Impact of Educational Program on Acquired Immunodeficiency Syndrome Prevention among Nurses in Wad Madani City, Gezira State, Sudan

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Abstract

Background: Acquired immunodeficiency syndrome (AIDS) is a common challenge that hospitals face globally. This study aimed to examine the impact of Educational Program on Acquired Immunodeficiency Syndrome Prevention among Nurses. Materials and Methods: This quasi-experimental study was conducted at three hospitals (Wad Madani Teaching Hospital, Obstetrics and Gynecology Teaching Hospital, and Gezira Hospital for Renal Diseases and Surgery) in Wad Madani City, Gezira State, Sudan. Targeted all nurses present during the study period at the three hospitals. Data were obtained through a modified questionnaire and observational checklist created by the authors. Results: The mean (±standard deviation) total knowledge score was 14.35 (± 6.51) before implementation of the educational program, as compared to 30.61 (± 6.32) after the program (T-value:-5.6, p-value: 0.006, level of significance:<0.05). The mean total attitude score was 6.4 (±6.20) before implementation of the training program, as compared to 11.7 (±5.56) after the program (T-value: -6.5, p-value: 0.004). The mean total practice score was 9.31 (± 6.45) before implementation of the educational course, as compared to $21.70 (\pm 6.86)$ after the program (Tvalue:-13.35, p-value: 0.001). Conclusions and Recommendations: Results showed that the intervention program improved the HIV/AIDS knowledge and practices of the participants. Further AIDS education and training programs should be mandatory for all nurses.

Keywords: Acquired immunodeficiency syndrome, educational program, prevention ,Nurses

Introduction

Human immunodeficiency virus (HIV) belongs to the genus Lentivirus within the family Retroviridae and subfamily Orthoretrovirinae (Advisory et al. 2016)Caring for HIV and acquired immunodeficiency syndrome (AIDS) patients requires special skills and attitudes. However. health workers. including nurses, often have negative attitudes towards people living with HIV and AIDS, leading to discrimination and stigma towards patients (Serwaa and Mavhandu-mudzusi **2019)** There is a survival gap between people living with HIV and those who are uninfected and have access to care (Marcus et al. 2017)

AIDS is a fatal disease caused by a retrovirus known as HIV, which breaks down the immune system, leaving patients vulnerable to a host of life-threatening opportunistic infections, neurological disorders, and unusual malignancies (Dharmalingam et al. 2015) AIDS can result from unprotected intercourse (including oral and anal intercourse); infected blood transfusions or hypodermic needles; and mother-to-child transmission during pregnancy, birth, or breastfeeding (John 2022)Some body fluids do not spread HIV, including saliva and tears. Preventive measures for HIV include male circumcision, safe sex, needle exchange programs, treating infected individuals, and preand post-exposure prophylaxis (Benn, Fisher, and Kulasegaram 2011) HIV cannot be contracted from feces, nasal secretions, saliva, sputum, perspiration, tears, urine, or vomit if not contaminated with blood (Article 2020)

Approximately60% of HIV-positive individuals in the US take complementary or alternative therapies, whose efficacy has not yet been proven Use of herbal remedies is not well-

supported by research , and use of medical cannabis to try to boost appetite or weight gain is not supported or advised due to lack of evidence (Ee et al. 2013)HIV-1 and HIV-2 are thought to have originated in non-human primates in West-Central Africa and spread to people in the early 20th century through a process called zoonosis (Faria et al. 2015) with HIV-2 being relatively uncommon and less infectious. HIV-2 is mainly concentrated in West Africa and surrounding countries, and is less fatal and progresses more slowly than HIV-1. The World Health Organization has classified Sudan as having an intermediate rate of HIV and AIDS, with all provinces and governorates now offering HIV/AIDS integrated services. In 2011, the Ministry of Health reported an HIV prevalence of 0.4among adults aged 15-49 in Sudan, with an estimated 260,000 people living with HIV and 12,000 HIV-related fatalities occurring on a periodic basis. According to a population-based study carried out in 2002, HIV sero-frequency was determined to be 1.6 annually (Marcus et al. 2017) Recent research indicates that the prevalence of HIV and AIDS among blood donors in Sudan rose from 0.15 in 1993 to 1.4 in 2000.

