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Research Article

Viral Hepatitis C and B: Hemodialysis Nursing Staffs' Knowledge

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Abstract:

Background: The hepatitis virus is a blood borne virus but can also is found in other body fluids such as semen and vaginal secretions. Body fluids, such as urine, faeces, tears and vomit, also contain the virus but usually carry a far lower risk of transmission. The risk of transmission of viral hepatitis B and C and other blood borne infections through the transfusion of contaminated blood and blood products is extremely high, and, despite being preventable, still occurs because of the absence, or poor quality, of screening in blood transfusion services. Ensuring the availability of safe blood and blood products is a vital public health duty for every national government. ***Aim:*** The aim of this study was to assess hemodialysis nursing staffs' knowledge regarding elderly viral hepatitis C and B. ***Design:*** A descriptive exploratory design was utilized in the current study. ***Setting:*** The study was carried out in two hemodialysis units at Beni-Suef University Hospital and Elwasta General Hospital in Beni-Suef Governorate. ***Subjects:*** A convenient sample of 76 hemodialysis nurses. ***Results:*** about 69.8% & 68.4% of them has incomplete knowledge about the causes of viral hepatitis and the items that should be taken when taking patient history with viral hepatitis, respectively, and 51.3% of the dialysis nurses have fair level of total knowledge about viral hepatitis B & C for elderly patients in the dialysis units. Also, 31.6% of them have good level of total knowledge, while, 17.1% of them have poor level of total knowledge. ***Conclusion:*** A highly statistically significant relation between dialysis nurses' knowledge about viral hepatitis B & C for elderly patients in the dialysis units and their education level, their training program for new dialysis nurses, and years of experience in nursing field (P=< 0.05). ***Recommendations:*** Policy makers should formulate a national plan of continuing education to help nurses already in the dialysis unit to retain and update their knowledge and clinical skills.

Keywords: Viral Hepatitis, Hemodialysis, Nurses' Knowledge

Introduction

During the last century, human lifespan has increased substantially resulting in a sub stantial increase of elderly people over the next two decades. Individuals aged 65 years and over will increase from 1billion in 2020 to 1.4 billion.by 2050, the world population of elderly people will double (2.1billion). Egypt population aged 65years and above was at level of 4.8 in 2022. Elderly status is affected by physical, social, financial, and cultural factors. Metabolic and physiologic changes that accompany normal aging modify the requirements of elderly. An examination of evidence is needed to better understand how elderly status is associated with aging and risk of mortality or chronic disease among older adults [1-10].

The hepatitis B virus is a blood borne DNA virus but can also is found in other body fluids such as semen and vaginal secretions. Body fluids, such as urine, faeces, tears and vomit, also contain the virus but usually carry a far lower risk of transmission. The incubation period for HBV is 45–160 days, and exposure can lead to an acute hepatitis or an asymptomatic chronic infection. The incidence of viral transmission in renal units has declined in recent years but can, and does, still occur. HBV can survive outside the body on surfaces for at least seven days and still be capable of causing infection. Hemodialysis patients are considered immunocompromised and are more susceptible to infection. The most common mode of transmission among patients has been found to involve sharing equipment between patients [11-16].

The risk of transmission of viral hepatitis B and C and other blood borne infections through the transfusion of contaminated blood and blood products is extremely high, and, despite being preventable, still occurs because of the absence, or poor quality, of screening in blood transfusion services. Ensuring the availability of safe blood and blood products is a vital public health duty for every national government. Countries should work towards self-sufficiency in safe blood and blood products, aiming for 100% of donations from regular, voluntary, and non-remunerated blood donors [17-22]. With an estimated 8-10 million persons living with viral hepatitis in Egypt and millions more at risk for infection, viral hepatitis is among the most significant public health problems facing this country. Most morbidity and mortality result from the chronic form of viral hepatitis caused by hepatitis B virus (HBV) and hepatitis C virus (HCV) infections. Because viral hepatitis can persist for decades without symptoms; many Egyptians remain unaware of their infection status and are not receiving care and treatment. Persons living with viral hepatitis are at increased risk for cirrhosis and liver cancer, and although not all persons infected with viral hepatitis develop these conditions, the medical and economic burden incurred by those who do is significant [23].

Aim of the Study

The aim of this study was to assess hemodialysis nursing staffs' knowledge regarding elderly viral hepatitis C and B.

