

Effect of Educational Guidelines Booklet About Work-related Blood-Borne Diseases among Nurses Working in Health Care Setting at Port-Said Governorate

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Abstract

Background: Nurses are at a great hazard of work-related exposure to body fluids such as blood, tears, urine, saliva of patient's members, subsequent in potential transmission spread of blood-borne diseases. **Aim:** to evaluate the effect of educational guidelines about Work-related blood-borne diseases on nurses' Basic knowledge, practice and attitude. **Subjects and method:** A brief initial pretest was completed, then, an intervention was managed then evaluation was completed. Carried out on 184 nurses who worked in the Port-Said governmental hospitals, central blood bank and outpatient clinics from certain centers of primary health care using three validated tools as follows: Tool I: **Self-Administered Questionnaire:** it was used to assess a studied nurse assess socio-demographic characteristic and knowledge level about blood borne diseases. Tool II: Observational checklist related to precautionary measures for blood borne infectious illnesses and Tool III scale for determining attitude. **Results:** revealed that there was an improvement in nurse's basic knowledge, approach and apply regarding blood-borne diseases from pre to where the mean percent change of improvement was 28.56 ± 36.53 , 237.7 ± 315.7 and 1.59 ± 7.30 . **Conclusion:** The education got an optimistic impact on 'basic information and performance. **Recommendations:** Nurses preparing & recurrent training to be accessible for free, total scope of immunizations together with nonstop supervision for worldwide precautions use.

Key Words: *Blood-Borne Disease, Educational Guidelines & Work-related Exposure.*

Introduction

Blood-borne diseases are caused by pathogenic microorganisms, which exist in body liquids as blood. Blood-borne pathogens are germs, for example, infections or microbes that are conveyed in blood and can cause sickness in persons. The most prominently blood-borne sicknesses are Hepatitis B-or-C (HBV/HCV), and the (human immunodeficiency virus) HIV. These infections cause diseases and liver harm or damage. (Beekman & Henderson, 2017).

These sicknesses can likewise spread if tainted blood or grisly organic liquids contact mucous tissues or an open sore or cut. Mucous tissues are the soggy parts of the patient body, for example, in his mouth, nose, and eyes. HIV can likewise spread starting with one individual then onto the next through synovial liquid in joints or spinal liquid. Also, it can spread through seminal fluid, vaginal discharge, breastfeeding, and amniotic liquid (Centers for Disease Control & Prevention, 2018).

Human services suppliers' particularly nurture are in danger of procuring blood-borne contaminations through word related presentation to sharp and needle-stick wounds. Attendants are at a high danger of word related introduction to blood and body liquids of patients, bringing about conceivable transmission of blood-borne ailments, for example, hepatitis B infection (HBV), hepatitis C infection (HCV) and human immunodeficiency infection (HTV). These dangers could be substantially reduced through

improve knowledge and practice of nurses about blood-borne diseases (Geiger-Brown & Jane 2010). As indicated by (Occupational Safety and Health Administration) OSHA, "word related presentation to blood or other body liquids implies sensibly foreseen skin, eye, mucous layer, or parenteral contact with blood or other conceivably irresistible materials that may come about because of the execution of a representative's obligations." Occupational introduction can happen among an assortment of occupations. (Centers for Disease Control & Prevention, 2018).

Nurses as a part of medical team regularly presented to blood and body liquids and subsequently lying face down to blood borne diseases. Preventative actions can be taken to prevent nurses from constricting these diseases. Nevertheless, nurses need to strictly affect these measures. Universal precautions in opposition to blood borne diseases infections include careful hygiene practices, such as hand washing and drying, proper handling and discarding of sharp substance, prevention of needle stick or sharp injuries, proper handling of patient care tools and dirty linen, environmental cleaning and spills management, proper handling of waste and also defensive garments, for example, hand gloves, outfits, smocks, covers and defensive eyewear (Massinga, 2012).

An "occupational exposure" that may place nurses at risk of blood borne infection is defined as a percutaneous injury either through needle stick or cut

with a sharp instrument or contact with the mucous membranes of the eye or mouth, or contact with non-intact/ intact skin resulting into contact with blood or other potentially infectious body fluids (Stephanie, 2015). There are approximately 2.5% of HIV cases, 40% of HBV and HCV cases worldwide resulting from occupational exposure among nurses, as reported by (WHO, 2016).

