Effect of Self-Learning Intervention on Knowledge, Attitudes and Care Provided among Nurses Caring for HIV\ AIDs Patients in Fever Hospitals

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Background: Self-directed learning is important for the ongoing professional education of nurses. Caring is one of the most attributes of nurses providing care for the patients with AIDS. So they are expected to have the knowledge, accurate practices, and positive attitudes toward such patients who have no chance to cure. **Aim:** Evaluate effect of self-learning intervention on knowledge, attitudes and care provided among nurses caring for HIV\ AIDs patients in fever hospitals. **Design:** Quasi-experimental study research. **Setting:** Tanta and Alexandria fever hospitals. **Subjects**: **79** nurses who provide direct care to HIV/ AIDS patients in previous settings **Tools:** Tool I: HIV knowledge Questionnaire **(HIVKQ 20)** which was developed by Carey and Schroder (2002); Tool II: **AIDS Attitude Scale** which was developed by Forman et al, (1992); Tool III: **Observation checklist** to assess practice of nurses dealing with HIV/ AIDS patients. **Results:** 54.4% of the studied nurses had low Knowledge scores and this percentage decreased to 5.1% post-self-learning program. The percentage of the nurses who had positive attitudes increased from 3% to 27.8 % in post-self- learning. The majority (92.4%) of them had unsatisfactory practice in pre-self-learning and this decreased to only 17.7% post-self-learning. Statistically significant correlation was found between total knowledge and attitude scores. **Conclusion and recommendation:** Self learning had a significant positive effect on knowledge, attitudes and different care aspects among studied nurses. So its recommended to encourage continuous learning and training among nurses working with AIDS patients with emphasize on maintaining positive attitudes and patients right to take optimal care regardless to his disease.

Keywords: Self-learning, Knowledge, Practices, Attitudes, HIV/ AIDS**.**

Introduction

Acquired immunodeficiency syndrome (AIDS) and the human immunodeficiency virus (HIV) is a global public health concerns. AIDS is one of the biggest challenges to our health system. Because more than 97.0% of infections occur in developing countries and are increasing every year, this epidemic is a threat to the South Pacific area. Egypt is reported to have the fastest-growing epidemic in the Middle East and North Africa Region. [1]

Acquired Immune Deficiency Syndrome is a syndrome that develops when the host's immune system has been compromised by the Human Immunodeficiency Virus. The first reported case of AIDS was in the mid of 1981 in the USA. In 2018 an estimated 37.7 million people were living with HIV with a global HIV prevalence of 0.7% among adults. In 2019 and 2020 an estimated 37.9 million people were living with HIV (including 1.8 million children), with a global HIV prevalence of 0.8% among adults. Since the start of the epidemic, an estimated 79.3 million people have become infected with HIV and 36.3 million people have died of AIDS-related illnesses [2-3].

In Egypt 2022, the MinistryHealth and population stated that, there was a gap between the number of HIV positive cases and the number of registered AIDS patients; the percentage of new cases of HIV- positive was increasing every year by 25%-30%, which is seen as a worrying sign that point toa dire need for increased investments to avoid further epidemic growth. In 2019, the average number of new cases of HIV in Egypt was (2470 per year). According to UNAIDS's 2021 statistics, there are about 28,000- 34,000 adults and children living with HIV in Egypt [4,5,6]

There are two types of HIV that exist; HIV-1 which is common worldwide, and HIV-2 is only common in West Africa. HIV is spread from person to person through blood, breast milk, or other bodily fluids. This may occur through blood transfusions, hypodermic needles, or sexual contact. Mothers who have HIV while they are pregnant may spread the infection to their unborn children. UNICEF reported that HIV cases were concentrated among people who inject drugs and men who have sex with men in Cairo and Alexandria [7].

HIV-positive" refers to a person whose blood contains the retrovirus. HIV infection causes AIDS when the immune system is significantly damaged. Each individual experiences different types and levels of symptom severity. The HIV infection process has three stages. [8] **Stage1 is the stage** which the person had after the entrance of the infection in to the body. It includes flu like symptoms such as: fever, sore throat, body ache, headache, muscle pain, swollen glands, rash, and upset stomach joint [9] **Stage 2** in which a lot of people may feel better for many years with no symptoms appear. However the virus is still be active and starts to infect new cells and making copies of itself. If the patient had no treatment, the immune system will affected by severe damage caused by HIV infection. [10] **Stage 3; in** which the person's immune system is severely damaged and the person's body cannot fight off the disease or infection. These infections are known as 'opportunistic infections: This stage include many symptoms that may appear such as weight

loss, night sweats, persistent fever, chronic diarrhea, skin problems, cough, serious illness and regular infections. The earlier a person is diagnosed with HIV and starts treatment, the better their health will be over time. [11]

Antiretroviral therapy (ART) is the treatment of HIV\ AIDS affected people with medications that suppress the replication of the virus. HIV diagnostics have a remarkable central role in assessing the progress in staging, initiating, and monitoring of infected individuals on life-saving antiretroviral therapy. In achieving epidemic control, the detection of HIV-specific antibodies and virus antigens was used. Antibodies to HIV-1 and HIV-2 are detected by (ELISA) test. [12]

Nurses have a main effective role in public health worldwide efforts that being directed toward AIDS pandemic **Community health nurse** roles may include direct caregiver, health educator, case manager, and advocate. Program planner, program coordinator, and policy advocate. [13]

 Community health nurses play a major important role in prevention activities directed toward people who are living with HIV, by educating patients how to prevent transmission to the others who are HIV-negative.; Encourage persons living with HIV to reduce risk practices (sexual and/or substance use behaviors). Nurses play a vital role in caring for HIV/AIDS patients. [14]

Nurses 'role includes not only managing antiretroviral therapy but also providing counseling and education through explaining the mode of transmitting of HIV virus, especially for eligible couples, help HIV positive woman to understand the impact of infection and disease on pregnancy and breastfeeding; when necessary, linking mothers with child

protection agencies to provide support and direction for HIV positive women, understanding the client's support systems, understand the implications of the aging process of clients, provide continuous support through ongoing reinforcement. Ensure that all processes are in place for patient follow-up e.g. primary care and public health supports. Also identify high-risk groups and patients contacts and educate them regarding HIV spread and its consequences and the importance of pre-prophylaxis for high-risk groups and screening for pregnant mothers at least twice. [15]

The person with HIV / AIDS is biologically, psychologically, socially, and spiritually affected when faced with the disease and communicates with youths and motivates talk regarding their sexual problems or STDs, so effective participation in nursing care for HIV / AIDS patients, is implied assistance in meeting emotional and spiritual needs. Nurses should consider all these aspects when providing care to HIV-infected patients [16]

