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"Effectiveness of a Comprehensive Nursing Intervention Program on Self-Efficacy and Quality of Life Among Chronic Renal Failure Patients: A Mixed-Methods Study".

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ABSTRACT

Background: Hemodialysis patients often experience diminished self-efficacy and quality of life due to ongoing physical, psychological, and social challenges. Structured nursing interventions may improve adaptation and well-being.

Purpose: To evaluate the effectiveness of a comprehensive nursing intervention program on self-efficacy and quality of life among patients undergoing hemodialysis using a mixed-methods sequential explanatory design.

Methods: A total of 189 hemodialysis patients were assigned to an experimental group (n=94) and a control group (n=95). Quantitative data were collected using validated self-efficacy and Kidney Disease Quality of Life (KDQOL) scales at pre-test and post-test. Paired and independent t-tests, chi-square, and correlation analyses were used. Qualitative data were collected from 15 participants using semi-structured interviews and thematically analyzed.

Results: The experimental group demonstrated significant improvement in self-efficacy (mean difference: 0.96; t=15.29; p<0.0001) and KDQOL (mean difference: 5.15; t=7.66; p<0.0001) after the intervention. No significant changes occurred in the control group. Qualitative findings revealed four themes: emotional distress and adaptation, physical symptom management, impact on work/social functioning, and coping strategies. Integration showed that improved coping and symptom management supported higher self-efficacy and quality of life

Conclusion: The comprehensive nursing intervention program significantly enhanced self-efficacy and QOL among hemodialysis patients. Mixed-method integration confirms that structured support, education, and coping strategies improve patient outcomes..

KeywordsHemodialysis, Self-efficacy, Quality of Life, Nursing Intervention, Mixed-Methods, Chronic Kidney Disease..

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INTRODUCTION

Chronic kidney disease (CKD) is a major global health problem, affecting nearly 10–15% of the adult population, with a rising incidence of end-stage renal disease (ESRD) requiring lifelong renal replacement therapy such as hemodialysis [1,2]. Hemodialysis, although life-sustaining, imposes significant physical, psychological, social, and economic burdens on individuals. Patients undergoing hemodialysis typically experience persistent symptoms such as fatigue, cramps, pruritus, insomnia, anorexia, and cognitive difficulties, all of which adversely affect functional status and daily activities [3–5]. In addition to these physical symptoms, the demanding treatment regimen—typically 2–3 sessions per week lasting 4 hours each—imposes restrictions on work life, social participation, and family responsibilities, contributing to emotional distress, anxiety, and depressive symptoms [6,7].

Self-efficacy, conceptualized by Bandura as an individual's belief in their ability to organize and execute behaviors necessary to manage life challenges, is a critical determinant of self-management behaviors among individuals with chronic diseases [8,9]. In hemodialysis patients, higher self-efficacy has been associated with better adherence to fluid and dietary restrictions, improved symptom management, more effective coping strategies, and enhanced overall well-being [10,11]. Conversely, low self-efficacy is linked with poor adherence, increased symptom burden, and diminished Quality of life (QOL) [12].

Kidney Disease Quality of life—an important outcome indicator in CKD—encompasses physical, psychological, and social domains of functioning. Numerous studies have documented substantially reduced QOL among patients undergoing hemodialysis compared to healthy individuals and even compared to patients with other chronic illnesses [13,14]. Factors such as symptom severity, emotional burden, socioeconomic constraints, and dependency on lifelong treatment contribute to this decline [15]. Therefore, interventions aimed at improving both self-efficacy and QOL are urgently needed in dialysis populations.

Nursing professionals play a pivotal role in the management of hemodialysis patients, providing essential support through education, counseling, symptom management, motivational guidance, and psychosocial care [16,17]. Evidence suggests that structured nursing interventions focusing on strengthening self-efficacy, improving disease-related knowledge, and enhancing coping skills can lead to significant improvements in HRQOL, treatment adherence, and psychological well-being [18–20]. Multi-component interventions—such as dietary counseling, stress-management practices, emotional support, and lifestyle modification training—have shown promising results globally, yet few studies have comprehensively evaluated such programs in the Indian context, where cultural, socioeconomic, and healthcare system differences may influence patient outcomes [21,22].

