Identifying and evaluating important factors which cause Onset End-Stage Renal Disease in Al-Marj City in the period from August 2023 to January 2024

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Abstract:

The present study aimed to identify and evaluate the important factors which cause the rise in the onset of ESRD, which demands hemodialysis in Al-Marj city**.**

The present study was conducted at Dialysis Center at Al-Marj Educational Hospital. The data was collected by using a questionnaire with 80 patients, The ages of the participants (20 years to 60 years). These Data were collected during the period from August 2023 to January 2024.

Data in the questionnaire were analyzed using the software program Statistical Package for Social Sciences (SPSS).In the present study the important factors associated with the onset of ESRD: are diabetes mellitus, hypertension, cardiovascular disease, recurrent analgesic drug, BMI, and infection of urinary tract. The result showed that there were no significant effects of gender, age and smoking on the onset of ESRD.

Keywords: ESRD, Diabetes Mellitus, Hypertension, Cardiovascular Disease, Analgesic.

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تحديد وتقييم العوامل المهمة المسببة لبداية المرحلة النهائية من مرض الفشل الكلوي في مدينة المرج في الفترة من أغسطس 2023 إلى يناير 2024

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الملخص:

هدفت الدراسة الحالية إلى تحديد وتقييم العوامل الهامة التي تسبب ظهور مرض الفشل الكلوي بمراحله الأخيرة والذي يتطلب غسيل الكلى للمرضى. أجريت هذه الدراسة في مركز غسيل الكلى في مستشفى المرج التعليمي. تم جمع البيانات عن طريق الاستبيان والمقابلة مع المرضى وكان عددهم(80) مريض، وكذلك استخدام السجل الطبي لهم، وكانت أعمارهم (20 سنة - 60 سنة). تم جمع البيانات خلال الفترة من أغسطس 2023 إلى يناير 2024.وتم تحليل البيانات الواردة في الاستبيان باستخدام البرنامج الإحصائي (SPSS) .

من نتائج هذه الدراسة تم تحديد العوامل المهمة المرتبطة بظهور مرض الفشل الكلوي بمراحله الأخيرة وهي كالتالي: داء السكري، ارتفاع ضغط الدم، أمراض القلب والأوعية الدموية، تناول المسكنات بشكل متكرر، مؤشر كتلة الجسم، وعدوى المسالك البولية. أظهرت النتيجة عدم وجود تأثير معنوي للجنس والعمر والتدخين على بداية الداء الكلوي بمراحله الأخيرة .

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Introduction:

End–Stage Renal Disease is a health problem in most countries .The ESRD can be defined as the loss of kidney function [28,29].

ESRD occurs when the kidney become unable to filter waste from the blood which may cause an imbalance in the chemical composition of the blood. Dialysis is the treatment for ESRD to purify the blood [7,8,13].

The important factors for causing chronic kidney disease are the increasing age of the population, diabetes mellitus typ2 and hypertension [2,3,,16,17].

Study problem:

ESRD is health problem in Libya .There are rare studies that aim to identify and evaluate important factors that cause the onset of ESRD in patients. This study could give a vivid idea of the factors that cause ESRD and reduce complications. Therefore, early intervention for patients with diabetes, hypertension and other factors are necessary to avoid loss of kidney function.

Study Objectives:

The current study aimed to identify and evaluate important factors which cause the onset of ESRD in Al-Marj city: (e.g.: age, sex, location, occupation, smoking BMI…etc. .In addition, the study will shed light on the effect of diabetes mellitus type I and II, hypertension, kidney diseases, urinary tract infections, kidney stones, cardiovascular, family members' history, and the recurrent taking of analgesic medication on the onset of the ESRD.

The sample of the study included 80 patients of ESRD enrolled in Al-Marj Educational Hospital. Their ages were (20- 60 years). Data were collected during the period(August 2023 to January 2024).

Methodology :

Research design:

The present study was designed to identify and evaluate important factors which cause the Onset End-Stage Renal Disease in Al-Marj**.**

Sampling method and study limitations:

The sample of the present study included 80 patients of ESRD enrolled in Al-Marj Educational Hospital. Their ages were (20- 60 years). Data collected during the period (August 2023 to January 2024).

Ethical consideration:

The approval was obtained from Al-Marj Educational Hospital. Consent was obtained from patients of ESRD after studying the purpose of the study.

Method of data collection:

The study utilized a questionnaire as a research instrument for collecting data from the participants.

A specially designed questionnaire was prepared to collect all data about the important factors which cause the Onset End-Stage Renal Disease in Al-Marj (Appendix1)**.**

Data analysis:

Data from the questionnaire were analyzed by using the software program Statistical Package for Social Sciences (SPSS).

Results and Discussion:

The purpose of this study is to identify the major risk factors that lead to the onset of ESRD among patients in the Al-Marj.

