A Study to Assess the Effectiveness of Nurse Led Interventions Program on Knowledge Regarding Hemodialysis Among Patients Admitted in Hemodialysis Ward in Selected Hospital of Jabalpur (M.P.)

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***Abstract*—Chronic Renal Disease (CRD) is a progressive and irreversible loss of kidney function that affects millions of people worldwide and has become a major public health concern. As kidney function declines, patients often require renal replacement therapies such as hemodialysis or kidney transplantation for survival. Hemodialysis is a lifesaving treatment, but patients experience various complications and lifestyle challenges, including dietary restrictions, fluid management, fatigue, infections, and psychological stress. The increasing prevalence of Chronic Kidney Disease (CKD) and End Stage Renal Disease (ESRD) in India and globally highlights the need for proper awareness and management among patients undergoing hemodialysis. Many patients lack adequate knowledge regarding dietary modifications, infection prevention, fluid restriction, and self-care practices, which can adversely affect treatment outcomes and quality of life.**

The present study aims to assess the knowledge and health status of patients undergoing hemodialysis and to evaluate the effectiveness of educational interventions in improving patient understanding regarding disease management and self-care practices. The study emphasizes the importance of patient education in reducing complications, promoting adherence to treatment, and improving overall well-being among hemodialysis patients.

Methodology: The study adopted a quantitative research approach with a quasi-experimental one-group pre-test and post-test design to assess the effectiveness of a Health Awareness Package on knowledge regarding reproductive health among college-going girls. The study was conducted in selected colleges of Jabalpur, Madhya Pradesh. A purposive sampling technique was used to select 60 college-going girls aged 18–23 years who fulfilled the inclusion criteria. A structured knowledge questionnaire was used to assess pre-test and post-test knowledge regarding reproductive health. After conducting the pre-test, the Health Awareness Package was administered, followed by a post-test to evaluate improvement in knowledge. Data were analyzed using descriptive and inferential statistics, including frequency, percentage, mean, standard deviation, paired t-test, and chi-square test.

Findings: The findings of the study revealed that the majority of patients had poor knowledge regarding hemodialysis during the pre-test, where 51 (85%) patients had poor knowledge and 9 (15%) had average knowledge, while none had good knowledge. After the administration of the nurse-led intervention program, a significant improvement in knowledge was observed in the post-test, where 48 (80%) patients had good knowledge and 12 (20%) had average knowledge, with no patient having poor knowledge. The comparison between pre-test and post-test knowledge scores indicated that the nurse-led intervention program was effective in improving patients' knowledge regarding hemodialysis, and therefore research hypothesis H1 was accepted. Further, selected socio-demographic and clinical variables showed association with post-test knowledge scores, while some variables had no significant association, leading to partial acceptance of research hypotheses H2 and H3.

Conclusion: The study concluded that the nurse-led intervention program was effective in improving patients' knowledge regarding hemodialysis. Post-test knowledge scores were significantly higher than pre-test scores, showing improvement after the intervention. Selected socio-demographic variables (age, gender, religion, occupation, family type, and locality) and some clinical variables (duration and frequency of hemodialysis, diabetes, and thyroid problems) showed significant association with knowledge scores. Overall, the study highlighted the importance of nurse-led

education in improving knowledge and disease management among hemodialysis patients.

***Index Terms*—Hemodialysis, Nurse-Led Intervention Program, Knowledge, Patients, Chronic Kidney Disease (CKD), Educational Intervention, Patient Education, Effectiveness, Hemodialysis Ward, and Selected Hospital.**

I. INTRODUCTION

Chronic Renal Disease (CRD), also known as Chronic Kidney Disease (CKD), is a progressive and irreversible deterioration of kidney function that occurs over time. The kidneys play a vital role in maintaining fluid and electrolyte balance, removing waste products, regulating blood pressure, and producing hormones essential for body functions. When kidney function gradually declines, harmful waste products accumulate in the body, leading to severe complications and ultimately end-stage renal disease (ESRD).