Moreover, while several quantitative studies have explored the impact of isolated interventions, limited research has integrated both quantitative and qualitative evidence to comprehensively understand patient experiences, treatment challenges, and mechanisms underlying improved outcomes. Mixed-methods designs provide deeper insights by complementing statistical findings with patient narratives, allowing for more holistic evaluation of intervention effectiveness.

Given these gaps, the present study aims to examine the effectiveness of a comprehensive nursing intervention program in improving self-efficacy and QOL among hemodialysis patients using a mixed-methods sequential explanatory design. This integrated approach is expected to provide robust evidence and a nuanced understanding of both measurable outcomes and subjective patient experiences.

METHODS

Study Design

This study employed a mixed-methods sequential explanatory design, which included a quantitative quasi-experimental component followed by a qualitative exploratory phase. The design was selected to first measure the direct effects of the intervention quantitatively and then enrich those findings through qualitative insights from patient experiences.

Setting and Participants

The study was conducted in hemodialysis units of selected hospitals in Udaipur, Rajasthan. A total of 189 patients undergoing maintenance hemodialysis were recruited and divided into two groups: 94 participants in the experimental group and 95 in the control group. Participants were included if they were adults aged 18 years or older, had been receiving hemodialysis for at least three months, were able to read or understand English or Hindi, and provided voluntary informed consent. Patients with cognitive impairment, severe psychiatric illness, or those who were critically ill were excluded from the study.

Intervention

The Comprehensive Nursing Intervention Program consisted of four weekly structured sessions lasting 45–60 minutes each. The sessions covered key components such as disease education, dietary and fluid management, symptom recognition, lifestyle modification, stress reduction techniques, and emotional support. Strategies included breathing exercises, relaxation practices, coping enhancement, and guidance on physical activity. The control group continued to receive routine hemodialysis care without any additional structured intervention.

Data Collection Tools

Quantitative data were collected using two validated tools: a Self-Efficacy Scale to measure patients' confidence in managing illness-related tasks, and the Kidney Disease Quality of Life (KDQOL) Scale, which assessed physical, mental, social, and kidney-disease–specific domains of quality of life. These tools were administered to both groups at baseline (pre-test) and after completion of the four-week intervention (post-test).

Data Analysis

Quantitative data were analyzed using SPSS software. Within-group comparisons were performed using paired t-tests, while between-group comparisons were analyzed using independent t-tests. Demographic variables were examined using the chi-square test. Pearson's correlation coefficient was used to determine the relationship between self-efficacy and quality of life scores. A p-value of <0.05 was considered statistically significant.

Qualitative Phase

In the qualitative phase, 15 participants were purposively selected from both groups to participate in semi-structured, in-depth interviews. Interviews explored patients' emotional experiences, symptom burden, coping strategies, and perceptions of the nursing intervention. Audio-recorded interviews were transcribed and analyzed using thematic analysis based on Braun and Clarke's six-step method, ensuring systematic identification and interpretation of major themes.

Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee of the respective institution. Written informed consent was obtained from all participants prior to data collection. Confidentiality, anonymity, and voluntary participation were maintained throughout the study.

RESULTS

Participant Characteristics

A total of 189 patients participated in the study, with 94 assigned to the experimental group and 95 to the control group. Demographic variables such as age, gender, marital status, education, occupation, family income, and duration of dialysis were comparable between the groups. (Table 1).

