Nurses' Knowledge and Practice Regarding Care for the Patients during Hemodialysis

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Abstract

Background: Hemodialysis is a common renal replacement therapy offered in hospital based units.

Aim: The aim of the present study is to assess nurses’ knowledge and practice regarding care for the patients during hemodialysis at Ismailia Hospitals.

Subjects and Methods: A descriptive exploratory design was used in this study. Subjects were composed of all available nurses that providing direct care to patients in hemodialysis units at Ismailia University Hospital and Ismailia General Hospital, the study included 50 nurses.

Tools: Two tools were used, namely a self questionnaire and an observation checklist.

Results: The findings of the study indicated that the majority of studied nurses 90% had satisfactory level of total knowledge about hemodialysis, while 44% of studied nurses had unsatisfactory level of practice regarding care for the patients during hemodialysis. There was no significant correlation between practice score and total knowledge scores.

Conclusion: The majority of studied nurses had satisfactory total knowledge regarding hemodialysis, while the studied nurses had unsatisfactory practice regarding care for patients during hemodialysis.

Recommendations: Continuous nursing educational and in-service training programs on Hemodialysis Unit, periodic monitoring of nurses knowledge and practice to evaluate the level of nurses.

Key Words: Hemodialysis – Knowledge – Practice – Complication.

Introduction

CHRONIC Kidney Disease (CKD) has been recognized as a global public health problem with increasing incidence and prevalence and high morbidity and mortality exceeds 25% [1,2]. The number of patients enrolled in the End Stage Renal Disease (ESRD) medicare-funded program has increased from approximately 10,000 beneficiaries in 1973 to 615,899 as of December 31, 2011. Patients with ESRD consume a disproportionate share of healthcare resources. The total cost of the ESRD program in the United State (US) was approximately $49.3 billion in 2011. Medicare costs per person per year were more than $75,000 overall, ranging from $32,922 for transplant patients to $87,945 for those receiving hemodialysis therapy [3,4].

Hemodialysis remained the most common treatment modality, with approximately 1,929,000 patients undergoing hemodialysis, for 89% of all dialysis patients [5]. In Egypt the total prevalence of patients on dialysis is 264 per million [6]. Nurses are directly responsible for patients undergoing hemodialysis and they administer care to reduce the complications [7].

The patient and the dialysis apparatus should be under supervision of nurses consistently, so that different potential complications can be detected. Dialysis nurses must have knowledge and skills, because they considered important features of quality nursing care in the hemodialysis [8,9].

Significance of the study:

Patients with ESRD often had disease-specific management needs, and are at especially high risk for complications. Care coordination, planning, communication, and education are at the core of basic nursing standards of care. Nurses are the most health care providers who are indispensable for caring of hemodialysis patients, they have to be sufficiently informed and practically skilled in dealing with their patients of hemodialysis. Those patients are usually need for careful and continuous
observation of their nurses, so as to avoid and or prevent any common complications and problems associated with hemodialysis processes. So the study will be carried out to assess nurses knowledge and practice regarding care for the patients during hemodialysis.

Aim of the study:
The present study was aimed to assess nurses’ knowledge and practice regarding care for the patients during hemodialysis at Ismailia Hospitals.

Research questions:
To achieve the aim of this study, the following questions should be answered:

Q1- What are the nurses' knowledge regarding care for the patients during hemodialysis?
Q2- What are the nurses' practice regarding care for the patients during hemodialysis?

Subjects and Methods

Research design:
A descriptive exploratory design was used to a chive the aim of the study. The present study was conducted in Hemodialysis Unit at Ismailia University Hospital and Ismailia General Hospital, starting from May 2015 to March 2016.

Subjects:
A convenient sample in this study were composed of all available nurses that providing direct care to patients in hemodialysis units at previously mentioned hospitals. The total number of available nurses was 55 (females 52 and males 3), and was excluded 5 nurses (10%) for pilot study.

Tools of data collection:
Two tools were used for collecting data, namely a self administered interviewing questionnaire and an observation checklist.

Tool I: A self administered interview questionnaire:
The questionnaire was constructed by the researcher based on review of literature. It included the following items.

Part 1: Personal and demographic data of the nurses which composed of (7) open ended questions.

Part 2: Nurses knowledge about anatomy and physiology of urinary system, renal failure and hemodialysis, role of nurses, common health problems during hemodialysis session and infection control. It consist of (75) questions.

Scoring of the scale:
For the knowledge items, a correct response was scored (1) and the incorrect (0). For each area of knowledge, the scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score. Knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60%.

Tool II: Observation checklist.
An observational check list was used to assess practice of nurses during hemodialysis session, (initiation of dialysis, nursing intervention with common problems during hemodialysis session and at termination of dialysis).

