ASSESSMENT OF HEALTH LITERACY AMONG PATIENTS UNDERGOING HEMODIALYSIS

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ABSTRACT

Background: levels of literacy have a direct impact on the ability to act on health information and take greater control of the health as persons, families, and communities. Hemodialysis patients with low health literacy are at increased risk for altered selfmaintenance and negative health outcomes. Aim: To assess health literacy among patients undergoing hemodialysis. Subject and method: Design: A descriptive design was utilized in this study. Subject: The study data were collected from all available adult patients undergoing hemodialysis (105 patients) in 9 months. Setting: the study was conducted in hemodialysis unit at El- Salam Hospital. Tools: Tool I: structure interview questionnaire. Tool II: Health literacy questionnaire. Results: 54.3% of them suffered from nausea during the hemodialysis session. The mean score ±SD of total health literacy of studied patients was high. There was a statistically significant relationship between the Patients' marital status and their total health literacy. While there was a statistically significant relation between the level of education of the studied patients and their total health literacy. Conclusion: There was a relatively high level of mean health literacy among patients undergoing hemodialysis especially inpatient safety literacy while the mean score of advanced health knowledge was low. There was a statistically significant relationship between the marital status and education level of the patients and their total health literacy. Recommendations: Providing ongoing in-service education for patients undergoing hemodialysis to update their health literacy related to their chronic disease. Provide more research on nursing care for patients undergoing hemodialysis.

Key words: Health Literacy – patients undergoing hemodialysis

INTRODUCTION

End-Stage Renal Disease (ESRD) is a condition in which the kidneys stop working and are not able to remove waste and extra water from the blood or keep body chemicals in balance. Acute or severe renal failure happens suddenly (for example, after an injury) and may be treated and cured. Chronic renal failure develops over many years, may be caused by high blood pressure or diabetes, and cannot be cured (Kestenbaum, Conley, and Roshanravan, 2020).

Hemodialysis is a complicated technique for patients who require frequent hospital or dialysis center visits, Three times a week is average, implying major disruptions in the patients' normal routine. About 92 % of patients with hemodialysis may have a high symptom burden, including fatigue, decreased appetite, difficulty concentrating, swelling in their feet and hands, and muscular cramps, all of which cause daily distress and have a detrimental impact on life. Hemodialysis is a time-consuming and expensive treatment that requires greater dietary and hydration restrictions, and long-term dialysis results in a loss of independence, reliance on the caregiver, disruption of marital, family, and social life, as well as a reduction or absence of income (Kalsoom, Khan, and Ahmad, 2020).

Health literacy is the degree to which individuals can obtain, process, and understand basic health information and services needed to make appropriate health decisions (Xie, Mengdi Zhang, Tan, 2019). Patients with adequate health literacy, In Comparison to those with low health literacy, are (1.5-3) times more likely to experience poor health outcomes. They're more likely to have difficulties understanding healthcare professionals, written health materials/health labels, processing health information, and navigating health-care environments, as well as limited health-related knowledge, limited use of preventive care, and fewer self-care behaviors like medication adherence. Furthermore, a low level of health literacy is linked to an increase in depression symptoms, a lower quality of life, a higher risk of mortality, more frequent hospitalization, and higher healthcare expenses (Bezerra, Lessa, Luz, and Borba, 2019).

Low health literacy is linked with less understanding of the health condition of the patient, less self-care, and a higher risk of hospitalizations and mortality in individuals with renal disease. To effectively accomplish hemodialysis-specific self-care, patients must routinely evaluate suggestions relating to drugs, dietary, hemodialysis prescription time, and visits to other healthcare providers. Furthermore, cognitive impairment is common in hemodialysis patients, and it's linked to poor self-care, so it's likely to affect a person's health literacy abilities (Chen, et al., 2021).

Significance of the study

Health literacy refers to the ability of individuals to gain access to, use, and understand health information and services to maintain good health. The lack of health literacy with hemodialysis increases the problems of the patients in different dimensions of life which reduces the quality of life and increases the treatment costs. Effectively improving the health literacy of patients can be beneficial for the health and self-care capabilities of patients who are undergoing hemodialysis treatment (Bilal et al.,2020).

Aim of the study

To assess the health literacy among patients undergoing hemodialysis.