Research Questions

- What about hemodialysis nursing staffs' knowledge regarding elderly viral hepatitis C and B?
- Is educational level, years of experience in nursing practice, previous attendance of in-service training program about infection control of hemodialysis nursing staff' can affect their knowledge regarding hepatitis B&C?

Subjects and Methods

Research Design: to achieve the goal of the study, a descriptive exploratory study was used.

Subjects & Setting:

Setting: Beni-Suef governorate's Elwasta general hospital and Beni-Suef University hospital both have hemodialysis facilities where the study was carried out.

Subjects:

Sample Size: All of the 76 hemodialysis nurses who provided direct patient care, of which 22 were men and 54 were women, agreed to take part in the study.

Sampling Type: A convenient sample

Tools of Data Collection:

Tool (I): Knowledge Assessment Questionnaire:

With the help of the original instrument was created by (Alpers, 2020) and literature reviews [24]. The researcher created a modified Arabic self-administered questionnaire (Setia et al., 2021) [25]. There were principally two parts:

Part I: Socio-demographic characteristics questionnaire sheet:

This part was developed by the researcher to collect data about nurses' personal and background data; educational level, years of experience in nursing practice, previous attendance of in-service training program about infection control.

Part II: Nurses' knowledge regarding viral hepatitis B & C in dialysis that introduced to Elderly patients with viral hepatitis B & C in dialysis units to assess nurses' knowledge about viral hepatitis transmission.

The scoring system

The questionnaire had questions, and each correct response received a score based on how much of it was complete (two points), how much was incomplete (one point), and how much was incorrect (zero points). These ratings were added up and transformed into a % rating. It was divided into three groups:

- Excellent knowledge if the score was more than 75%.
- Fair knowledge if 50–75%.
- Scores below 50% indicate poor knowledge.

Validity and reliability

Content Validity:

Tool validity was assessed to see how well the employed instruments capture the intended outcomes. The tools' face validity and content were evaluated by a panel of

five community health nursing experts from the nursing faculty at Beni-Suef University.

Reliability: In the present study, reliability was tested using Cronbach's Alpha coefficients:
Among senior dialysis patients, nurses' awareness of viral hepatitis B and C was 0.823.

Preparatory phase

Using textbooks, articles, journals, and websites, this phase began with a survey of the relevant literature from the past and present, as well as from both domestic and foreign sources, about the study's subjects.

Pilot study

10% of the total study sample (8 nurses) participated in a pilot study to examine the tools' applicability, effectiveness, and clarity as well as the fieldwork's viability and to look for any potential challenges that the researcher might encounter that might impede data collection.

Field Work

The Self-administered Questionnaire was given to the nurses who volunteered to participate in the study in order to gather information about the nurses' understanding of the elderly and dialysis.

Ethical Considerations

The scientific research ethical committee of the Faculty of Nursing at Beni-Suef University gave its clearance before the study was carried out. Each eligible individual was also told of the study's purpose and significance during the initial interview.

Administrative design

The dean of the nursing faculty at Beni-Suef University sent an official letter requesting authorization to conduct the study and forwarded it to the hospital affiliated with the university, Elwasta General Hospital, asking for their consent to do so.

Statistical design

The Statistical Package for Social Science (SPSS) version 25 was used for the statistical analysis of the data. For categorical data, frequencies and percentages were used, while for quantitative data, the arithmetic mean (X) and standard deviation (SD) were used. Qualitative variables were compared using chi square test (X^2). Degrees of significance of results were considered as follows:

- - P-value > 0.05 Not significant (NS)
- - P-value ≤ 0.05 Significant (S)
- - P-value ≤ 0.01 Highly Significant (HS).

Results

Figure 1. presents frequency of dialysis nurses according to their education. It shows that 26.3% of the dialysis nurses have secondary school nursing graduated.

Figure 2. presents frequency of dialysis nurses according to their years of experience in nursing. It shows that 11.9% of the dialysis nurses have more than 10 years of experience in nursing field.

Figure 3. presents frequency of dialysis nurses according to their attending training programs for improving nursing skills. It shows that 84.2% of the dialysis nurses attend training programs for improving nursing skills.

Figure 4. presents frequency of dialysis nurses according to their number of attending training programs for improving nursing skills. It shows that 54.7% of them attend two programs.

Figure 5. presents frequency of dialysis nurses according to their participation in scientific conferences for dialysis and kidney disease during the last 5 years. It shows that 72.4% of the dialysis nurses don't participate in scientific conferences for dialysis and kidney disease during the last 5 years.