The transmission prevention of diseases which blood-borne in nature is a high priority for the Ministry of Health and Population (MOHP) in Egypt (Talaat et al., 2010) According to Cuadros, et al., (2014) & (Amer et al., 2015) studies, Egypt has the highest prevalence(14.7%) of HCV. More than 500 000 new HCV infections are reported every year. Therefore, HCV is considered to be the most significant public health problem in Egypt (Cuadros et al., 2014 & Amer et al., 2015) A paper done on the job-related blood borne diseases in Egypt indicated that about 8617 HBV infections occur every year among health care personnel in the health care environment (Talaat et al., 2010).

The use of safe universal precautions and vaccination of health care personnel against blood-borne diseases are the only means for the prevention of these disease among health care personnel (WHO, 2009). A study carried out among Egyptian health care personnel in a national liver disease referral center detected a frequency of viral hepatitis C, B, and co-infection as 16.6, 1.5, and 0.2%, respectively (Abdelwahab et al., 2012).

Existing information about the effect of increasing awareness to infection control guidelines implemented in hospitals, hepatitis B vaccination in relation to existing immunity, and other risk factors for exposure to blood-borne infections with their effective outcome on the sero frequency level of hepatitis among HCWs still needs to be evaluated. (El-Melligy, 2016)

According to Fishbein et al., (2001) attitudes based on defective information or foundations are seen as prejudices. Prejudices can be directed towards a group of people, which then is judged on the basis of inadequate information and knowledge. There are still many prejudices towards people suffering from HIV/AIDS and to face other people's fears and lack of knowledge can be difficult (Kitara & Aloyo, 2012) This can sometimes make it hard for an HIV infected person to tell friends and relatives about his/her condition. The negative attitude towards people living with bloodborne disease especially HIV/AIDS is high among nurses as well as the general population. Knowledge and specific information has an important role in HIV/AIDS prevention and the nurses have a central responsibility in prevention, care and treatment.

Therefore, it is important to improve knowledge, practice and attitudes towards people living with bloodborne disease among nurses. Gained information can be used to direct educational guidelines (Dahlström & Viberg, 2013).

One of the strategies that should be used to prevent the increased spread of blood borne diseases-is guidelines booklet aiming at expansion of knowledge develop practices and gaining positive attitude toward this issue. A number of studies from developing countries have examined knowledge, attitude related to blood borne diseases infections (Aluko et al., 2016) that indicate inadequate knowledge and awareness among nurses related to blood borne diseases infections. Lack of knowledge and awareness on these issues can further adversely affect the safe work practices of the nurses and make them vulnerable to blood borne infections. Therefore, frequent on job an educational guidelines booklet on blood-borne diseases can prove to be very beneficial in safety and promoting occupational health among the nurses.

Significance of study

In Egypt people were suffering and could die from complications of blood-borne diseases daily. Through the experiences and observations of researchers, it was found that nurses dealing with individuals' body fluids by some of inattention, due to lack or absence of information or lack of compliance for basic common measures. Hence, it should be a basic principal to increase the nurses' knowledge, improve their practices and acquire their positive attitude about the blood-borne diseases. So, it is important to increase the nurses' understanding and education about the disease, attitudes and corrective actions, high-quality practices.

Aim of the study

Therefore, our study aims to evaluate the effect of educational guidelines booklet concerning work-related blood-borne diseases on nurses' basic knowledge, performance and attitudes.

Research Hypothesis

To fulfill the aims of the study the following research hypotheses are formulated

H 1: There will be an improvement of studied nurse's knowledge in post and follow-up of implementation of blood-borne diseases educational guidelines.

H 2: There will be an improvement of studied nurse's practice in post and follow-up of implementation the blood-borne diseases educational guidelines.

H3: There will be positive in studied nurse's attitude regarding the blood-borne diseases in post and follow-up of implementation the blood-borne diseases educational guidelines.

Methodology

Designs

A Quasi-experimental (pre-post-test) design was utilized. It is a type of evaluation which aims to determine whether a program or intervention has the intended effect on study's participants (Stephene, 2007).

Setting

This study was conducted at the section of medical surgical and dressing outpatient- clinic at general hospital, Elzohour hospital, Port-Fouad hospitals, and central blood bank. Also, wound dressing clinics in primary health centers namely (El Gawhara and Omar health center care) were engaged from Port Said.