This aim will be achieved through:

- Assess Functional literacy among patients undergoing hemodialysis.
- Assess Interactive literacy among patients undergoing hemodialysis.
- Assess Critical literacy among patients undergoing hemodialysis.

SUBJECT AND METHOD

I. Technical Design

Research design:

A descriptive design was utilized in the study. The descriptive design describes the characteristics of a population. It collects data that is used to answer a wide range of what, when, and how questions of a particular population or group (Polit & Beck, 2022).

Study Setting:

This study was conducted at El- Salam Hospital which is affiliated with the ministry of health and become under comprehensive health insurance. The hemodialysis unit contains 47 dialysis machines and 37 patients' beds.

Study Subject:

The study data were collected from adult patients (male and female) who undergoing hemodialysis sessions on Saturday, Monday, and Wednesday in three shifts per day, and the number of patients in the session were 35 patients. There were (105) patients in (9) months at Port-Said General Hospital as a total sample of the study.

Tools for data collection:

The data was collected by the following tools:

Tool I: structure interview:

This tool was created by the researcher based on a literature review (Agustiyowati et al, 2018 and Mansouri et al, 2019). It involved two parts as follows:

Part I: Socio-demographic characteristics: This part includes 8 items related to the patient's socio-demographic characteristics as (age, gender, marital status, level of education, number of family members, occupation, and level of income per month and if this income sufficient for medical expenses)

Part II: Patient' medical history:

This part is used to assess the patient's medical history as:

- **Family history:** which contains 2 questions as (Does a family member suffer from renal failure and his/her relation to the patient).
- Current medical history: This contains 6 questions as (symptoms, knowing, date of occurrence, number of hours/session, Frequency session/week, problems exposed during the hemodialysis).

Tool II: Health literacy questionnaire

It was adapted from (Chung et al., 2016) in anguish language and some modifications were done which convert multiple-choice questions to true or false questions based on reviewing recent related literature (Shyaa & Sabah, 2017) and translated to Arabic language with the maintenance of the meaning of the questions. It was used to assess patients' understanding in the context of their health, as well as measuring their ability to communicate with their health care provider. It includes three main constructs of critical health literacy, interactive health literacy, and functional health literacy that enumerate in 26 items as follows:

1. Functional Health Literacy: it included two sub-constructs:

- a) Functional literacy (five items) which included questions about nutrition, the lifestyle of the patient, the aim of dialysis, 2 questions about blood pressure, and fluid intake
- b) Basic health knowledge (four items) which included questions about types of food, 2 questions about fluids intake, and diet.

2. Interactive Health Literacy: it included two sub-constructs:

- c) Communicative literacy (four items) included questions about patients' health compliance with medical advice, medications, how to deal with its side effect and lab examination.
- d) Interactive literacy (three items) included questions about receiving treatment advice from non-medical resources, problems related to dialysis, and dialysis treatment.

3. Critical Health Literacy: it included three sub-constructs:

- e) advanced health knowledge (five items) which included questions about complications in dialysis patients, different therapies to treat end-stage renal disease, the difference between HD and PD, kidney transplantation, and medication before hemodialysis session f) Critical literacy (three items) which included questions about weight, self-care, and exercise
 - g) Patient safety (two items) includes questions about full prevention and infection prevention in a dialysis patient.

Scoring system:

As regards the Health literacy questionnaire; the answer was evaluated using model key answer prepared by the researcher, whereas the right answer scored 1, the wrong answer scored 0 and the score was reversed for negative items. No cut-off point was established for it and, thus, the higher mean score indicates the higher patient's level of health level.

II. OPERATIONAL DESIGN:

The operational design involves the preparatory phase, content validity, reliability, pilot study, and fieldwork.

A-Preparatory Phase

It includes reviewing the literature, different studies, and theoretical knowledge of various aspects of the problems using books, articles, the internet, periodicals, and magazines.

B- Content Validity and

It was ascertained by the odd number of experts including medical and nursing staff. Their opinion was directed regarding the tool format, consistency, and scoring system. The content of the tools was ascertained by 9 experts from the Department of Medical-

Surgical Nursing, Department of Community Health Nursing, and Department of Mental Health Nursing, Faculty of Nursing, Port Said University, and from the department of medicine, Faculty of Medicine, Al-Azhar University who revised the tools and modifications were done according to their opinion to evaluate the accuracy, relevance, and completeness of the tools content.

