Annals of Health Research
Volume 4, Issue No 2: 108-119
July-December 2018
DOI: 10.30442/ahr.0402-3-14

ORIGINAL RESEARCH

Comparative effects of educational intervention on knowledge, attitude and practice regarding HIV/AIDS among hospital orderlies in two Tertiary Hospitals

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Abstract

Background: HIV (Human Immunodeficiency Virus) and AIDS (Acquired Immunodeficiency Syndrome) pandemic is a major challenge that health care workers are faced with because of increased risk of infection. Despite the high risk of HIV infection among nursing assistants, less attention is currently paid to training this cadre of hospital staff to reduce the risk of infection.
Objective: To assess the effect of educational intervention on knowledge, attitude and practice about HIV/AIDS among hospital orderlies in two tertiary facilities in Ogun State, South-west, Nigeria.
Methods: The study was a quasi-experimental, non-randomized, controlled group design which was conducted in three phases; a pre-intervention evaluation, immediate post-intervention evaluation and another evaluation three months post-intervention. Hospital orderlies were recruited (108 from the Olabisi Onabanjo University Teaching Hospital, Sagamu (OOUTH) as intervention group and 112 orderlies from the Federal Medical Centre (FMC), Abeokuta as controls).
Results: Significant increase in the knowledge, attitude and practice of the intervention group determined by percentage score was recorded immediately after the training. In the control group, there was a decline in the attitudinal score but an insignificant increase in the knowledge and practice of HIV prevention. Three months post-intervention, further increase in the knowledge score and attitudinal score in the intervention group respectively compared to the pre-test scores (83.3% vs. 99.1% and 94.4% vs. 96.3%) were recorded.
Conclusion: The study showed good knowledge of HIV and AIDS which further improved after the educational intervention. Therefore, the need for continuous training for the hospital orderlies is germane.

Keywords: Acquired Immunodeficiency Syndrome, Health Care Workers, Human Immunodeficiency Virus, People Living with HIV/AIDS, Tertiary Hospital.

Introduction

Nigeria has the second largest number of people living with HIV (PLHIV) in the world. [1] Overall in Nigeria, the HIV seroprevalence increased from 1.8% [1] in 1991 to 4.6% [2] in 2010 and a decline to 3.2% was reported in the year 2016. [1] The HIV and AIDS epidemic impacts the health system by causing loss of staff to illness, absenteeism, low staff morale,

as well as through the increased burden of patient load. Health care workers (HCW) constitute one of the groups at high risk of contracting HIV. This is because of potential risks from occupational exposure. [3] For example, in Madagascar, 79% of HCW believed they were at risk of acquiring HIV through occupational exposure. [4]
Many health care workers are aware of HIV and AIDS pandemic but a knowledge gap exists among some cadre of HCW such as hospital orderlies who are also equally faced with the challenge of the care of PLHIV. [5, 6]

Hospital orderlies are nursing assistants with the job description of cleaning patients' couches, beddings, lockers, handling body fluids, cleaning floors, disposing needles, syringes and other sharps and also assisting nurses in physical movement of patients as well as packing and transporting corpses. [7] Hospital orderlies are less involved in HIV programming as reports of training are frequently limited to doctors, nurses, paramedical staff and students, [1] yet, they are at higher risk of HIV infection than the general population. Studies have demonstrated poor knowledge and need for continuous training among HCW. [8-10] With careful search, only one of these studies was carried out among hospital orderlies. [11] The referenced study was premised on the fact that hospital orderlies needed to understand their risk of contracting HIV infection, options for risk reduction and how to live positively with the virus for those who were infected. Educating the HCWs, especially the non-professional HCWs such as the orderlies who directly care for these patients as well as relating with the larger populace will provide an avenue for disseminating information on HIV and AIDS to families and communities which they represent. Therefore, there is a need for capacity building for this category of HCWs. The current study was carried out to assess the effect of a health education programme on HIV and AIDS-related knowledge, attitude and practices among hospital orderlies in Olabisi Onabanjo University Teaching Hospital, (OOUTH), Sagamu, Ogun State in South-west, Nigeria.