Sample

A convenient sample of this research consists of all nurses working in the previous mentioned settings, total number =184 nurses, distributed as the following (36 Port-Said general hospital, 32 Elzohour hospital, 26 Port-Fouad hospital, and 23 out-patient clinics) 10 El Gawhara health center, 27 Omar bin El-khatab health center and 30 central blood banks.

Tools for data collection

Tool I: Self-Administered Questionnaire: it was used to assess socio-demographic characteristic and knowledge level about blood borne diseases among studied nurses. It is composed of two parts;

Part 1: Socio demographic data: it included data related to subjects' characteristics namely; age, sex, marital status, years of experience, educational level and presence of manual guideline about blood borne diseases precaution.

Part 2: Assessment of nurse's knowledge about standard precautions to be taken while handling blood and body fluids and the procedures to be followed after exposure to them. It was adopted from Chacko, 2007. It contains 10 MCQ and 15 "true", "false" "don't know" questions covering the following areas; general aspects and definition, causes, and manners of transmission, risk influences, Signs and symptoms, diagnosis and treatment care, prophylaxis and control behavior of blood-borne illness.

The Scoring system for the questionnaire had three alternative responses, each correct answer scored "two" grades, the wrong answer scored "One" grade, and "I don't know" scored "Zero" grade, thus the knowledge score was scaled from 0 to 10. Based upon scoring system utilized, the knowledge level was categorized as follows: satisfactory 60 % and unsatisfactory knowledge less than 60 %.

Tool II: Observational check list related to precaution for blood borne diseases: it was adopted from Romea et al., (2007) to assess studied nurses' clinical skills at the greatest usual

procedures' techniques in their work field. It includes 12 items covering the following areas; use of personal protective devices (6 items), hand washing and cleanliness (2 items) and safe handling and disposal of hospital waste and sharps (4 items).

Scoring system

Total score of performance test was ranged from 1-12. One mark was given for done and zero for not done or incorrect. Thus, total maximum score would be 12. The score for the total were evaluated as highly safe practice level were considered from 9 to 12, moderately safe practice was from 5 to 8 and Unsafe practice < 5.

Tool III- Attitude related to precaution for blood borne diseases scale; it was adapted from Chacko, 2007. It is composed of 16 items scale to elicit nurse's opinion regarding HIV/ AIDS. Inducing Risk factors, causes, modes of transmission (3 items), Discrimination related to HIV / AIDS (4 items) and Stigma related HIV/AIDS (9 items)

Scoring system

Each item was scored as a 5 Likert scale as 5, 4, 3, and 1 (powerfully agree, agree, undecided, Disagree and powerfully disagree-respectively) the total score is with maximum of

80. Statistically presentation of data was derived from collapsing the original scale. 1 = (strongly agree + agree), 2 (undecided), 3 (Disagree + strongly disagree). The score for the total were evaluated as favorable ≥ 48 or unfavorable < 48.

Validity and reliability of the tools

The tools were translated, **validity** was checked by seven experts in different field of medical and nursing. A few changes were made.

The created and approved apparatus for the information was tried for reliability quality on an example of 10% test retest result utilizing alpha Chronbach uncovered that all things are altogether contrasted and has a connection coefficient over the limit of critical ($r = .74$). Then again, the alpha incentive for performance checklist was ($r = .07$) which shows emphatically unwavering quality. Additionally, the alpha incentive for Likert scale in the example was ($r = .75$).

Pilot study

A pilot study was completed on 10% of studied sample ($n= 18$) to survey lucidity and relevance of the instrument and gauge the time expected to fill each part. The essential alteration was done as uncovered from the pilot consider. The pilot participants were barred from the aggregate sample to guarantee the dependability of the outcome. Otherwise, these nurses were then excluded from the sample of research work to assure the stability of answers

Administrative and ethical consideration:

The analysts satisfied the fundamental authority steps required to get the endorsement for doing the investigation. Educated verbal assent was acquired from all members to take an interest in the examination. The privacy and namelessness of any acquired information was guaranteeing through coding all things considered. The reason for the investigation was disclosed to every member amid individual meetings.

Field work

The current study includes four phases (preparation, planning, implementation, and evaluation phase).