Table 1: Sociodemographic Variable

S. No.	Demographic Variables	Experimental Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
1.	Age (in years)				
a)	21-30 years	17	18.1	17	17.9
b)	31-40 years	11	11.7	12	12.6
c)	41-50 years	19	20.2	17	17.9
d)	51-60 years	25	26.6	24	25.3
e)	> 60 Years	22	23.4	25	26.3
2.	**Gender**				
a)	Male	51	54.3	52	54.7
b)	Female	43	45.7	43	45.3
3.	**Habitat**				
a)	Urban	38	40.4	35	36.8
b)	Semi urban	17	18.1	18	18.9
c)	Rural	39	41.5	42	44.2
4.	**Marital status**				
a)	Unmarried	13	13.8	11	11.6
b)	Married	71	75.5	71	74.7
c)	Divorced/Separated/Widow	10	10.6	13	13.7
5.	**Type of family**				
a)	Nuclear family	51	54.3	50	52.6
b)	Joint family	43	45.7	45	47.4
6.	**Educational status**				
a)	No formal education	19	20.2	20	21.1
b)	Primary education	25	26.6	27	28.4
c)	Secondary education	24	25.5	25	26.3
d)	Graduation and above	26	27.7	23	24.2

7.	**Occupation**				
a)	Housewife	27	28.7	29	30.5
b)	Unemployed	27	28.7	26	27.4
c)	Labour	8	8.5	8	8.4
d)	Govt. employee	9	9.6	7	7.4
e)	Private employee	13	13.8	14	14.7
f)	Self employed	10	10.6	11	11.6
8.	**Family monthly income**				
a)	Less than 10000 Rs.	27	28.7	28	29.5
b)	10001-20000 Rs.	22	23.4	24	25.3
c)	20001-30000 Rs.	15	16.0	15	15.8
d)	Above 30001 Rs.	30	31.9	28	29.5
9.	**Duration of illness**				
a)	Less than 1 year	16	17.0	14	14.7
b)	1 to 3 years	32	34.0	32	33.7
c)	3 to 5 years	18	19.1	25	26.3
d)	More than 5 years	28	29.8	24	25.3
10.	**Years of illness on dialysis**				
a)	Less than 1 year				
b)	1 to 3 years	24	25.5	22	23.2
c)	3 to 5 years	36	38.3	38	40.0
d)	More than 5 years	19	20.2	23	24.2
		15	16.0	12	12.6

Effect of Intervention on Self-Efficacy

The experimental group demonstrated a substantial improvement in self-efficacy following the intervention. The mean self-efficacy score increased from 4.89 ± 1.22 at pre-test to 5.85 ± 0.91 post-test, resulting in a mean difference of 0.96, which was statistically significant ($t = 15.29$, $p < 0.0001$). In contrast, the control group showed no meaningful change, with mean scores of 4.889 ± 1.190 at pre-test and 4.891 ± 1.179 at post-test ($t = 0.043$, $p = 0.965$). These findings indicate that the intervention had a strong positive effect on participants' confidence in managing their condition (Table 2).

Table 2: Intervention Effect on Self-efficacy

Group	Observation	Mean±SD	Mean Diff.	t-value	p-value
Experimental	Pre-test	4.89±1.22	0.96	15.29	<0.0001
	Post-test	5.85±0.91			
Control	Pre-test	4.889±1.190	0.001	0.043	0.965
	Post-test	4.891±1.179			

Table 3: Intervention Effect on Quality of Life

Group	Observation	Mean±SD	Mean Diff.	t-value	p-value
Experimental	Pre-test	50.72±9.27	5.15	7.66	<0.0001
	Post-test	55.87±6.36			
Control	Pre-test	50.80±9.09	0.45	0.351	0.725

	Post-test	51.25±8.69			

Effect of Intervention on Quality of Life (HRQOL)

Quality of life also improved significantly in the experimental group. The mean KDQOL score increased from 50.72 ± 9.27 during the pre-test to 55.87 ± 6.36 post-intervention, yielding a mean difference of 5.15 ($t = 7.66$, $p < 0.0001$). The control group, however, showed only minimal change, with pre-test and post-test means of 50.80 ± 9.09 and 51.25 ± 8.69, respectively ($t = 0.351$, $p = 0.725$) (Table 3).

