

# Hemodialysis Nursing Staffs' General Knowledge Regarding Elderly and Dialysis

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## Abstract

**Background:** Hemodialysis today moves towards innovative techniques, biomaterials and devices with an absolute need for solid evidence around every new treatment or technology. Aim: This study aimed to assess hemodialysis nursing staffs' general knowledge regarding elderly and dialysis.

**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, of whom 22 were men and 54 women.

**Results:** It shows that, 79.0% & 77.6% of the dialysis nurses have incomplete correct knowledge about the changes that occur to the elderly and the causes of renal failure for elderly, respectively. However, 50% of the dialysis nurses have fair level of total knowledge about elderly patients and dialysis. Also, 32% of them have good level of total knowledge, while, 18% of them have poor level of total knowledge.

**Conclusion:** There is statistically significant relation between dialysis nurses' knowledge and their years of experience in dialysis unit, attendance training program for new dialysis nurses, and their opportunity to viewing the courses and medical journals ( $p < 0.05$ ).

**Recommendations:** Modification of the ongoing training program regarding infection control to be more applied to hemodialysis units

**Keywords:** hemodialysis; nursing knowledge; elderly

## 1. Introduction

Aging is a progressive state, which is associated with physical, social and psychological changes. The more traditional African definitions of an elder or 'elderly' person correlate with the chronological ages of 50 to 65 years, depending on the setting, the region and the country. Geriatrics was defined as the branch of medicine that deals with the problems of old age and aging, including the clinical problems of senescence and senility [1-9].

Hemodialysis is one of several renal replacement therapies (RRTs) used in the treatment of renal failure to remove excess fluids and waste products and to restore chemical and electrolyte imbalances. Hemodialysis today moves towards innovative techniques, biomaterials and devices with an absolute need for solid evidence around every new treatment or technology. The number of patients being treated for end

stage renal disease ESRD globally was estimated to be 2,786,000 at the end of 2017 and, with a 8%-9% growth rate, continues to increase at a significantly higher rate than the world population [10].

Dialysis is the process of removing excess water, solutes, and toxins from the blood in people whose kidneys can no longer perform these functions naturally. This is referred to as renal replacement therapy. The first successful dialysis was performed in 1943 [11].

The hemodialysis procedure as illustrated by Figure (1) started as an external vascular circuit through which the patient's blood is transferred in sterile polyethylene tubing to the dialysis filter or membrane (dialyzer) via a mechanical pump. The patient's blood then passes through the dialyzer on one side of the semipermeable membrane and is returned to the patient. The dialysate solution, which consists of purified water and

electrolytes, is pumped through the dialyzer countercurrent to the flow of blood on the other side of the semipermeable membrane. In most cases, systemic anticoagulation (with heparin) is used to prevent clotting of the hemodialysis circuit [12].

### 1. Aim Of the Study

The aim of this study was to assess hemodialysis nursing staffs' general knowledge regarding elderly and dialysis.

#### 1.1. Research Questions

- What about hemodialysis nursing staffs' general knowledge regarding elderly and associated changes?
- What about hemodialysis nursing staffs' general knowledge regarding dialysis in elderly?
- Are hemodialysis nursing staffs' experiences in dialysis units, and attendance of in-service training program dialysis can affect their knowledge regarding dialysis?

### 2. Subjects And Methods

**2.1. Research Design:** The goal of the study was achieved through a descriptive exploratory study.

#### 2.2. Subjects & Setting:

**3.2.1. Setting:** The study was carried out in two hemodialysis units at Beni-Suef University Hospital and Elwasta General Hospital in Beni-Suef Governorate.

#### 3.2.2. Subjects

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

**3.2.2.2. Sampling Type:** A convenient sample

#### 3.2.3. Tools of Data Collection:

##### A. Tool (I): Knowledge Assessment Questionnaire:

Informed on the original instrument was created by Alpers (2020) [13]. The researcher created a modified Arabic self-administered questionnaire (Setia et al., 2021) [14]. It was divided into two main sections:

##### Part I: General characteristics questionnaire sheet:

This part was developed by the researcher to collect data about nurses' personal characteristics that includes: years of experience in dialysis units, and previous attendance of in-service training program dialysis.