1. Preparation phase: Immediately agreement was approved to conduct this study, the investigators were beginning to collect data assembly. They met participants who match the conditions. The goal of this study was explained to them after taking their oral consent. The researcher divided participants into small groups each group not exceed than 15 nurses. Personal data was taken using tool I-a. Then pre- test for blood born precaution knowledge was assessed using tool I-b, followed by tool III to assess their attitude. The time taken was 20 to 25 min for each one. The researchers give pre- test to collect data related to precaution for blood born disease using tool II the observational checklist.

2. Planning phase: the researcher used the assessment data and recent related literature in developing the educational guideline booklet about job-related blood-borne diseases. Based on the study objective: a) the knowledge part covered the general information concerning the blood borne diseases as (description, roots, and methods of transmission, signs and symptoms, treatment, and controller of blood-borne disease). b) Attitude part covered the general trends toward AIDS as (HIV-individual are immoral, HIV- personal are just like one's family members and they are responsible for their condition) c) Practice part was developed based on observational checklist related to precaution for blood borne diseases (wearing gloves, use gloves while working with needles and sharp tools and hand wash after removing gloves).

3. Implementation phase: The educational guideline booklet was implemented for each group one session per week for a total of eight sessions for each group (two sessions for knowledge part, four sessions for practical part and the last two sessions for attitude regarding blood-borne disease). The duration of the session was about one hour, and it carried at the pre-mentioned setting. The booklet was distributed to all participants in the first day of starting

implementation phase after explaining the aim of the educational guideline booklet to all participants (participants divided into 12 groups each one contained about 15 nurses). In relation to the methods used in the educational guideline booklet were lectures, discussion, role play and demonstration. Suitable teaching aids were prepared also, to help the participants assimilate and refresh U heirU knowledge as booklet, PowerPoint and posters.

4. Follow-up phase: This phase includes evaluation of nurses of guidelines booklet after 3 months through using the same tools which used in pre and post-test phase regarding blood borne diseases & it's precaution.

5. Evaluation stage: each member of medical attendants was assessed three times amid the examination time frame utilizing three apparatuses, pre-usage of the instructive rule, quickly post execution of the instructive rule and a month post execution of the instructive rule. The Data accumulation for this investigation was done from first of March to 30th of April 2017.

Data analysis

All information was gathered, coded, classified and subjected to factual investigation. Factual examination is performed by measurable Package SPSS all in all (form 23.0). Quantitative factors are depicted by the Mean, Standard Deviation (SD), while subjective unmitigated factors are portrayed by extents and rates. Chi-square and P-esteem test used to test connection-correlation. Statistically significant was set at $p < .05$.

Results

Table (1): Distribution of the studied sample regarding to nurses' socio-demographic characteristic (n=184).

Demographic data	No.	%
Age (years)		
21 - 25	8	4.3
26 - 30	26	14.1
31 - 40	62	33.7
Above 41 years	88	47.8
Sex		
Male	14	7.6
Female	170	92.4
Marital status		
Married	120	65.2
Single	8	4.3
Divorced	36	19.6
Widow	20	10.9
Education		
Diploma	112	60.9
Institute of nursing	28	15.2
University	44	23.9
Years of Experience		
< 1 year	10	5.4
1-3 years	42	22.8
4 - 6 years	22	12.0
More than 6 years	110	59.8
Attend Training program		
Yes	46	25.0
No	138	75.0
If yes (n=46)		
One day	2	1.1
Three days	34	18.5
More than 3 days	10	5.4

Table (2): Distribution of the studied sample regarding to nurses' knowledge about blood-borne diseases for (pre- post and follow up test) (N = 184).

Items	Pre-guidelines test		Post- guidelines test		Follow up-test after 3 months		χ^2	p
	No.	%	No.	%	No.	%		
Definition	112	60.9	116	63.0	88	47.8	10.185	0.006*
Causes	106	57.6	160	87.0	170	92.4	77.622	<0.001*
Mode of transmission	170	92.4	172	93.5	174	94.6	0.713	0.700
Risk factors	6	3.3	8	4.3	2	1.1	3.604	0.165
Signs and symptoms	174	94.6	184	100.0	184	100.0	4.182	0.124
Diagnosis	144	78.3	148	80.4	120	65.2	13.168	0.001*
Prevention	20	10.9	36	19.6	66	35.9	34.429	<0.001*
Treatment	116	63.0	154	83.7	158	85.9	33.533	<0.001*

χ^2 : Chi square

*: significant at $p \leq 0.05$

Table (3): Distribution of the studied sample regarding to nurses' knowledge score of blood-borne diseases for (pre- post and follow up) (N = 184)

Total knowledge	Pre-guidelines booklet test		Post-guidelines booklet test		Follow up-test after 3 months		χ^2	P
	No.	%	No.	%	No.	%		
<60% Unsatisfactory	26	14.1	6	3.3	6	3.3	22.609*	<0.001*
≥60 Satisfactory	158	85.9	178	96.7	178	96.7		

χ^2 : Chi square

*: significant at $p \leq 0.05$

Table (4): Distribution of the studied sample regarding to nurses' practice about blood-borne diseases for (pre- post and follow up test) (N = 184).