Methods

The study was carried out at the Olabisi Onabanjo University Teaching Hospital (OOUTH), located within the Sagamu Local Government Area of Ogun State and the Federal Medical Centre, Abeokuta also in Ogun State, Nigeria. The study centres are the only government-owned tertiary hospitals in Ogun State, where holistic management of HIV/AIDS takes place. The OOUTH staff strength was nine hundred (900) from the nominal roll documentation as at January 2011, with four hundred and fifty-five (455) bed capacity for in-patient care. The staff strength was about 0.5% of the Sagamu LGA, estimated at 180,000. There were 120 hospital orderlies in OOUTH, Sagamu and these constituted the intervention group. There were 130 hospital orderlies at FMC, Abeokuta. The orderlies working at the FMC, Abeokuta served as the control group. None of these study centres routinely organize in-service HIV/AID training for the orderlies.

This study used a quasi-experimental, non-randomized, controlled group design involving pre-test versus post-test analysis. [12] The data for the study were collected with the aid of a structured, coded and pre-tested questionnaire. The questionnaire was pre-tested among twenty (20) hospital orderlies at the Otunba Tunwase National Paediatric Centre (a tertiary institution) Ijebu-Ode, Ogun State. The study questions were adapted from a number of standardized HIV and AIDS-related materials which included the National HIV/AIDS and Reproductive Health Survey. [3] The questionnaire was made up of six sections which encompassed socio-demographic characteristics, knowledge on HIV, attitude towards HIV and AIDS patients, practice in respect of HIV and AIDS, facilities to support the practice of HIV and AIDS

prevention and counselling and testing assessment.

The lead researcher (EAA) trained a team of research assistants comprising two doctors and three nurses, using the designed health education training manual adapted from the HIV and AIDS Training Manual of the Institute of Human Virology Nigeria (IHVN) [13] and Injection Safety Training Manuals.[14]

The intervention was carried out immediately after the initial baseline assessment using the self-administered questionnaire. The participants were divided into two main groups (prior to the baseline assessment) for the training; groups A and B. Group A comprised orderlies not on duty for that day and those on afternoon and night shifts and had their training in the morning. Group B comprised those who were on morning duty and had their training in the afternoon to avoid the disruption of their routine duties. The training for each group lasted three hours (9 a.m to 12 noon for group A and 12.30 pm to 3:30 pm for group B for a period of five days).

The educational intervention involved training in form of didactic lectures and role-play, with the lecture series, were divided into modules. There were four modules taken over five days. The sources of the modules for the purpose of this training were the Institute of Human Virology Nigeria [13] and Injection Safety [14] Training Manuals.

The details of the modules were as follows:

Module 1: General knowledge on HIV and AIDS, Basic facts about HIV and AIDS, transmission modes, risk factors, socio-economic factors facilitating transmission, plus misconceptions on the disease.

Module 2: Prevention practices; safer sex, abstinence before marriage, prompt and adequate treatment of STIs. It also included workplace protection and prevention practices (universal precaution), and injection safety.

Module 3: Occupational hazard and post-exposure prophylaxis (PEP); How employers may help reduce the risk of employees getting infected at work.

Module 4: HIV Counselling and Testing (HCT) how, where and when people may know their HIV status; disclosure of results, partner notification, and care of the HIV-positives; information on centres offering free HCT [11], treatment centres and forms of support available, how people can contribute positively towards the prevention of HIV and AIDS individually and at workplace.

The placebo (health education) given to the control group was on essential nutrition for a healthy living relevant to this age group. It was sourced from the standard training manuals on basic nutrition. [15] Similarly, the health education was divided into four modules which were delivered over five days.

The health education on nutrition was carried out using similar arrangement as in the intervention group (groups A and B for the training).

Following the intervention, the structured, coded questionnaire was re-applied on the participants in both the experimental and control study sites after the completion of the training sessions for the immediate post-intervention assessment and a follow-up assessment was carried out three months later.

Ethical considerations

Ethical approval was obtained from the Scientific and Ethics Review Committees of the Olabisi Onabanjo University Teaching Hospital, Sagamu and Federal Medical Centre, Abeokuta. Informed consent was also obtained from the participants.