**Part II: Nurses' knowledge about elderly patients, and dialysis** in dialysis that introduced to elderly patients with viral hepatitis B & C in dialysis units to assess nurses' knowledge about elderly and dialysis.

##### ❖ The scoring system: -

The questionnaire was made up of questions; the complete correct response received two points, the incomplete correct response received one point, and the incorrect response or "don't know" received zero points. These results were added up to create a % score. There were three categories:

- Excellent knowledge if the score was more than 75%.
- A score of 50 to 75% indicates fair knowledge.
- Lack of knowledge if score is lower than 50%.

#### 3.2.4. Validity and reliability

##### ▪ Content Validity:

Tool validity analysis was performed to determine the extent to which the employed tools capture the intended metric. Five community health nursing experts from the nursing department at Beni-Suef University served on a panel to review the instruments' content and face validity.

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

- For senior patients in dialysis units, nurses' knowledge of viral hepatitis B and C was 0.823.

#### 3.2.5. Preparatory phase:

Using textbooks, articles, journals, and websites, this phase began with a survey of recent and historical, national and international, related material regarding the study's subjects.

#### 3.2.6. Pilot study:

A pilot study was conducted on 10% of the total study sample (8 nurses) in order to check the tools' applicability, effectiveness, and clarity as well as the fieldwork's viability and to look for any potential barriers that would stand in the way of the researcher's capacity to collect data.

#### 3.2.7. Field Work

To gather information about nurses' understanding of the elderly and dialysis, researchers gave the self-administered questionnaire to the nurses who accepted to participate in the study.

#### 3.2.8. Ethical Considerations:

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

#### 3.2.9. Administrative design:

The dean of the nursing faculty at Beni-Suef University wrote an official letter to the hospital serving the university, Elwasta General Hospital, requesting their permission to perform the study.

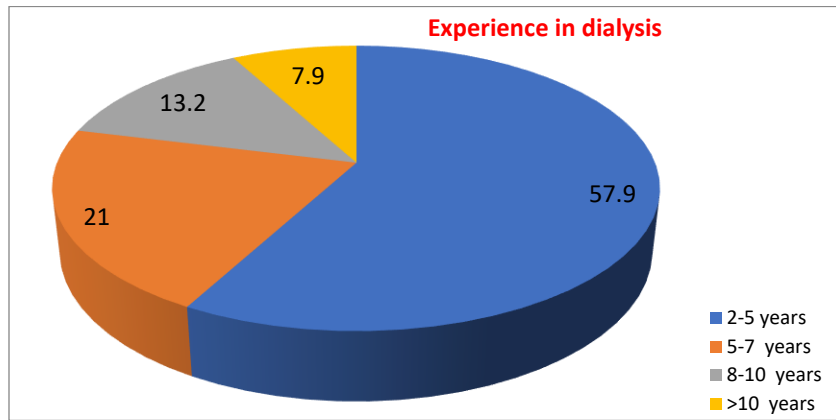
#### 3.2.10. Statistical design:

The Statistical Package for Social Science (SPSS) version 25 computer programme and Microsoft Excel were used to conduct the statistical analysis of the data. For categorical data, frequencies and percentages were used, while for quantitative data, the arithmetic mean ( $\bar{X}$ ) and standard deviation (SD) were used. Data were presented using descriptive statistics. Qualitative variables were compared using chi square test [ $\chi^2$ ]. 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).

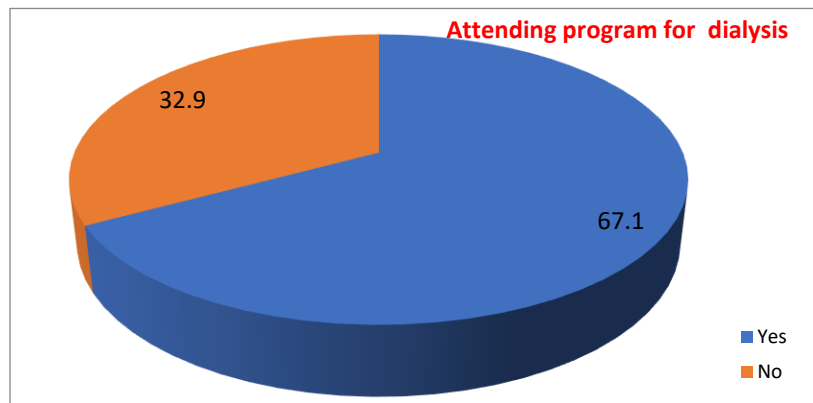
### 3. Results

**Figure (1)** Frequency of dialysis nurses according to their years of experience in dialysis unit. It shows that 57.9% of the dialysis nurses have 2-5 years of experience in dialysis unit.