Risk of HIV/AIDS transmission increases when those with HIV/AIDS adopt certain behaviors, including blood transmission, and sharing of needles and syringes. As this situation is difficult to control and hampers regional development, the mechanism of HIV/AIDS transmission must be understood so that it can be minimized (Serwaa and Mavhandu-mudzusi 2019)

Justification (Significance of the study)

Sudan is considered to be a country with an intermediate HIV and AIDS prevalence by the World Health Organization (WHO).

AIDS destroys cells in the immune system, leaving them unable to fight off diseases and disrupts many cells in the body, brain, heart, lungs, liver, and intestines. Spread by contact with infectious body fluid and blood HIV is a member of the lent virus. HIV is transmitted through retroviruses, sexual contact with infected one, sharing of contaminated needles, from infected mother to baby, transfusion of blood or blood products and oral kissing through saliva. All of these can be prevented through health education and counseling. Upgraded nurses' knowledge, attitude and practices regarding HIV/AIDS is essential to prevent and control AIDS.

Study hypothesis

Implementation of educational interventions will improve nurses' knowledge, practice, and attitudes regarding HIV/AIDS

Aim of study

Assess nurses' knowledge, practice and attitudes before and after the nursing educational intervention on HIV/AIDS

Plan, implement and evaluate the effect of nursing educational sessions on the knowledge, practice, and attitudes of nurses regarding HIV/AIDS.

Materials & Methods

Research design, setting, and sample Institutions like the Wad Madani Teaching Hospital and Obstetrics and Gynecology Teaching Hospital, and Gezira Hospital for Renal Diseases and Surgery)are established centers for medical education and training. These institutions have a history of training healthcare professionals and are equipped to support educational programs aimed at enhancing knowledge and skills related to HIV/AIDS prevention

This quasi-experimental pretest/posttest cohort study was conducted at three hospitals in Wad Madani City, Gezira State, Sudan: Wad Madani Teaching Hospital, Obstetrics and Gynecology Teaching Hospital, and Gezira Hospital for Renal Diseases and Surgery. All available nurses were targeted, and 103 were ultimately included in the study.

Data collection tools

Two tools were used in this study, as described below.

Tool I:Modified Knowledge and Attitude Questionnaire

This tool comprised two parts: The first part was related to socio-demographic characteristics including age, qualifications, years of experience, and attendance of previous educational courses.

The second part assessed nurses' knowledge regarding AIDS before and after an educational course comprising a lecture about AIDS, including its definition, symptoms, signs, diagnosis, and methods of transmission. The nurses were also trained on the correct ways to care for AIDS patients and how to prevent transmission (e.g., taking samples and washing hands).

Nurses'AIDS knowledge was measured by 34 questions across five domains, including two questions on the definition, and signs and symptoms of AIDS, 14 questions on AIDS transmission methods, eight questions on AIDS prevention, five questions on AIDS diagnosis methods, and five questions on the AIDS incubation period. One point was given for each correct response and zero points for incorrect responses.

The third part of the tool consisted of a modified Likert scale developed by Rensis Liker, comprising eight questions covering nurses' attitudes for example There is no cure for getting rid of AIDS,

Early detection of HIV infection helps to treat and reduce the progression of the disease toward AIDS (scored three points for agree, two points for neutral, and one point for disagree). Thereafter, the scores of each domain were divided by the number of questions for that domain to determine the domain's mean negative score 46.6 and positive score 28.2.

Tool II: Observational Checklist

The second tool was an observational checklist developed by the authors thatwas used to assess the nurses' practice before and after the educational course. The tool comprised 64 questions across five domains, including 12 questions on hand washing, nine question on wearing gloves, 10 questions on sharp disposable, five questions onhandling and disposal of linen, and 28 questions on mattresses and pillows. One point was given for each correct response and zero points for incorrect responses. The scores of each domain were divided by the number of questions of that domain to determine the domain's mean score

Validity

The content validity of the questionnaires and checklist was confirmed by three academic experts from the medical, surgical and family, and community health nursing fields. Based on their recommendations, few modifications to the tools were made.