Data management

Data was sorted, edited and stored into a personal computer and analyzed using SPSS version 15. Scores were assigned to the various questions on the questionnaire. Score one (1) for the correct answer and zero (0) for the wrong answer and the scores were graded. [12] The total score was 100%. (The score per participant was derived as follows: number of correct responses/total expected correct responses X 100%). The scores were graded as follows: poor (0-49%), fair (50-69%) and good (≥ 70%). For the indicator questions on

knowledge, attitude and practice, the total scores were 19, 9 and 9 respectively. The respondents who scored 50% and above were categorized as being knowledgeable and <50% as not knowledgeable. In addition, a score of 50% and above on attitude scale defined positive attitude and scores below 50% defined negative attitude. Similarly, scores of 50% and above on practice scale defined appropriate practice while scores below 50% defined inappropriate practice.

Knowledge, attitude and practice data were presented as tables. McNemar's Chi-Square test was used to compare the pre- and post-intervention data within each group (intervention and control groups) [16] while Paired-t-test was used to assess the effect of the educational intervention on the knowledge, attitude and practice regarding HIV and AIDS between the two groups. P-values of less than 0.05 (and appropriate 95% confidence interval) were considered statistically significant.

Results

A total of 220 (88%) hospital orderlies out of 250, participated in the study. These comprised 108 participants from the intervention site and 112 from the control site. All the 108 completed the third month's post-test at the intervention site, while 85(75.9%) completed their third month's post-test at the control site.

The mean (SD) age of the participants in the intervention group was 43.3 (7.0) years and 35.7 (7.1) years for the control group. The difference in the mean ages of both groups was not significant (p =0.056). Over 70% of the participants at both sites were married (76.8% and 72.3% for the intervention and control sites respectively) hence, there was no significant difference in the marital status of the groups (χ^2= 11.24, p =0.244). There were more females in both groups; 86.1% vs. 13.9%, in the intervention group and 82.1% vs.17.9%in the control group (χ^2= 0.324, p =0.569).

Over 60.0% of the participants from both groups had senior secondary school certificates (70.4% and 62.7% respectively) hence, there was no statistically significant difference in the educational qualification of both groups (χ^2= 8.33, p =0.139). In addition, 5.6% of participants in the intervention group and 12.5% in the control group had tertiary education. A majority of the participants in both groups were aged 40-49 years (53.7% and 39.3% in intervention and control groups respectively).

In all, 24.1% and 9.8% of the participants in the intervention and control sites respectively affirmed having a relative with HIV disease (χ^2=8.742, p= 0.003).

Overall, 83.3% and 88.4% of the participants in the intervention and control groups respectively had good knowledge of HIV from the pre-intervention assessment. The pre-intervention mean (SD) knowledge score was 68.5 (22.9)% and 71.1 (21.3)% in the intervention and control groups respectively.

The participants in the intervention and control groups showed good knowledge in the following knowledge parameters; (a) HIV causes AIDS (84.3% and 78.6% respectively), (b) only laboratory test can confirm HIV status (88.0% and 94.6% respectively) and (c) sexual contact is the most important mode of transmission of HIV (88.0% and 89.3% respectively). However, lower percentages of the participants in the intervention and control groups showed good knowledge in the following areas; (a) HIV infection can occur from different strains of HIV (50.0% and 67.7% respectively), (b) usefulness of antibiotics in the prevention of HIV infection (52.8% and 50.9% respectively). More than half (54.6%) of the intervention group and 62.5% of the control group knew that HIV has no cure.

In all, 71.3% and 78.6% of the participants in the intervention and control groups

respectively believed mosquitoes cannot transmit HIV while 90.7% and 90.2% in the respective groups knew that transmission can occur through sharps.

Correct responses on the usefulness of condom sheaths for HIV prevention were 75.0% and 69.6% in the intervention and control groups respectively. In addition, the proportions of participants (with good knowledge) who believed that universal precautions cannot help with HIV prevention were 63.9% and 53.6% in the intervention and control groups respectively. Faithfulness among sexual partners was believed to prevent HIV by 77.8% and 90.2% of the participants in the intervention and control groups respectively as shown in Table I.

