

Beni-Suef Elderly Hemodialysis Units: Nurses' knowledge and Preventive Measures Practices

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Abstract Background: Association for Professionals in Infection Control and Epidemiology emphasized on the use of aseptic technique during all aspects of parenteral medication administration, medication vial use, injections, and glucose monitoring procedures to patient stations in hemodialysis settings and the use of medication in a syringe for more than one patient even if the needle is changed between patients. **Aim:** The aim of this study was to assess hemodialysis nursing staffs' knowledge and preventive measures practices regarding elderly viral hepatitis C and Bat Beni-Suef hemodialysis units. **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 55.3% of the dialysis nurses have fair level of total knowledge about viral hepatitis B & C for elderly patients in the dialysis units, while 32.9% & 11.8% of had good and poor total knowledge, respectively. Moreover, 53% of the dialysis nurses have incompetent level regarding practices towards viral hepatitis B & C for the elderly patients in the dialysis units, while 47% of them have competent level of practices. There is highly significant positive correlation between dialysis nurses' knowledge and their practices towards viral hepatitis B & C for the elderly patients in the dialysis units ($P < 0.01$). **Conclusion:** There are statistically significant relation between dialysis nurses' knowledge and practices, as well, and their training program for improving nursing skills and participate in educational lectures before, their years of experience in nursing field, the opportunity to view the courses and medical journals and participate in scientific conferences for dialysis and kidney disease during the last 5 years. **Recommendations:** Modification of the ongoing training program regarding infection control to be more applied to hemodialysis units.

Keywords: elderly, hemodialysis, nurses' knowledge, preventive measures

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1. Introduction

Egypt is the most populous country in the Middle East and the third most populous on the African continent (after Nigeria and Ethiopia). One of the main features of the Egyptian population over the last few decades is the gradual increase in the absolute and relative numbers of older people. In addition, it was predicted that around 20 million Egyptians will be categorized as elderly by 2050 which resembles a full nation at some parts of the world. It should go without saying that, the health sector must be ready to respond to the emerging diseases and illnesses associated with old age [1-17].

Association for Professionals in Infection Control and Epidemiology emphasized on the use of aseptic technique during all aspects of parenteral medication administration,

medication vial use, injections, and glucose monitoring procedures; and prohibited the use of medication carts to transport medications to patient stations in hemodialysis (HD) settings and the use of medication in a syringe for more than one patient even if the needle is changed between patients. In addition; the risk of transmission posed by multidose vials has been clearly demonstrated and mandates a practice of one vial per one patient whenever possible. Infection transmission risk is reduced when multidose vials are dedicated to a single patient [18].

Regarding disinfection procedures in HD units; it is supported that all potentially contaminated surfaces at the dialysis station should be wiped clean with a low-level disinfectant if not visibly contaminated after each session. Surfaces that are visibly contaminated with blood or fluid should be disinfected with a commercially available tuberculocidal germicide or a solution containing at least 500 p.p.m. hypochlorite (1:100 dilution of 5% household bleach).

APIC stressed that to follow the manufacturer's recommendation regarding concentration and dwell time [19].

2. Aim of the Study

The aim of this study was to assess hemodialysis nursing staffs' knowledge and preventive measures practices regarding elderly viral hepatitis C and Bat Beni-Suef hemodialysis units

2.1. Research Questions

- What is the level of nurses' total knowledge & practices regarding viral hepatitis B & C in dialysis units?
- Is there relationship between dialysis nurses' personal characteristics and their total knowledge and practices regarding viral hepatitis B & C in dialysis units?
- Is there correlation between dialysis nurses' knowledge and their practices towards viral hepatitis B & C for the elderly patients in the dialysis units?

3. Subjects and Methods

3.1. Subjects & Setting

The study was conducted in two hemodialysis units at Beni-Suef University hospital and Elwasta general hospital in Beni-Suef governorate. All hemodialysis nurses (76 nurses), 22 of them were males and 54 of them were females, providing direct patients care and agreed to participate in the study. A convenient sample was used.

