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Chronic Renal Failure in Hemodialysis Patients

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ABSTRACT

Objective: This study was a retrospective cross-sectional examination.

Methods: The study enrolled 301 patients in 2018 who were referred to dialysis clinic. Data is collected through a series of questions about demographics (gender, age, education, employment, housing, marital status) and a checklist for causes of chronic renal failure (hypertension, diabetes, kidney disease, etc.). The Chi-square test, Fisher's exact test, analysis of variance (ANOVA), and SPSS version 24 were utilized to carry out inferential statistics.

Results: Patients on hemodialysis typically develop chronic renal failure due to high blood pressure, although kidney disease and diabetes also play a role. Among the many potential factors that led to ESRD in these patients, the most common were: other/unspecified causes (15.3%), surgical history (6.3%), anemia (5%), trauma (4.3%), shock (7.7%) (2%), viral diseases (2%), drug use and congenital causes (1.3%), and poisoning during pregnancy and lupus (0.3%).

Conclusions: According to the results of this study, promoting screening procedures for patients who are at risk may help to lower the prevalence of end-stage renal failure.

KEYWORDS: Hemodialysis, Patient, Chronic Renal Failure

ARTICLE DETAILS

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1.BACKGROUND

Chronic renal failure is the permanent impairment of glomerular function that cannot be reversed (1). One of the chronic diseases that has been on the rise recently is chronic renal failure. The disease has an annual incidence of 260 cases per million people, up 8% from the previous year, and has increased tenfold in the United States over the past 20 years, according to the most recent statistics. There are currently 39,000 patients with chronic renal failure, and the prevalence of chronic renal failure is estimated to be 250 per million people, according to data from the Ministry of Health and Medical Education (2, 3).

Despite numerous attempts to prevent end-stage renal disease (ESRD), it appears that 16,000 patients each year are affected by inadequate medical and diagnostic facilities and delayed patient referrals to doctors and medical facilities. In the healthcare system, hemodialysis has been replaced as the most prevalent treatment and is much more expensive, with a treatment cost per patient of 11053 US dollars in our nation (2). Additionally, this patient group experiences high rates of family issues, depression, stress, and death despite the high cost of their treatment (4).

In addition, early detection and treatment of chronic renal failure have become possible in developed nations. They postpone the start of dialysis and downplay the treatable causes (5). Therefore, it is believed that early identification of these patients and specialized care can delay the onset of advanced renal failure, lower mortality and healthcare costs, and improve quality of life (6).

The causes and risk factors for kidney failure vary by geographic region, lifestyle, family context, renal

failure, gender, race, and the availability of medical facilities for kidney disease diagnosis and treatment in different countries (3, 7, 8). Hypertension and diabetes were found to be the two main causes of chronic renal failure in Raisifar's study (9). The condition was chronic gastrolonephritis (10). Given the significance of preventing chronic renal failure, the impact of geographic differences, the contribution of genetic factors, and the influence of environmental factors in its development, it is therefore possible to ascertain the prevalence of each of these factors by looking into the underlying causes of the condition. To better assist the health system in managing this phenomenon (9-11).

It is possible to reduce community health costs and lengthen the lives of these patients by understanding the etiology of chronic renal failure in each region and promptly diagnosing and treating the underlying diseases in a timely manner, minimizing its treatable causes and minimizing the start of dialysis (12, 13). (14). The researcher made this decision in light of the disparities in the underlying causes of chronic renal failure in various regions, his clinical expertise in dealing with a large number of patients receiving permanent hemodialysis, the paucity of research in this field in, and other factors.

2. OBJECTIVES

The purpose of this study was to identify the contributing factors to chronic renal failure in hemodialysis patients.

3. METHODS

This retrospective cross-sectional study was conducted with 300 hemodialysis patients. All hemodialysis patients with chronic renal failure made up the study population. After obtaining informed written consent and outlining the purpose of the study, patients with chronic renal failure receiving hemodialysis were referred to Hemodialysis facilities. Demographic data (sex, age, education, employment, marital status, and medical history) and a chronic kidney failure etiology checklist based on hypertension, diabetes, kidney disease, and other factors were used as data collection tools.