The study sample (n=80 patients) recorded (60%) of males, and (40%) of females. The data showed that males and females whose ages ranged between 40-49 years recorded an increase in the rate of ESRD by (28.8%) compered to females and males whose ages ranged between20-30 years old who recorded a rate of (27.5%). Table (1). Our data is consistent with the international research which were conducted in Japan, France, Iran, and Korean .These researches showed that ESRD increases with aging, particularly after the age of 50 in both genders. In addition, males develop ESRD at a higher rate compared to females [18,20].

Table(1): percentages of ESRD patients according to age group and gender.

Age			Gender		%
			Female	Male	
20-29			4	6	10
			5.0%	7.5%	12.5%
30-39			5	7	12
			6.2%	8.8%	15.0%
40-49			6	17	23
			7.5%	21.2%	28.8%
50-59			6	9	15
			7.5%	11.2%	18.8%
60			11	9	20
			13.8%	11.2%	25.0%
Total			32	48	80
			40%	60%	100%

The data showed increase rate of ESRD in males who were smokers by(30%),while female was not smoking. This results explained that smoking in Libyan society is not acceptable for females Table (2). The data is consistent with previous researches conducted in USA, Singapore, Norway, Germany, Italy and Austria which indicated that smoking is considered a major factor for ESRD [4,20].

Table (2) : percentages of ESRD patients according to smoking statutes and gender.

		smoking statutes	Gender		%
			Female	Male	
	Yes		0	24	24
			.0%	30.0%	30.0%
	No		32	24	56
			40.0%	30.0%	70.0%
Total			32	48	80
			40%	60%	100%

Table (3)showed percentage of (58.8%) of ESRD patients had normal weight compared to ESRD patients who were overweighed which recorded (23.8%). Our data is consistent with previous researches indicated that the ESRD association with BMI [14,31].

Table(3): percentages of ESRD patients in sample according Body Mass Index level. (BMI).

BMI	No.	%
<18. 5	5	6.2%
18.5-24.9	47	58.8%
25-29.9	19	23.8%
30. -34.9	8	10%
35-39.9	1	1.2%
Total	80	100%

Data presented in Table (4) showed a percentage of (43.8%)of family history members with diabetes ,while recorded (35%) of family history members without diabetes.
Data presented in Table (4) recorded (55%) of family history members with hypertension , This result clarified the effect of family history with hypertension on onset of ESRD.
Data presented in Table (4) recorded(8.8%) of family history members with cardiovascular disease, this result indicated onset of ESRD in patients associated with cardiovascular disease.
Data presented in Table (4) showed that the percentage of (16.2%) of family history members with ESRD. This result indicated that patients with ESRD who had family members with ESRD are affected by this disease .
Data presented in Table (4) showed a percentage (23.8%) of the family history members with Renal disease. The data is consistent with previous studies conducted in the USA that indicates that the ESRD associated with family history [6, 27].

Table (4): percentages of family members who suffer from diabetes, hypertension, cardiovascular disease, renal disease and ESRD**.**

	Diabetes		Hypertension		cardiovascular disease		renal disease		ESRD	
	No.	%	No.	%	No.	%	No	%	No.	%
Yes	35	43.8%	44	55.0%	7	8.8%	19	23.8%	13	16.2%
No	45	56.2%	36	45.0%	73	91.2%	61	76.2%	67	83.8%
Total	80	100%	80	100%	80	100%	80	100%	80	100%

Data presented in Table (5) recorded that (43.8%) of ESRD patients had diabetes mellitus ,and (55%) had hypertension. These data are consistent with reports in USA ,Caribbean, Iran, Saudi Arabia, Egypt, Jordan, Palestine indicated that ESRD may be caused by hypertension and diabetes mellitus [1 ,10,12,15,16,24,25].
The data in Table (5) showed that the percentage (8.8%) of ESRD patients had cardiovascular disease. These data is consistent with others reports in USA indicated that ESRD may be caused by Atherosclerosis [5,9,22,30].
Data presented in Table (5) showed a percentage (16.2%)of ESRD patients had Renal failure stone participate. Data presented in Table (5) recorded (23.8%) of ESRD patients had kidney disease. The data is consistent with several reports conducted in several countries indicated that the ESRD associated with Glomerulonephritis and other urinary tract infection [13,21, 22,24].

Table (5): percentage of ESRD patients with chronic disease**.**

chronic disease	Yes		No		Total	
	No.	%	No.	%	No.	%
diabetes mellitus	35	43.8%	45	56.2%	80	100%
hypertension,	44	55%	36	45%	80	100%
Cardiovascular	7	8.8%	73	91%	80	100%
renal failure	13	16.2%	67	83.3%	80	100%
kidney disease	19	23.8%	61	76.2%	80	100%

Data presented in Table (6) recorded (63.6%) of ESRD patients had diabetes mellitus type one were males whereas (18.2%) were females. The results recorded that a rate of (18.2%) of ESRD patients who had diabetes mellitus type two were males. Table (6) indicated that there is no effect of the type diabetes mellitus and gender on ESRD. Our data is not consistent with several reports indicated that ESRD associated with type one diabetes [3,9,10,12,19] .