3.2. Tools of Data Collection

Interview questionnaire, it was developed by researcher after reviewing the national and international related literature reviews that related to the study topic, it includes two parts; were designed to collect data pertinent to the study: a) self-administered questionnaire to assess nurses' level of knowledge and b) Observational checklist used to assess nurses' level of practice.

Part I: Background characteristics questionnaire sheet: This part was developed by the researcher to collect data about nurses' background data; experience in dialysis unit, attending training programs for improving nursing skills, opportunity to view the courses and medical journals, and participation in scientific conferences for dialysis and kidney disease during the last 5 years

Part II: Nurses' knowledge: about elderly patients, 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 was contained of 54 questions, the total scores of the questionnaire were 108 grades, the Complete correct answer was scored as a two point, the

incomplete correct answer was scored as a single point and the wrong answer or don't know was scored as a zero point. These scores were summed and were converted into a percent score. It was classified into three categories:

- Good knowledge if score $\geq 75\%$, Fair knowledge if score $50 < 75\%$, Poor knowledge if score from $< 50\%$.

Part III: Nurses' practices toward viral hepatitis for the patient who attended in dialysis units that includes; patterns of preventive practices for viral infection in dialysis units.

❖ Scoring system:

The total score of nurses' practice were 59 grades, each item was evaluated as "Done" was taken one score and "not done" was taken zero score. These scores were summed up and were converted into a percentage score. It was classified into 2 categories: Competent practices if score $\geq 80\%$, Incompetent practices if score from $< 80\%$.

3.2.1. Validity and Reliability of Tool

i. Content Validity:

- Tool validity was done to identify the degree to which the used tools measure what was supposed to be measured. Content and face validity of the tools were tested through subjecting the tools to a panel of five community health nursing expert form faculty of nursing in Beni-suef University members.
- Each expert was asked to examine the instrument for content coverage, clarity, and whether the included items are suitable to achieve the aim of the current study.
- The revision of the tools for clarity, relevance, comprehensiveness understanding and applicability was done by a panel of five community health nursing experts from faculty of nursing to measure the content validity of the tools and the necessary modification was done.

ii. Reliability: In the present study, reliability was tested using Cronbach's Alpha coefficients:

- Nurses' knowledge about viral hepatitis B & C for elderly patients in the dialysis units was 0.823.
- Nurses' practice towards viral hepatitis B & C for the elderly patients in the dialysis units was 0.841.

3.3. Field Work

This phase started by preparatory phase, that concern by review of current and past, national and international related literature concerning the subjects of the study, using textbooks, articles, journals, and websites. This review was helpful to the investigator in reviewing and developing the data collection tools, and then the investigator tested the validity of the tool through the expertise to test the content, knowledge, accuracy, and relevance of questions the tools. The nurses who agreed to participate in the study were received the Self-administered Questionnaire to collect data about nurse's knowledge regarding prevention of viral hepatitis transmission in HD units. It took about minutes for each nurse separately in all shifts of working during which the researcher was clarifying any obscure questions.

Then participant observational checklist was utilized to fill out practice assessment checklist regarding nursing practice to prevent HCV transmission in HD units. Each potential nurse was observed directly by the researcher for three times during giving care to patients; this required attending for all HD shifts to achieve this objective.

Pilot study was carried out on 10% of the total study sample (8 nurses) to evaluate the applicability, efficiency, clarity of tools, assessment of feasibility of fieldwork, beside to detect any possible obstacles that might face the investigator and interfere with data collection. Modifications were done so the pilot sample included in the study subjects. The pilot sample was included in the main study sample.

Data collections of the study take five months. Data collection of the study was started at the beginning of January 2022, and completed by the end of May 2022. The investigator attended in HD unit at Beni-Suef university hospital, and Elwasta general hospital, Three days per week from 9am to 12pm for nurses; Each hospital one day every week.