In order to assess the questionnaire's validity, its content validity was used. The questions' content was determined using reference materials, and then ten nursing and midwifery faculty members were asked for their opinions.

Following the consideration of these queries, professional and follow-up recommendations have been divided into four sub-types of hypertensions, diabetes, history of kidney disease, and other causes. Glomerulonephritis, polycystic kidney disease, kidney stones, anemia, trauma, pregnancy poisoning, viral diseases, significant surgical history, congenital causes, drug use, lupus, and other unknowns were classified as subgroups of kidney disease and shock. The reliability of the tool was used to calculate the content validity ratio (cvr = 75%) and the content validity index (cvi = 90%). Additionally, in order to evaluate the internal consistency of the instruments' Cronbach's alpha coefficients, the Cronbach's alpha coefficients were correlated with chronic failure factors. All were calculated to be 0.85. The inclusion criteria included being a patient in the ESRD stage, having received at least one hemodialysis treatment session, being a city native, having access to medical records, and more. Patients with acute renal failure or those who had temporarily undergone hemodialysis without a fistula met the exclusion criteria.

The initial patient records archive from 2014 to 2018 was used for the quota sampling, and 150 records from Hospital and 150 returnees from the hospital served as the sample. A history of proteinuria with hematuria and hypertension or a kidney biopsy may be used to make the diagnosis of glomerulonephritis. Patients in this study were defined as hypertensive if they had a history of hypertension (140/90 hypertension) long before they developed chronic renal failure.

Data analysis for this study used both descriptive and inferential statistics. The final step was to enter the collected data into the SPSS version 24 program, which was then used for all analyses and statistical modeling. The categorized data, as well as the central and dispersion criteria, such as mean and standard deviation, are described in the descriptive statistics section using a frequency table. We repeated the Fisher exact test, chi-square test, and ANOVA to analyze the data. At 0.05, the significance level was established.

The most common additional causes of ESRD in these patients were, in order, anemia (6.3%), trauma (4.3%), shock (7.7%), viral illnesses (2%), drug use and congenital causes (1.3%), pregnancy and lupus poisoning (0.3%), and anemia (5%), trauma (4.3%), shock (7.7%), and viral diseases.

Additionally, data analysis revealed that men were more likely to develop chronic kidney failure due to diabetes or hypertension than women. The frequency of men and women in each group was compared using the Chi-square test, but there was no statistically significant difference (P = 0.176). (Table 1).

4. DISCUSSION

In the present study, hypertension, other causes, kidney disease, and diabetes where the reasons why

patients on hemodialysis develop chronic renal failure.

The most common causes of renal failure in the patients in some studies, however, were blood pressure and diabetes, respectively. According to the Rezaiean Langroudi and Oshvandi study (13), diabetes and hypertension were the main causes of idiopathic renal failure. The prevalence of blood pressure, glomerulonephritis, urinary stones, and polycystic kidney disease was 8.7%, 10.9%, and 26.1%, respectively, in a different study (14) conducted on hemodialysis patients. Another study (15) revealed that hemodialysis patients with high blood pressure and diabetes were the most frequent causes of chronic kidney failure. In contrast, a US study discovered that 50% of the cases of the disease were caused by diabetes (1). The most frequent causes of ESRD abnormalities in hemodialysis patients were glomerulonephritis, hypertension, and diabetes, according to a study by Zhang et al. (16) in China.

The two main causes of chronic kidney disease were chronic glomerulonephritis (49.1%) and hypertension (4.25%) in a study of 800 patients with chronic kidney failure in the Ivory Coast (17). According to a study conducted on patients from Western nations (17), the disease was caused by 5.22% diabetes, 1.1% hypertension, 6.10% diabetes and hypertension, and 6.27% by causes that were not known. The findings of a study conducted on hemodialysis patients (15) also demonstrate that hypertension and diabetes are the most common causes of the disease. From these reports, it can be concluded that a number of variables, including environment, race, diet, and others, may contribute to this issue, which requires additional research.