Table I: Knowledge of participants about prevention of HIV and AIDS

	Intervention (n =108)		**Control (n = 112)**	
Variables	Good knowledge n (%)	Poor knowledge n(%)	Good knowledge n (%)	Poor knowledge n (%)
Correct condom use prevents HIV	81 (75.0)	27 (25.0)	78 (69.6)	34 (30.4)
Universal precaution cannot help in reducing HIV	69 (63.9)	39 (36.1)	60 (53.6)	52 (46.4)
Laboratory test to know HIV status	95 (88.0)	13 (22.0)	106 (94.6)	6 (5.4)
Being faithful to sexual partner prevents HIV	84 (77.8)	24 (22.2)	101 (90.2)	11 (9.8)

Overall, 94.4% of the participants in the intervention group and 81.3% of the control group had good HIV and AIDS-related attitudes. While 88.9% and 84.8% of the participants in intervention and control groups respectively agreed to care for the PLHIV, 61.1% and 34.8% in intervention and control groups respectively responded correctly that those who got HIV infection through sex did not deserve it. In all, 77.8% and 87.5% of the intervention and control groups respectively had good HIV and AIDS-related practices. While 62.0% and 88.4% of the participants in the intervention and control groups respectively wore gloves during contact with potential body fluids, 79.0% and 66.1% respectively of the participants in the comparison groups recapped needles. In addition, 93.5% of the participants in the intervention group routinely washed hands, 95.5% did so in the control group. Comparisons of the proportions of participants with good HIV and AIDS-related knowledge, attitude and practices in the Pre-Interventional, Post-Interventional and 3-month Post-Interventional assessments (for the Intervention Group) are shown in Table II.

Table III shows, the comparison of the proportions of participants with good HIV and AIDS-related knowledge, attitude and practices in the Pre-Interventional, Post-Interventional and 3-month Post-Interventional assessment (for the Control Group). After the third month of the intervention, another knowledge assessment was carried out, and this revealed appreciable increases in the proportions of participants with better knowledge, attitude and practices in the majority of the variables. Response on whether HIV causes AIDS increased from 84.3% to 100% in the intervention group (χ^2 = 8.242, $p < 0.001$) as shown in Table IV.

Table II: Comparison of the proportions of participants with good HIV and AIDS-related knowledge, attitude and practice in the Pre-Interventional, Post-Interventional and 3-Month Post-Interventional tests (Intervention Group).

	Pre-test (n = 108)	Post-test (n = 108)	3-Month Post-test (n = 108)	Pre-test/Post-test	Post-test/3-Month post-test	Pre-test/3-Month Post-test
Knowledge	90 (83.3)	103 (95.4)	107 (99.1)	$\chi^2 = 6.260$; p = 0.012	$\chi^2 = 1.500$; p = 0.221	$\chi^2 = 13.474$; p < 0.001
Attitude	102 (94.4)	99 (91.7)	104 (96.3)	$\chi^2 = 1.067$; p = 0.302	$\chi^2 = 1.455$; p = 0.228	$\chi^2 = 0.100$; p = 0.752
Practice	84 (77.8)	86 (79.6)	72 (66.7)	$\chi^2 = 0.028$; p = 0.868	$\chi^2 = 5.113$; p = 0.024	$\chi^2 = 3.673$; p = 0.055

McNemar's Chi square P< 0.05 (significant)

Post-intervention, there was a significant increase in the proportion of participants who claimed mosquito bite cannot transmit the HIV (71.3% to 90.7%; $\chi^2 = 13.276$, p < 0.001). On the other hand, the respective proportion in the control group decreased (78.6% to 74.1%, $\chi^2 = 1.515$, p = 0.218). Significant increases also occurred in the proportion of participants who claimed the HIV cannot be acquired through casual contact as well as through toilet use following intervention, ($\chi^2 = 6.842$, p = 0.009 and $\chi^2 = 8.112$, p = 0.004 respectively).

The slight increases in the control group for the aforementioned variables were not statistically significant, ($\chi^2 = 0.139$, p = 0.710 and $\chi^2 = 1.715$, p = 0.190 respectively).

Table III: Comparison of the proportions of respondents with good HIV and AIDS-related knowledge, attitude and practice in the pre-Intervention, immediate post-intervention and 3-month post-intervention tests (Control Group).