Items	Not done Correctly		Done Correctly		χ^2	P
	No.	%	No.	%		
Wearing gloves during work						
Pre-test	122	66.3	62	33.7	188.060*	<0.001*
Post test	14	7.6	170	92.4		
Follow up	24	13.0	160	87.0		
The mop is used during work						
Pre-test	108	58.7	76	41.3	268.541*	<0.001*
Post test	0	0.0	184	100.0		
Follow up	0	0.0	184	100.0		
Wearing the foot wear during work						
Pre-test	176	95.7	8	4.3	45.315*	<0.001*
Post test	148	80.4	36	19.6		
Follow up	126	68.5	58	31.5		
Gloves are worn during collection of waste						
Pre-test	120	65.2	64	34.8	137.776*	<0.001*
Post test	32	17.4	152	82.6		
Follow up	26	14.1	158	85.9		
Using gloves while working with needles and sharp tools						
Pre-test	126	68.5	58	31.5	145.647*	<0.001*
Post test	32	17.4	152	82.6		
Follow up	30	16.3	154	83.7		
An antiseptic solution is used during cleaning						
Pre-test	80	43.5	104	56.5	88.352*	<0.001*
Post test	14	7.6	170	92.4		
Follow up	20	10.9	164	89.1		
Hand wash after removing gloves						
Pre-test	140	76.1	44	23.9	217.083*	<0.001*
Post test	24	13.0	160	87.0		
Follow up	24	13.0	160	87.0		
Collect dirty tools and sheets separately						
Pre-test	132	71.7	52	28.3	188.142*	<0.001*
Post test	28	15.2	156	84.8		
Follow up	22	12.0	162	88.0		
The bag of dirty sheets and garbage shall be sealed tightly						
Pre-test	130	70.7	54	29.3	241.711*	<0.001*
Post test	28	15.2	156	84.8		
Follow up	2	1.1	182	98.9		

Used for the collection of needles and acute aches and anti-puncture families						
Pre-test	142	77.2	42	22.8	296.348*	(<0.001*)
Post test	22	12.0	162	88.0		
Follow up	2	1.1	182	98.9		
Used vehicles to transport waste to another place						
Pre-test	166	90.2	18	9.8	0.154	(0.926)
Post test	164	89.1	20	10.9		
Follow up	164	89.1	20	10.9		

χ^2 : value for Chi square

*: Statistically significant at $p \leq 0.05$

Table (5): Distribution of the studied sample regarding to nurses' practice score of blood-borne diseases for (pre- post and follow up) (N = 184).

Practice regarding preventable measures of blood-borne	Pre-guidelines booklet test		Post-guidelines booklet test		Follow up-test after 3 months		Test of sig.	p
	No.	%	No.	%	No.	%		
Highly safe practice	30	16.3	150	81.5	154	83.7	$\chi^2 = 237.580^*$	<0.001*
Moderately safe practice	22	12.0	14	7.6	8	4.3		
Unsafe practice	132	71.7	20	10.9	22	12.0		

χ^2 : value for Chi square

*: Statistically significant at $p \leq 0.05$

Table (6): Distribution of the studied sample regarding to nurses' attitude scale about blood-borne diseases for (pre- post and follow up test) (N = 184)