Table (6): percentage of sample according to gender and type of diabetes mellitus**.**

	Type of diabetes mellitus	Gender		%
		Female	Male	
	Type one	2	7	9
		18.2%	63.6%	81.8%
	Type two	0	2	2
		.0%	18.2%	18.2%
	Total	2	9	11
		18.2%	81.8%	100%

Data in Table (7) recorded that (27.5%) of ESRD patients recurrent taken analgesic drugs, Also recorded that (72.5%) of ESRD patients no recurrent taken analgesic drugs. analgesic drug (paracetamol or Anti-inflammatory Drugs) may be caused ESRD. The data is consistent with previous researches indicated that ESRD associated with patients take drugs without consulting doctor or prescription [11,26] .

Table (7): percentage of study sample according to ESRD patients who use analgesic drugs**.**

Use analgesic drugs	No.	%
Yes	22	27.5%
No	58	72.5%
Total	80	100%

Conclusion :

The present study aimed to shed light on the major factors which cause the onset of ESRD which demands hemodialysis.

The findings of this study indicated the important factors which cause the onset of ESRD in Libya. These factors can be summarized in chronic diseases such as diabetes mellitus, hypertension, CVD, BMI, urinary tract infection and taking medication without consulting a doctor or prescription.

Recommendations:

Through the current study, the researcher recommends the following:

1- The necessity of developing dialysis centers and devices.

2- The necessity of improving treatment and kidney transplant operations in Libyan hospitals.

3- Educating and awareness of groups at risk of kidney failure.

4- Do not take medicine without consulting a doctor.

5- The necessity of following a healthy diet free of salts.

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Faculty of Arts And Sciences – Al-Marj -University of Benghazi.
A questionnaire for study the risk factor which lead to onset the End Stage Renal Disease .

This study was designed to determine the risk factor which lead to the development of kidney disease and access to the final stage that require dialysis, with the knowledge that this information will be used for the purposes of scientific research and will be treated strictly confidential, so your cooperation with us in completing this questionnaire will be appreciated.

Serial number ----------------------------Date--------------------

Date start dialysis------------------------ The patient's medical file

The duration of dialysis (months)----------------------------------

Dear dialysis patient:

Please tick (√) inside the box, which is consistent and your situation:

Personal data:

1- Sex: ☐Male   ☐Female

2- Date of Birth: Day ----------- Month ------------ Year ---------

3 - Are you a smoker?   No☐   Yes☐   * If the answer is yes

 -At any age started smoking: ------------------

-How many cigarette smoke per day: ------------------

4 - The patient's weight at the start of dialysis: --------- patient's medical file.

5 - The length of the patient at the start of dialysis: -------- - patient's medical file.

Family medical history

9 - Is one of your family (father, mother, brother, sister) suffers from a disease?

* Diabetes mellitus: No☐   Yes☐

*Hypertension: No☐   Yes☐

*Cardiovascular disease: No☐   Yes☐

* Kidney disease: No☐   Yes☐

* End Stage Renal failure: No☐   Yes☐

Medical history of the patient:

10 - Do you suffer from diabetes mellitus before onset End Stage Renal disease ?

        No☐   Yes☐   * If the answer is yes

- Which type of diabetes affects the patient's: ------------------

- The date of diabetes onset : ------------------

- The type of treatment you are patients taken: ------------------

11- Do you suffer from hypertension before onset End Stage Renal disease?

        No☐   Yes☐   * If the answer is yes

- The date of hypertension onset : ------------------

12- Do you suffer from cardiovascular disease before onset End Stage Renal disease ?

        No☐   Yes☐   * If the answer is yes

- The date of cardiovascular disease onset: ------------------

13 - Do you suffer from congenital defects in the kidney and urinary tract before onset End Stage Renal Disease?

        No☐   Yes☐   * If the answer is yes

- The type of congenital defects (   ) the patient's medical file

14 - Do you suffer from kidney stones and urinary tract before onset End Stage Renal Disease ?

        No☐   Yes☐

15 - Do you suffer from recurrent infections in the kidneys and urinary tract before onset End Stage Renal Disease ?

        No☐   Yes☐   * If the answer is yes

- type of infections (   ) the patient's medical file

16 - Do you got the End Stage Renal Disease suddenly ?

          No☐   Yes☐

17 - Do you got the End Stage Renal Disease gradually ?

          No☐   Yes☐

18 - Do you got a rise in blood impurities gradually?

          No☐   Yes☐

19 - Do you take analgesic drug frequently?

          No☐   Yes☐   * If the answer is yes

- type of medication intake (   ) the patient's medical file

-The length of time the drug intake (   )

20 - Did End Stage Renal Disease occur due to a hereditary disease?

       No☐   Yes☐   * If the answer is yes

- type of disease (   ) the patient's medical file

21 - Did End Stage Renal Disease as a result of other diseases?

       No☐   Yes☐   * If the answer is yes

- type of disease (   ) the patient's medical file

22 - Did End Stage Renal Disease as a result of an incident involving a patient?

       No☐   Yes☐

Thank you for your cooperation