Reliability

8 nurses were trained and educated to assist in implementing the training program

Pilot Study

A pilot study was done on a sample of 11 nurses from the three hospitals to test the reliability and feasibility of the questionnaire instrument and observational checklist. Based on the results, some questions were restructured, and some were deleted to decrease the chance that the study would yield unusable data, and to obtain the most accurate result. This sample of pilot study was excluded or included in the total study sample? This sample of study was excluded

Phases of intervention

Pre-intervention Phase

Before the educational course, a questionnaire was distributed to each available nurse. Nurses had to fill out the questionnaire, and we evaluating each nurse separately via the observational checklist to assess their clinical skills when caring for patients with AIDS.

Course Implementation what about number of session, methods of teaching and types of media used in implementation of the program?9 sessions divided over three days. Teaching methods used include PowerPoint presentations and brochures.

All participants attended the educational course and actively participated in practical sessions. The course included two aspects: a

marital status, 45 (43.5%) of the nurses were

married, 41 (39.5%) were single, 14 (13.5%) were divorced, and three (3.5%) were widowed.

In terms of educational level, 81 (79%) of the

nurses had a diploma, 18 (17.5%) had a

bachelor's degree in nursing, and four (3.5%) had a master's degree. In terms of experience,

40 (39.5%) of the nurses had 1–5 years of

experience, 21 (20.5%) had 6-10 years of

experience, 20 (19%) had 11-15 years of experience, and 22 (21%) had ≥15 years of

experience. As for previous experience in courses, 37 (35.9%) of the nurses had received

courses on HIV/AIDS in the form of

workshops/seminars and/or attended lectures for

the same purpose, whereas 66 (64.1%) had not

educational program, overall knowledge level

was poor in 20(19.4%) nurses, medium in nine

(8.7%) nurses, and good in 74 (71.8%) nurses; after the program, overall knowledge level was

poor in four (3.9%) nurses, medium in four (3.9%) nurses, and good in 95(92.2%) nurses.

The mean score (±standard deviation) for total

implementation of the educational course, as

compared to 30.61 (± 6.32) after the program (T-

value:-5.6, p-value: 0.006, <0.05), as seen in

14.35

implementation

of

of

 (± 6.51)

the

before

the

attended courses, as shown in Table 1.

was

Before

knowledge

Table 2.

theoretical aspect, where nursing staff attended a lecture on AIDS (e.g. definition, symptoms, and signs): and a practical aspect, where nursing staff were trained on correct skills (e.g., hand washing). The training team included experts specialized in teaching and training of nursing staff, general nursing lecturers, clinical instructors, and the department heads of the hospitals. The memory gap duration was three months (January to April 2023).

Post-intervention Phase

А post-test was done using а questionnaire to evaluate the effect of the course on nurses' knowledge regarding AIDS patient care. A certificate and copies of the program were given to all participants. We also observed all nurses again while they performed their duties using the same observational checklist covering AIDS patient care. The post-test was given immediately after the intervention.

Ethical considerations

Permission to conduct the study was obtained from the managers and heads of nursing of the three hospitals either verbally or through official letters. All nurses from the selected hospitals were informed about the aims and benefits of the study, and all agreed to participate.

Statistical Design

Data were analyzed using SPSS software package version 20.0. Qualitative data are described using frequencies and percentages. Quantitative data are described using range (minimum and maximum), mean, and standard deviation.

Results

Comments on table not mean repeated all results in table, comments on high percentages and notable percentages and no correlations between study variables.

Of the 103 nurses included in the study, 53(51%) were aged 20-29 years, 35 (34%) were aged 30-40 years, 10 (10%) were aged 40–49 years, and 5 (5%) were aged \geq 50 years. In terms of gender, 81 (77%) of the nurses were female, and 22 (23%) were male. In terms of

Before implementation educational course, overall attitude regarding HIV patients was negative in48 (46.6%) nurses, neutral in 26 (25.2%) nurses, and positive in 29 (28.2%) nurses; after the program, overall attitude regarding HIV patients was negative in 23 (22.3%) nurses, neutral in 10 (9.7%) nurses,

and positive in 70(68%) nurses. The mean score for total attitude was 6.4 (± 6.20) before implementation of the educational program, as compared to 11.7 (±5.56) after the program (Tvalue:-6.5, p-value: 0.004,<0.05), as seen in Table 3.