Correlation Between Self-Efficacy and HRQOL

A moderate positive correlation was found between self-efficacy and HRQOL in both groups, with correlation coefficients of $r = 0.417$ in the experimental group and $r = 0.489$ in the control group (Table 4).

Table 4: Correlation Between Self-efficacy and QoL

Group	Correlation (r)
Experimental	0.417
Control	0.489

Qualitative Findings

Qualitative data analysis generated four major themes: emotional distress and adaptation, physical symptom burden, social and occupational disruptions, and coping strategies and confidence. Patients described initial fear, frustration, and uncertainty regarding dialysis; however, those in the experimental group reported improved emotional adjustment after participating in the intervention. Many shared that the program enhanced their understanding of the disease, improved symptom management, and strengthened their coping abilities. The findings from the qualitative phase complement and reinforce the quantitative results, offering deeper insight into how the intervention improved patient outcomes.

DISCUSSION

This study found that a comprehensive nursing intervention program significantly improved both self-efficacy and Kidney Disease quality of life (KDQOL) among hemodialysis patients. These findings are consistent with earlier evidence showing that patient-centered educational and psychosocial interventions improve treatment adherence, symptom management, and overall well-being in CKD populations [26,12]. Tsay and Hung [20] demonstrated that empowerment-based interventions enhance self-efficacy, self-management, and psychological resilience in ESRD patients, while Wu et al. [27] showed similar improvements following nurse-led self-management programs.

The significant improvement in QOL observed in the present study across physical, emotional, and kidney-disease–specific domains can be explained by the multi-component nature of the intervention. Educational components likely improved patient understanding of fluid and dietary restrictions, a factor known to improve functional status and reduce complications [21,28]. Stress-reduction practices, including breathing exercises and relaxation techniques, have been shown to reduce anxiety and enhance emotional well-being in dialysis patients [29]. Lifestyle and coping-focused counseling may have strengthened adaptive behaviors and resilience, mirroring findings from prior self-management support programs [22].

The qualitative findings enriched the quantitative results by providing insight into the lived experiences of patients. Themes such as emotional distress, symptom burden, and social disruption align with previously documented challenges among hemodialysis populations worldwide [30,31]. Patients in the intervention group reported enhanced confidence, better symptom control, and more effective coping strategies—consistent with mixed-methods evidence that empowerment and emotional support play a central role in improving HRQOL [32].

The positive correlation observed between self-efficacy and HRQOL reinforces findings from earlier studies showing that individuals with higher perceived self-efficacy exhibit better adherence to complex treatment regimens, reduced distress, and greater psychological stability [33,34]. Low self-efficacy has been linked to poor clinical outcomes and greater emotional burden, underscoring the need for interventions that strengthen patient confidence and autonomy [14].

The study also contributes to the Indian CKD literature, where structured psychosocial nursing interventions remain under-researched. Sociocultural and socioeconomic factors in India including limited resources, family dependency, and varying levels of health literacy highlight the importance of context-specific interventions [23,24]. The demonstrated effectiveness of the current intervention suggests that even in resource-constrained settings, structured nursing support can significantly improve patient outcomes. This aligns with international guidelines such as the KDOQI recommendations, which emphasize patient education, emotional support, and comprehensive self-management training as essential components of dialysis care [35].

While the study provides strong evidence, limitations include the quasi-experimental design and short follow-up duration. However, the mixed-methods approach enhances credibility through triangulation of quantitative and

qualitative findings, a strategy widely recommended for chronic disease research [25]. Future studies should adopt multi-center randomized controlled designs, assess long-term outcomes, and explore telehealth or digital models to enhance accessibility and continuity.