Regarding the high blood pressure in hemodialysis patients in this study, several hypotheses can be made: First, there are fewer diabetic patients in this region who have end-stage nephropathy, which may indicate that the situation is being properly addressed. In this area, diabetes is more prevalent or, conversely, diabetes nephropathy has a higher mortality rate; as a result, it is less common in the study population. The second idea is that blood donation is not given enough attention in this area and that more research is necessary to determine whether factors like the region's diet and food products are to blame for the high incidence of blood donation there. According to research findings in response to the overall objective, factors like occupation, sex, age, and place of residence are among the etiologic factors affecting renal failure in hemodialysis patients. According to the findings, 63.8% of the patients were men.

Male to female patient ratio was 7.57% versus 4.42% in a study by Khader et al. (12) among patients in Western countries, and 362 female and 642 male patients made up the study by Biavo et al. (18).

According to USRD (United States Rena Data System) statistics, there are roughly equal numbers of men and women (18). In the current study, both male and female gender groups' most significant contributor to chronic renal failure was hypertension. Controlling hypertension and making lifestyle changes is crucial in other nations because it appears that these people are at greater risk of developing hypertension and exacerbating its long-term effects. Its effects have also been delayed, highlighting the need for widespread education at the community level, motivation to alter behaviors and lifestyles, and easy access to medical facilities.

However, in the study by Ghorbani et al. (19), diabetes was primarily brought on by hypertension in 4.36% of women and diabetes in 27.2% of men, respectively. In the study by Monfared et al., the most frequent causes of chronic kidney failure in men were hypertension (3.202) and glomerulonephritis (4.152), whereas the most frequent causes in women were hypertension (7.312) and diabetes (9.102). (17). The Kher (14) study found that the average age of dialysis patients was 59.08 years old. The majority of developed nations have an average age between 60 and 63. The findings indicate that the average age of diagnosis in the city is a little older than that of other regions of the nation and a little younger than that of developed nations. This average difference, though, did not statistically differ from zero. The Dialysis Society of Japan reported that the average age of dialysis patients was 63.3 years old; however, this may also be a result of the higher standard of healthcare in Japan. The patients' age is another important consideration because renal failure, a chronic disease, affects older people with particular physical and mental health issues.

With 33% of hemodialysis patients being unemployed and 26.9% having self-employment, there was a significant correlation between occupational status and chronic renal failure in the current study, which could be justified. Due to the frequent hemodialysis treatments and burnout, she claimed that these patients are unable to perform the duties of their regular office jobs.

Table 1. The Relationship Between Gender and Causes of Chronic Kidney Failure

	Cause of Renal Failure					
	Hypertension	**Diabetes**	**Renal Disease**	**Other Causes**	X^2 **Statistics**	**P Value**
Sex					94.4	176.0
Male	62	31	42	57		
Female	31	29	19	30		

Long-term exposure to the illness and the dialysis procedure usually results in turning to freelance work and eventual unemployment. Long-term dialysis causes medical, social, and health issues, according to Globan. It is a feeling that contributes to dependence and job loss. The study's findings indicated that those who resided in urban areas (73.8%) were more likely to have chronic kidney failure. However, there was no statistically significant difference between the number of people with chronic renal failure based on the causes of failure in urban and rural areas.

5. CONCLUSIONS

Due to the rising prevalence of CKD, it is advised to prevent people from developing end-stage renal disease by enhancing screening techniques and, in particular, by expediting the referral of patients at risk. It is crucial to complete the statistical data within the National Plans for Kidney Disease Monitoring of the Ministry of Health. Learning the signs of diabetes and high blood pressure and specifically referring patients frequently to a doctor are crucial components of social media education.

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