	Pre-test (n = 112)	Post-test (n = 112)	3-Month Post-test (n = 85)	Pre-test/Post-test	Post-test/3-Month post-test	Pre-test/3-Month Post-test
Knowledge	99 (88.4)	101 (90.5)	80 (94.1)	$\chi^2 = 0.062$; p = 0.803	$\chi^2 = 0.642$; p = 0.423	$\chi^2 = 3.368$; p = 0.066
Attitude	91 (81.2)	89 (79.5)	76 (89.4)	$\chi^2 = 66.125$; p < 0.001	$\chi^2 = 51.753$; p < 0.001	$\chi^2 = 2.560$; p = 0.110
Practice	98 (87.5)	103 (92.0)	66 (77.6)	$\chi^2 = 0.762$; p = 0.383	$\chi^2 = 6.260$; p = 0.012	$\chi^2 = 1.161$; p = 0.281

McNemar's Chi-Square P< 0.05 (significant)

There was an increase in the proportion of participants with good knowledge on condom use for the prevention of HIV and AIDS from 75.0% to 90.7% ($\chi^2 = 9.45$, p = 0.002). The knowledge on HIV status determination also increased significantly from 88.0% to 96.3% ($\chi^2 = 5.172$, p = 0.023). In response to some attitudinal questions like caring for PLHIV, the proportion of participants increased from 88.9% to 97.2% ($\chi^2 = 5.803$, p = 0.016) in the intervention group, unlike a decrease in the control group (84.8% to 81.2%, $\chi^2 = 1.716$ p = 0.190). A significant increase was also noted in the proportions of participants in the intervention group with good knowledge

concerning the need to avoid isolating PLHIV from , 54.6% to 85.2% (χ^2 = 23.966, p < 0.001)., There was a slight and insignificant decrease in the proportions in the control group regarding the need to isolate PLHIV (50.0% to 56.5%; χ^2 = 0.408, p = 0.523). The proportion of participants with good knowledge concerning whether HIV infection through sex is deserved or not, also increased significantly in the intervention group (χ^2 = 13.292, p < 0.001) but not in the control group (χ^2 = 0.156, p = 0.699).

The proportions of participants with appropriate practices prior to intervention for the intervention and control groups were 77.8% and 87.5% respectively (and the baseline mean score were 61.7 (16.6)% and 71.2 (18.6)% respectively. Although there was a general improvement in the post-interventional assessment in the various practice variables as well as in the immediate post-intervention period, the overall proportion of participants with appropriate practices reduced by the third-month assessment.

The proportion of respondents who adorned gloves while attending to patients, for instance, increased from 62.0% to 79.6% in the intervention group (χ^2 = 8.090, p = 0.004) but decreased from 88.4% to 82.4% (χ^2 = 3.789, p = 0.052) in the control group. The practice of recapping of needles decreased from 79.6% to 55.6% in the intervention group (p < 0.001) and insignificantly from 66.1% to 49.4% in the control group (p = 0.107). Using adhesives to cover wounds was more embraced after training in the intervention group (69.4% vs. 87.4%, p = 0.002) than in the control group (71.4% vs. 88.2%, p = 0.014).

Educational intervention on the knowledge, attitude and practice in the intervention and control groups in the pre-intervention and post-intervention periods was effective. For example, a significant increase in the proportion of respondents who knew that HIV causes AIDS from 91 (84.3%) to 108 (100%) was recorded in the intervention group as well as a rise from 88 (78.6%) to 72 (84.7%) in the control group; (χ^2 = 33.473, p <0.001).

The proportion of participants who admitted that mosquito bite cannot transmit HIV also increased significantly in the intervention group compared with the control group (where a decrease was noted) after the third month intervention period; 77 (71.3%) to 98 (90.7%) in the intervention group and 88 (78.6%) to 63 (74.1%) in the control group (χ^2 = 9.503, p = 0.002).

The proportion of participants who admitted that mosquito bite cannot transmit HIV also increased significantly in the intervention group compared with the control group (where a decrease was noted) after the third month intervention period; 77 (71.3%) to 98 (90.7%) in the intervention group and 88 (78.6%) to 63 (74.1%) in the control group (χ^2 = 9.503, p = 0.002).

In comparing knowledge about HIV/AIDS prevention and related attitudes, there was an increase in the proportion of participants to question on correct condom use and faithfulness to sexual partners in the prevention of HIV transmission in the post-interventional group. A significant increase in the proportion of participants who would care for PLHIV was also observed in the intervention group (χ^2 = 13.798, p<0.001) as shown in Table V.

In comparing the mean scores of the knowledge, attitude and practice of the intervention and the control groups at the pre-intervention, immediate post-intervention and 3-month post-intervention assessments, a significant increase in the mean score of the parameters was recorded in the intervention group.