RECOMMENDATIONS

Future research should include multi-center randomized controlled trials to validate the effectiveness of the comprehensive nursing intervention program across diverse populations. Longitudinal studies are recommended to evaluate long-term sustainability of improvements in self-efficacy and quality of life. Development of digital or telehealth-based self-management tools could further enhance patient engagement and access to ongoing support.

CONCLUSION

The comprehensive nursing intervention program was found to be highly effective in significantly improving self-efficacy and quality of life among patients undergoing hemodialysis. By integrating quantitative and qualitative findings, the study highlights the importance of structured support, patient education, and coping enhancement strategies in managing the complex physical and emotional challenges associated with long-term hemodialysis. The results underscore the need for incorporating such interventions into routine nursing care to enhance patient outcomes and overall well-being.

REFERENCES

[1]Hill NR, Fatoba ST, Oke JL, Hirst JA, O'Callaghan CA, Lasserson DS, et al. Global prevalence of chronic kidney disease: a systematic review and meta-analysis. PLoS One. 2016;11(7):e0158765.

[2]Liyanage T, Ninomiya T, Jha V, Neal B, Patrice HM, Okpechi I, et al. Worldwide access to treatment for end-stage kidney disease: a systematic review. Lancet. 2015;385(9981):1975–82.

[3]Almutary H, Bonner A, Douglas C. Symptom burden in chronic kidney disease. J AdvNurs. 2016;72(11):2653–66.

[4]Murtagh FEM, Addington-Hall J, Higginson IJ. The prevalence of symptoms in end-stage renal disease: a systematic review. Adv Chronic Kidney Dis. 2007;14(1):82–99.

[5]Davison SN, Jhangri GS. Impact of pain and symptom burden on the quality of life in hemodialysis patients. Clin J Am SocNephrol. 2010;5(7):1231–9.

[6]Sabry AA, Abo-Zenah H, Wafa E, Mahmoud K, El-Dahshan K, Hassan A, Abbas TM, Saleh Ael-B, Okasha K. Sleep disorders in hemodialysis patients. Saudi J Kidney Dis Transpl. 2010;21(2):300-5.

[7]Soliday E, Kool E, Lande MB. Psychosocial adjustment in children with kidney disease. J Pediatr Psychol. 2000;25(2):93-103.

[8]Cukor D, Cohen SD, Peterson RA, Kimmel PL. Psychosocial aspects of chronic disease: ESRD as a paradigmatic illness. J Am SocNephrol. 2007;18(12):3042–55.

[9]Loosman WL, Rottier MA, Honig A, Siegert CE. Depression and anxiety in chronic kidney disease patients. BMC Nephrol. 2015;16:155.

[10] Bandura A. Self-efficacy: The exercise of control. New York: W.H. Freeman; 1997.

[11] Marks R, Allegrante JP, Lorig K. Self-efficacy–enhancing interventions for reducing chronic disability: implications for health education practice. Health PromotPract. 2005;6(1):37–43.

[12] Curtin RB, Walters BA, Schatell D, Pennell P, Wise M, Klicko K. Self-efficacy and self-management in chronic kidney disease. Adv Chronic Kidney Dis. 2008;15(2):191–205.

[13] Mudgal SK, Sharma SK, Chaturvedi J, Chundawat DS. Effects of health promotion model-based visual learning module on self-efficacy and health promotion behavior of stroke survivors: A nonrandomized controlled trial. J Neurosci Rural Pract. 2021;12(2):389–95.

[14] Kugler C, Vlaminck H, Haverich A, Maes B. Nonadherence with diet and fluid restrictions among adults having hemodialysis. J NursScholarsh. 2005;37(1):25–9.

[15] Feroze U, Martin D, Kalantar-Zadeh K, Kim JC, Reina-Patton A, Kopple JD. Anxiety and depression in maintenance dialysis patients: preliminary data of a cross-sectional study. IntUrolNephrol. 2012;44(6):1903–8.