Chronic kidney disease is a major global health problem affecting millions of people worldwide. The common causes of CKD include diabetes mellitus, hypertension, glomerulonephritis, obesity, infections, and hereditary disorders. In advanced stages, patients require renal replacement therapies such as hemodialysis, peritoneal dialysis, or kidney transplantation to survive. Hemodialysis is one of the most commonly used treatment modalities for patients with ESRD, helping to remove waste products and excess fluid from the blood.

Despite advancements in medical technology, hemodialysis patients continue to experience multiple physical, psychological, social, and economic challenges. They often suffer from fatigue, weakness, dietary restrictions, fluid limitations, infection risks, and emotional stress, affecting their quality of life. The increasing prevalence of chronic renal disease and the growing dependency on dialysis highlight the importance of proper awareness, early detection, prevention, and management of kidney disease.

Therefore, adequate knowledge regarding chronic renal disease and hemodialysis management is essential to improve patient outcomes, reduce complications, and enhance the quality of life among patients undergoing treatment.

1.1 Need for the study

Chronic kidney disease has become one of the leading causes of morbidity and mortality worldwide. The number of patients requiring dialysis is increasing rapidly due to rising cases of diabetes, hypertension, obesity, and unhealthy lifestyles. Hemodialysis, although lifesaving, places a significant physical, emotional, social, and financial burden on patients and their families.

Patients undergoing hemodialysis often face complications such as hypotension, muscle cramps, nausea, infections, fatigue, itching, and dietary challenges. Many patients lack adequate knowledge regarding fluid restriction, nutritional management, medication adherence, vascular access care, and prevention of complications. Poor knowledge and noncompliance may worsen the disease condition and increase hospitalization.

In India, the burden of chronic kidney disease is steadily increasing, while access to affordable treatment remains limited for many patients. Lack of awareness and inadequate patient education further complicate disease management. Therefore, there is a need to assess the knowledge and health status of hemodialysis patients and provide appropriate educational interventions to improve self-care practices and treatment compliance.

Hence, the investigator felt the need to conduct the study to improve awareness and knowledge among patients regarding chronic renal disease and hemodialysis management, thereby promoting better health outcomes and quality of life.

1.2 Objectives of the study

The objectives of the study were to:

1. Assess the pre-test level of knowledge regarding hemodialysis among patients admitted in the hemodialysis ward of a selected hospital in Jabalpur.
2. Assess the post-test level of knowledge regarding hemodialysis among patients admitted in the hemodialysis ward of a selected hospital in Jabalpur.
3. Evaluate the effectiveness of the nurse-led intervention program on knowledge regarding hemodialysis among patients admitted in the hemodialysis ward of a selected hospital in Jabalpur.

4. Find out the association between post-test knowledge regarding hemodialysis among patients and their selected socio-demographic variables.
5. Find out the association between post-test knowledge regarding hemodialysis among patients and their selected clinical variables.

1.3 Research hypothesis

P value < 0.05 (Level of Significance)

H1: There would be a significant difference between pre-test and post-test knowledge regarding hemodialysis among patients admitted in the hemodialysis ward of a selected hospital.

H2: There would be a significant association between post-test knowledge regarding hemodialysis among patients and their selected socio-demographic variables.

H3: There would be a significant association between post-test knowledge regarding hemodialysis among patients and their selected clinical variables.

1.4 Operational definitions

Evaluate: In this study, evaluate referred to assessing the increase in knowledge regarding hemodialysis after administration of nurse-led interventions among patients undergoing hemodialysis.

Effectiveness: In this study, effectiveness referred to the expected increase in knowledge scores regarding hemodialysis after administration of nurse-led interventions.

Nurse-Led Intervention: It referred to selected nursing interventions consisting of teaching regarding dialysis, hemodialysis, fluid restriction, and diet management through a structured module.

Patients: It referred to patients admitted in the hemodialysis ward of a selected hospital in Jabalpur who fulfilled the inclusion criteria.

Hemodialysis: It referred to the process of removing accumulated waste materials and excess fluid from the blood through an artificial filtering system.

1.5 Assumptions

1. Patients and their family members had limited knowledge regarding hemodialysis self-care.
2. The level of knowledge among hemodialysis patients would improve after administration of nurse-led interventions.