Before implementation of the educational course, overall practices regarding HIV were poor in 49 (47.6%) nurses, fair in 50(48.5%) nurses, and good in four (3.9%) nurses; after the program, overall practices regarding HIV were poor in eight (7.8%) nurses, fair in 20 (19.4%) nurses, and good in 75(72.8%) nurses. The mean score for total practices was $9.31 \ (\pm 6.45)$ before implementation of the educational course, as compared to $21.70 \ (\pm 6.86)$

after the program (*T*-value:-13.35, *p*-value: 0.001,<0.05), as seen in Table 4.

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Table 1: Demogra	aphic profile	of respondents	(N=103).

Nurse Characteristics	Frequency (n)	Percentage(%)		
Age (vears)				
20–29	53	51 %		
30-40	35	34%		
40-49	10	10%		
>50	5	5%		
Gender				
Male	22	23%		
Female	81	77%		
Marital Status				
Married	45	43.5%		
Divorced	14	13.5%		
Widowed	3	3.5%		
Single	41	39.5%		
Educational Level				
Diploma	81	79%		
Bachelor's	18	17.5%		
Master's	4	3.5%		
Years of Experience				
1–5	40	39.5%		
6–10	21	20.5%		
11–15	20	19%		
>15	22	21%		
Previous Experience with				
Educational Course	37	35.9%		
Yes	66	64.1%		
No				

Table 2:Pre-test and post-test overall knowledge scores of nurses (N=103).

Overall knowledge score	Pre-test		Post-test		<i>p</i> -value
	n	%	n	%	
Poor (0%–33%)	20	19.4	4	3.9	
Medium (34%–66%)	9	8.7	4	3.9	0.006*
Good (67%–100%)	74	71.8	95	92.2	
Total	103	100.0	103	100.0	
Mean ± SD	14.35±6.51		30.61±	6.32	

Independent *t*-test. *Significant, **Highly significant, SD: standard deviation.

	Pre-test		Pre-test Post-test		<i>p</i> -value
Overall attitude score	n	%	n	%	
Negative(0%-33%)	48	46.6	23	22.3	
Neutral (34%-66%)	26	25.2	10	9.7	0.004*
Positive(67%-100%)	29	28.2	70	68.0	
Total	103	100.0	103	100.0	
Mean±SD	6.4±6.20		11.7=	±5.56	

Table 3: Pre-test and post-test overall attitude scores of nurses (N=103).

Independent *t*-test. *Significant, **Highly significant, SD: standard deviation.

Table 4:Pre-test and post-test overall practice scores of nurses(N=103).

	Pre-test		Post-test		<i>p</i> -value
Overall practice scores	n	%	n	%	
Poor practice (0%–33%)	49	47.6	8	7.8	
Fair practice (34%–66%)	50	48.5	20	19.4	0.001**
Good practice (67%–100%)	4	3.9	75	72.8	
Total	103	100.0	103	100.0	
Mean±SD	9.31±6.45		21.70±6.86		

Independent *t*-test. *Significant, **Highly significant, SD: standard deviation.

Discussion

In this study, we aimed to ascertain the AIDS knowledge, attitudes, and practices of nursesin three hospitals (Wad Madeni Teaching Hospital, Obstetrics and Gynecology Teaching Hospital, and Gezira Hospital for Renal Diseases and Surgery) of Wad MadeniCity. Our findings showed that the nurses' overall level of knowledge, attitudes, and practices regarding AIDS improved significantly from pre-test to post-test levels. For example, use of the correct hand-washing technique increased among the nurses compared to pre-test levels. These results agree with those of a 2014 study by Taha, which found that nannies and midwives were quite knowledgeable about HIV and universal prevention measures(Ali and Taha 2014).