Table 1 & Figure 6 Present frequency distribution of the dialysis nurses according to their knowledge about viral hepatitis, it shows that 100.0% of the dialysis nurses have correct answer about health care workers at risk for exposure to viral hepatitis (B & C) by working in dialysis unit and transmission of viral hepatitis (B & C) between health care workers via apply research-based practice, respectively. Also, 69.8% & 68.4% of them has incomplete knowledge about the causes of viral hepatitis and the items that should be taken when taking patient history with viral hepatitis, respectively.

Figure 7 Percentage distribution of the dialysis nurses according to their total knowledge about viral hepatitis B & C for elderly patients in the dialysis units. It shows that 51.3% of the dialysis nurses have fair level of total knowledge about viral hepatitis B & C for elderly patients in the dialysis units. Also, 31.6% of them have good level of total knowledge, while, 17.1% of them have poor level of total knowledge.

Figure 8 Presents relationship between dialysis nurses' education and their total knowledge about viral hepatitis B & C in dialysis unit. It reveals a highly statistically significant relation between dialysis nurses' knowledge and their education level ($P = < 0.01$).

Figure 9 Presents relationship between experience in nursing and their total knowledge about viral hepatitis B & C in dialysis unit. It reveals a highly statistically significant relation between dialysis nurses' knowledge and their training program for new dialysis nurses ($P = < 0.01$).

Figure 10 Presents relationship between dialysis nurses' attending training programs for improving nursing skills and their total knowledge about viral hepatitis B & C in dialysis unit. It reveals that there is statistically significant relation with years of experience in nursing field ($P =< 0.05$).

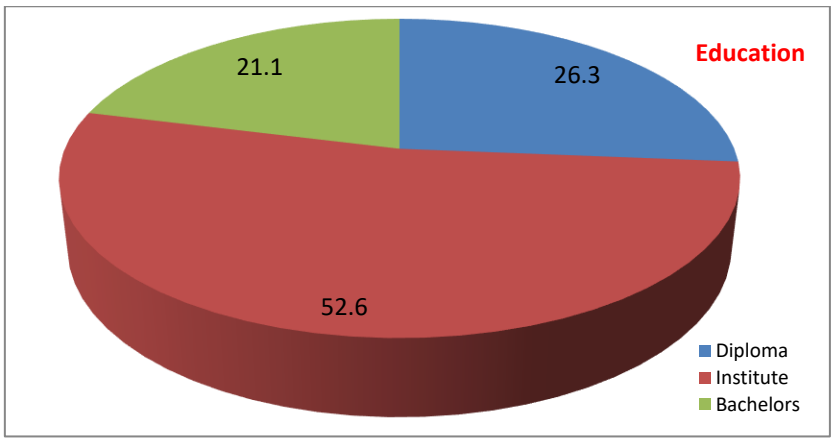

Figure 1. Frequency of dialysis nurses according to their education (n=76)

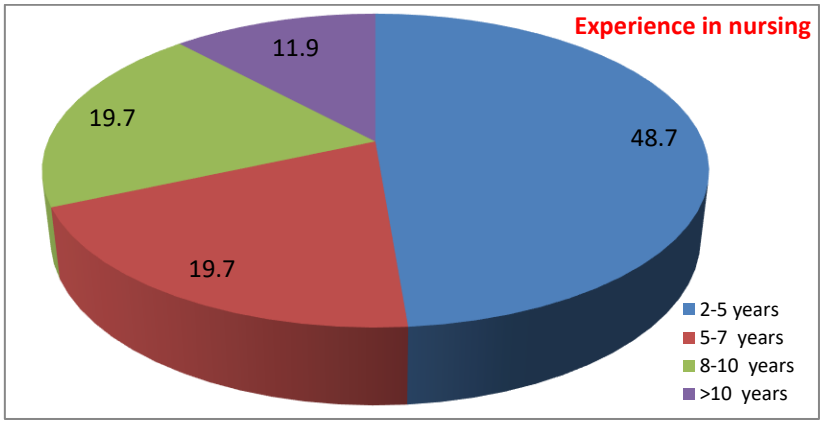

Figure 2. Frequency of dialysis nurses according to their years of experience in nursing (n=76)