Scoring system:
The items observed to be done were scored (1) and the items not done and not applicable were scored (0). For each area, the scores of the items were summed up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score. The practice was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60%.

Content validity:
It was established by a jury of five experts (2 professors in medical surgical nursing and 3 professors in urology specialty) who reviewed the instruments for clarity, relevance comprehensiveness, understanding, applicability, and easiness for administration. Minor modifications were required.

Pilot study:
A pilot study was conducted on 5 nurses (10%) selected randomly of the study sample to check and ensure the clarity, applicability, relevance and feasibility of the tools.

Field of work:
Field study was conducted during the period from the beginning of April (2015) to the end of November (2015) (7 months). The researcher visited the University Hospital and Ismailia General Hospital for 4 days a week (Sunday, Monday, Tuesday and Wednesday) in different shifts (morning and afternoon) to collect the data by using the previous tools.
The interviewing questionnaire was administered to nurses individually in the workplace and explanation of the questionnaire was done by the researcher; each nurse took about 30-45 minutes to complete the questionnaire sheet. The observation checklist was utilized by the researcher to assess nurses’ practice. The assessment of nurses’ practice was done through observation. The researcher spent 5-6 hours daily in observing nurses during morning and afternoon shifts.

**Ethical considerations:**

At the initial interview, each nurse was informed about the nature, purpose and benefits of the study and informed that his/her participation is voluntary. Confidentiality and anonymity of the subjects were also assured through coding of all data. The researcher assured that the data collected information will be confidential and for the purpose of the study.

**Statistical design:**

After the collection of data, it was revised, coded and fed to statistical software Statistical Package for the Social Sciences (SPSS) version 18. Microsoft Office Excel software was used to construct the needed graphs. After data coding the following data manipulations were done.

**Results**

The study results revealed that 94% were female, and more than half 54% of studied nurses their ages ranged between twenty to less than thirty years. More than half 58% of studied nurses had diploma of nursing. Related to working place showed that 65% of nurses were working at Suez Canal University Hospital and 44% of studied nurses were working at Ismailia General Hospital. Half of studied nurses had experience from 1 year to less than 10 years, and 40% of studied nurses were attended training courses about patients care in Hemodialysis Unit. While 95% who attended training courses were had beneficial of attending training courses.

Fig. (1) showed that the majority of studied nurses 90% had satisfactory level of total knowledge about hemodialysis, while only 10% had unsatisfactory level of total knowledge about hemodialysis.

Fig. (2) showed that, more than half of studied nurses 56% had satisfactory level of practice, while 44% had unsatisfactory level of practice regarding care for the patients during hemodialysis.

<table>
<thead>
<tr>
<th>Knowledge items</th>
<th>Satisfactory</th>
<th>Unsatisfactory</th>
<th>Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Anatomy and physiology</td>
<td>43</td>
<td>86.0</td>
<td>7</td>
</tr>
<tr>
<td>Renal failure and hemodialysis</td>
<td>46</td>
<td>92.0</td>
<td>4</td>
</tr>
<tr>
<td>Role of nurse in hemodialysis</td>
<td>46</td>
<td>92.0</td>
<td>4</td>
</tr>
<tr>
<td>Complications during hemodialysis</td>
<td>27</td>
<td>54.0</td>
<td>23</td>
</tr>
<tr>
<td>Infection control during hemodialysis</td>
<td>49</td>
<td>98.0</td>
<td>2</td>
</tr>
<tr>
<td>Total knowledge score</td>
<td>45</td>
<td>90.0</td>
<td>5</td>
</tr>
</tbody>
</table>
Table (2): Scores of practice of the studied nurses regarding care during hemodialysis (No=50).

<table>
<thead>
<tr>
<th>Practice items</th>
<th>Satisfactory</th>
<th>Un satisfactory</th>
<th>Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of dialysis</td>
<td>78.0</td>
<td>11</td>
<td>70.0±13.6</td>
</tr>
<tr>
<td>Dealing with complications</td>
<td>40.0</td>
<td>30</td>
<td>52.0±24.1</td>
</tr>
<tr>
<td>Hypotension</td>
<td>39.0</td>
<td>8</td>
<td>42.9±25.1</td>
</tr>
<tr>
<td>Muscle cramps</td>
<td>58.0</td>
<td>21</td>
<td>54.0±27.8</td>
</tr>
<tr>
<td>Hypoglycemia</td>
<td>16.0</td>
<td>35</td>
<td>34.3±21.9</td>
</tr>
<tr>
<td>Vomiting</td>
<td>30.0</td>
<td>35</td>
<td>44.9±25.9</td>
</tr>
<tr>
<td>Cerebral disequilibrium syndrome</td>
<td>42.0</td>
<td>29</td>
<td>47.3±28.8</td>
</tr>
<tr>
<td>Dyspnea</td>
<td>52.0</td>
<td>24</td>
<td>56.3±26.5</td>
</tr>
<tr>
<td>Cardiac arhythmias</td>
<td>100.0</td>
<td>0</td>
<td>83.9±8.4</td>
</tr>
<tr>
<td>Termination of dialysis</td>
<td>56.0</td>
<td>22</td>
<td>60.3±10.8</td>
</tr>
</tbody>
</table>