Self-directed learning is important for the ongoing professional education of nurses. The benefits of self-directed learning include professional autonomy and independence besides motivation and increased choice. [17-18]

Nurses play a significant role in HIV-infected patients' prevention, care, and support. Nurses should follow all infection control precautions to protect themselves and protect their patients. They should follow all blood and body fluid precautions and injection and sharps precautions. Nurses' level of self-protection and level of comfort are positively influenced by higher levels of

knowledge about HIV/AIDS and more positive attitudes towards persons with HIV/AIDS. Discriminating attitudes of nurses toward HIV/ AIDS patients are identified by several studies. Healthcare workers stigmatizing attitudes against patients with HIV infection had been reported to be responsible for decreased retention in care, decreased medication adherence, and an increase in the number of new HIV infections. [19]

Significance of the study:

As a result of increasing HIV-positive cases annually in Egypt, UNICEF in collaboration with the Egyptian Ministry of Health and Population (MOHP) and National AIDS Program (NAP) recommended supplying Chain Magangemt System and Updating health professions HIV training Package (Information, Education and Communication) (IEC).

Self-learning education is important for nurses to acquire a set of guidelines that can potentially improve their knowledge and their practices when caring for and communicating with positive HIV cases and their contacts. Self-learning can be an attempt to improve the quality of care rendered to HIV-positive patients. They can provide optimal care for the patient and their contacts. Besides they can remove the misconception that they may have about the disease. [20]

The aim of this study was to determine the effect of self-learning intervention on knowledge, attitude, and care provided among nurses caring for HIV\ AIDS patients in fever hospitals

Research questions

What is the effect of self-learning intervention on nurses' knowledge, attitudes and care provided for patients with human immunodeficiency virus/AIDS in fever hospitals?

Subject and Methods

The quasi-experimental study research design was utilized in this study.

Setting

The study was conducted at the AIDS department in Tanta Fever Hospital and Alexandria Fever Hospital, which are affiliated with the Ministry of Health. The capacity of the AIDS department in Tanta fever hospital was 12 beds and in Alexandria fever hospital was 24 beds.

Subjects

A convenient sample of all 79 nurses who provide direct care to HIV/AIDS patients in previous settings was involved in the study; 37 nurses from Tanta fever hospital and 42 nurses from Alexandria fever hospital.

Tools of study

The researchers used three tools to collect the required data for this study

Tool (I): Structured Interview schedule

Which was used to assess the biosocial data and knowledge of nurses regarded HIV/AIDS; it included two-part as following; -

Part I: it included items related to socio-demographic data such as age, sex, marital status, education level, and years of experience working with HIV/AIDS patients and previous training courses related to HIV /AIDS.

Part (2); Nurses' knowledge regarding HIV/AIDS which measured by using the nursing Human Immunodeficiency Virus Knowledge Questionnaire (HIVKQ 21) which was developed by Carey and Schroder (2002) [21] and adapted by the researcher to measure nurse's knowledge of HIV. It includes 21 item covering (Causes, Risk factors,

Transmission, Prevention, Treatment and How to cope with HIV)

The scoring system of nurses regarding HIV knowledge

Each question was scored (1) point for the correct answer and (0) for in correct/false answers. The total score is equal to 21 and the nurse's level of **total knowledge** score was classified as follows: -

Low knowledge —<60% of the total knowledge score. (<13degrees)

Moderate knowledge —60-80% of the total knowledge score. (13-17 degrees)

High knowledge —>80% of the total knowledge score. (>17 degrees)

Tool (II): Nurses' attitudes toward HIV/AIDS **patients which is measured by using AIDS Attitude Scale (AAS)**

AIDS Attitude Scale was developed by Forman et al, (1992) [22] and adopted by the researcher. It is used for measuring the attitude of nurses toward HIV/AIDS patients. This scale consists of 21 statements and is based on a three-point Likert scale "disagree" "natural" and. "agrees". The questionnaire is composed of two correlated subscales; including the statement number which describes questions that denote therapeutic and positive viewpoints toward HIV/ AIDS which are fourteen empathetic items (6-14, 16-19, and 21). And other seven avoidant items were described as negative responses (Non-empathetic statements).

The total score of nurse's attitudes about HIV statement was calculated according to the nurse's answers as follows: -

The scoring of the statements was done through a three-point Likert scale agree (3), uncertain (2), and disagree (1), for positive empathetic statements. (1 agree, 2 uncertain, 3 for disagree for negative Non- empathetic statements.

The total attitude Score was calculated by summation of all items and classified into two categories as follows: -

Positive attitude: ≥75% of total attitude score (≥ 47degree)

Negative attitude: < 75% of total attitude score (<47 degrees)

Tool III Nurses' Practice Checklist (NPC):

An observation checklist was developed by the researcher to measure nurses' performance in caring for HIV/AIDS patients based on a literature review [23-25,].

It consisted of 48 practice items covering direct care proved to HIV/AIDS patients and clinical management which include:

1-Infection control measures which included (12) items.

2-Protective measures which included (8) items.

3-Injection and sharps disposal, which included (5) items.

4-counseling, which included (10) items.

5-Communication with HIV patients, which included (3) items

6-Managing antiviral therapy (ART), which included (7) items.

7-Health Education about HIV/ADIS, which included (3) items

The scoring system of nurse's performance regarding caring for HIV/AIDS patients:

The items which were done by nurses correctly took one point and those incorrectly done took zero. The total level of practice was calculated by summation of all items and classified as followed:

-Satisfactory practice: ≥80% of the total score. (≥38).

-Unsatisfactory practice: <80% of the total score (<38).

Method

-Administration process

An official permission was obtained from the Dean of the Faculty of Nursing, Tanta University to the manager of fever hospitals in Tanta and Alexandria cities to facilitate the work of the researcher inside the hospital.

Ethical considerations

- An approval of the ethical committee of the faculty of Nursing, at Tanta University was obtained to conduct this study.

-the researcher will put confidentiality and privacy regarding the data collected into consideration.

- Nature of the study did not cause any harm or pain for the entire sample.

-Every nurse was informed about the purpose, nature, and benefits of the study, informed consent was obtained from all study nurses after providing an appropriate explanation about the purpose of the study, and each nurse was informed that she has the right to withdraw from the study at any time she wants.

- **The pilot study** was done on 10% of nurses to test clarity, applicability, and relevance and identify obstacles that may be encountered during data collection. Accordingly, the necessary modification was done. Those nurses were excluded from the sample.

-Validity and reliability

The study tools were tested for content validity by a jury of eight experts in the field of community health nursing and public health. The content validity index is 97.5 % according to the opinions of experts.

The reliability test was applied to the study tools using Cranach s alpha test and it was found to be = (.935).

Data collection

The collection of data was continued over a period of four months from the start of March 2021the to the end of June 2021.