1.6 Delimitations

1. The study was limited to patients undergoing hemodialysis admitted in the hemodialysis ward of a selected hospital and fulfilling the inclusion criteria.
2. The study was limited to patients who were willing to participate.

II. MATERIALS AND METHODS

A research methodology adopted for the study on the effectiveness of a nurse-led intervention program on knowledge regarding hemodialysis among patients admitted in the hemodialysis ward of a selected hospital in Jabalpur. A quantitative evaluative research approach with a pre-experimental one-group pre-test and post-test design was used. The study was conducted at Metro Prime Hospital, Jabalpur, among 60 patients selected through purposive sampling technique, while 10 patients were included in the pilot study. A self-structured knowledge questionnaire was developed to assess knowledge regarding hemodialysis, and a nurse-led intervention program was prepared based on literature review, expert opinion, and researcher experience. The tool was validated by experts, and reliability was established using the split-half method, with a reliability coefficient of r = 0.82. Data collection included pre-test, intervention, and post-test after seven days. The collected data were analyzed using descriptive and inferential statistics such as frequency, percentage, mean, standard deviation, paired t-test, and chi-square test. The methodology ensured the validity, reliability, and feasibility of the study.

III. RESULT

The findings of the study were organized according to the objectives and statistical analysis of the data collected from 60 patients undergoing hemodialysis in a selected hospital of Jabalpur.

1. Findings related to socio-demographic variables

The study findings revealed that the majority of patients 18 (30%) belonged to the age group of 30–45 years, followed by 17 (28%) in the age group of 45–60 years. Female patients constituted the majority 34 (57%), while males were 26 (43%). Regarding educational status, most patients 16 (27%) had secondary education, followed by 14 (23%) with

primary education. Majority of the patients 41 (68%) belonged to the Hindu religion. In occupation, most patients 14 (23%) were farmers, followed by 13 (22%) housewives. Equal distribution was observed in family type, where 30 (50%) belonged to nuclear families and 30 (50%) to joint families. Regarding monthly income, most patients 20 (33%) had an income of Rs. 5000/- per month. Equal distribution was also noted in locality, with 30 (50%) from urban and 30 (50%) from rural areas.

2. Findings related to clinical variables

The findings showed that 33 (55%) patients had no family history of similar illness, whereas 25 (42%) reported having family members with the same illness. Majority of patients 24 (40%) had started hemodialysis treatment 1–3 years earlier. Most patients 33 (55%) underwent hemodialysis weekly thrice. Regarding diabetes, 27 (45%) patients did not have diabetes, while 24 (40%) had diabetes. More than half of the patients 32 (53%) had hypertension. Majority of the patients 45 (75%) had no thyroid problem, whereas 15 (25%) had thyroid disease.

3. Findings related to pre-test knowledge score regarding hemodialysis

The pre-test findings revealed that the majority of patients 51 (85%) had poor knowledge regarding hemodialysis, while 9 (15%) had average knowledge. None of the patients had good knowledge. The mean pre-test knowledge score was 5.60 with a standard deviation of 3.601.

4. Findings related to post-test knowledge score regarding hemodialysis

The post-test findings showed a marked improvement in knowledge after the nurse-led intervention program. Majority of patients 48 (80%) had good knowledge, while 12 (20%) had average knowledge. No patient had poor knowledge. The mean post-test knowledge score was 20.68 with a standard deviation of 1.521.

5. Findings related to effectiveness of nurse-led intervention program

The effectiveness of the nurse-led intervention program was assessed using the t-test. The post-test mean score (20.68) was significantly higher than the pre-test means score (5.60). The calculated t-value (2.024) was greater than the table value at 0.05 level of significance, indicating that the nurse-led intervention program was effective in improving the knowledge of patients regarding hemodialysis. Therefore, research hypothesis H1 was accepted.