Reliability

Reliability analysis by Cronbach's Alpha test was done to measure the overall consistency of the items that are used to define scales. Reliability was good if more than 0.70.

The health literacy tool was 0.72 showed a strong significant positive correlation between the items of the tool.

C- Pilot Study

The pilot study was conducted on 10 % of patients (11) undergoing hemodialysis to test the applicability of the tools then necessary modification was done according to the pilot study result. Items were added or corrected as needed. The results from the pilot study were included from the main statistical sample because there were no modifications in the used tools.

D- Field Work

The field study was carried out for 12 months from the beginning of April (2019) to the end of March (2020). In this stage after the finalization of the tools, the researcher assessed patient 'ssocio-demographic data using tool I. while, assessing patients' health literacy using Tool II. Tool II was designed to assess patients' understanding in the context of their health, as well as to measure their ability to communicate with their health care professionals. It includes three key constructs of critical health literacy, interactive health literacy, and functional health literacy. The researcher clarified the questionnaire (Tool II) to each patient and filled it with illiterate patients after asking them. While asking literate patients to answer it. The tool was filled in about 25 minutes to 30 minutes.

III. Administrative Design

By submitting a formal letter from the vice dean of the Faculty of Nursing at Port Said University, official approval for data collection was acquired from the study's chosen area (the director of the center for genetic counseling in Port Said city) and from the hospital administrative employees. Meetings and discussions were held between the researcher, administrative workers, and hemodialysis patients to inform them of the research's goals and objectives, as well as to improve cooperation during the data collection process.

Ethical Consideration:

The researcher explained the objective and aim of the study to patients, the patient was informed that they have the right to refuse to participate in the study and that they have the right to withdraw from the study at any time without reason, and that this withdrawal did not affect the care they received at the hospital. The research tools did not cause any harm or pain to the participant patients.

Statistical Design

The collected data were organized, revised. stored. tabulated. and analyzed using number and percentage distribution. Statistical analysis was done by computer using Statistical Package of Social Science model (SPSS) package version 16. To determine whether there was significant statistical difference between the variables of study, the proper statistical tests were used.

RESULTS

Table (1): shows that 60 % of studied patients were from 40 to < 60 years with a mean age of 49.3±1.2, 51.4% of studied patients were male, 95.2% were married, 4.8% had the lowest level of literacy (read and write) and 66.7% of them didn't working. Meanwhile, 65.7% of them had not enough income and 79% of them weren't able to cover medical expenses.

Table (2): illustrates that 63.8% of studied patients had no family history of renal failure. However, 65.8% of them had first-degree consanguinity and 45.7% of them discovered their disease by symptoms. Regarding current problems with hemodialysis, 46.7% of studied patients suffered from hypertension during a hemodialysis session.

Table (3): illustrates that the mean of functional literacy, basic health knowledge, communication literacy, interactive literacy, advanced health knowledge, critical literacy, and patient safety literacy were 3.2 ± 0.9 , 2.3 ± 1.1 , 2.5 ± 1.07 , 2.0 ± 0.7 , 2.4 ± 1.3 , 1.8 ± 0.8 , and 1.4 ± 0.6 . Finally, it was shown that the total health literacy among studied patients was 15.8 ± 3.1 .

Table (4): declares that there was a statistically significant relationship between the Patients' marital status and their total health literacy. While there was a statistically significant relation between the level of education of the studied patients and their total health literacy.

Table (1): Socio-demographic characteristics of the studied patients (n = 105)

Item	Frequency (No)	Percentage (%)
Age / years		
20 < 40	19	18.1
40 < 60	63	60.0
60 - 80	23	21.9
Mean ±SD	49.3±1.2	
Sex		
Male	54	51.4
Female	51	48.6
Marital status		
Married	100	95.2
Single	5	4.8
Educational level		
Illiterate	34	32.4
Read and write	5	4.8
Basic education	22	21.0
Moderate education	34	32.4
High education	10	9.5
Occupation		
Working	35	33.3
Not working	70	66.7
Family number		
2 - 4	46	43.8
5 - 7	57	54.3
8 - 10	2	1.9
Mean ±SD	5±1.2	
Family income		
Enough	36	34.3
Not enough	69	65.7
Income sufficient to		
cover medical		
expenses		_
Yes	22	21
No	83	79

