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Effect of educational program on nursing staff' knowledge and attitude toward prevention of hepatitis B virus infection in the cardiac diseases and surgery center

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***Abstract*---**The study Aim to evaluate the effect of educational program on the knowledge and attitude of nursing staff toward prevention of hepatitis B virus infection in the cardiac diseases and surgery center . The study was quasi-experimental using the test and retest method . In which evaluation approach is applied to achieve the objectives of the study and was conducted for during the period of the study from November 2021 to June 2022, The study recommended to establishing the necessary educational programs to increase the knowledge of the nursing staff and improve their attitudes toward the prevention of viral hepatitis B.

***Keywords*---**educational program, knowledge, attitude, prevention, hepatitis B virus.

Introduction

Hepatitis B virus is highly contagious and is spread through percutaneous or mucosal contact with infected blood, sperm, or other bodily fluids (Osei et al., 2019) . HBV is an enveloped DNA virus that causes liver inflammation. It can cause acute or chronic hepatitis, as well as abrupt liver failure, often known as fulminant hepatitis . Acute hepatitis is typically a symptomatic, self-limiting condition that does not require treatment. Chronic hepatitis, on the other hand, is typically asymptomatic until problems such as acute flares, cirrhosis, and malignancy develop (Okonkwo et al. , 2018). Hepatitis B virus elimination needs

interaction across five essential interventions (HBV vaccination, prevention of HBV transmission from mother to child ; safety of blood and injections; services for individuals who use injected drugs that reduce harm, and expanded treatment & testing); according to the global strategy (Liu et al.,2019) .

Healthcare –worker (HCW) including nursing staff , are more commonly than the general public at risk of contracting HBV infection from mucosal cutaneous contact with possibly infective blood (mouth , skin , or eyes) or from percutaneous contact with polluted shrill instruments (blades , needles , etc.) (Garzillo et al., 2020) . Nurses are an important element of the healthcare team. As a result, they must have a thorough understanding of Hepatitis-B infection, including its modes of transmission, clinical features, complications, and various preventive measures that should be taken, in order to take the necessary precautions to prevent the disease and to raise knowledge about the disease among the general public, patients, and other health-care professionals (Anand et al., 2020). The cardiac interventional laboratory (catheterization) is a potentially dangerous location if appropriate safety precautions are not taken. One of these risks is being exposed to blood and other bodily fluids at work. (Sorajja et al.,2021).

Many research have demonstrated the importance of educational activities in enhancing knowledge and changing attitudes. Changes in professional practice and, in some cases, health care outcomes can be influenced through interactive continuing education courses that increase participant involvement and allow opportunities to practice skills. As a result, nursing personnel should be appropriately educated in the fundamentals of infection control and should get ongoing training to keep their knowledge and abilities up to date. Periodic seminars are held for HCWs as part of their ongoing infection control training (Gaikwad et al., 2018).

Method

Design of the Study: The study was quasi-experimental design. The study was conducted from December \ 2021 to June \2022, and the test and retest method was used to meet the study's objectives.

Setting of the Study : The study was conducted in Karbala center for cardiac diseases and surgery. The study's location was purposefully chosen to be used as a location for this study. All units affiliated to the center were included in this study.

Sample of the Study: A non-probability purposive sample of 50 nurses, all of whom work at Karbala center for cardiac diseases and surgery, was chosen. The study group was drawn from center's units . The nurses participating in the study were selected according to their availability in the center's units, the sample divided to two groups (study group ,and control group) , each group consisted from 25 nurses . The study group participated in the educational program, while the control group did not participate in the educational program .

Study instrument : The questionnaire was constructed based on a review of the relevant literature, previous studies, and the advice of a panel of experts . The questionnaire consists from three parts:

Part I: It contains the demographic characteristics of the nurses participating in the study, which include age groups / years, gender, education levels, years of experiences, and participating in training.
Part II: It contains general information about the disease to measure nursing staff ' knowledge toward hepatitis B and prevention . This part consisted of (30) items. It is divided into three dimensions, the first dimension contains (7) items about the disease and its signs and symptoms, the second dimension contains (8) items is about transmission, diagnosis and treatment, and the third dimension contains (15) items about disease prevention.
Part III: It contains(10) items to measure nursing staff ' attitude toward hepatitis B and prevention.

Results

Table (1): Distribution of the participants (according to their demographic characteristics data (n=50)

Demographic characteristics		Study group		Control group	
Variables	Categories	F.	%	F.	%
Age Groups / Years	20-30	21	84.0	17	68.0
	31-40	2	8.0	5	20.0
	41-50	2	8.0	3	12.0
	Total	25	100.0	25	100.0
Gender	Male	8	32.0	17	68.0
	Female	17	68.0	8	32.0
	Total	25	100.0	25	100.0
Marital Status	Married	17	68.0	15	60.0
	Unmarried	8	32.0	10	40.0
	Total	25	100.0	25	100.0
Education levels	Secondary school of nursing	7	28.0	5	20.0
	Diploma	13	52.0	16	64.0
	College of nursing	5	20.0	4	16.0
	Total	25	100.0	25	100.0
Years of experiences	1-5	20	80.0	13	52.0
	6-10	2	8.0	5	20.0
	11-15	1	4.0	1	4.0
	16-20	2	8.0	4	16.0
	21-25	0	0.0	2	8.0
	Total	25	100.0	25	100.0
Participating in training	No	22	88.0	24	96.0
	Yes	3	12.0	1	4.0
	Total	25	100.0	25	100.0

F = Frequency; % = Percentage.