The study was conducted throw three phases

1- **Initial assessment**: - in which the study nurses' knowledge, attitude, and practice were assessed study tools to develop the educational interventions based on nurses' assessment needs.

- Every participant nurse was observed individually, for her practices, throughout performances of caring for HIV/ADIS patients, using tool III, (via concealed observations). The observations were carried out throughout the three morning, evening, and night shifts.

- The participant nurses were interviewed, to collect data related to their knowledge and attitude about HIV/ADIS patients using tools (I) and (II) after explaining the purpose of the study.

The interviews were carried out throughout the break shift, and the answers were recorded in the tool.

2- **Planning Phase:** The related self- learning educational interventions were developed by the researcher\ based on the results of the assessment phase as well as a review of the related literatures. The developed self-learning educational interventions were prepared in Arabic language and were prepared

in a booklet in the Arabic language. The educational interventions booklet included essential information related to theoretical and practical as follows:

- **Theoretical content of the educational intervention:**

- An overview on, (Definition, Causes of HIV infection, risk factors of Human Immunodeficiency Virus, Ways of transmission of HIV disease, Important of nutrition and good lifestyle)

-Infection prevention and control practice, (Hand hygiene, personal protective equipment, safe injection practices, cleaning and disinfection of environment surface, waste management, sharps disposal, and linin management, screening /routine serologic testing and, as well as immunization of patients and health-care personnel, Prevention of HIV disease, and Treatment used for HIV infection.

- **Practical content of the educational intervention:**

- Direct care provided to HIV/AIDS patients and clinical management such as; Take complete medical history, Physical examination Laboratory evaluation, Counseling and communication with the patient and Managing anti-retroviral therapy (ART), The benefits of antiretroviral therapy (ART) for the patient's health and Preventing transmission of infection t o other through using universal blood and body fluid precautions at nurses workplace using personal protective equipment (PPE), Injection and sharps disposal measures.

Phase III: Implementation phase:

-In which the self-learning educational booklet was introduced to each participant nurse after conducting the initial assessment. Any explanations or clarifications about the content were provided.

- After 3 weeks, the researcher conducts a post-assessment to assess the effect of self-learning on nurses' level of knowledge, attitude, and practices toward HIV/AIDS patients using the study tools (Tool I part 2, tool II, and toll 3).

Phase IV: Evaluation phase: To determine the effectiveness of the educational interventions through self-learning.

- First evaluation (pretest) was carried out using all study tools for every nurse to evaluate their knowledge, attitudes, and practices before introducing the self-learning booklet.

- Second evaluation (posttest) was carried out 3 weeks after introducing the self-learning education intervention booklet.

Statistical analysis:

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described using numbers and percentages. The Kolmogorov-Smirnov test was used to verify the normality of distribution. Quantitative data were described using range (minimum and maximum), mean, standard deviation, and median. Pearson coefficient was used to correlate between two normally distributed quantitative variables. The significance of the obtained results was judged at the 5% level.

Results

Table 1: represents socio-demographic characteristics of the studied nurses. It shows that the mean age of the studied nurses was (39.61 ± 10.39) years and

30.4% of the studied nurses aged 40 – <50 years. More than half (57. %) of them were females and married. and nearly three-fifths (59.5%) of them were from rural areas. More than half (51.9%) of the studied nurses were bachelor's degree graduates, while 32.9% of them were graduates of nursing secondary school and the rest 15.2% of them were graduates of a nursing technical institute. The table shows also that, the mean years of experience was (6.25 ± 9.35) years. Slightly less than two thirds (60.8%) of them had 15 years of experience. Nearly two-thirds (64.6%) of studied nurses attended training courses related to human immunodeficiency virus, and 35.4% of them reported they didn't attend any training courses related to human immunodeficiency virus.

(Figure 1): shows the distribution of the studied nurses according to their total knowledge score regarding human immunodeficiency virus pre- and post-self-learning program implementation. The figure clarifies that pre-implementation of the self-learning program, more than half (54.4%) of the studied nurses had low Knowledge scores and this percentage decreased to 5.1 post-self-learning. On the other hand, in post – self-learning program implementation the percentage of nurses who had a moderate level of Knowledge increased from 45.6 to 89.9 post-self-learning. There was a statistically significant improvement occurring post-self-learning program implementation than pre-self-learning implementation (p<0.05).

Table 2: shows the distribution of the studied nurses according to their Attitude toward HIV/AIDS per and post-self-learning. It shows that a lot of misconceptions were identified among the studied nurses and this changed significantly post-self-learning. Their belief that homosexuality should be illegally changed from 69.6 to 100% after the self-learning intervention. 96.2% of nurses reported dealing with AIDS patients in a caring manner after self-learning compared to 58.2% pre-self-learning. About three-quarters (73.4%) of nurses had a sympathetic sensation toward the misery that people with AIDS experience compared to 49.49 pre-self-learning intervention. However, about two-thirds of 62.0% of them thought that patients who are positive should isolated in separate rooms and not be put in rooms with other patients, and this increased to 98.7 % after the self-learning intervention.

Moreover, the table shows also that, Feeling more sympathetic toward people who get AIDS from blood transfusions than those who get it from IV drug abuse post-self-learning changed from 68.4% to 100% after the self-learning intervention. Making something to help people with AIDS having easier life, is increased from 60.8% pre self-learning to 92.8% after self-learning. The table shows also changes in thoughts nurses have. Nurses who reported worrying about putting their families and friends at risk of contracting the disease If they were assigned to a patient with AIDS increased from 62 %to 84.8%, after the intervention and their thoughts that patients with HIV\AIDS have the right to the same quality of care as any other patients increased from 43.0% to 94.9%. After the intervention

(Figure 2): percent distribution of the studied nurses according to their total attitude scores regarding human immunodeficiency virus pre- and post-

self-learning program implementation. The table pointed out that post the implementation of the self-learning program the nurses' who had negative attitude scores decreased from 93.7% to 72.2%. On other hand, the percentage of nurses whom had positive attitudes improved from 3% to 27.8% in post self-learning (p<0.001). A significant improvement occurred in post self – learning program intervention than pre-self-learning (p<0.001).

Table 3: shows percent distribution of the studied nurses according to their total score of practice items pre- and post-self-learning intervention. There was a statistically significant improvement in the total score of all practices regarding HIV/AIDS patient care. including infection control measures, injection procedures, sharps disposal pretest, counseling, communication with HIV patients, management of antiretroviral therapy (ART), and health education about HIV(p<0.001). **The table and Figure (3)** shows also that, there was a statically significant improvement in the overall practice score of studied nurses in post-self-learning than pre-self-learning (P<0.001). The majority (92.4%) of the studied nurse had unsatisfactory practice in pre-self-learning and this decreased to only

17.7% post-self-learning. Satisfactory level of practice increased to 82.3% post-self-learning compared to 7.6% pre-self-learning

Table 4: displays the correlation between nurses' total knowledge, attitude, and practice scores post-self-learning. It reveals that there was a statistically significant correlation between nurses' total knowledge score and their attitude score post-self-learning implementation (r=0.332, p=0.003). However, there was not a significant correlation found between nurses' practice scores and their knowledge and attitude scores (P=0.106 and 0.341) respectively.