Table (2): Number and percentage of medical health history among the studied patients (n = 105):

Item	No	%
Family history of renal failure		
Yes	38	36.2
No	67	63.8
Relativity (No =38)		
First degree	25	65.8
Second degree	13	34.2
Discovering disease (No = 105)		
By chance	21	20.0
By medical examination	36	34.3
By symptoms	48	45.7
Current problems with hemodialysis		
None	11	10.5
Hypertension	49	46.7
Abdominal pain	29	27.6
Pallor	2	1.9
Fever	9	8.6
Headache	25	23.8
Allergy	9	8.6
Palpitation	14	13.3
Nausea	20	19.04
Vomiting	22	21.0
Chest tightness	12	11.4
Blurred vision	4	3.8
Edema around eye	2	1.9
General weakness	2	1.9
Dysuria	3	2.9
Difficult movement	11	10.5
Musculoskeletal pain	3	2.9
Hypotension	7	6.7
Dyspnea	4	3.8
Heart failure	3	2.9

^{*}numbers not mutually exclusive

Table (3): Mean and standard deviation of total health literacy among the studied patients (n =105):

Health literacy	Mean ±SD
1. Functional Health Literacy:	
a) Functional literacy	3.2±0.9
b) Basic health knowledge	2.3±1.1
2. Interactive Health Literacy	
c) Communication literacy	2.5±1.07
d) Interactive literacy	2.0±0.7
3. Critical Health Literacy	
e) Advanced health knowledge	2.4±1.3
f) Critical literacy	1.8±0.8
g) patient safety literacy	1.4±0.6
Total health literacy	15.8±3.1

Table (4): Relation between Socio-demographic characteristics of patients and their total health literacy

Socio-demographic characteristics	Total health literacy		
	test	Sig	
Age	r=.139	.156	
Gender	t=2.50	.014	
Marital status	t=1.08	.001	
Education	F=10.62	.000	
Occupation	t=1.55	.124	
Family income	t=1.14	.256	

DISCUSSION:

The result of the present study found that near to two third of studied patients were from 40 to < 60 years with mean age 49. Regarding gender, half of studied patients were male and most of them were married. As regards the education of them, minor of had low level of education. In addition to, two third of them weren't working and weren't have enough income and most of them didn't able to cover medical expenses.

The result of the present study found that hypertension was the most common health problem during hemodialysis. This result is consistent with (Gorsane, Mahfoudhi, Younsi, Helal, and Abdallah, 2015) who carry out study prevalence and risk factors of hypertension in hemodialysis, and (Wallbach, et al., 2019) who carried out a study about hypertension in patients on dialysis: diagnosis, mechanisms, and management, asserted that the most patients undergoing regular hemodialysis suffered hypertension

The current study assesses the health literacy among patients undergoing hemodialysis which included seven sub-constructs as functional, basic health knowledge, communicative, interactive, advanced health knowledge, critical, and patient safety literacy. This result revealed that there was a relatively high level of the mean of health literacy among patients undergoing hemodialysis. This result was supported by (Bahadori, Najari, and Zadeh, 2018) who carried out a study about the relationship between health literacy and the general health level of hemodialysis patients reported that health literacy means the score was relatively high. On the contrary (Liu, et al., 2021) who carried out a study about missing in-center hemodialysis sessions among patients with end-stage renal disease in Banda Aceh, Indonesia, found that the level of health literacy was generally low. Patients with greater educational levels than elementary school were less likely to miss hemodialysis sessions, according to multivariate logistic regression analysis.

This study reported that the mean functional literacy of studied patients was relatively high. In the researcher's opinion, this result is due to the relative increase in the number of educated patients and the long duration of the disease that leads to an increase in the adaptation level of studied patients. This result disagrees with (Bezerra, et al., 2019) who carried out a study about the health literacy of individuals undergoing dialysis therapy, reported that inadequate functional literacy was common, indicating problems

interpreting and processing health information, which could impair therapeutic management and self-care.

The present study found that there was a statistically significant relationship between the education level of patients and their total health literacy. This result is consistent with (Bayati, Dehghan, Bonyadi and Bazrafkan, 2018) who carry out a study investigating the effect of education on health literacy and its relation to health-promoting behaviors in the health center, which found that health literacy had a direct relationship with the level of education. This means that, with an increase in education level, the mean score of health literacy would increase.