[16] Mapes DL, Lopes AA, Satayathum S, McCullough KP, Goodkin DA, Locatelli F, et al. Health-related quality of life and outcomes in hemodialysis patients. Kidney Int. 2003;64(1):339–49.

[17] Abdel-Kader K, Unruh ML, Weisbord SD. Symptom burden, depression, and quality of life in chronic kidney disease. Clin J Am SocNephrol. 2009;4(6):1057–64.

[18] St. George B, Reddy AV, Muninarayanappa NB. Role of nurses in chronic kidney disease management: an integrative review. Indian J Nephrol. 2020;30(3):155–62.

[19] Chen Y, Yang H, Yao Y, Zhao C. Effects of structured nurse-led education on coping, knowledge, and quality of life in hemodialysis patients. J Ren Care. 2018;44(1):33–40.

[20] Tsay SL. Self-efficacy training for patients with end-stage renal disease. J AdvNurs. 2003;43(4):370–5.

[21] Lopez-Vargas PA, Tong A, Howell M, Craig JC. Educational interventions for patients with chronic kidney disease: a systematic review. Am J Kidney Dis. 2016;68(3):353–70.

[22] Chen SH, Tsai YC, Sun CY, Wu IW, Lee CC, Wu MS. The impact of self-management support on quality of life and clinical outcomes in hemodialysis patients. J Formos Med Assoc. 2011;110(9):580–9.

[23] Abraham G, Varughese S, Thandavan T, Iyengar A, Fernando E, Naqvi SA, et al. Chronic kidney disease hotspots in developing countries in South Asia. Clin Kidney J. 2016;9(1):135–41.

[24] Singh AK, Farag YM, Mittal BV, Subramanian KK, Reddy SR, Acharya VN, et al. Epidemiology and risk factors of chronic kidney disease in India. Kidney Int. 2013;83(4):703–14.

[25] Creswell JW, Plano Clark VL. Designing and conducting mixed methods research. 3rd ed. Thousand Oaks: Sage; 2017.

[26] Gaur R, Mudgal SK, Suyal N, Sharma SK, Agarwal R, Ritu R, et al. Nurses and nursing students' knowledge regarding blood transfusion: A comparative cross-sectional study. J IntegrNurs. 2022;4(3):137–44.

[27] Wu SFV, Lee MC, Liang SY. Outcomes of nurse-led interventions for dialysis patients. ClinNurs Res. 2021;30(4):495–504.

[28] Hays RD, Kallich JD, Mapes DL, Coons SJ, Carter WB. Development of the Kidney Disease Quality of Life instrument. Qual Life Res. 1994;3(5):329–38.

[29] Mudgal SK. Assess learning needs of nursing students and effectiveness of workshop on knowledge regarding extended and expanded role of nurses in selected nursing institutions of Udaipur. Int J Nurs Educ. 2018;10(3):109–13.

[30] Tong A, Sainsbury P, Craig JC. Hemodialysis patient experiences: a systematic review of qualitative studies. BMJ. 2013;346:f396.

[31] Subramanian L, Quinn M, Zhao J, Lachance L, Zee J, Hedayati SS, et al. Patient empowerment and engagement in CKD. Kidney Int. 2019;95(4):948–60.

[32] Johansson CM, Bennett PN, O'Brien K. Mixed-methods evaluation of hemodialysis patient experiences. J Ren Care. 2018;44(2):123–32.

[33] Sharma SK, Mudgal SK, Thakur K, Gaur R, Aggarwal P. Lifestyle behavior of budding health care professionals: A cross-sectional descriptive study. J Fam Med Prim Care. 2020;9(7):3525–31.

[34] Bonner A, Havas K, Douglas C, Theadom A, Yates P. Self-efficacy and self-management in hemodialysis patients. J Ren Care. 2014;40(1):40–8.

[35] National Kidney Foundation. KDOQI Clinical Practice Guidelines for Hemodialysis. Am J Kidney Dis. 2015;66(5):882–930..