The mean knowledge score increased from 68.5 ± 22.9 to 80.1 ± 3.7 (p = 0.001), the mean attitude score increased from 70.6 ± 12.3 to 80.0 ± 16.5 (p < 0.001) and the mean practice score also increased from 61.7 ± 16.6 to 64.0 ± 19.0 (p = 0.001).

Table IV: The pre-Intervention versus 3-month post-intervention comparison of HIV/AIDS-related basic knowledge

	Intervention				**Control**			
Knowledge Variables	Pre-test (n=108)	Post-test (n=108)	χ^2	p-value	Pre-test (n=112)	Post test (n= 85)	χ^2	p-value
	N (%) Good knowledge				N (%) Good knowledge			
HIV Causes AIDS	91 (84.3)	108 (100.0)	8.242	0.000	88 (78.6)	72 (84.7)	0.345	0.555
There is the risk of HIV infection from needle injury.	74 (68.5)	92 (85.2)	7.412	0.006	87 (77.7)	72 (84.7)	0.565	0.452
Antibiotics cannot prevent HIV/AIDS	57 (52.8)	76 (70.4)	7.065	0.008	57 (50.9)	55 (64.7)	2.779	0.096
AIDS patients are infected with HIV	90 (83.3)	91 (84.3)	0.03	0.854	89 (79.5)	72 (84.7)	0.182	0.670
Different HIV co-infection same time	54 (50.0)	68 (63.0)	3.692	0.055	75 (67.0)	53 (62.4)	1.071	0.301
HIV/AIDS has No cure	59 (54.6)	70 (64.8)	2.329	0.127	70 (62.5)	51 (60.0)	0.471	0.492

χ^2 - (McNemar's Chi-Square)

In the control group, no significant increase in the mean score of the parameters was observed. The increase in the mean knowledge score increased from 71.1 ± 21.3 to 72.8 ± 9.1 ($p = 0.384$); there was a significant decline in mean attitude score from 67.7 ± 20.4 to 37.9 ± 16.0 ($p < 0.001$) was also observed. There was no significant increase in the mean practice score (71.2 ± 18.6 to 72.4 ± 17.7; $p = 0.218$).

Discussion

The majority of the participants in the intervention group and almost half of the participants in the control group were aged above 40 years. This is similar to the average age of 44 years for health care workers in USA, UK and Canada [17], but within the limits for civil servants in Nigeria. [18] Only a few of the participants in both the intervention and control groups respectively affirmed having a relative with the disease. This finding was at variance with the report of the Zambia Care for the Care Givers study, where over half (>50%) of the respondents have had and were currently having a family member with the disease. [11]

Table V: Between-groups comparison of pre-intervention and 3-month post-intervention knowledge about the prevention and related attitudes towards HIV/AIDS

	Pre-test				3-Month Post-test			
Variables	Intervention (n = 108) n (%)	Control (n = 112) n (%)	X^2	p-value	Intervention (n = 108) n (%)	Control (n = 85) n (%)	X^2	p-value
Correct condom use prevents HIV	81 (75.0)	78 (69.6)	0.787	0.375	98 (90.7)	67 (78.8)	5.446	0.020
Universal precaution cannot help in reducing HIV	69 (63.9)	60 (53.6)	2.413	0.120	72 (66.7)	58 (68.2)	0.053	0.818
Laboratory test to know HIV status	95 (88.0)	106 (94.6)	3.109	0.078	104 (96.3)	82 (96.5)	0.004	0.949
Being faithful to sexual partner prevents HIV	84 (77.8)	101 (90.2)	6.320	0.012	93 (86.1)	81 (95.3)	4.519	0.034
Care for PLHIV	96(88.9)	95(84.8)	0.795	0.373	105(97.2)	69(81.2)	13.79	<0.001
Eat with PLHIV	60(55.6)	62(55.4)	0.001	0.976	78(72.2)	45(55.3)	5.973	0.015
Work with PLHIV	67(62.0)	59(52.7)	1.968	0.161	91(84.3)	62(72.9)	3.708	0.054
Share toilet with PLHIV	65(60.2)	87(77.7)	7.879	0.005	69(63.9)	63(74.1)	2.302	0.129
Do not isolate PLHIV	59(54.6)	56(50.0)	0.472	0.492	92(85.2)	48(56.5)	19.688	<0.001
PLHIV through sex deserve it	66(61.1)	39(34.8)	15.232	<0.001	90(83.3)	33(38.8)	40.767	<0.001

The low proportion of 24.1% recorded in the present study compared to that in Zambia could be due to participants not wanting to disclose such information for reasons of possible stigmatization or that awareness about the disease remains poor.