Table (3): Correlation between total satisfactory knowledge score and practice score among studied nurses about care for the patients during hemodialysis.

<table>
<thead>
<tr>
<th>Practice items</th>
<th>Total knowledge score</th>
<th>r-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of dialysis</td>
<td>0.225</td>
<td>0.074</td>
<td></td>
</tr>
<tr>
<td>Dealing with complications</td>
<td>0.025</td>
<td>0.864</td>
<td></td>
</tr>
<tr>
<td>Hypotension</td>
<td>0.078</td>
<td>0.592</td>
<td></td>
</tr>
<tr>
<td>Muscle cramps</td>
<td>0.183</td>
<td>0.202</td>
<td></td>
</tr>
<tr>
<td>Hypoglycemia</td>
<td>-0.167</td>
<td>0.247</td>
<td></td>
</tr>
<tr>
<td>Vomiting</td>
<td>-0.084</td>
<td>0.561</td>
<td></td>
</tr>
<tr>
<td>Cerebral disequilibrium syndrome</td>
<td>0.045</td>
<td>0.754</td>
<td></td>
</tr>
<tr>
<td>Dyspnea</td>
<td>-0.004</td>
<td>0.976</td>
<td></td>
</tr>
<tr>
<td>Cardiac arhythmias</td>
<td>0.011</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>Termination of dialysis</td>
<td>0.267</td>
<td>0.061</td>
<td></td>
</tr>
</tbody>
</table>

Total practice: 0.147 (p-value=0.31)

Discussion

Hemodialysis is a term used to describe the removal of solutes and water from the blood across a semipermeable membrane (dialyzer). Techniques have become increasingly sophisticated, resulting in a variety of highly efficient methods of clearing waste products and excess fluid that would normally be removed by the healthy kidney; the process of dialysis depends on two major physiological concepts that involve solute removal: diffusion (sometimes referred to as conduction), filtration (convection), and fluid is removed by the process of ultrafiltration [10]. The dialysis nurse is responsible for all forms or renal replacement therapy, including hemodialysis, and continuous renal replacement therapies across the age continuum. Nursing care focuses on close assessment and monitoring of the patient during their dialysis treatment, patient, staff education, and dismissal planning in collaboration with the multidisciplinary team [11].

Based on the results of the present study, more than half of the nurses between ages twenty to less than thirty years, which might be related to their new graduation, this is in concordance with Ahmed [12], study that was done on the effect of designed nursing protocol on nurse's knowledge and practice regarding hemodialysis patients, who found that the majority of the nurses ages ranged from twenty to twenty-nine years. This study is also in agreement with Hassona [13], conducted a study in Hemodialysis Unit at Zagazig University Hospitals, who stated that the majority of the nurses between ages twenty to less than thirty years. While this is in disagreement with El-Moghazy [14], who stated that more than half of nurses aged more than thirty years.

The results of the present study revealed that the majority of studied nurses are females, due to the tendency of females to enter the Nursing Faculties who find it difficult to enter the Medical Schools in Egypt, this is in according with Flynn et al., [15] conducted a study to organizational traits, care processes, and burnout among chronic hemodialysis nurses; who reported that majority of nurses are female, this study is also in agreement with Abdelsarat [16], study that was done at Kartoum State; who stated that most of nurses were female, while this study is in disagreement with
Bakey [17], who stated that more than half of nurses studied are males.

Concerning to level of education more than half of nurses in the current study had diploma in nursing, this might be related to their registration at the available institutes of nursing in governorate and the inability of admission to the newly established Nursing Faculty, this is in agreement with Ali [18], study that was done at Cairo University Hospital; who stated that most of nurses had diploma of nursing, while this is in disagreement with Thomas-Hawkins et al., [19], who reported that half of nurses studied had baccalaureate degree in nursing.

As regard of years of experience was noticed that half of studied nurses had experience from 1 year to less than 10 years. This might be due to their new graduation from nursing for some of them while the other due to their supervision in the unit. The present study is in agreement with Ugur et al., [20] and Bakey [17], their studies were done on the hemodialysis nurses in Ankara Turkey and Baghdad teaching hospitals respectively; who stated that most of the nurses had experience years ranged from 1 year to less than 10 years, and who stated that more than two third of studied nurses had experiences ranged from one year to less than 5 years.