Statement	Pre-test						Post-test						Follow up-test after 3 months						χ^2	P
	Strongly disagree/ Disagree		Undecided		Strongly agree / Agree		Strongly disagree/ Disagree		Undecided		Strongly agree / Agree		Strongly disagree/ Disagree		Undecided		Strongly agree / Agree			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
HIV/AIDS is always the result of willful mischiefs of the one's life.	112	60.9	28	15.2	44	23.9	162	88.0	8	4.3	14	7.6	162	88.0	8	4.3	14	7.6	54.650*	<0.001*
AIDS is a disease that anyone can get if they are not careful in their lives.	76	41.3	36	19.6	72	39.1	128	69.6	14	7.6	42	22.8	128	69.6	14	7.6	42	22.8	42.953*	<0.001*
If one's close relative / Friend become HIV positive, it is better to discontinue the relationship with them.	78	42.4	50	27.2	56	30.4	116	63.0	16	8.7	52	28.3	116	63.0	18	9.8	50	27.2	35.671*	<0.001*
Health care personnel with HIV/AIDS should be allowed to work in any area of health care setting that requires patient contact.	112	60.9	52	28.3	20	10.9	158	85.9	20	10.9	6	3.3	160	87.0	18	9.8	6	3.3	46.805*	<0.001*
Treating someone with HIV/AIDS is just wasting the precious resources	24	13.0	56	30.4	104	56.5	18	9.8	30	16.3	136	73.9	18	9.8	14	7.6	152	82.6	37.303*	<0.001*
People with HIV/AIDS should still be allowed to get married, as long as both partners know about it.	70	38.0	46	25.0	68	37.0	124	67.4	26	14.1	34	18.5	138	75.0	14	7.6	32	17.4	59.862*	<0.001*
If one has AIDS, he can still lead a normal life.	124	67.4	32	17.4	28	15.2	170	92.4	8	4.3	6	3.3	170	92.4	8	4.3	6	3.3	57.321*	<0.001*
One can get AIDS while working with a colleague who is HIV positive	142	77.2	22	12.0	20	10.9	172	93.5	4	2.2	8	4.3	172	93.5	6	3.3	6	3.3	32.071*	<0.001*
HIV infected patients should be treated just like everybody else	136	73.9	26	14.1	22	12.0	166	90.2	14	7.6	4	2.2	166	90.2	8	4.3	10	5.4	28.346*	<0.001*
People with AIDS are immoral	112	60.9	24	13.0	48	26.1	18	9.8	4	2.2	162	88.0	0	0.0	4	2.2	180	97.8	270.785*	<0.001*
HIV/AIDS patients can be admitted to the general wards along with other patients.	136	73.9	30	16.3	18	9.8	172	93.5	8	4.3	4	2.2	172	93.5	8	4.3	4	2.2	41.520*	<0.001*
AIDS patients are a burden for society and family.	128	69.6	28	15.2	28	15.2	174	94.6	2	1.1	8	4.3	178	96.7	0	0.0	6	3.3	79.593*	<0.001*
It is difficult to work calmly and peace fully when there is HIV infected person in the ward.	76	41.3	72	39.1	36	19.6	160	87.0	16	8.7	8	4.3	162	88.0	14	7.6	8	4.3	130.240*	<0.001*
People with HIV/AIDS are just like one's family members only.	60	32.6	88	47.8	36	19.6	16	8.7	0	0.0	168	91.3	10	5.4	0	0.0	174	94.6	324.571*	<0.001*
It is better to get any other diseases other than AIDS	52	28.3	108	58.7	24	13.0	12	6.5	22	12.0	150	81.5	12	6.5	24	13.0	148	80.4	233.044*	<0.001*

χ^2 : value for Chi square

*: Statistically significant at $p \leq 0$.

Table (7): Comparison between studied sample regarding to nurses' attitude scale about blood-borne diseases for (pre- post and follow up test) (N = 184)

Attitude scale for nurses on HIV/AIDS	Pre-guidelines booklet test		Post- guidelines booklet test		Follow up-test after 3 months		Test of Sig.	p
	No.	%	No.	%	No.	%		
Favorable attitude (≥ 30)	132	71.7	176	95.7	178	96.7	$\chi^2=69.800^*$	<0.001*
Unfavorable attitude (<30)	52	28.3	8	4.3	6	3.3		

χ^2 : value for Chi square

*: Statistically significant at $p \leq 0.05$

Table (8): Correlation between total knowledge, practice and attitude regarding blood-borne diseases for (pre- post and follow up test) (N = 184).