The investigator first explained the aim of the study to the nurses and reassures them that information collected was treated confidentiality and that it was used only for the purpose of the research. The investigator meted nurses in HD unit at Beni-Suef University hospital, Elwasta general hospital. Nurses complete knowledge questionnaire sheet and each nurse take from 15:20 minutes for knowledge questionnaire sheet and the investigator observe nurses' performance during their work, the investigator evaluates each nurse and each nurses take from 10: 20 minutes for observation checklist.

3.4. Ethical Considerations

Prior study conduction, ethical approval was obtained from the scientific research ethical committee of the Faculty of Nursing, Beni-Suef University. The researcher met director of Beni-Suef University hospital, Elwasta General Hospital to clarify the aim of the study and take their approval. The investigator also met nurses to explain the purpose of the study and obtain their approval to participate in the study. They were reassured about the anonymity and confidentiality of the collected data, which was used only for the purpose of the scientific research. The nurses' right to withdraw from the study at any time was assured.

For ethical reasons, a primary permits was granted from the research ethical committee at the faculty of nursing as well as the hospital administrators. Also at the initial interview, each eligible subject was informed about the aim of the study and its importance. The investigator emphasized that participation in the study is entirely voluntary, and anonymity and confidentiality were assured through coding the data. Written consent form was collected from each subject who agreed to participate in the study.

3.5. Administrative Design

An official letter requesting permission to conduct the study was directed from the dean of the Faculty of Nursing Beni-Suef University to Beni-Suef University hospital, Elwasta General Hospital to obtain their approval to carry out this study. This letter included the aim the

study and photocopy from data collection tools in order to get their permission and help for collection of data.

3.6. Statistical Design

The statistical analysis of data was done by using the computer software of Microsoft Excel Program and Statistical Package for Social Science (SPSS) version 25. Data were presented using descriptive statistics in the form of frequencies and percentage for categorical data, the arithmetic mean (X) and standard deviation (SD) for quantitative data. Qualitative variables were compared using chi square test (X)², P-value to test association between two variables and Pearson correlation test (R- test) to the correlation between the study variables. 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).

4. Results

Figure 1: Presents distribution of the dialysis nurses according to their characteristics. It shows that, 57.9% of the dialysis nurses have 2-5 years of experience in dialysis unit. Furthermore, 69.7% of the dialysis nurses attend training programs for improving nursing skills, 60.5% of them don't have the opportunity to view the courses and medical journals. In addition, 84.2% of the dialysis nurses don't participate in scientific conferences for dialysis and kidney disease during the last 5 years.

Figure 2: Presents dialysis nurses' total knowledge about elderly, viral hepatitis B & C, infection control for elderly patients in dialysis unit. It illustrates that 55.3% of the dialysis nurses have fair level of total knowledge about viral hepatitis B & C for elderly patients in the dialysis units, while 32.9% & 11.8% of had good and poor total knowledge, respectively.

Figure 3: Presents relationship between dialysis nurses' personal characteristics and their total knowledge about viral hepatitis B & C for elderly patients in dialysis units. It illustrates that there is highly statistically significant relation between dialysis nurses' knowledge and their training program for improving nursing skills and participate in educational lectures before (P=<0.01). Also, there is statistically significant relation with their years of experience in nursing field, the opportunity to view the courses and medical journals and participate in scientific conferences for dialysis and kidney disease during the last 5 years at (P=<0.05).

Figure 4: presents frequency distribution of the dialysis nurses according to their total practices towards viral hepatitis B & C for the elderly patients in the dialysis units. It illustrates that 53% of the dialysis nurses have incompetent level regarding practices towards viral hepatitis B & C for the elderly patients in the dialysis units, while 47% of them have competent level of practices.

Figure 5: displays relationship between Dialysis Nurses' Personal Characteristics and Their Total Practices towards Viral Hepatitis B & C for Elderly Patients in Dialysis Units. It presents that, there is

highly statistically significant relation between dialysis nurses' practice and their attended training program for improving nursing skills, and participate in scientific conferences for dialysis and kidney disease during the

last 5 years ($P < 0.01$). Also, there is statistically significant relation with their years of experience in dialysis unit and the opportunity to view the courses and medical journals at ($P < 0.05$).