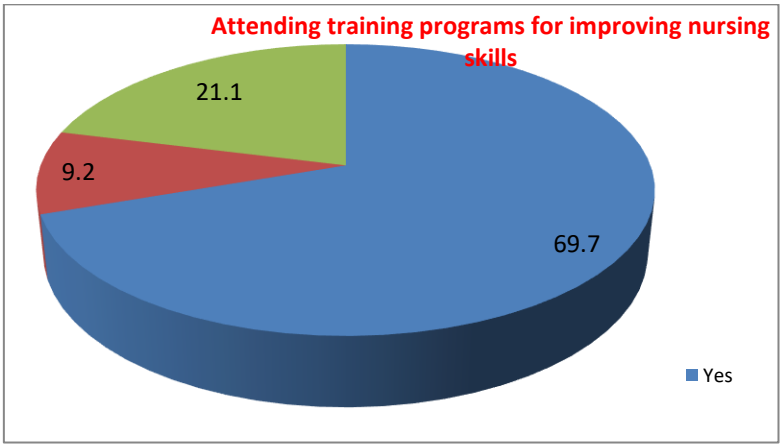

Figure 3. Frequency of dialysis nurses according to their attending training programs for improving nursing skills (n=76)

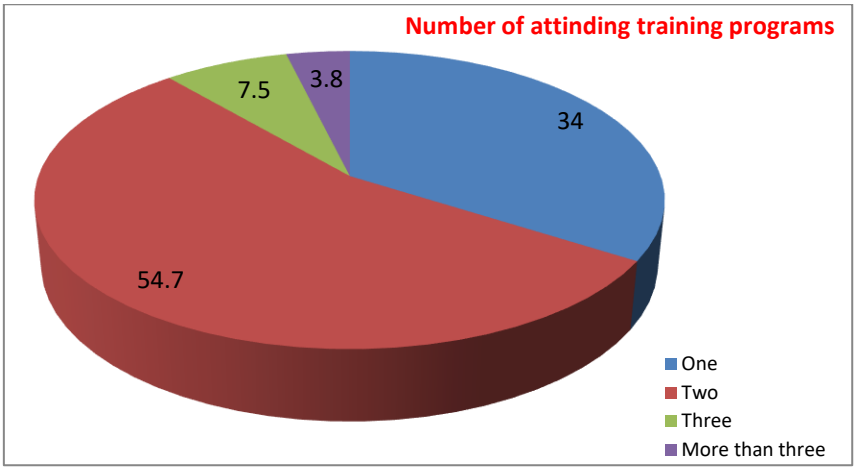

Figure 4. Frequency of dialysis nurses according to their number of attending training programs for improving nursing skills (n=76)

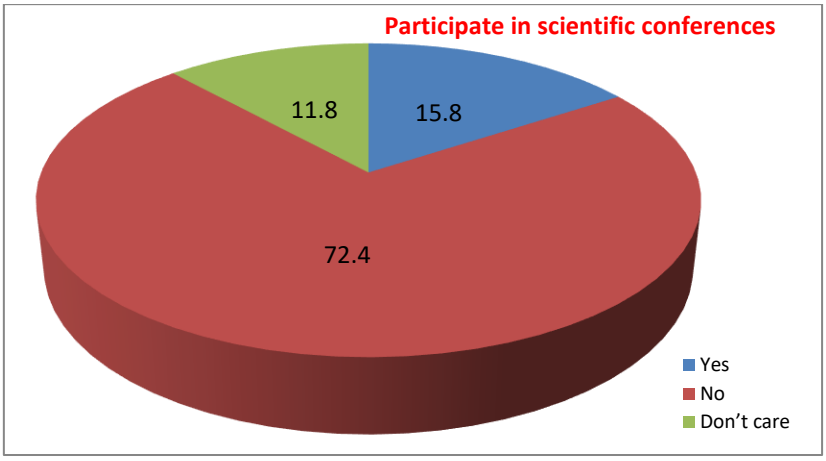

Figure 5. Frequency of dialysis nurses according to their participation in scientific conferences for dialysis and kidney disease during the last 5 years (n=76)

Table 1. Frequency distribution of the dialysis nurses according to their knowledge about viral hepatitis (n=76).