Table (5): shows the relationship between studied nurses' total knowledge, attitude, and practice scores regarding HIV/AIDS and their socio-demographic characteristics pre and post self – learning. The table shows a statistically significant relationship between the sex of the studied subject and the total knowledge and attitude scores of studied nurses and between nurses' resident and their practice scores. However, no significant relationship was found between other items of socio-demographic characteristics and total knowledge, practice, or attitude scores.

Table (I):   Distribution of the studied nurses according to socio-demographic characteristics (n=79)

Socio-demographic characteristics	No.	%
Sex		
Male	34	43.0
Female	45	57.0
Age (years)		
<30	18	22.8
30 – <40	21	26.6
40 – <50	24	30.4
≥50	16	20.3
Range	22.0 – 58.0	
Mean ± SD.	39.61 ± 10.39	
Median	40.0	
Marital status		
Single	19	24.1
Married	45	57.0
Widower	5	6.3
Divorced	10	12.7
Residence		
Rural	47	59.5
Urban	32	40.5
Education		
Nursing Diploma	26	32.9
Technical Institute	12	15.2
Bachelor of Nursing	41	51.9
Number of years of experience		
<5	16	20.3
5 – <15	15	19.0
≥15	48	60.8
Range	1.0 – 35.0	
Mean ± SD.	16.25 ± 9.35	
Median	18.0	
Attended training workshop on HIV		
Yes	51	64.6
No	28	35.4
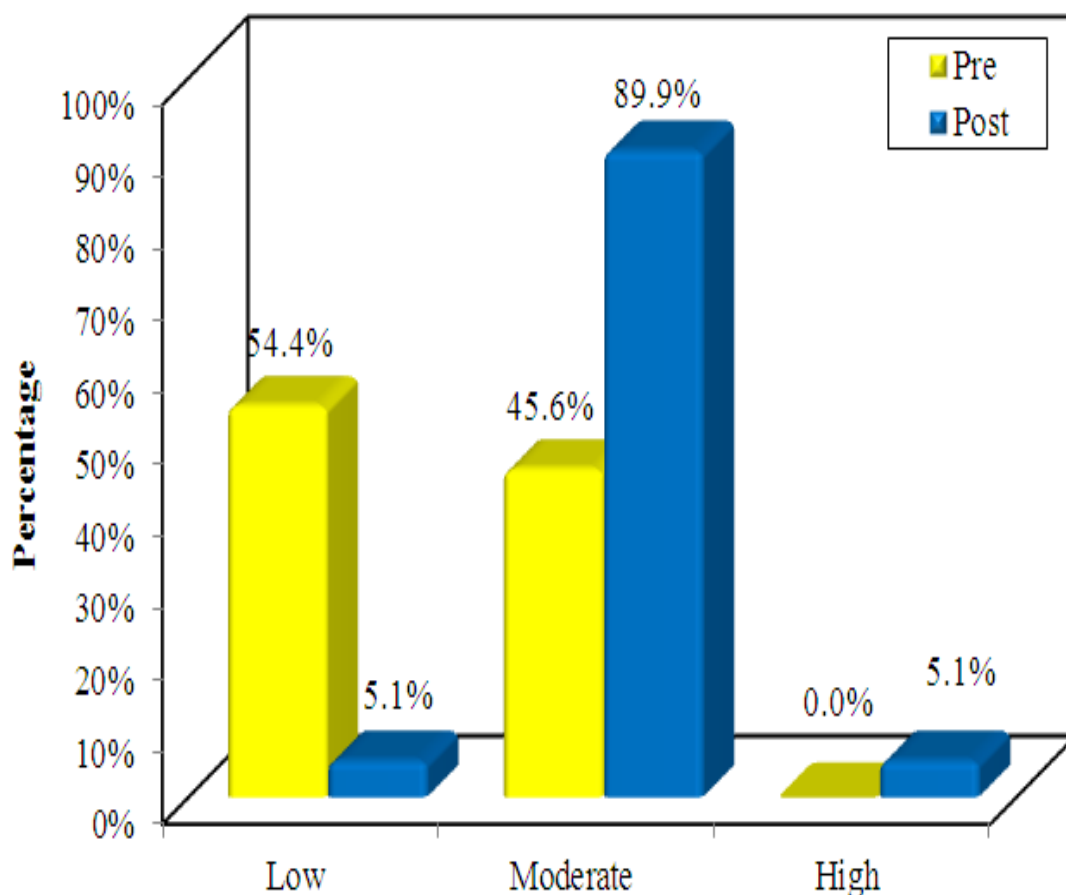
(Figure 1): Distribution of the studied nurses according to their total knowledge scores regarding HIV/AIDS pre and post self- learning (n=79)

Table (2):   Distribution of the studied nurses according to their Attitude toward HIV/AIDS per and post-learning (n= 79)

Q	AIDS Attitude Scale (AAS)	Pre						Post					
		Disagree		Natural		Agree		Disagree		Natural		Agree	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Most people who have AIDS have only themselves to blame	32	40.5	36	45.6	11	13.9	34	43.0	17	21.5	28	35.4
2	Most people who have AIDS deserve what they get	24	30.4	29	36.7	26	32.9	31	39.2	9	11.4	39	49.4
3	. Patients who are HIV-positive should not be put in rooms with other patients	1	1.3	29	36.7	49	62.0	1	1.3	0	0.0	78	98.7
4	. If I were assigned to a patient with AIDS, I would worry about putting my family and friends at risk of contracting the disease	18	22.8	12	15.2	49	62.0	9	11.4	3	3.8	67	84.8
5	Young children should be removed from the home if one of the parents is HIV positive	28	35.4	21	26.6	30	38.0	15	19.0	10	12.7	54	68.4
6	I think patients with AIDS have the right to the same quality of care as any other	31	39.2	14	17.7	34	43.0	3	3.8	1	1.3	75	94.9
7	. It is especially important to work with patients with AIDS in a caring work manner.	16	20.3	17	21.5	46	58.2	1	1.3	2	2.5	76	96.2
8	I think people who are IV drug users deserve to get	13	16.5	15	19.0	51	64.6	0	0.0	2	2.5	77	97.5