The present study found that there was a statistically significant relationship between socio-demographic variables of patients and their total health literacy. This result is supported by (Joveini, Rohban, Askarian, Maheri, and Hashemian, 2019) who studied health literacy and its associated demographic factors in (18–65) year old, literate adults in Bardaskan, assert that the relationships of the level of health literacy with age, education, marital status, occupational status, and history of disease were statistically significant. Furthermore, Xie, et al., (2019) who studied factors associated with health literacy in rural areas of Central China, reported that health literacy was significantly associated with socio-demographic variables.

CONCLUSION:

There was a relatively high level of the mean of health literacy among patients undergoing hemodialysis, especially inpatient safety literacy while the mean score of advanced health knowledge was low. There was a statistically significant relationship between the marital status and education level of the Patients and their total health literacy.

RECOMMENDATIONS:

- Promote more research on theory-based nursing care to manage among patients undergoing hemodialysis.
- Providing ongoing in-service education for patients undergoing hemodialysis to update their health literacy related to hemodialysis.

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تقييم محو الأمية الصحية لدى المرضى الذين يخضعون للغسيل الكلوي

الخلاصة

المقدمة: يعد الغسيل الكلى الآن علاج طبي لا غني عنه للمرضى الذين يعانون من الفشل الكلوي بمراحله الأخيرة. يؤثر مستوى معرفة القراءة والكتابة بشكل مباشر على القدرة على العمل على المعلومات الصحية و السيطرة بشكل كبير على صحتنا كأفراد وعائلات ومجتمعات. لذا فإن مرضى الغسيل الكلوى الذين لديهم انخفاض مستوى الثقافة الصحية معرضون بشكل متزايد للتغيرات الحياتية الهائلة والنتائج الصحية السلبية. الهدف من الدراسة: تقييم الثقافة الصحية بين المرضى الذين يخضعون لغسيل الكلوى. التصميم: تم استخدام تصميم وصفى في هذه الدراسة. العينة: تم جمع بيانات الدراسة من جميع المرضى البالغين المتاحين (ذكورا وإناثا) الذين يخضعون لغسيل الكلوى. بلغ مجموع مجتمع الدراسة 105 في 9 أشهر المكان: تم تنفيذ الدراسة في وحدة الغسيل الكلوى بمستشقى السلام الدولي. الأدوات: الأداة الأولى: استبيان مقابلة منظم تضمن جزأين هما الخصائص الاجتماعية والديمو غرافية والتاريخ الطبي للمريض. الأداة الثانية: استبيان محو الأمية الصحية. النتائج: 51.4٪ من المرضى الذين خضعوا للدراسة كانوا من الذكور و 95.2% منهم متزوجون. 54.3٪ منهم عانوا من الغثيان أثناء جلسة غسيل الكلي. كان متوسط درجة إجمالي محو الأمية الصحية للمرضى الخاضعين للدراسة مرتفع. كانت هناك علاقة ذات دلالة إحصائية بين الحالة الإجتماعية للمرضى ومحو الأمية الصحية الشاملة. بينما توجد علاقة ذات دلالة إحصائية بين المستوى التعليمي للمرضى الخاضعين للدراسة ومعرفة القراءة والكتابة الصحية لديهم. الخلاصة: كان هناك مستوى مرتفع نسبيًا من متوسط المعرفة الصحية بين المرضى الذين يخضعون للغسيل الكلوى وخاصة معرفة سلامة المرضى الداخليين بينما كان متوسط درجة المعرفة الصحية المتقدمة منخفضًا. توجد علاقة ذات دلالة إحصائية بين الحالة الاجتماعية والمستوى التعليمي للمرضى ومحو الأمية الصحية الإجمالية. ا**لتوصيات:** توفير التعليم المستمر أثناء الخدمة للمرضى الذين يخضعون لغسيل الكلى لتحديثا للمعرفة الصحية الخاصة بمرضهم المزمن. تقديم المزيد من الأبحاث حول الرعاية التمريضية للمرضى الذين يخضعون للغسيل الكلوي.

الكلمات المرشدة: محو الأمية الصحية - مرضى الغسيل الكلوى.