in our study was also lower than those reported by previous studies among Health care workers in Nigeria (23, 24, 25). The differences in the study populations assessed explains the disparity observed, as there is a paucity of reports on nPEP among young adults in Nigeria, our study could only compare with similar studies among healthcare workers.

The majority of the students were not aware of the initiation time and duration of nPEP and this means little or no knowledge of nPEP among the participants. Findings from this study indicate that very little has changed concerning awareness level and utilization of nPEP among young adults in Nigeria. There is a general lack of awareness among young people about PEP and lack of knowledge of where to access PEP when needed (16, 20). This finding aligned with reports from a 2017 National health survey, which showed that only 28.6% of young people aged 15-24 could correctly identify ways of preventing sexual transmission of HIV (26).

This raises a cause for concern because young people in Nigeria are among the most vulnerable group due to several reasons including their

likelihood to engage in risky sexual behavior and low HIV risk perception (27, 28, 29).

The majority of the participants (92.4%) had not taken nPEP before because they have not been exposed while 74 (20.3%) did not take because of fear and stigmatization. This is similar to findings in previous studies (20, 30). However, the majority of the students answered that risky sexual exposure is an indication for nPEP and that nPEP can reduce the transmission of HIV and that they will see their physician peradventure they get exposed. These positive attitudes observed among the study participants showed their low level of awareness of NPEP is as a result of lack of education and information on NPEP. Considering the high prevalence of HIV among the African youths (31) and for nPEP to have a population-level impact on HIV prevention, nPEP education and promotion must be intensified (17). There should be promotion and national policy on the use of HIV nPEP among this population. Our study though has its limitation, aligns with recommendation (17) of a rigorous and comprehensive research study using a large sample size be conducted on HIV nPEP in Nigeria.

### Conclusion

We have been able to identify within the limits of the study the general knowledge of HIV infection among Babcock university undergraduates. Though a high general knowledge of HIV was observed among our study participants, there is a low level of awareness of post-exposure prophylaxis among the respondents. Thus there appears to be a gap between the knowledge of HIV and the knowledge of PEP. Therefore, consistent health education and promotion of nPEP will improve its awareness, uptake, and possibly reduce the prevalence of HIV among our youths.

### List of abbreviations

BUHREC:	Babcock University Health Research Ethics Committee
CDC:	Centre for Disease Control
HIV:	Human immunodeficiency virus
nPEP:	Non-Occupational post-exposure prophylaxis
PEP:	Post exposure prophylaxis

### Declarations

#### *Ethics approval and consent to participate*

The study proposal was reviewed by and ethics approval was obtained from Babcock University

Health Research Ethics Committee (BUHREC/024/17). Written informed consent to participate in the study was obtained from all participants of this study.

#### *Consent for publication*

The authors hereby give consent for the publication of our work under the creative commons CC Attribution-Noncommercial 4.0 license.

#### *Availability of data and materials*

The data and materials associated with this research will be made available by the corresponding author upon reasonable request.

#### *Competing interests*

The authors declare that they have no competing interests.

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#### *Authors' contributions*

All authors participated in the meeting summarized by this article. CJE and TAA wrote the initial draft of the article. All other authors contributed significantly to revisions of the article. All authors approved this version of the article for publication.

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