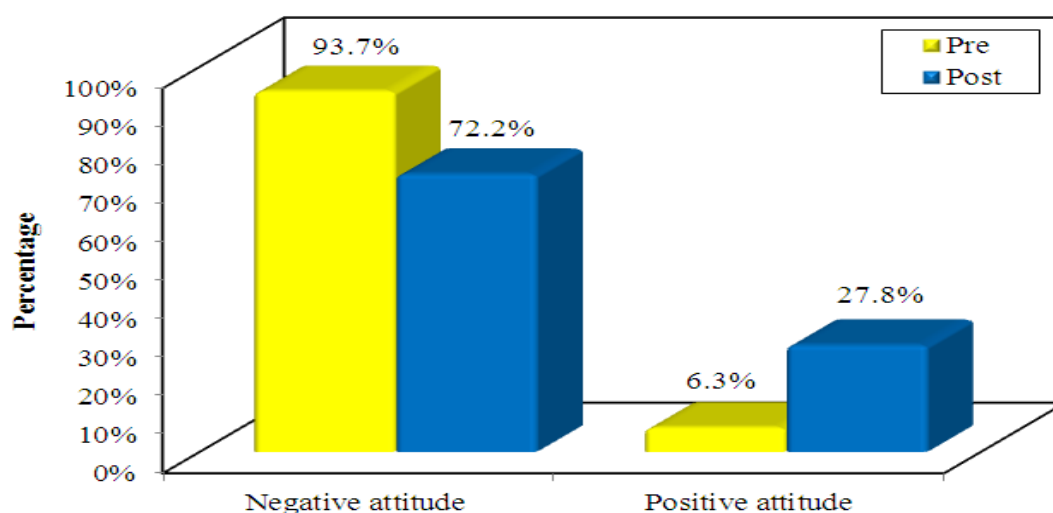|	AIDS											
9	I think women who give birth to babies who are HIV-positive should be prosecuted for child abuse	45	57.0	19	24.1	15	19.0	56	70.9	10	12.7	13	16.5
10	Homosexuality should be illegal	11	13.9	13	16.5	55	69.6	0	0.0	0	0.0	79	100
11	. I feel more sympathetic toward people who get AIDS from blood transfusions than those who get it from IV drug abuse	13	16.5	12	15.2	54	68.4	0	0.0	0	0.0	79	100
12	A homosexual patient's partner should be accorded the same respect and courtesy as the partner of a heterosexual patient	14	17.7	14	17.7	51	64.6	1	1.3	0	0.0	78	98.7
13	Patients with AIDS should be treated with the same respect as any other patient	2	2.5	3	3.8	74	93.7	1	1.3	0	0.0	78	98.7
14	If I found out that a friend of mine was a homosexual, I would not maintain the friendship	24	30.4	15	19.0	40	50.6	3	3.8	3	3.8	73	92.4
15	I'm worried about getting AIDS from social contact with someone	31	39.2	21	26.6	27	34.2	24	30.4	13	16.5	42	53.2
16	I am sympathetic toward the misery that people with AIDS experience	31	39.2	9	11.4	39	49.4	12	15.2	9	11.4	58	73.4
17	I would like to do something to make life easier for people with AID	5	6.3	26	32.9	48	60.8	0	0.0	6	7.6	73	92.4
18	I would do everything I could to give the best possible care to patients with AIDS	7	8.9	27	34.2	45	57.0	0	0.0	13	16.5	66	83.5
19	Children or people who get AIDS from blood transfusions are more deserving of treatment than those who get it from IV drug abuse	40	50.6	5	6.3	34	43.0	40	50.6	5	6.3	34	43.0
20	I would be worried about my child getting AIDS if I knew that one of his teachers was a homosexual	7	8.9	13	16.5	59	74.7	0	0.0	0	0.0	79	100
21	I have little sympathy for people who get AIDS from sexual promiscuity	56	70.9	16	20.3	7	8.9	70	88.6	5	6.3	4	5.1

Figure (2): **Distribution of the studied nurses according to their total Attitude score toward HIV/AIDS pre- and post-self-learning (n=79)**

Table (3):   Distribution of the studied nurses according to total Nurses' Practice scores pre and post self -learning (NPC) (n= 79)

| Tool III Nurses' Practice Checklist (NPC)	Pre		Post		McNp
	No.	%	No.	%	
I. Practice related to following Infection control measures					
Unsatisfactory practice (<80%)	69	87.3	33	41.8	<0.001*
Satisfactory practice (≥80%)	10	12.7	46	58.2	
II. Practice related to injection procedures					
Unsatisfactory practice (<80%)	65	82.3	29	36.7	<0.001*
Satisfactory practice (≥80%)	14	17.7	50	63.3	
III. Practice related to Sharps Disposal					
Unsatisfactory practice (<80%)	43	54.4	8	10.1	<0.001*
Satisfactory practice (≥80%)	36	45.6	71	89.9	
IV. Practice related to Pretest counseling					
Unsatisfactory practice (<80%)	56	70.9	1	1.3	<0.001*
Satisfactory practice (≥80%)	23	29.1	78	98.7	
Counseling					
Unsatisfactory practice (<80%)	41	51.9	2	2.5	<0.001*
Satisfactory practice (≥80%)	38	48.1	77	97.5	
VI. Practice related to Communicating with HIV patients					
Unsatisfactory practice (<80%)	52	65.8	25	31.6	<0.001*
Satisfactory practice (≥80%)	27	34.2	54	68.4	
VII. Practice related to initiated and management of antiretroviral therapy (ART)					
Unsatisfactory practice (<80%)	50	63.3	7	8.9	<0.001*
Satisfactory practice (≥80%)	29	36.7	72	91.1	
VIII. Practice related to Health Education about HIV					
Unsatisfactory practice (<80%)	32	40.5	4	5.1	<0.001*
Satisfactory practice (≥80%)	47	59.5	75	94.9	
Overall practice					
Unsatisfactory practice (<80%)	**73**	**92.4**	**14**	**17.7**	**<0.001***
Satisfactory practice (≥80%)	**6**	**7.6**	**65**	**82.3**	
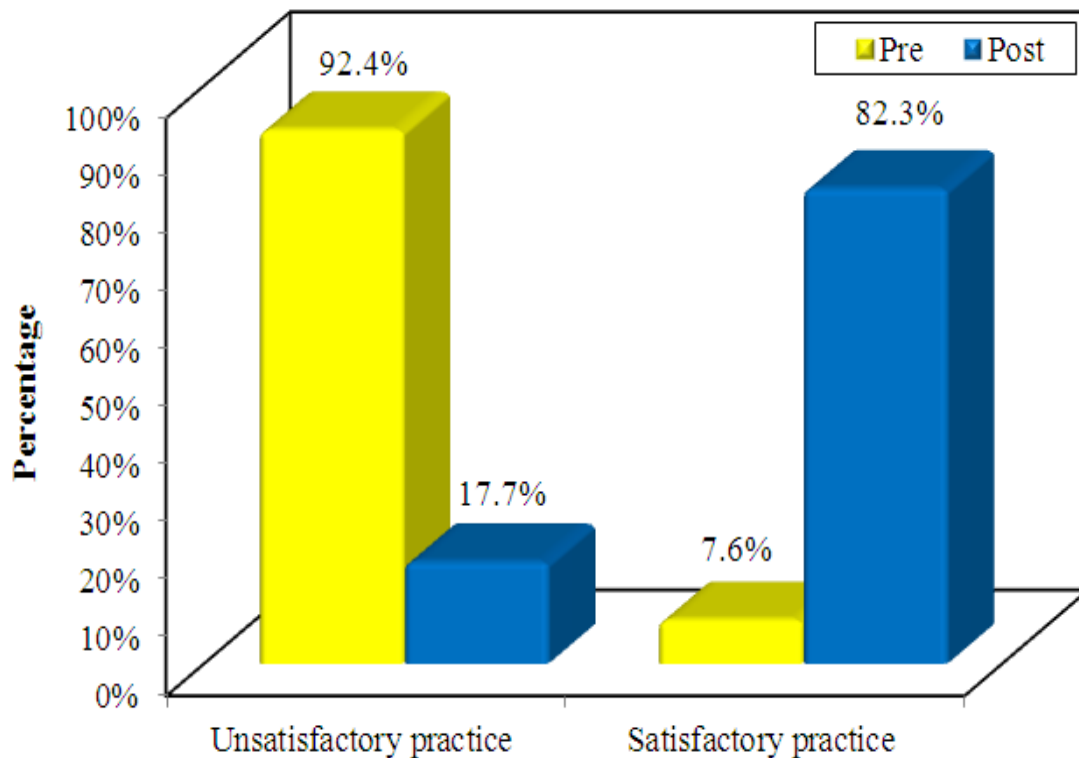
Figure (3): **Distribution of the studied nurses according to total Nurses' Practice score pre and post self -learning (NPC) (n= 79)**