Items		Pre-guidelines booklet test	Post- guidelines booklet test	Follow up-test after 3 months)
Knowledge VS practice	r	0.029	-0.061	0.431*
	p	0.694	0.410	<0.001*
Knowledge VS attitude	r	0.239*	0.156*	0.685*
	p	0.001*	0.035*	<0.001*
Practice VS Attitude	r	0.027	0.132	0.431*
	p	0.713	0.073	<0.001*

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

Table (1): Shows distribution of nurses according to their sociodemographic characteristics. The majority of studied subjects (92.4%) were females, 47.8% of them were in age group above 41. Nearly two third of them (65.2%) were married. In relation to educational level, the highest frequency (60.9%) had diploma of nursing, more than half of them 59.8% had more than 6 years level of experience. As regards to training course the highest frequency (73.9%) had training more than 6 days.

Table (2): We observe significant difference statistical in studied nurses' knowledge about meaning, and other informational outlines of blood-borne disease post and follow-up the guideline implementation compared to their knowledge pre the guideline booklet implementation, which $p < 0.0001$. The studied nurses' knowledge improvement was the highest concern in the areas of causes and treatment of blood-borne disease (87% and 83.7%) respectively at post-test with increasing at follow-up after 3 months (92.4% and 85.9%) respectively. On the other hand, there was no significant statistical difference in their knowledge about modes of transmission, risk factors and signs and symptoms post and follow-up the guideline booklet implementation $p \leq 0.5$.

Table (3) Shows that there was improvement in studied nurses' total of knowledge of blood borne sicknesses pre -post the educational guideline implementation as 85.9% of participants had acceptable satisfactory knowledge towards blood borne diseases pre the guideline booklet implementation, compared to 96.7% of post and

follow-up guideline booklet implementation which is highly significant $p < 0.00001$.

Table (4): Clarified that there are a statistically significant difference in nurse's practice regarding applying standard precautions and preventable measures in contact of blood borne diseases in three phases of guidelines booklet implementation between posttest and follow -up phase in comparing with pretest phase in item related to wearing gloves during work , Gloves are worn during collection of waste, using gloves while working with needles and sharp tools, used for the collection of needles and acute aches and anti-puncture families separately ($P=0.001$) respectively. while a statistically significant differences were found between pretest and post-test, pretest and follow-up phases in items related the mop is used during work, wearing the foot wear during work, an antiseptic solution is used during cleaning, Hand wash after removing gloves, Collect dirty tools and sheets separately ($P=0.001$), however there in non-significant difference regarding used vehicles to transport waste to another place ($P=0.926$).

Table (5): Illustrates that there was improvement in studied nurses' practice regarding score of blood-borne disease in three phases of guidelines booklet implementation. The studied nurses' practice improvement was noted especially in the high safe practice level (81.5%) at posttest with slightly increasing at follow up over eighty with $p = \leq 0.01$.

Table (6): Clarified that there is a statistically significant difference in nurse's attitude towards patients with HIV diseases between post-test and follow-up phases in comparing with pre-test phase

only in items related to **Frankly** if you find out that your close relative / Friend, will you complete your life with him ($P = 0.001, 0.001, 0.001$) respectively. while there is a statistically significant difference in nurse's attitude between pre-test test and post-test , pretest and follow-up phases only found in items related to If you are asked to travel to a place where the disease is widespread, will you go?, Will you live with the patient in the same house?, Do you work with the patient in the same workplace? , If you find the presence of the disease in one of the spouses after the examination of pre-marriage, will you agree to complete the marriage? ($P = 0.001$).

Table (7): Shows unfavorable attitude of participants following conducting guideline booklet in the three phases of the study (P value-equals 0.001). The studied nurses' favorable attitude improvement regarding blood-borne disease was noted (95.7%) at post-test with slightly increasing at follow up (96.7%).

Table (8): This table shows huge connection between learning with respect to blood borne infections and work on in regards to preventable measures of blood-borne ailment in pre, post and follow up rule (P -value<0.001) and $r = 0.431$. It implies that after instructive rule, with expanding the information essentially increments. Additionally, a measurably critical relationship was found amongst information and state of mind in pre, post and follow up rule (P -value<0.001) and same line by and by and disposition where (P -value<0.001) $r = 0.431$.

Discussion

In Egypt Hepatitis C is considered to be the most significant public health problem **Cuadros, et al., (2014) & Amer et al., (2015)** A study conducted in Egypt indicated that about 8617 HBV infections occur every year among health team in the Health organization setting **Talaat et al., (2003)** A study carried out among Egyptian HCWs in a national liver disease referral center detected HCV -Ab (antibody), (HBs-Ag) hepatitis B surface antigen, and co-infection as 16.6, 1.5, and 0.2%, respectively (**WHO, 2009**).