Items	correct answer		Incomplete answer		Incorrect answer	
	No.	%	No.	%	No.	%
Types of viral hepatitis	34	44.7	38	50.0	4	5.3
Causes of viral hepatitis	15	19.7	**53**	**69.8**	8	10.5
Incubation period for viral hepatitis B	20	26.3	0	0.0	56	73.7
Transmission factors of viral hepatitis	40	52.6	33	43.4	3	4.0
To avoid complication of viral hepatitis the patient must be made aware	18	23.7	48	63.2	10	13.1
Items that be taken when taking patient history with viral hepatitis	15	19.7	**52**	**68.4**	9	11.9
Time that dialysis patients are examined for viral hepatitis	34	44.7	0	0.0	42	55.3
Time that dialysis teamwork is examined for viral hepatitis.	30	39.5	0	0.0	46	60.5
Health care workers at risk for exposure to viral hepatitis (B &C) by working in dialysis unit.	**76**	**100.0**	0	0.0	0	0.0
Viral hepatitis can be transmitted from patient to another in dialysis unit	70	92.1	0	0.0	6	7.9
Transmission of viral hepatitis (B & C) between health care workers applying research-based practice.	**76**	**100.0**	0	0.0	0	0.0
Hand washing can minimize the risk of infection.	70	92.1	0	0.0	6	7.9

Don’t recapping the needle to prevent needle stick injury.	76	100.0	0	0.0	0	0.0
Put sharp object in safety box immediately after using.	70	92.1	0	0.0	6	7.9

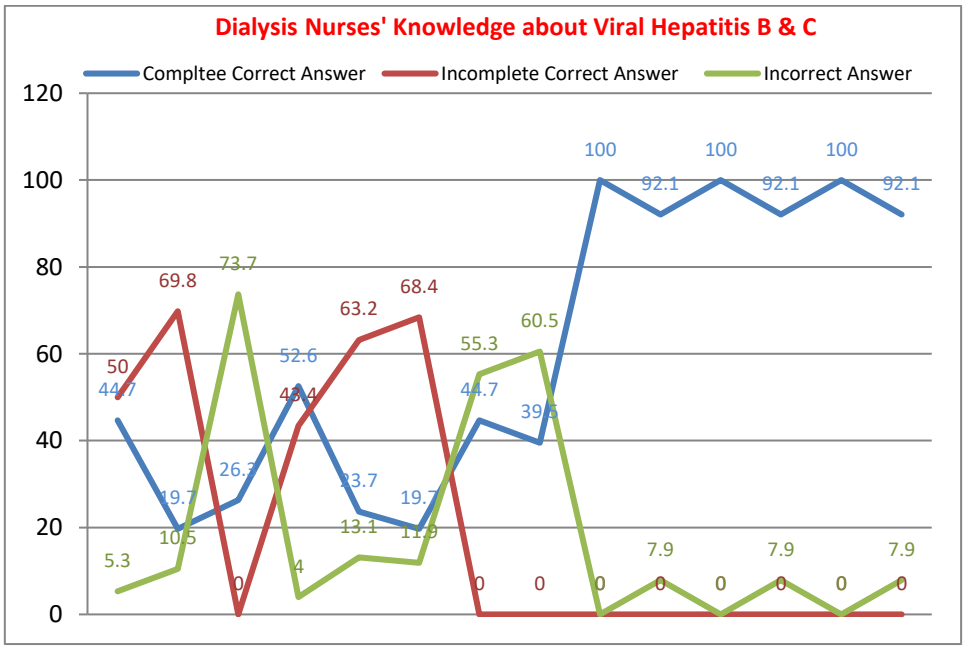

Figure 6. Frequency distribution of the dialysis nurses according to their knowledge about viral hepatitis (n=76)