Table (4): **Correlation between total knowledge, attitude, and practice scores post-self-learning (n =79)**

		Human Immunodeficiency Virus Knowledge	AIDS Attitude Scale (AAS)	Nurses' Practice Checklist (NPC)
Human Immunodeficiency Virus Knowledge	R		0.332*	0.183
	p		0.003*	0.106
AIDS Attitude Scale (AAS)	R			0.108
	p			0.341

r: Pearson coefficient

*: Statistically significant at p ≤ 0.0

Table (5): Relationship between sociodemographic characteristics of the studied nurses and their total knowledge attitude, and practice scores regarding HIV/AIDS post self–learning (n = 79)

Socio-demographic characteristics	Overall Human Immunodeficiency Virus Knowledge							χ^2	^{MC}p	Overall AIDS Attitude Scale (AAS) post-self-learning				χ^2	p	Overall total Nurses' Practice score (NPC)				χ^2	p
	Low (<60%) (n=4)		Moderate (60–80%) (n=71)		High (>80%) (n=4)					Negative attitude (<75%) (n=57)		Positive attitude (≥75%) (n=22)				Unsatisfactory practice (<80%) (n=14)		Satisfactory practice (≥80%) (n=65)			
	No.	%	No.	%	No.	%			No.	%	No.	%			No.	%	No.	%		
Sex																				
Female	4	100.0	26	36.6	4	100.0	11.011*	0.001*	19	33.3	15	68.2	7.863*	0.005*	5	35.7	29	44.6	0.372	0.542
Male	0	0.0	45	63.4	0	0.0			38	66.7	7	31.8			9	64.3	36	55.4		
Age (years)																				
<30	1	25.0	16	22.5	1	25.0	6.289	0.265	13	22.8	5	22.7	0.091	0.993	6	42.9	12	18.5	3.417	$^{MC}p=$ 0.346
30 – <40	1	25.0	20	28.2	0	0.0			15	26.3	6	27.3			3	21.4	18	27.7		
40 – <50	0	0.0	21	29.6	3	75.0			17	29.8	7	31.8			3	21.4	21	32.3		
≥50	2	50.0	14	19.7	0	0.0			12	21.1	4	18.2			2	14.3	14	21.5		
Marital status																				
Single	0	0.0	19	26.8	0	0.0	4.197	0.584	16	28.1	3	13.6	6.357	$^{MC}p=$ 0.083	5	35.7	14	21.5	1.779	$^{MC}p=$ 0.655
Married	4	100.0	37	52.1	4	100.0			34	59.6	11	50.0			8	57.1	37	56.9		
Widower	0	0.0	5	7.0	0	0.0			2	3.5	3	13.6			0	0.0	5	7.7		
Divorced	0	0.0	10	14.1	0	0.0			5	8.8	5	22.7			1	7.1	9	13.8		
Residence																				
Rural	2	50.0	45	63.4	0	0.0	6.150*	0.032*	34	59.6	13	59.1	0.002	0.964	4	28.6	43	66.2	6.751*	0.009*
Urban	2	50.0	26	36.6	4	100.0			23	40.4	9	40.9			10	71.4	22	33.8		
Education																				
Nursing Diploma	1	25.0	22	31.0	3	75.0	5.905	0.136	20	35.1	6	27.3	1.456	0.483	5	35.7	21	32.3	3.066	$^{MC}p=$ 0.204
Technical Institute	2	50.0	10	14.1	0	0.0			7	12.3	5	22.7			0	0.0	12	18.5		
Bachelor of Nursing	1	25.0	39	54.9	1	25.0			30	52.6	11	50.0			9	64.3	32	49.2		
Number of years of experience																				
<5	0	0.0	15	21.1	1	25.0	3.131	0.513	12	21.1	4	18.2	0.401	$^{MC}p=$ 0.884	5	35.7	11	16.9	3.057	$^{MC}p=$ 0.201
5 – <15	2	50.0	13	18.3	0	0.0			10	17.5	5	22.7			3	21.4	12	18.5		
≥15	2	50.0	43	60.6	3	75.0			35	61.4	13	59.1			6	42.9	42	64.6		
Attended courses on HIV																				
Yes	3	75.0	47	66.2	1	25.0	2.818	0.513	35	61.4	16	72.7	0.890	0.346	6	42.9	45	69.2	3.502	$^{FE}p=$ 0.073
No	1	25.0	24	33.8	3	75.0			22	38.6	6	27.3			8	57.1	20	30.8		

Discussion

Nurses play a pio-vital role in HIV-infected patients' care and support. A higher level of HIV/AIDS knowledge significantly impacts the nurses' level of comfort and self-defense and is favorable to more accepting attitudes toward people with the disease. [26] This study aims to evaluate the effect of self-learning intervention on nurses' knowledge, attitudes, and care provided to HIV\AIDS patients.