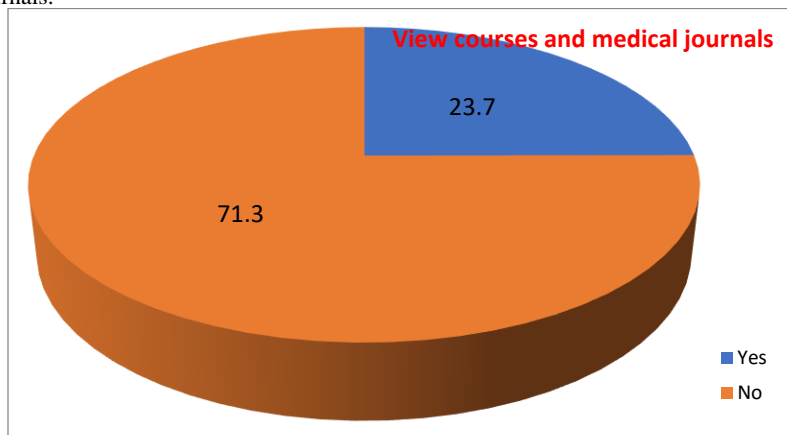
**Figure (1):** Frequency of dialysis nurses according to their years of experience in dialysis unit (n=76)

**Figure (2)** presents frequency of dialysis nurses according to their attending program for new dialysis nurses. It shows that 76.1% of them attend program for new dialysis nurses.



**Figure (2):** Frequency of dialysis nurses according to their attending program for new dialysis nurses (n=76)

**Figure (3)** presents dialysis nurses opportunity to view the courses and medical journals. It shows that 71.3% of them don't have the opportunity to view the courses and medical journals.



**Figure (3):** Frequency of dialysis nurses according to their opportunity to view the courses and medical journals.

**Table (1) & Figure (4)** displays that, 79.0% & 77.6% of the dialysis nurses have incomplete correct knowledge about the changes that occur to the elderly and the causes of renal failure for elderly, respectively. Also, 73.7% & 67.1% of them have incomplete correct knowledge about the method to monitor excess fluid in the body of patients with renal failure

and the medications that elderly with renal failure should be careful when using, respectively.

**Table (1):** Frequency distribution of Dialysis nurses' knowledge about elderly and Dialysis (n=76).

Items	Correct answer		Incomplete answer		Incorrect answer	
	No.	%	No.	%	No.	%
The changes that occur to the elderly	16	21.0	60	79.0	0	0.0
Causes of renal failure for elderly	17	22.4	59	77.6	0	0.0
Method to monitor excess fluid in the body of patients with renal failure	20	26.3	56	73.7	10	13.2
Controlling excess fluid for patients with renal failure	25	32.9	45	59.2	6	7.9
Skin care for elderly with dehydration	21	27.6	46	60.5	9	11.9
Training dialysis patients about safety of arteriovenous fistula	18	23.7	45	59.2	13	17.1
Causes of skin dryness of elderly	16	21.1	47	61.8	13	17.1
The basic kidney functions	18	23.7	50	65.8	8	10.5
Medications that elderly with renal failure should be careful when using	15	19.7	51	67.1	10	13.2
Daily meal plan for elderly with renal failure	15	19.7	53	69.8	8	10.5
The importance of Hemodialysis to the elderly patients	22	29.0	46	60.5	8	10.5
The problems that face the elderly during dialysis	25	32.9	42	55.3	9	11.8
Time that disequilibrium syndrome happens for dialyzing elderly	16	21.1	32	42.1	28	36.8
Factors affecting the efficiency of dialysis	45	59.2	0	0.0	31	40.8
Uremic elderly suffers from difficulty of breathing during sleep, distended neck veins, hypertension it's probably so	23	30.3	0	0.0	53	69.7
According to fluid over load the first action to be done in this case is	22	28.9	0	0.0	54	71.1
Actions to avoid arteriovenous fistula complication for dialysis patient	25	32.9	51	67.1	0	0.0