Nurses as health care providers are at possibility of attaining blood-borne contagions within working presentation to sharpers shrill and needle-stick wounds. Also, nurse's contact with fluids of patients' body might leads to transmission of HBV, HCV and HTV. The danger of occupational broadcast of infectious diseases could be substantially reduced through nurses' educational guidelines to increase their knowledge moreover improving their level of universal practices and attitude (**Geiger et al., 2010**). In light of the aftereffects of the present paper as respect sociodemographic characteristics qualities of

medical attendants, the larger part of contemplated attendants were females; about portion of them were in age assemble over forty. About one third of them were unmarried. In relation to educational level, the highest frequency had secondary school level of nursing; the greater part of them had over six years level of proficiency.

The analysis of data exposed that, after the educational guideline carrying out, there is a really advance in studied nurses' knowledge around concept, judgmental diagnosis, inhibition and care treatment of blood-borne illness. This improvement might be related to the fact that the majority of the studied nurses were > 41 years this age might have good readiness for learning new things, in the same hand they might have more responsibilities more than the young nurses so more capacity of learning. This finding is in agreement with **Al-Mazrou et al., (2005)** who assessed the impact of health education for Saudi para-medicinal scholar's information in the direction of AIDS. The finding indicated that the health education intervention had a significant positive effect on students' knowledge regarding modes of transmission and most of available means of protection. Moreover, **Buskin et al., (2002)** assessed Chinese health professionals' knowledge about HIV as an example of Blood Born diseases and revealed significant differences between the pre- and post-lecture level, where most participants became able to correctly identify sexual transmission, blood transfusion and sharing of injection equipment as HIV risky practices.

The present study revealed improvement in the studied nurses' practice regarding preventable measures of blood-borne disease in three phases of guidelines booklet implementation. This has been concluded by the presence of highly significant differences between effects of before and post guidelines implementation test. This finding indicated that level of practice can be easily improved, especially if preceded by relevant scientific base of knowledge. **Batrof & Mansour (2012)** agree with our study and mentioned that, continuing education is required to maintain competence in practice. Education may take the form of on the educational guideline, programs, workshops that teaching had a meaningful influence on nurses understanding knowledge and skills.

After educational guideline implementation booklet there was a significant increase in the studied nurses' level of favorable attitude regarding blood-borne disease was noted. **Gutierrz (2014)**. Showed significant improvement on attitudes towards HIV/AIDS after education intervention on stigma reduction among nurses. On the same hand Angel **Rajakumari & Sheela (2015)** showed significant

improvement on AIDS attitudes after an educational intervention for nurses. Having knowledge is the first key and necessary element in an attempt for development of a positive attitude (**Sharifzadeh et al., 2007**)

This research paper discovered a crucial significant correlation between practice and gained knowledge regarding preventable measures of blood-borne disease among the studied nurses. This finding reflected that practice was based on their knowledge. Agreement with this study, **Zatton (2012)** mentioned in her study about "Assessment of awareness among nurses caring for hepatitis patients" that there was a clear positive association amongst nurse's knowledge and practices. In this respect, **Walsh (2010)** emphasized on the fact that correct theoretical knowledge of under lying principles of the action is essential before practice has no effect. On the contrary, **Chan (2009)** reported in his study around "knowledge and compliance of common precautions among nurses in an acute hospital setting" that no correlation between knowledge and practices of nurses.

Additionally, we discovered a considerable significant correspondence for attitudes and knowledge toward patients with HIV/AIDS and willingness to provide nursing care to these patients were each improved at the conclusion of the educational guideline. (**Williams et al., 2006**) agrees with our study and mentioned that, Knowledge, attitudes toward patients with HIV/AIDS and willingness to provide nursing care to these patients were each improved at the end of the workshop summery.

Conclusion

As uncovered by the investigation that, our suggested hypothesis is proved instruction was a key for better understanding and hazard thought between all nurses and empowering them for perfect managing all hazard elements of that identified with this issue.

Recommendation

- Uses preparing & recurrent training to be accessible for free, total scope of immunizations together with nonstop supervision for worldwide precautions use and offering emphasis for a new nurse's orientation about job-related blood borne virus.
- Hospitals and unit police about job-related blood borne virus must be obtainable and applicable in our health care facilities.

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