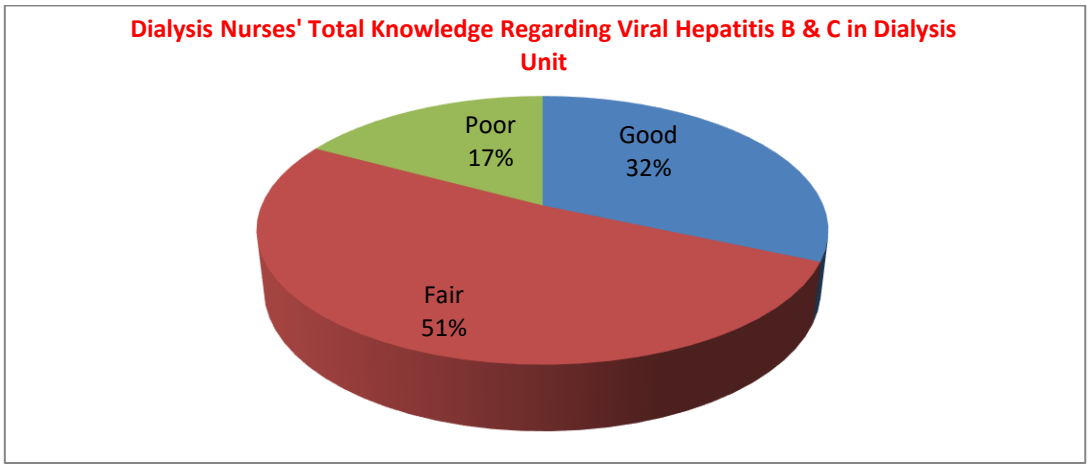

Figure 7. Dialysis nurses' total knowledge regarding viral hepatitis B & C in dialysis unit

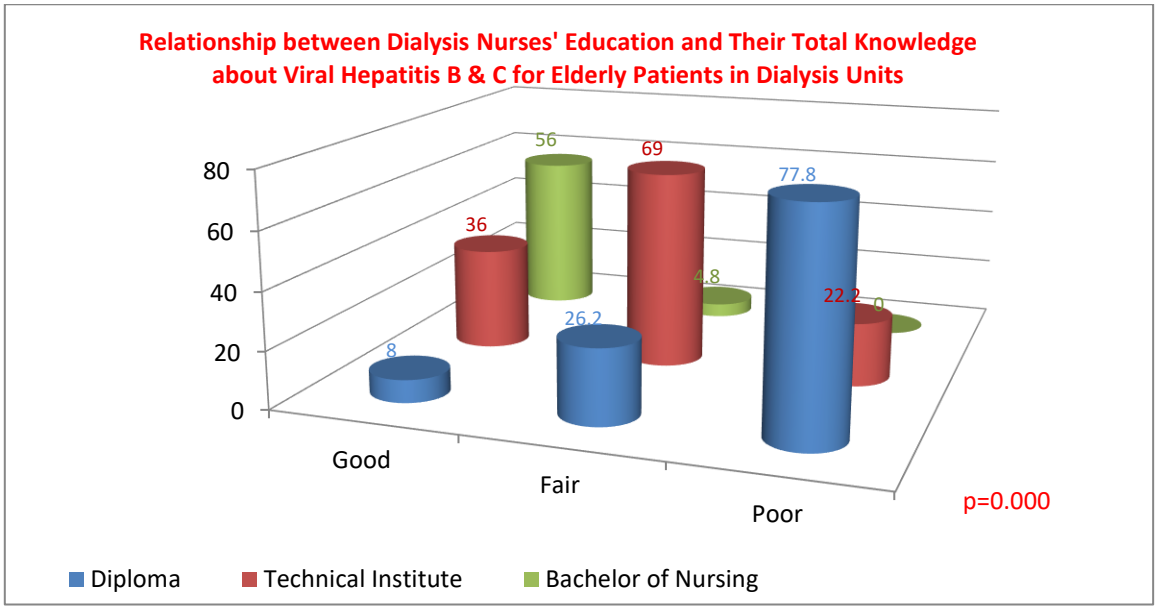

Figure 8. Relationship between dialysis nurses' education and their total knowledge about viral hepatitis B & C in dialysis unit