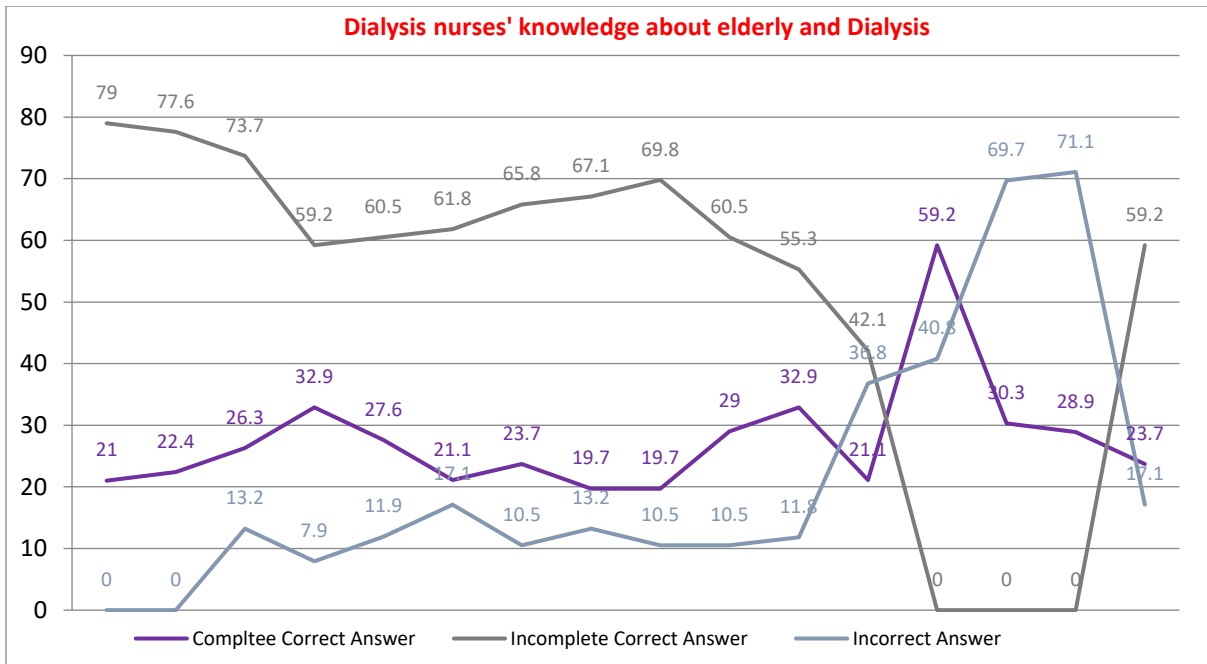
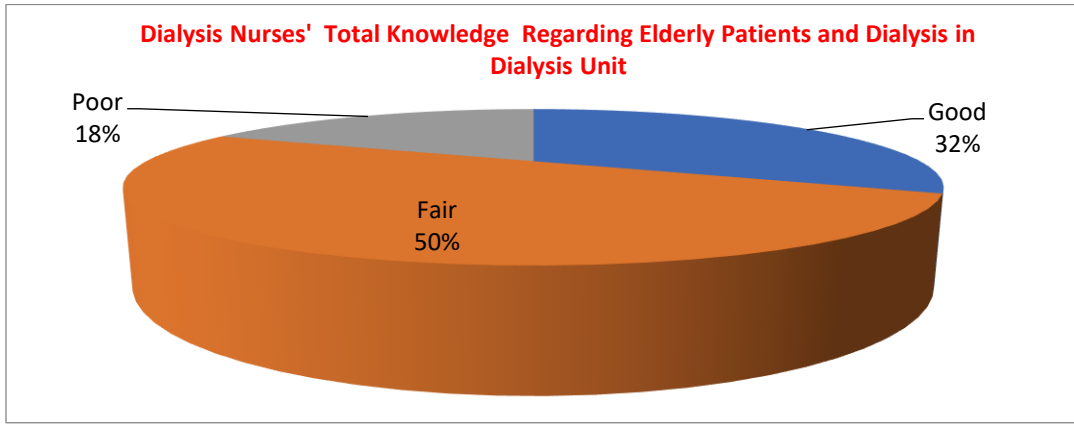


Figure (4): Frequency distribution of Dialysis nurses' knowledge about elderly and Dialysis (n=76).