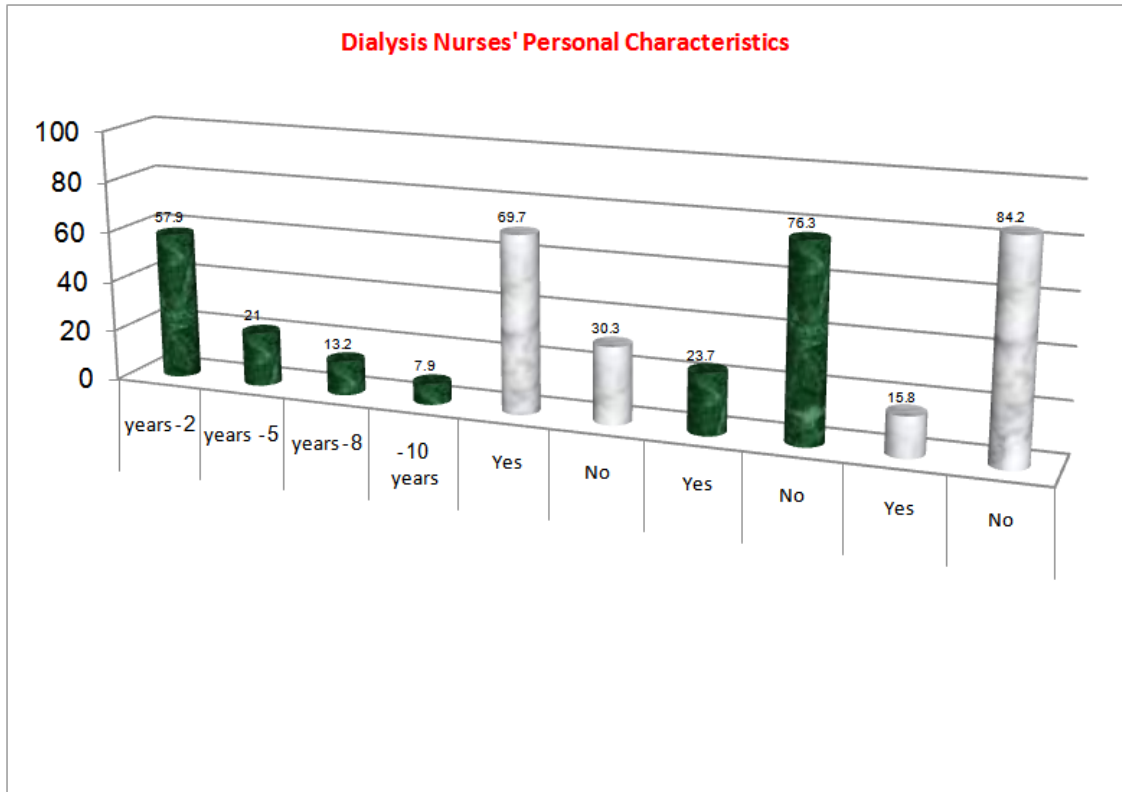


Figure 1. Dialysis Nurses' Personal Characteristics (n=76)