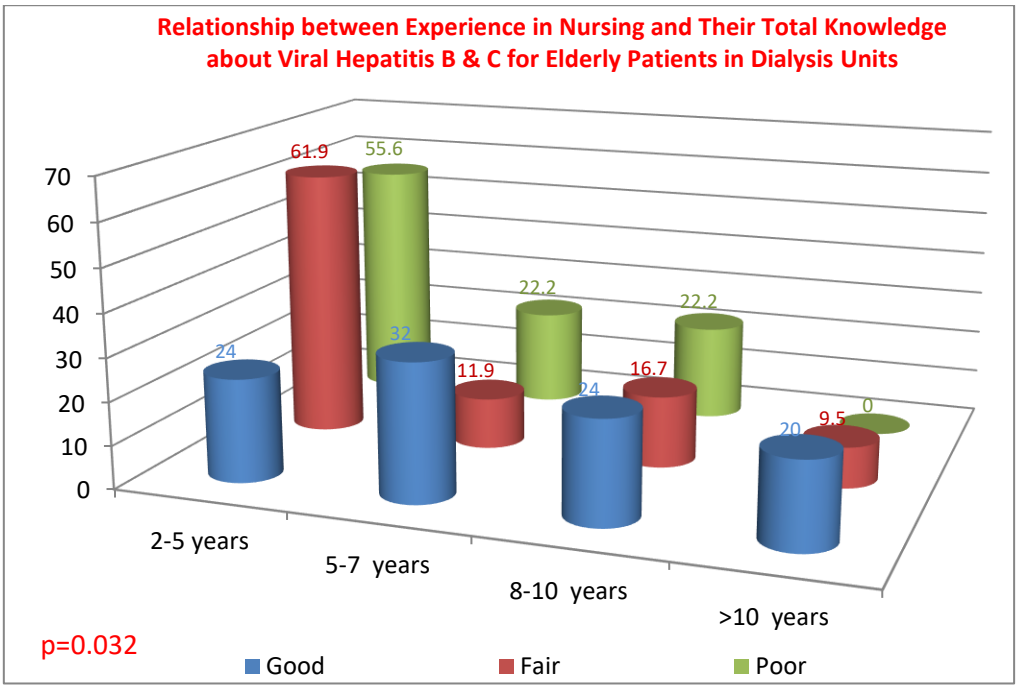

Figure 9. Relationship between experience in nursing and their total knowledge about viral hepatitis B & C in dialysis unit.

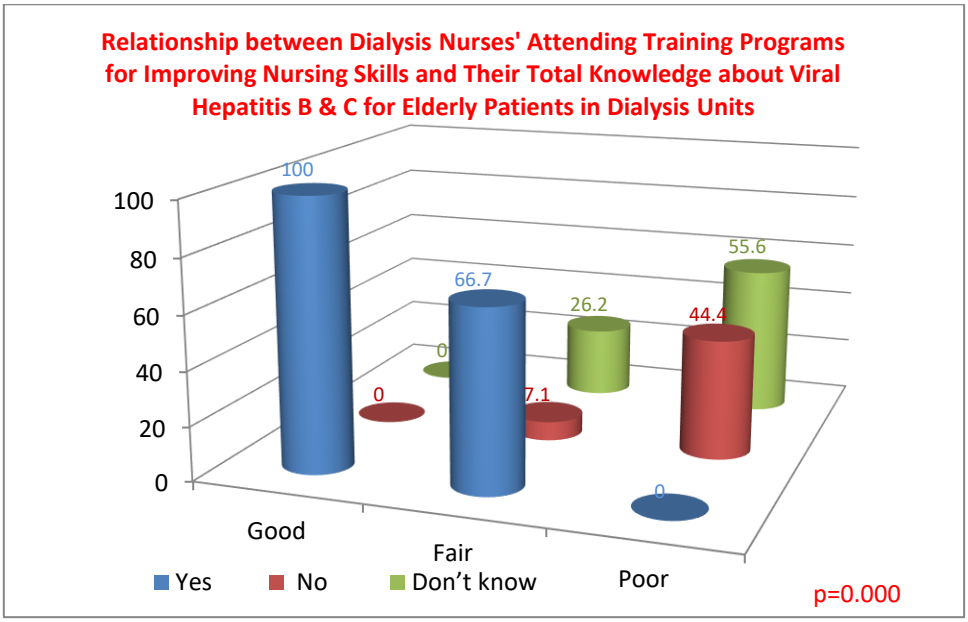

Figure 10. Relationship between dialysis nurses' attending training programs for improving nursing skills and their total knowledge about viral hepatitis B & C in dialysis unit

Discussion

Worldwide, about 1 in every 12 persons (480-520 million people) is living with viral hepatitis. Globally, an estimated 78% of primary liver cancer and 57% of liver cirrhosis cases are caused by viral hepatitis, and 1 million deaths from viral hepatitis occur each year. Chronic hepatitis B and C are among the leading causes of infectious-disease death worldwide. The proportion of persons living with viral hepatitis is greatest in Asia, Sub-Saharan Africa, and Egypt; however, prevalence of HCV infection is high among subpopulations (e.g., people who inject drugs [PWIDs] and persons living in correctional settings) in almost all parts of the world [26-36].