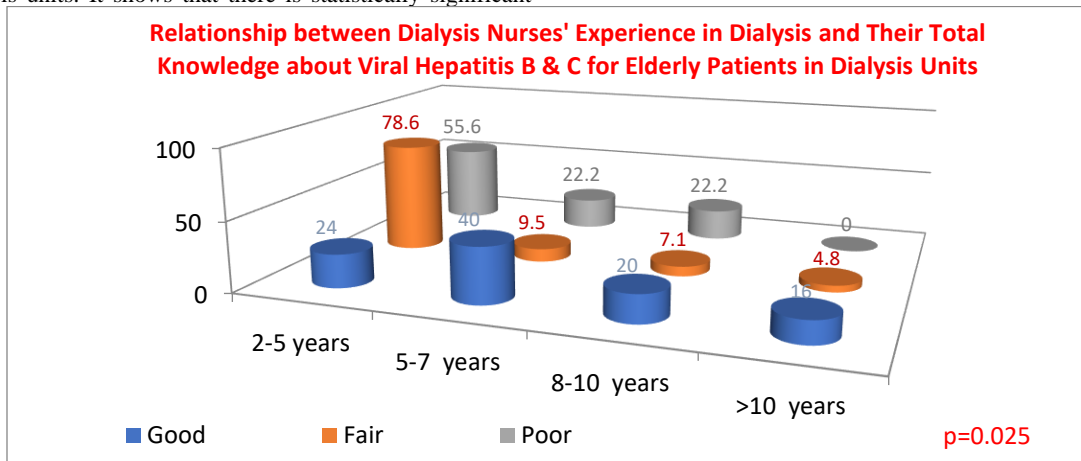
Figure (5): Percentage distribution of the Dialysis nurses' knowledge about their total knowledge regarding elderly patients and dialysis in dialysis unit. It shows that, (50%) of the dialysis nurses have fair level of

total knowledge about elderly patients and dialysis. Also, 32% of them have good level of total knowledge, while, 18% of them have poor level of total knowledge.



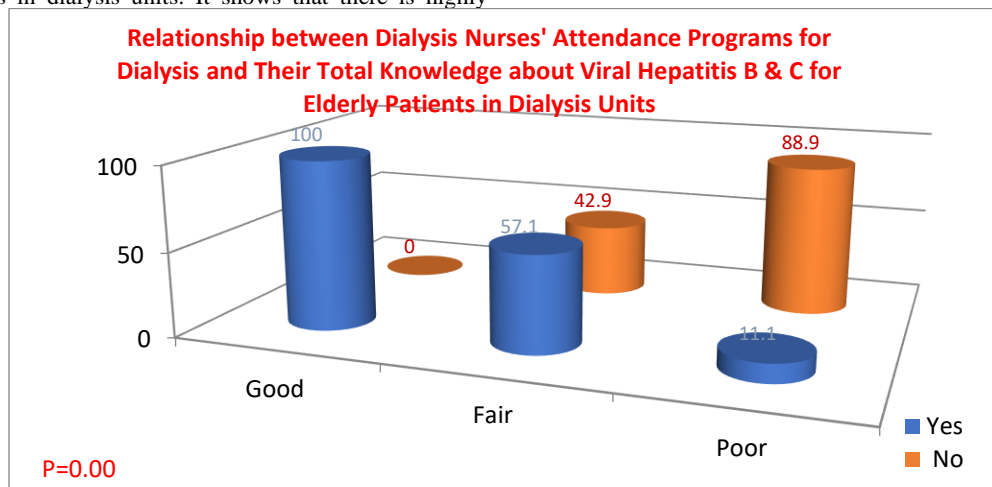
**Figure (5):** Dialysis nurses' knowledge about their total knowledge regarding elderly patients and dialysis in dialysis unit (n=76).

**Figure (6):** Presents relationship between dialysis nurses' experience in dialysis and their total knowledge about viral hepatitis B & C for elderly patients in dialysis units. It shows that there is statistically significant relation between dialysis nurses' knowledge and their years of experience in dialysis unit (p=0.025).