About half of the participants in both groups have had previous training on HIV and AIDS with 48.1% and 54.5% among those in the participants in the intervention and control groups respectively. The awareness of HIV infection was just increasing in those early years of 2000 compared to more recent trends with increasing campaign and increasing search for knowledge.

The percentage increase in the proportion of participants in the intervention group who had a total knowledge score of 50% on general HIV and AIDS knowledge was remarkable during the three- month post-intervention test; this suggests a satisfactory rise in the good level of knowledge. This proportion of the intervention group with good knowledge was higher than the 46% knowledge score found in the study by Umeh and others [19] on health

care workers, in southern Nigeria. On the basic knowledge about sexual contact with an infected partner as a route for HIV transmission, this study revealed 86.1% knowledge score after the third-month post-intervention. This is slightly lower than the score reported by Sadoh and colleagues [20] where 96.3% had a very good knowledge of routes of transmission of HIV. In addition, the finding was slightly lower than the finding in the study on the attitude of HCWs by Adebajo *et al.* [21] in Lagos state, in which the participants were adjudged to have moderate to good knowledge scores. The respondents in the two studies cited above belonged to higher cadre health care workers in their studies compared to the hospital orderlies in the index study and this may account for the higher percentage score in basic knowledge of HIV in the previous studies.

The intervention was associated with an increased proportion of participants with good knowledge score in the immediate and third month's post-intervention assessment. The proportion with a tendency for appropriate practice was also increased in the immediate post-intervention assessment but not in the third month's post-intervention test. There was no significant attitudinal change in the control respondents. Comparing the means of knowledge, attitude and the practice scores, there was a significant improvement in the knowledge and attitudinal score; although there was a significant increase in the practice scores as well but without statistical significance. The initial mean knowledge score increased in the immediate post-intervention test and in the third month's post-intervention test respectively. The mean attitudinal score also increased from the pre-intervention period to immediate post-intervention period, while the mean practice score reduced. These observations imply that it may take a long time to change practice in this cadre of health caregivers.

The Baylor International Paediatric AIDS Initiative (BIPAI) [22] reported similar knowledge mean scores; 68.7 ± 13.7% pre-training and 84.0 ± 12.0% post-training. The study of knowledge, attitude and practice of HIV and AIDS among the OOUTH nurses by Jeminusi [23] revealed a pre-intervention mean score of 14.4±5.1 and an immediate post-intervention mean score of 24.2±3.15. The respondents in this study were nurses who were ordinarily more educated than orderlies and were expected to have better knowledge than the hospital orderlies. However, the advantage of better access to information over time should also be taken into consideration. Umeh and others [19] studied doctors, nurses and laboratory scientists, the mean scores were 18.43 (5.53), 13.19 (5.53) and 11.01 (5.52) respectively.

It is also important to note that the participants in the index study may not have uniform access to necessary protective materials such as gloves, apron, boots and safety boxes as the supplies depend on the various units and departments within the hospital. Also worthy of note is the percentage of hospital orderlies that still recapped needles possibly due to poor knowledge and heavy workload resulting in poor compliance with universal precautions. The percentage of participants who were recapping needles at the time of the study was remarkably high, which became reduced after the intervention in the intervention group. The proportion of the participants who recapped needles was also high in the control group, which slightly reduced as well, but not as significant as the intervention group.

Conclusion

Overall, there was a significant improvement in the knowledge, attitude and training of hospital orderlies in the intervention group compared to the control group. The 3-month decline in post-intervention practices on HIV

revealed the need to make such training more frequent and at regular interval.

Authors' Contributions: EAA and AOK conceived and designed the study. EAA, AOE and AOK acquired and analysed data while AMO drafted and critically revised the manuscript. All the authors approved the final version of the manuscript.

Conflict of Interest: None declared.
Funding: Self-funded.
Publication History: Submitted 07 May 2018; Revised 21 August 2018; Accepted 07 November 2018.

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