The present study reported that more than half of the studied nurses were females, married and their mean age was (39.61 ± 10.39) years, 30.4 % of them belonged to the age group of $40 – <50$. More than three-fifths of them had ≥ 15 years of experience (**Table 1**). This result agrees with **Abd El-aty et al., (2021)** [27] who conducted a study at the outpatient clinics of Zagazig Fever and Chest Hospital. They mentioned that the average age of the nurses in their study sample was 33.34 ± 7.99 and 91% of them were females and married. Their mean of work experience was 11.11 ± 7.9 with slightly more than two-fifths having from 12-<13 years of experience.

Regarding educational status, our study findings reported that more than half of the studied nurses were bachelor's degree graduates (**Table 1**). **This result may be due to that nurse students insisting to complete their university degree, especially in rural areas.** This result agrees with **Yakin, et al (2021)** [28] who studied the knowledge of and attitude toward AIDS and what the variables predict them among Turkish university students who studying in Izmir and reveled that more than half (59.6 %) of their participants were registered in state universities.

Regarding the Attended training workshop on HIV/AIDS, the present study reveals that nearly two-thirds of the studied nurses attended training courses related to human immunodeficiency virus (**Table 1**). This result disagrees with **Ibrahim et al (2019)** [29] who elaborates that their studied sample hasn't participated in AIDS training workshops, and 90.9% did not perform any training workshop about AIDS. **Our study result reflects the attention to in-service training in Tanta and Alexandria fever hospitals.**

The current study found that pre-implementation of the self-learning program, more than half of the studied nurses had low Knowledge scores and this percentage decreased to 5.1 in post-self-learning. On the other hand, in post –self-learning program implementation the percentage of nurses who had a moderate level of Knowledge increased from 45.6 to 89.9 post-self-learning (**Figure 1**). There was a statistically significant improvement in the total knowledge score post-self-learning program implementation. **This emphasized the importance of encouraging self-learning and offering guidance written material to nurses in this clinical area and the readiness of studied subjects to accept and retain the information through clinical practice with HIV patients.**

This result is contracting with **Ali et al., (2020)** [30] who study the nursing students' knowledge and attitude about HIV/AIDS in Sohag, Egypt, and found that nurses show good overall knowledge about HIV/AIDS. Most of the respondents (78.4%) had good knowledge. **This may be due to that his participants were nursing students and still had recent information about the disease.**

On the other hand, this result is in agreement with **Rai et al., (2016)** [31] who study the effect of educational intervention on knowledge regarding HIV/AIDS among nursing assistant students of Shree Birendra Hospital, Nepal,

and showed that there was also a significant change in knowledge in post-self-learning program implementation regarding knowledge about HIV. Also, **Al-Salihy et al. (2017)** [32] evaluate healthcare workers' HIV-related awareness and attitude of in Baquba Teaching Hospital as it consider as an important pillar in dealing with and managing an AIDS patient. The participant generally has good levels of knowledge

Also, **Mukherjee, et al (2016)** [33] who conducted a study at a tertiary care hospital in eastern India, reported also a statistically significant improvement in AIDS knowledge and attitudes. In a similar vein, **Abul-Fotouh et al. (2013)** [34] studied trends toward AIDS among Saudi nursing and predictions of readiness to provide care to patients in Saudi Arabia and reported a high level of knowledge among their participants after receiving the intervention.

Regarding nurses' attitudes toward HIV /AIDS, the present study illustrated that about two-thirds of studied nurses thought that patients who are HIV positive should not be put in rooms with other patients and this increased to 98.7 % after the self-learning intervention. **This may be explained that studied nurses may think that it is protection for the patients themselves from attracting further infections because of low immunity.**

Also, nurses' belief that homosexuality should be illegally changed from 69.6 to 100% after the self-learning intervention. Most of the nurses agree to work with in a caring work manner when caring of patients with AIDS after self-learning compared to half of them pre-self-learning; about three-quarters of them post-self-learning were feeling sympathetic toward the misery that people with AIDS experience compared to less than half of them pre-self-learning. Most of the studied nurses

agree that AIDS patients have the same right to quality of care and respect (**Table 2**).

These results are in agreement with **James et al.**, (2018) [35] who stated that .most participants reported a positive attitude toward people living with HIV. Also, the present study results are in agreement with **Boakye, et al., (2019)** [36] who study the determinants of knowledge, attitude, and practices of Ghanaian nurses towards persons living with HIV and AIDS in Kumasi and showed that the nurses have positive attitudes, with the majority showing greater agreement with positive statements, and more disagreement with negative statements about people living with HIV. The majority of the nurses strongly agreed with the statements 'patients with HIV/ AIDS have the right to the same quality of care as any other patient' and 'patients with HIV/AIDS should be treated with the same respect as any other patient.

The present study result revealed also that more than one-third of studied nurses agree that most people having AIDS have only themselves to blame and most of them diverse what they get after the self-learning program **(table 2)**. This result is in the same line as **Lui et al., (2014)** [37] who study attitudes and beliefs among nursing students about HIV and AIDS and explored that the majority (77.6%) indicated that they were afraid of contracting HIV through clinical practice. About a third of them believed that HIV and STIs are a punishment for immoral behavior.

Concerning studied nurses' total attitude score**,** the present study shows that most of the studied nurses had negative attitude scores and this percentage decreased to 72.2% in post – self-learning program implementation. On the other hand, the percentage of nurses who had positive attitudes increased from 6.3% to 27.8 % in post-self-learning. A statistically

significant positive change occurred in post self -learning program implementation **(Figure 2). This makes attention toward that HIV/AIDS patients still need to face discrimination in Egypt in society's health care system.**

The present study results are in agreement with **Yakin, et al., (2021)** [28] who reported that his participants have less discriminatory social attitudes toward people with HIV/AIDS and a negative attitude toward contact with people with AIDS

The present study results are also in agreement with **Eman, et al, (2011)** [38] who found that negative attitudes towards HIV-positive individuals were observed however, even after the intervention more than half of the study sample overall would avoid HIV-positive individuals at work or in public. **Abolfotouh et al (2013)** [34] who discover an overall negative attitude that the nursing students had toward AIDS, as, more than one-half of them negatively agreed that treating people living with HIV puts health workers at high risk with regard to attitude to precautionary measures. Also, the majority of students negatively agreed that AIDS patients and/or carriers be isolated from other patients (83.0%), have their care in specialized hospitals (89.6%), and not allowed to share a room with non-infected patients (81.8%).

Tern et al., (2015) [39] **who assessed** knowledge, attitudes, and practices on HIV/AIDS and the prevalence of HIV in the general population of Sucre, Bolivia found also that, the prevalence of attitudes of discrimination towards persons living with HIV/AIDS was very high. All these are important to be considered when designing preventive strategies as **it has been acknowledged that attitudes toward people living with HIV reduce the effectiveness of programmers and services**.