Table (1) reveals that 84.0% and 68.0% of the participants enrolled in the study and control groups respectively are at the age group of 20-30 years old, and(68.0% , 32.0%) of the participants in the study group are females and males respectively. Concerning educational level, more than half (52.0%) of the study group and approximately two-thirds (64.0%) of the control group have a diploma.

Regarding the years of experience, the result in this table indicate that the majority (80.0%) of the study group, and more than half (52.0%) of the control group had 1-5 years. With respect to participating in training about the prevention of viral hepatitis B infection, the majority (88.0%), and (96.0%) of the study and control groups respectively do not participate in a training course about the prevention of hepatitis B infection.

Overall Knowledge respondents		Rating	F	%	Cumulative Percent
Study group	Pre-test	Low	24	96.0	96.0
		Moderate	1	4.0	100.0
		High	0	0.0	
		Total	25	100.0	
	Post-test	Low	0	0.0	0.0
		Moderate	3	12.0	12.0
		High	22	88.0	100.0
		Total	25	100.0	
Control group	Pre-test	Low	23	92.0	92.0
		Moderate	2	8.0	100.0
		High	0	0.0	
		Total	25	100.0	
	Post-test	Low	25	100.0	100.0
		Moderate	0	0.0	
		High	0	0.0	
		Total	25	100.0	

Table (2): Comparison between the study and control groups in the pre and post-test period for the level of nurses' knowledge

Low (R.S. < 66.6); Moderate (R.S.= 66.6-83.3); High (R.S.≥83.4-100); F = Frequency; % = Percentage.

Table (2) exposed three levels of nurses' knowledge at pre and post-test for the two groups (study and control groups). 96.0% of nurses have had a low level of knowledge in the pretest period of the study group; during the post-test period of the study group, about 12.0% and 88.0% of patients have had a moderate and high level of knowledge respectively. The result reveals a significant difference in the level of knowledge between the pre-test and post-test periods of the study group this indicates that the educational program was effective.

Table (3): Comparison between the study and control groups in the pre and post-test period for the level of nurses' attitudes

Overall attitudes respondents		Rating	F	%	Cumulative Percent
Study group	Pre-test	Negative	16	64.0	64.0
		Positive	9	36.0	100.0
		Total	25	100.0	
	Post-test	Negative	1	4.0	4.0
		Positive	24	96.0	100.0
		Total	25	100.0	

Control group	Pre-test	Negative	16	64.0	64.0
		Positive	9	36.0	100.0
		Total	25	100.0	
	Post-test	Negative	15	60.0	60.0
		Positive	10	40.0	100.0
		Total	25	100.0	

Positive= positive attitudes (R.S. < 60); Negative attitudes (R.S.≥60); F = Frequency; % = Percentage.

Table (3) indicates two levels of attitudes respondents among nurses enrolled in the pre-test and post-test of the control and study groups. There are no significant differences in the nurses' attitudes levels shown between the study and control group in the pre-test period. Whereas, there are a wide difference in attitudes level shown between the study and control group in the post-test period of the program .

Discussion

Demographic Data of Descriptive Statistic (table 1)

The findings of the present study showed in table (1) ages group has participants ranging in age from 20 to 50 years, which indicated that almost of the participants (84.0%) were in the age range (20-30) years, and less than a quorate (68.0%) were the age range (20-30) years of the of the study group. This finding agree with a cohort study that was carried out upon (560) nurse by Al-Busafi et al., (2021) concerned (Assessment of Risk Factors for Hepatitis B Virus Transmission in Oman), they found that the majority of the study sample were nurse and accounted at age groups (< 13, 13–23, > 28) in percentage (52.2%) .

In addition, another cross-sectional, prospective study of (328) nurse conducted by Araya Mezgebo and other (2018) included 30 years of age, (81.7%) were also. Furthermore, more than half (52.0%) of the study group of participants in the study group had graduated from a diploma education also high percentage two-thirds (64.0%) of participants in the control group had graduated from a diploma education. This result is inconsistent with design for a quasi- experimental study with(pre and post) test , the (control , study) groups method , use to evaluate the effect of the an educational program about HBV study carried out The sample consists of (60) nurses working in both hospitals by Mustafa Wahab et al.,(2016). In their study that aim to determine the effect of an educational program on knowledge of nurses toward HBV the study conducted at the hospitals of the Nineveh Governorate, they reported that the majority of nurses within level education secondary school of nursing (37%; 57%) of each study, control group, respectively.