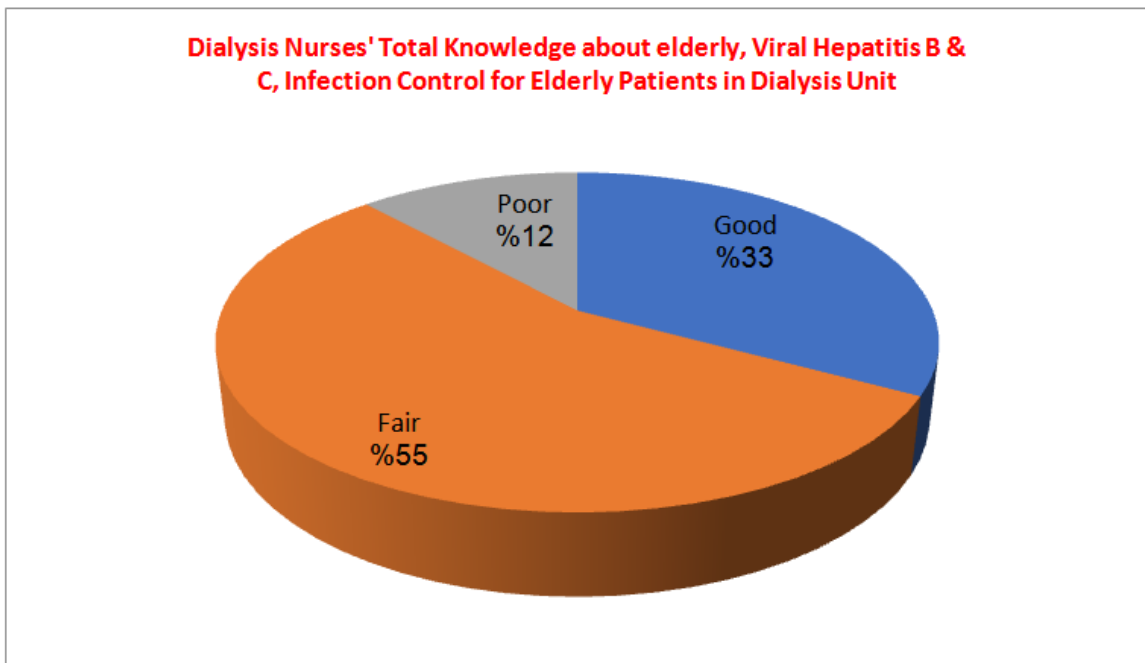


Figure 2. Dialysis Nurses' Total Knowledge about elderly, Viral Hepatitis B & C, Infection Control for Elderly Patients in Dialysis Unit