Regarding the level of nurses' knowledge related to viral hepatitis the study findings revealed that more than two third of nurses have level of knowledge the great majority (100%) correct answer about health care workers at risk for exposure to viral hepatitis (B&C) by working in dialysis unit and transmission of viral hepatitis (B&C) between health care workers via apply research-based practice, respectively. Also, more than two thirds (69.8% and 68.4%) of them have incomplete knowledge about the causes of viral hepatitis and the items that should be taken when taking patient history with viral hepatitis, respectively.

The current study findings related to nurses' knowledge were consistent with a study done by Rao, & Lee (2022) in a tertiary hospital in Turkey [37]. The study had total of (206) professionals with a mean age of 37.0±6.3 years and predominantly females (86%). The study sample included medical laboratory technicians (54) and nurses (152). Results showed that health 54 care workers have a moderate level of knowledge toward HBV/HCV infections and the hepatitis knowledge levels of (51.5%) participants were found to be satisfactory.

However; On the contrary the results of study, in a study done by (Setia & Garg, 2021) to investigate attitudes and awareness regarding viral hepatitis (B&C) amongst healthcare workers of a tertiary hospital in India, showed that the level of awareness regarding the modes of transmission and vaccination was unsatisfactory [25]. The investigator may interpret that result to be due to the rareness of the disease there; since the population prevalence of HCV infection in India is only 1% (Quarterly Newsletter from the (Nies, 2021) [38].

The results of the current study show that 92.1% of the dialysis nurses have correct answer about the importance of Hand washing can minimize the risk of infection. This is expected as a lot of them attending infection control training programs and conferences. Hand hygiene is an important measure for preventing vascular access–related infections, and dialysis facilities should ensure the availability of easily accessible hand washing sinks and alcohol-based hand sanitizers. Opportunities for hand hygiene include: Before touching a patient, before aseptic procedures, after body fluid exposure risk, after touching a patient, after touching patient surroundings [39].

In the other side; the European Renal Best Practice (ERBP) by Covic, Van,vanholder, et al.; (2020) and International Society of Nephrology (ISN) support the other opinion that considered the implementation of universal hygienic measures as the standard of care, and isolation might be only considered as an additional optional measure in those centers with a high (HBV,HCV) prevalence [40]. Therefore, the investigators' point of view accepted the study subjects' concept regarding application of isolation policy, as these centers have a high (HBV, HCV) prevalence.

Regarding the relationship between socio-demographic characteristics of the dialysis nurses and their total knowledge about viral hepatitis B & C for elderly patients in the dialysis units, the results of the current study revealed a statistically significant relation between dialysis nurses' knowledge and their years of experience in dialysis unit ($p<0.05$). It is expected as one's knowledge will increase day by day as his experience and knowledge enhanced by exposure to situations every day as well as attending training programs and opportunity to viewing the courses and medical journals.

Moreover, a statistically significant relation between dialysis nurses' knowledge and their educational level was found ($p<0.05$). According to the results of the current study, 26.3% & 52.6% of the study sample had a secondary & institute level of nursing education; 17% & 51% of them had poor & fair level of knowledge, respectively, regarding hepatitis B&C. This agrees with the findings of a study who found 3 types of nursing education relating to three types of nurses in Egypt today. The first level is carried out within high schools for nursing education akin to a sort of vocational education that takes place in lieu of high school (referred to as secondary level school in Egypt). The second level is carried out within a technical institute of nursing education (two years of after high school nursing education). The third or highest level is attained via a University college of nursing(students are trained over four years plus a one-year internship within a post-secondary school education or technical institute of nursing [41-44].

The health sector in Egypt suffers from a severe shortage of qualified nurses (nurses with at least technical institute, or 2 years of post-high school nursing education). The shortage has implications both for the quality of health care as well as the efficiency of the production of health services. The majority of nurses in Egypt (approximately 90%) are high school level nurses reflecting an inadequate/insufficient quality of nursing education not only by internationally but even by the region's local standard. The current approach by the Ministry of Health and Population is to upgrade the standard of quality of nursing education in Egypt to eliminate high school level nursing education in the future; this seems to be the right approach [41].

Conclusion

A highly statistically significant relation between dialysis nurses' knowledge about viral hepatitis B & C for elderly patients in the dialysis units and their education level, their training program for new dialysis nurses, and years of experience in nursing field (P=< 0.05).

Recommendation

1. Involve healthcare workers and nurse aids in training courses, continuous education and evaluation.
2. Policy makers should formulate a national plan of continuing education to help nurses already in the dialysis unit to retain and update their knowledge and clinical skills.

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