As regards to studied nurses' total practice score, the present study results show that most studied nurses had unsatisfactory total practice in the pre-self-learning phase while the majority of them had satisfactory total practice in the post-self-learning. There were highly statistically significant differences between the pre and post-test total practice scores **(figure 3)**. **This result may be because a significant proportion of them haven't participated in training workshops. Also, about half of the studied nurses are from rural areas where fields to earn health education are very narrow. On the other hand, this directed attention toward importance of encouraging self-learning among nurse caring for HIV\AIDS patients.**

This result agrees with **Ibrahim.et al (2019)** [29] who found that the majority of the participants had satisfactory total practice in the post-test and there were highly statistically significant differences between the pre-and post-phases regarding total practice scores.

The present study shows also that, there was an improvement in counseling, initiating and management of antiretroviral therapy, teaching patients how to correctly take their medications, assessment of side effects during ART, and teaching patients modes of transmission and causes of HIV/AIDS **in post-self-learning** than pre-self-learning (**Table 3**). Also, astatically significant improvement occurred in the most defective points of nurses' practices related to the prevention of the spread of HIV infection including wearing personal protective requirements, washing hands disposing of gloves, covering all wounds, using single-dose vials, and using single-dose vials (**Table 3**).

This result is in accordance with that of **Boakye et al (2019)** [36] in Ghana who reported that their participant had satisfactory practice

toward safety measures and that wearing gloves the last time they took a blood sample is reported by most of the them. **Ekundayo, et al (2018)** [40] found also that the percentage of nurses who were recapping needles at the time of the study was remarkably high, which became reduced after the intervention. Also, **Lui, et al., (2014)** [37] reported that the majority of participants stated that they would wear gloves to touch a patient who had or was suspected of having HIV and when changing the sheets of a patient with HIV.

Regarding infection control measures, nurses under study have a satisfying practice of safety measures regardless of educational level and years of experience. **(Table 3). This result may be due to the hospital's application of infection control standards as reported by nursing staff.** This result is supported by **Magdi, et al., (2013)** [41] who studied the nursing adherence to safety measures in Egypt and reported that 70% of the studied participants adhere to infection control measures and explored that the infection control team were adherence to managerial supervision.

Concerning communication skills, there were about one-quarter of the studied nurses had unsatisfactory communication practices. There was a statistically significant improvement in the total score of communication practices with HIV/AIDS patients occurring post-self-learning. The present study result is in agreement with **Lima et al. (2011)** [42] who studied communication between student nurses and AIDS patients and explored that it was difficult for nursing students to establish effective communication with HIV/AIDS patients. Also, **Magdi, et al., (2013)** [41] found that the communication skills of nurses under study were unsatisfying, however, nurses with bachelor's degrees had average good scores in communication skills.

The present study revealed that there was a statistically significant relationship between the total knowledge and attitude scores of studied nurses and their sex, however, there was no significant relationship found between total knowledge score and the other socio-demographic items including age, marital status, or education **(table 4).**

This result is a disagreement with **Okpala, et al. (2017)** [43] who assessed nurses' knowledge and attitude toward the care of HIV/AIDS patients in South East, Nigeria and found that there were significant relationships between age, marital status, and their level of knowledge. **This can be explained by knowledge and attitudes gained through experience and contact with the world around us.**

The present study revealed that there was a statistically significant relation between the residence of studied nurses and their total practice and knowledge scores. However, there wasn't a significant relationship between other socio-demographics **(Table 4)**. This result is in the same line with **Ibrahim, et al (2019)** [29] who found that there was a statistically significant association between the place of family living of the studied sample with their total practice throughout the pre and post-test.

The present study revealed that there was a statistically significant relationship between nurses' total knowledge score and their attitude score post-self-learning implementation **(Table 5). This finding indicates that knowledge has an effective role in attitude, as knowledge increases attitudes become more positive and concepts are changed to the best.**

The present study is in the same line with **Said, et al., (2018)** [44] who found that there is a positive correlation between knowledge and attitude which indicates that the level of

knowledge can influence the attitude of the respondents. The results revealed that the relationship was statistically significant. **The results revealed that an increased level of knowledge led to a positive attitude toward people living with HIV Thus, knowledge via education is vital to change the perception and attitudes of nurses toward HIV Infection.**

On the other hand, the result of the present study disagrees with **Hafeez, et al., (2017)** [45] who conduct a study among tertiary care hospitals' healthcare providers in Lahore, Pakistan", and revealed that; (there is no significant relationship between knowledge and attitude of healthcare providers toward HIV/AIDS where they not affected by each other) as doctors have biased attitude mainly with contamination, however, they have high knowledge.

The present study is also disagreement with **Ali et al (2020)** [30] **who** revealed that there is no significant association was found between the knowledge and attitude of the studied students regarding HIV/AIDS. This means that the attitude and knowledge of studied nurses are built independently and explore the importance of focusing the attention of the faculty authorities on building better nurse-to-patient relationships that are based on developing confident skillful nurses that can deal and cope with HIV patients.

The present study revealed also, there was no statistically significant correlation between nurses' practice scores and their knowledge and attitude scores **(Table 12)**.

This result agrees with **Nubed, C et al (2016)** [46] who assess Knowledge, attitudes, and practices regarding HIV/AIDS among senior secondary school students in Fako Division, South West Region, and Cameroon and found that a negative correlation was found to exist between knowledge and behaviors/practices but this was not significant.

However, regarding studied nurses who are already providing care for HIV/AIDS the present study results assure that encouraging continuous self-learning is essential to refresh their knowledge and changing their attitudes in the appositive direction toward such patients to improve nursing care provided to HIV/AIDS patients and helping them to improve their quality of life as possible.

Conclusion: Based on the findings of the present study, it can be concluded that nurses showed a significant improvement in their knowledge, practice, and extent attitudes toward patients with HIV/AIDS after the implementation of the self-learning program. There was a statistically significant positive correlation between nurses' total knowledge score and their attitude score.

Recommendations:

1-Develop educational interventions and continuous in-service training programs for fever hospitals nurses to improve their knowledge, attitude, and practices regarding HIV /AIDS.

2 Training should stress offering high-quality patient care and support **regardless of** the disease and assuring patients' rights and proper communications.

3-Stigma-reduction programs among healthcare workers are urgently needed to improve the quality of provided care, uphold human rights to healthcare, increase access to healthcare services, and maximize investments in HIV prevention and treatment.

4. Further research should be done regarding AIDS to promote the attitudes of HCWs, especially nurses to decrease the stigma toward caring for HIV /AIDS patients.

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