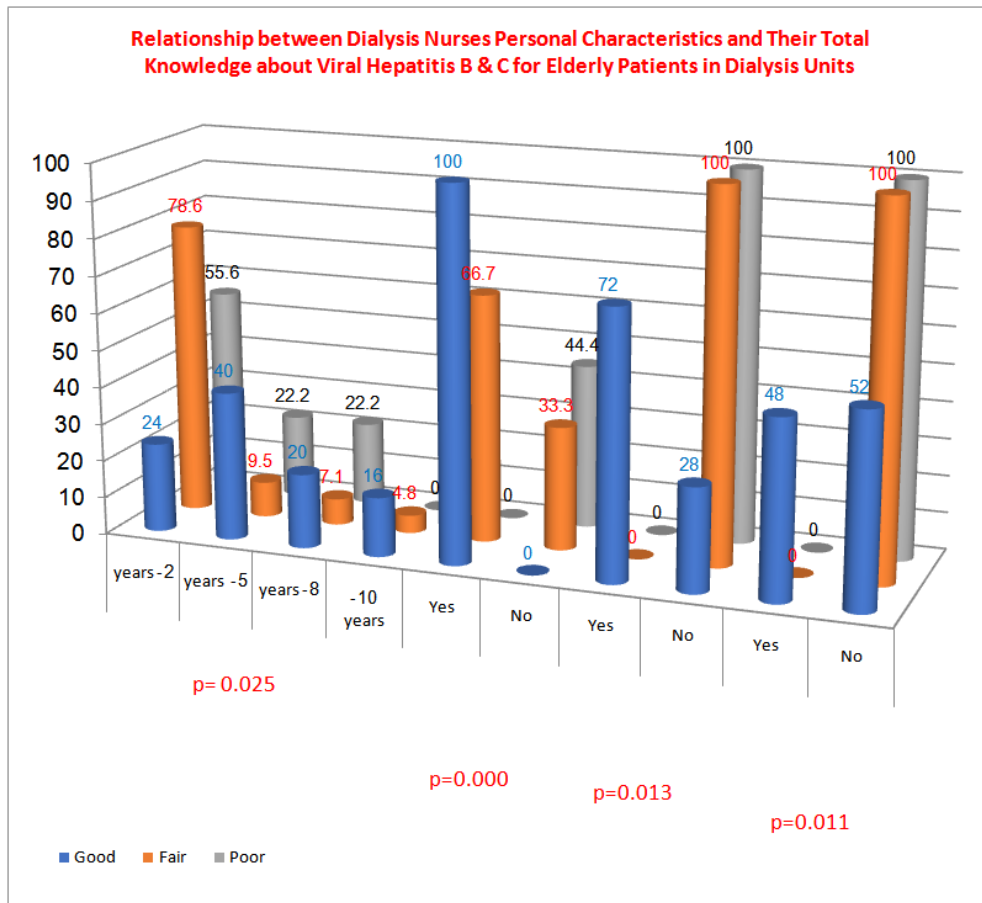


Figure 3. Relationship between Dialysis Nurses' Personal Characteristics and Their Total Knowledge about Viral Hepatitis B & C for Elderly Patients in Dialysis Units

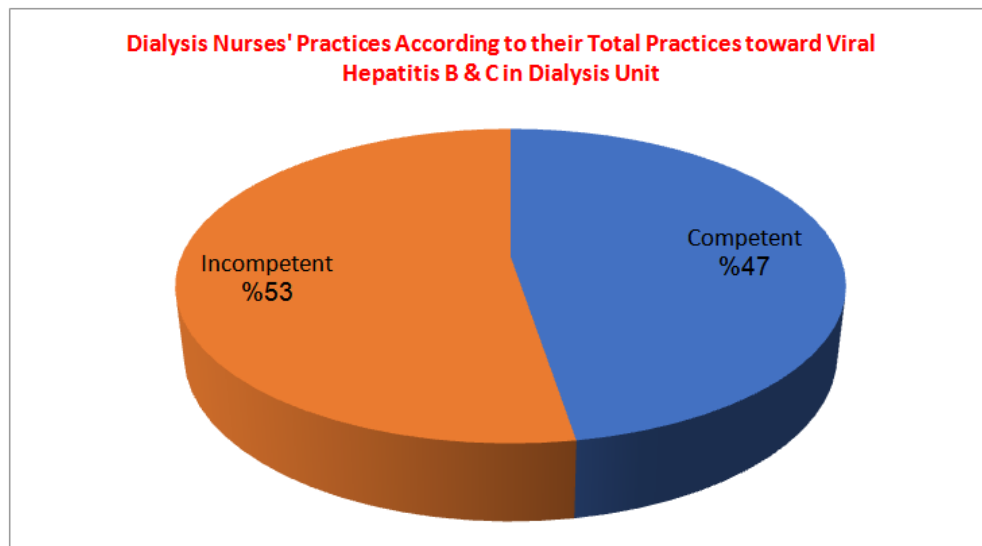


Figure 4. Dialysis Nurses' Total Practices toward Viral Hepatitis B & C in Dialysis Unit