With regard to attending training courses the study was found that nearly two third of studied nurses did not attend training course about patients care in Hemodialysis Unit. This may be attributed to their hospital focusing on courses related to infection control rather than courses related to care during hemodialysis. This is in agreement with Abdelfatah [21] and Bakey [17], who stated that the majority of studied nurses did not attend training course about patients care in Hemodialysis Unit.

Regarding nurse's total knowledge about hemodialysis the results of the current study revealed that majority of nurses had satisfactory knowledge in hemodialysis, this is in agreement with El-Moghazy [14], who reported that nearly two thirds of total nurses had satisfactory knowledge regarding hemodialysis. This is while disagreement with Hassona [13], who stated that most of nurses had unsatisfactory total knowledge regarding hemodialysis. It might be due to many factors including: New graduation, attending courses.

The current study results revealed that the studied nurses had unsatisfactory practice regarding care for patients during hemodialysis. It might be due to the lack of nurses application of knowledge especially regarding to nursing interventions with common complications that occur and misunderstanding of their roles as there is no job description or definition of responsibilities in the hemodialysis unit and due to carelessness of nurses; these findings in agreement with Hassona [13], who stated that all nurses had unsatisfactory knowledge practice regarding care during hemodialysis. While this is in disagreement with Ali [18], who stated that nearly two third had satisfactory practice regarding care during hemodialysis.

The present study showed a significant difference between nurse's knowledge scores and their age. This may be due to the studied nurses were spent much time for caring these patients. This is in agreement with Abdelfatah [21], who stated that there was statistical significant difference between nurse's knowledge scores and ages of studied nurses. While disagreement with Mohamed [22], who reported that there was high statistical significant difference between nurse's knowledge scores and working place.

On the same way, the present study showed a high significant difference between studied nurses practice scores and working place. This in agreement with Mohamed [22], who stated that there was high statistical significant difference between nurses practice scores and working place, these results are also in disagreement with Abdelfatah [21], who stated that there was statistical significant difference between nurses practice scores and age of studied nurses and years of experience.

Finally this study showed that studied nurses had satisfied level of knowledge regarding hemodialysis, on the other hand that studied nurses had unsatisfied level of practice regarding care for patients during hemodialysis.

**Conclusion:**

The majority of studied nurses had satisfied level of total knowledge regarding care for the patients during hemodialysis and had unsatisfactory practice regarding care for the patients during hemodialysis. There is no statistical significant differences between nurses' knowledge and their practice.

**Recommendations:**

Continuous nursing educational and in-service training programs on Hemodialysis Unit should be well organized within Ismailia Hospitals, nurses should be add to their routine obligations the regular reading of up-to date references (periodicals, textbooks, act.), and a booklet should be designated.
and distributed to all nurses who working in hemodialysis units including the standard actions that should be applied and followed to care for patients in Hemodialysis Units.

References


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الملخص العربي

الفشل الكلي المزمن يعتبر من المشاكل الصحية الرئيسية في جميع أنحاء العالم. الفشل الكلوي هو العلاج المطلوب للحياة الذي يتم استخدامه بشكل روتيني لمرضى الذين يعانون من مرض الكلى الكلي. المرضى الذين يعانون من الفشل الكلوي يتضمنوا التقييم والتخطيط الدقيق من قبل المريضة لمنع حدوث المضاعفات الأكثر شيوعًا أثناء غسيل الكلي.

هدف هذه الدراسة إلى تقييم ممارسات الممرضات في مراقبة مرضى أثناء نسبة الفشل الكلوي في مستشفى الناصرة. تم استخدام التصميم الوصفي الاستكشافي في هذه الدراسة. أجريت هذه الدراسة في وحدات غسيل الكلى في المستشفى الجامعي والمستشفى العام بالإسعاف، وهي واحدة من جميع الممارسات المتاحة لتوفير الرعاية المباشرة للمرضى الذين يعانون من الفشل الكلوي المزمن في وحدات غسيل الكلي. بلغ إجمالي عدد المريض 50 مريضة بعد استبعاد العينة التجريبية.

النتائج: خلصت نتائج الدراسة إلى أن ممارسة مريضة جاهزة للعمل في الحالة الفطرية أثناء غسيل الكلى، بينما كانت الممارسة غير مرتبطة فيما يتعلق بالرعاية التشخيصية للمرضى أثناء غسيل الكلي. وأظهرت الدراسة عدم وجود علاقة ذات دلالات إحصائية بين درجات الممارسات ومستوى ممارستهم.