**Figure (6):** Relationship between dialysis nurses' experience in dialysis and their total knowledge about viral hepatitis B & C for elderly patients in dialysis units

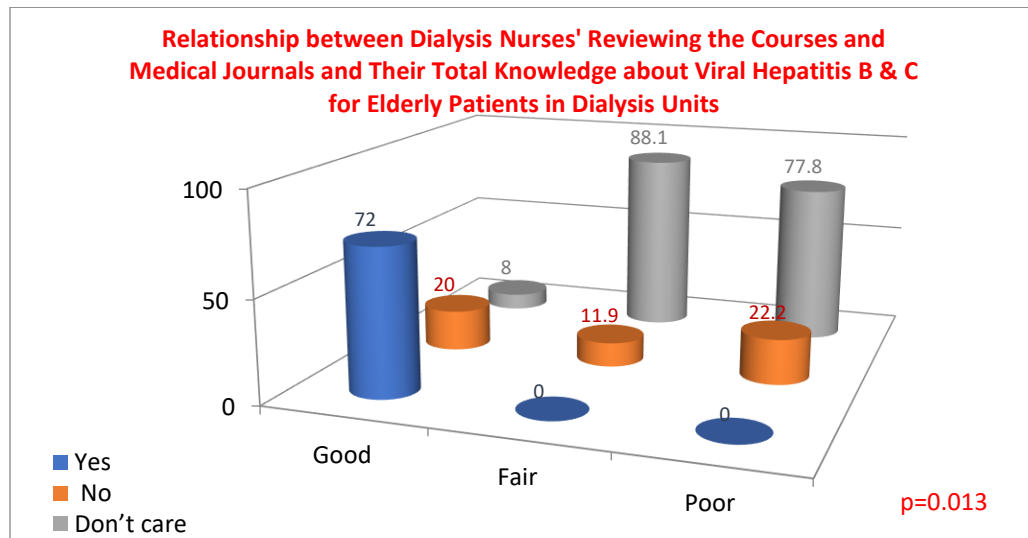
**Figure (7):** Presents Relationship between dialysis nurses' attendance programs for dialysis and their total knowledge about viral hepatitis B & C for elderly patients in dialysis units. It shows that there is highly statistically significant relation between dialysis nurses' knowledge and their training program for new dialysis nurses (P=0.000).



**Figure (7):** Relationship between dialysis nurses' attendance programs for dialysis and their total knowledge about viral hepatitis B & C for elderly patients in dialysis units

**Figure (8):** presents relationship between dialysis nurses' opportunity to viewing the courses and medical journals and their total knowledge about viral hepatitis B & C for elderly patients in dialysis units. It shows that

there is statistically significant relation between dialysis nurses' knowledge and their nurses' opportunity to viewing the courses and medical journals ( $p=0.013$ ).



**Figure (8):** Relationship between dialysis nurses' reviewing the courses and medical journals and their total knowledge about viral hepatitis B & C for elderly patients in dialysis units

#### 4. 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 [15-18]. 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 [19-24]. In the current study, the findings that answered the research question, which was "What is nursing staffs' level of knowledge regarding changes that occur to the elderly and the causes of renal failure for elderly and causes of renal failure of elderly more than two thirds of the dialysis nurses have incomplete correct knowledge in HDU?", Also less than three quarters, (73.7% and 67.1%) of them have incomplete correct knowledge about the method to monitor excess fluid in the body of patients with renal failure and the medications that elderly with renal failure should be careful when using, respectively. This lack of knowledge may be attributed to more than half of the dialysis nurses have less than 5 years of experience in dialysis unit. 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. Regarding relationship between dialysis nurses'

experience in dialysis and their total knowledge about viral hepatitis B & C for elderly patients in dialysis units, results of the current study shows that there is statistically significant relation between dialysis nurses' knowledge and their years of experience in dialysis unit ( $p=0.025$ ). It is not amazing to find this as most of the studied sample attending training programs about dialysis that enhance their practices.

#### 5. Conclusion

There is statistically significant relation between dialysis nurses' knowledge and their years of experience in dialysis unit, attendance training program for new dialysis nurses, and their opportunity to viewing the courses and medical journals ( $p<0.05$ ).

#### 6. Recommendation

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

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