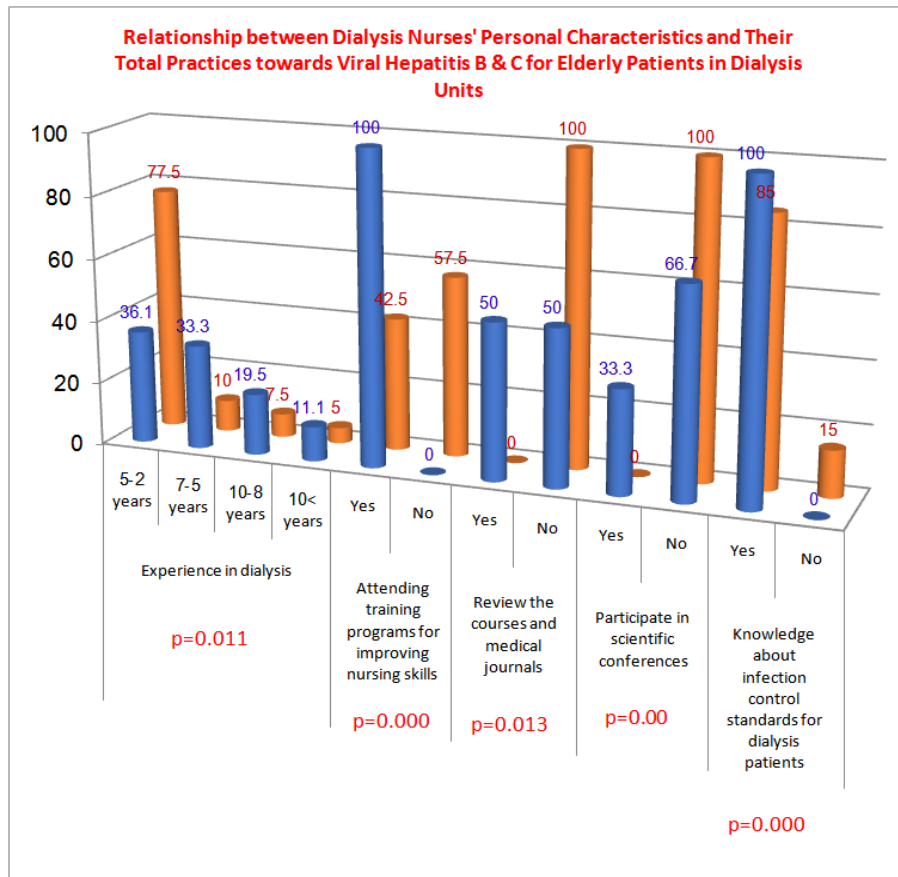


Figure 5. Relationship between Dialysis Nurses' Personal Characteristics and Their Total Practices towards Viral Hepatitis B & C for Elderly Patients in Dialysis Units

Table 1: presents correlation between dialysis nurses' knowledge and their practices towards viral hepatitis B & C for the elderly patients in the dialysis units. It indicates that, there is highly significant positive correlation between dialysis nurses' knowledge and their practices towards viral hepatitis B & C for the elderly patients in the dialysis units ($P < 0.01$).

Table 1. Correlation between dialysis nurses' knowledge and their practices towards viral hepatitis B & C for the elderly patients in the dialysis units (n=76)

Items	Total knowledge
Total practices	r = 0.544 P = 0.000**

r= correlation coefficient test.
**highly significant at $p < 0.01$.

5. Discussion

Elderly is a natural process, which starts with intrauterine life, continues until death and is caused by irreversible degeneration of cells and systems. Elderly is not a pathological process and it consists of physiological, psychological, sociological and chronological changes [20-21]. At the biological level, ageing results from the impact of the accumulation of a wide variety of molecular and cellular damage over time. This leads to a gradual decrease in physical and mental capacity, a growing risk of disease and ultimately death. These changes are neither linear nor consistent, and they are only loosely associated with a person's age in years. The diversity seen in older

age is not random. Beyond biological changes, ageing is often associated with other life transitions such as retirement, relocation to more appropriate housing and the death of friends and partners [22-28].

Regarding the relationship between socio-demographic characteristics of the dialysis nurses and their total knowledge about elderly and dialysis, 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.

Concerning relationship between dialysis nurses' education, attending training programs, and opportunity to review the courses and medical journals and their total practices towards viral hepatitis B & C for elderly patients in dialysis units. The results of the current study emphasized on highly statistically significant relation between dialysis nurses' practice and their education level, attendance training program for improving nursing skills, and their opportunity to view the courses and medical journals at ($P < 0.05$).

The researcher examined the relationship between total mean knowledge and total mean practice. The results revealed that there was no significant statistical relationship exists between knowledge and practice scores. This finding is supported by Zaninotto, & Steptoe (2022) in a study assessed knowledge and practices of universal precautions, which revealed that there was no significant

correlation between level of knowledge and level of performance [29].

Conclusion

Training program improved nurses' skills and participate in dialysis units.

Recommendation

- Modification of the ongoing training program regarding infection control to be more applied to hemodialysis units.

Implement and conducting continuous practicing sessions to improve practice level regarding prevention of viral hepatitis transmission in hemodialysis units.

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