Following the intervention, nurses' support for universal HIV/AIDS prevention measures increased. In terms of memory gap, nurses' performance in the first month after the intervention was notably better than that in subsequent months. In a systematic review, in the majority of studies, similar interventions had a comparatively positive impact on nurses' knowledge, attitudes, and willingness to care for patients with AIDS or HIV in various nations (Mockien, Suominen, and Välimäki 2010)In addition, the nurses' knowledge and skills were

greatly improved through educational intervention programs targeting HIV prevention, allowing them to play a teaching role in the prevention and treatment of HIV/AIDS.

In 2015, Adhikari et al. conducted a study in Nepal with the aim of evaluating nursing academics' level of knowledge and awareness on HIV/AIDS (Adhikari et al. 2015) where an overall knowledge indicator based on the answers to ten objective questions was used to gauge level of knowledge. Colorful opinion replies were scored and totaled to create a station indicator that determined the respondent's overall station. According to the study, almost half of the nursing scholars were quite knowledgeable about HIV/AIDS, whereas roughly one-fifth had little knowledge. Furthermore, this difference in knowledge led to different attitudes towards caring for people living with HIV/AIDS(PLWHA).

A study conducted at Grand Valley State University's Kirkh of School of Nursing in Grand Rapids, Michigan, investigated the knowledge, attitudes, and practices of pastoral student nurses caring for individuals with HIV/AIDS. The findings of this study were consistent with those of prior studies, showing hypercritical attitudes toward HIV/AIDS cases.

Pastoral nursing programs should concentrate on enhancing knowledge of the effects of HIV/AIDS on pastoral communities and assisting in the development of future requirements for services connected to HIV/AIDS. Nurse educators must consider methods of HIV/AIDS education that can raise awareness and improve the way people with the disease are actually treated. Furthermore, the goal of rural nursing programs should be to better understand how HIV/AIDS affects rural populations, and to assist in forecasting future demands for services linked to HIV/AIDS (Campbell et al. 2013)

According to studies conducted in the US, nurses who received HIV/AIDS education and worked in hospitals where the disease was prevalent were less inclined to care for AIDS patients (Miners et al. n.d.) Based on the results of our current study, we recommend increasing HIV/AIDS education for nurses, friends, family, and all other health care professionals, as has been recommended elsewhere(ajol-filejournals 66 articles 11209 submission proof 11209-781-25742-1-10-20060721.pdf n.d.) Gallagher et al.'s 1989 study of general practitioners had similar results, with 6% of the study sample stating they did not want to provide care to patients on their list from whom they might contract AIDS, and another 20% expressing uncertainty about doing so These results contrast with a number of studies conducted in Nigeria, which revealed a high frequency of stigmatizing, discriminatory, and negative attitudes toward the care of PLWHA among Nigerian nurses and other healthcare personnel (Ee et al. 2013)Recent awareness efforts and numerous in-service trainings on HIV/AIDS in Nigeria may be to blame for this discrepancy, as they have been demonstrated to improve people's attitudes and views of the disease Our (Marranzano et al. 2013)data could indicate a recent shift in Nigerian nurses' perspectives on people living with HIV/AIDS (PLWHA).

Study limitations

Our study had some limitations. The hospital where the sample was taken did not have internet access. Another challenge was that the training program for nurses was held outside working hours, which added to the daily workload. In addition, it was difficult to provide fully equipped classrooms to conduct the training program. The ongoing war in Sudan was also a major obstacle in obtaining ethical approval for the study. Despite these limitations, we submitted our findings to the hospital, which in turn submitted its recommendations to the state health department.

Conclusion

Overall knowledge of the nurses significantly increased after implementation of the educational program, indicating that the program effectively increased nurses' awareness of the basics of AIDS, as well as its transmission, prevention, and management. The tendency of nurses to have positive attitudes towards HIV patients and work with them was significantly increased after implementation of the intervention course.

Recommendations:

Recommend educating all nurses about HIV prevention. Periodic workshops and seminars are vital to preventing further infection. Future studies to further determine the impacts of AIDS education programs on healthcare workers are highly recommended. Illustrated manuals or handbooks must be designed and available for nurses in hospitals. Educational courses should be conducted periodically for updating knowledge in the field of AIDS, which should be subjected to evaluation for improvement

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