In addition, this result in disagree with a ccross-sectional descriptive study done by Clausina et al., (2019) include 150 nurse in the study, a bout HBV seroprevalence in pregnant , who reported that the majority of the participants within level of education college (54.67%) .With respect to participating in training about the prevention of viral hepatitis B infection, the majority (88.0%), and (96.0%) of the study and control groups respectively do not participate in a

training course about the prevention of hepatitis B infection, there is findings disagree with cross sectional study by Joukar et al., (2017) among (100) nurses participated, the purpose of this study was to assessing the attitude and knowledge of health-care providers toward HBV , a significant percent of responders (52.9 %) and (55.4%) had satisfactory attitude and knowledge toward HBV. Mean - score of the knowledge toward HBV was meaningfully among higher educated staff , p < 0.001 and immunized staffs , and (68.0% , and 32.0 %) and of the responders in the study group are females and males respectively the result agree with study done by Reang et al., (2015) The study found that (73.3%) were females and the male of each them have training about the prevention of viral hepatitis B infection , Regarding the years of experience, the majority (80.0%) of the study group, and more than half (52.0%) of the control group had 1-5 years . This findings are consistent with a cross – sectional study (descriptive) conducted by Al - Dossary et al., (2020) in their study (Awareness, Attitudes, Prevention, and Perceptions of HBV infection among nurses in Saudi Arabia), who reported that a large majority 400 (96.3%) size of sample are less than 10 years of experience groups. Also These findings disagree with admixed technique of survey advanced depend on the reporting by checklist as a result of online surveys by Bergman et al., (2019) among (282) nurses participated, the reason behind this study was for (Assess registered nurses 'experiences of working in the intensive care with patient have hepatitis B), they reported that the majority of the study sample ,more than ten years of experience (42%) the prevention of viral hepatitis B infection.

According to the present study findings , most of the participants are young people between the ages of (20- 30) years , as outcome of the great numeral of educational institutions that graduate nurses . As well as the fact that only a small percentage of the nurses in the current study attended particular hepatitis B courses emphasizes the importance of developing hepatitis B educational programs and involving nurses in these programs. Because the majority of the nurses in this study are new employees, their years of experience range (1-5) years .

Comparison between the study and control groups in the pre and post-test period for the level of nurses' knowledge (Table 2)

The result shows that regarding the levels of nurses' knowledge at (pre and post) tests for the two groups (control and study) groups. Whereas, the result of the current study showed that the result reveals a significant difference in the level of knowledge between the (pre and post) tests periods of the study group this indicates that the educational program was effective. These outcomes are congruent with research done by Machowska and other (2020) who mentioned that there was The study group shows that an educational program is highly effective in improving nurses' knowledge of HBV transmission and prevention in the room of operation, as evidenced by a large significant difference in (pre and post) tests timings respectively , at (p- value = 0.001) . among the research group . There was no significant difference in (pre and post) test time in the control group. The research shows that the educational –oriented program was effective for nurses . There were statistical disparities between educational

levels and birth's year , which was significant, knowledge from operating room experiences.

According to the present study findings , these results indicate that the educational program was effective, and this is due to the good preparation as well as the effort that the researcher made in implementing the program, and his use of multiple methods to present the scientific material in a smooth and not boring way in attracting the attention of the participants The program as well as the participants' desire to obtain the information they need to prevent hepatitis B infection and to have their questions answered.

Comparison between the study and control groups in the pre and post-test period for the level of nurses' attitudes (Table 3)

In relation to the of nurses' attitudes, the current study findings reported that a highly significant difference between the (pre and post) test attitudes among nurses' Participants in the study group, this indicates that the educational program was effective in modifying the nurses' attitudes toward the prevention of viral hepatitis B infection; the study group between pre and post-test was changed for the better, while the control group stay at the same attitudes between pre and post-test .

These findings are consistent with the study done by Kim et al., (2019) included evolution the nurses' attitudes about the prevention of viral hepatitis B infection according to training courses ;who mention that The pre-test knowledge score did not show a statistical significant difference between the groups, but the post-test score of attitude was significantly greater in the group of study , than in the group of control (p 0.001) .The study group's attitude scores significantly improved from the (pre to post) test (p 0.01) .

According to the present study findings , these results confirm the improvement in attitudes of the participating nurses in the study group after implementing the program compared to the control group, indicating that the program was effective in improving knowledge and attitudes at the same time , and this is because the nurses' good knowledge leads to positive attitudes.

Conclusion

The study concluded that the educational program led to an effective increase in the knowledge of the nursing staff participating in the educational program (study group), as well as greatly improved their attitude towards the prevention of hepatitis B infection, according to the comparison between the results of the pre and post -test. While the level of knowledge and attitude for the control group that did not participate in the educational program remained the same in the pre and post -tests.

Recommendation

The study recommends the necessity of periodic assessment of the nursing staff about viral hepatitis B and how to prevent it, and the preparation and

development of special programs that include the necessary information for them to meet their needs to raise their level of knowledge and improve their attitude towards preventing hepatitis B infection.

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