6. Findings related to association between post-test knowledge score and socio-demographic variables

The study found a statistically significant association between post-test knowledge scores and selected socio-demographic variables such as age ($\chi^2 = 8.901$, $p = 0.030$), gender ($\chi^2 = 9.773$, $p = 0.001$), religion ($\chi^2 = 12.716$, $p = 0.001$), occupation ($\chi^2 = 19.638$, $p = 0.001$), family type ($\chi^2 = 6.667$, $p = 0.009$), and locality ($\chi^2 = 6.667$, $p = 0.009$). However, educational status and monthly income showed no statistically significant association with post-test knowledge score. Hence, research hypothesis H2 was partially accepted.

7. Findings related to association between post-test knowledge score and clinical variables

The study findings revealed that clinical variables such as duration of hemodialysis treatment ($\chi^2 = 18.049$, $p = 0.000$), frequency of hemodialysis ($\chi^2 = 2.845$, $p = 0.092$), presence of diabetes ($\chi^2 = 5.486$, $p = 0.064$), and thyroid problem ($\chi^2 = 13.889$, $p = 0.000$) showed association with post-test knowledge score. However, variables such as family history of illness and hypertension did not show any statistically significant association. Therefore, research hypothesis H3 was partially accepted.

IV. CONCLUSION

The present study concluded that the nurse-led intervention program was effective in improving the knowledge regarding hemodialysis among patients admitted in the hemodialysis ward of the selected hospital in Jabalpur. The findings revealed that the majority of patients had poor knowledge during the pre-test, whereas a significant improvement was observed in the post-test, with most patients attaining good knowledge scores after the intervention. The comparison of pre-test and post-test mean scores showed a statistically significant difference, indicating the effectiveness of the nurse-led intervention program.

The study also concluded that selected socio-demographic variables such as age, gender, religion, occupation, family type, and locality had a significant

association with post-test knowledge scores, while educational status and monthly income had no significant association. Among clinical variables, duration of hemodialysis treatment, frequency of hemodialysis, diabetes, and thyroid problems showed significant association, whereas family history of illness and hypertension did not show significant association.

Overall, the study emphasized that proper nurse-led educational interventions can effectively enhance patients' knowledge regarding hemodialysis, thereby helping patients to understand disease management, treatment compliance, and prevention of complications.

V. IMPLICATION

Nursing Education

1. Nurse educators can include hemodialysis care and self-management education in nursing curriculum.
2. Students can be trained to provide health education regarding diet, fluid restriction, and dialysis care.
3. Educational programs can improve nurses' knowledge and teaching skills in hemodialysis care.

Nursing Practice

1. Nurses can provide regular nurse-led educational interventions to improve patient knowledge.
2. Health education can help patients understand hemodialysis, diet management, and treatment compliance.
3. Nurses can identify patients' learning needs and provide individualized teaching.
4. Improved patient knowledge may help in prevention of complications and better self-care practices.

Nursing Administration

1. Hospital administrators can organize regular educational programs for hemodialysis patients.
2. Nurse administrators can encourage development of educational modules and teaching materials.
3. Policies can be developed to include nurse-led intervention programs as a routine part of dialysis care.
4. Adequate staff training and supervision can improve patient education services.

Nursing Research

1. Similar studies can be conducted on larger sample sizes for better generalization.
2. Comparative studies can be conducted using control groups.
3. Further research can assess long-term effectiveness of nurse-led interventions.
4. Studies can be conducted in different settings to compare results and improve evidence-based nursing practice.

VI. RECOMMENDATIONS

1. Similar studies can be conducted on a larger sample size to increase the generalization of findings.
2. A comparative study can be conducted by including a control group.
3. The study can be replicated in different hospitals and settings to compare findings.
4. Long-term follow-up studies can be conducted to assess retention of knowledge among hemodialysis patients.
5. Nurse-led intervention programs can be implemented regularly to improve patient knowledge regarding hemodialysis.
6. Educational materials such as pamphlets, booklets, and audiovisual aids can be used for better understanding of patients.
7. Similar studies can be conducted to assess patients' attitude and practice regarding hemodialysis.
8. Further studies can evaluate the effectiveness of different teaching methods among hemodialysis patients.
9. Family members of patients can also be included in educational interventions to improve home care practices.
10. Research can be conducted to assess the impact of nurse-led interventions on quality of life and treatment compliance among hemodialysis patients.

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