



**A STUDY TO EVALUATE THE EFFECTIVENESS OF
NURSING INTERVENTION STRATEGIES ON
PHYSIOLOGICAL PROBLEMS AMONG CHRONIC KIDNEY
PATIENTS IN A TERTIARY CARE HOSPITAL OF SHERE
KASHMIR INSTITUTE OF MEDICAL SCIENCES SOURA
SRINAGAR KASHMIR**

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Abstract:

As chronic kidney disease progress, the patients develop distressing problems like oliguria, anemia edema, sleep disturbances, fatigue, restless leg syndrome and hypertension which is both the main physiological cause and sign of the chronic kidney disease. These problems lead to anxiety, irritability and depression, thereby gradually deteriorating the quality of life. Such problems can be curtailed in intensity and life of CKD patients can be improved if they are being advised and exposed to various nursing intervention strategies such as: dietary control, massaging, muscle relaxation techniques and deep breathing exercises in addition to drug adherence. Hence the present study was conducted to evaluate the effectiveness of nursing intervention strategies on physiological problems such as: anemia, hypertension, edema, insomnia, fatigue and restless leg syndrome among patients with chronic kidney disease in nephrology ward of a tertiary care hospital of Shere Kashmir Institute of Medical Sciences, Soura Srinagar, Kashmir. A quasi-experimental non-equivalent two group pre-test post-test design was used to conduct study on 200 adult chronic kidney disease patients who were randomly selected and assigned to experimental and control groups (experimental=100; control=100) The study subjects in the experimental group received the 'Nursing Intervention Strategies'

including : dietary advice, progressive muscle relaxation therapy, deep breathing exercises, leg massaging therapy, leg elevation therapy and talk therapy, whereas study subjects in the control group received the routine care. The findings revealed that the study subjects in experimental group, who received nursing intervention strategies and prescribed treatment showed a significant reduction ($p \leq 0.05$) in magnitude of 5 physiological problems such as: systolic blood pressure, edema of feet, insomnia, fatigue and restless leg syndrome. Whereas the control group subjects who received only routine care and prescribed treatment showed a significant reduction ($p \leq 0.05$) in only 3 physiological problems such as: systolic blood pressure, insomnia and fatigue. Based on the study findings it can be concluded that nursing intervention strategies such as : Dietary advice, progressive muscle relaxation, deep breathing, leg massaging, leg elevation and talk therapy were effective in minimizing the magnitude of physiological problems among chronic kidney disease patients. However the long term efficacy of these strategies needs to be investigated.

Key words

Chronic Kidney Disease, Nursing Intervention Strategies, Physiological Problems

INTRODUCTION

Chronic Kidney disease (CKD) is a global health problem and 9th leading cause of death in the United States with increasing incidence of hypertension and diabetes mellitus corresponding to one in 10 million American adults and approximately 26.3 million of people. It is a worldwide public health problem with an increasing incidence and poor outcome.¹ Chronic kidney disease (CKD) as a progressive, irreversible deterioration in renal function in which the body's ability to maintain metabolic, fluid and electrolyte balance fails, resulting in uremia or azotemia which disturbs the homeostasis of all systems of the body. It can progress to end-stage renal disease (Stage -5 CDK) in which glomerular filtration rate (GFR) falls to 15 ml/minute/1.73 m² (Normal GFR=125 ml/minute/1.73 m²).²

The clinical manifestations of chronic kidney disease are due to overt metabolic derangements resulting from inability of failed kidney to regulate electrolyte, fluid and acid-base balance and due to accumulation of toxic products of amino acid metabolism in the serum. As chronic kidney disease progress, the patients develop many physiological disturbances such as: hypertension, anemia, edema of feet, insomnia, fatigue, restless leg syndrome and so on which reduce their physical activities thereby affecting the quality of life.²

Various researchers : (Dreyer G, Hull S, Badrick E, Chesser A and Yaqoob M -2010³; Nina R. O' Connor and Pallavi Kumar-2012⁴ ; Hayfa Almutary, Ann Bonner and Clint Douglas-2013⁵) have described chronic kidney disease as a target organ injury associated with co-morbid type-2 diabetes mellitus , hypertension and heart disease which leads to reduction in quality of life due to gradual worsening of kidney function for 10-20 years with slow onset of manifestations like hypertension, anemia ,edema of feet and legs, symptoms of fatigue, sleep disturbances and restless leg syndrome.

Hypertension is both cause and complication of chronic kidney disease. As a complication, high blood pressure may develop early during the course of chronic kidney disease and is present in more than 70% of people whose kidney function falls below 60 % of normal.⁶ Anemia is one of the clinical manifestations which normally starts during stage-3 of chronic kidney disease when the glomerular filtration rate drops to below 60 ml/minute/1.73m² and the cells responsible for producing erythropoietin begin to die. This leads to a reduction of the erythropoietin, resulting in a

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decreased production of red blood cells which reduces hemoglobin level in blood.⁷ Edema has been referred a common problem associated with renal disease that results due to excessive fluid accumulation in body which is evidenced on feet, legs, face, arms and hands and chest. The feet and legs that swell due to edema can become stiff and uncomfortable.⁸ Insomnia is a noticeable distressing problem found in chronic kidney disease patients which cause psychological disturbances (anxiety and depression), physical disturbances (hypertension and muscle cramps) and fluid and electrolyte imbalances. Research data: (Hanly P-2004⁹; Eduard A. Iliescu, Karen E. Yeates and David C. Holland-2004¹⁰ ; Novak M, Mendelssohn D, Shapiro CM and Mucsi I-2006¹¹) have revealed that stage-5 of chronic kidney disease directly influences the quality of sleep. About 40.8 % of these patients suffer from sleep abnormalities and the prevalence is higher in chronic kidney disease patients than that in the general population. The most frequently reported factors of insomnia are restless leg syndrome (RLS), sleep-disordered breathing and excessive daytime sleeplessness.

Fatigue has been demonstrated as a highly prevalent symptom in advanced chronic kidney disease which is associated with anemia and demineralization of bones. Chronic kidney disease patients commonly experience fatigue and loss of strength; both of which have an impact on an individual's ability to carry out routine activities of daily life.¹² Restless leg syndrome (RLS) has been found common in people with moderate or advanced kidney disease who wake up in the middle of night because of tingling sensation /or cramping in their legs. It has been reported that many as 8 in 10 people with stage- 4 chronic kidney disease have restless leg syndrome (RLS).These conditions commonly disrupt sleep and cause a great impact on employment, social activities and quality of life.¹¹.

Need for Study

The chronic kidney disease (CKD) is a silent killer disease that has great impact on daily living, impair significantly the quality of life, increase the risk of cardiovascular events and negatively influence the survival of CKD patients. They need life long support and motivation in bringing change in behaviors pertaining to their life style modification especially related to diet and physical activity, which is a critical step in preventing chronic kidney disease progression.²

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Research studies (Eskridge MS-2010¹³; Faqah A, Jafar TH-2011¹⁴; Huisman S, de Gucht V, Maes S, Schroevers M, Chatrou M and Haak H-2009¹⁵) have shown that strategies such as blood pressure control, blood sugar control and protein intake restriction can effectively retard the progress of chronic kidney disease. Various authors: (Kuroki. A¹⁶ - 2008; Manson. J-2008¹⁷ ; Lin CC, Tsai MF and Lin SH-2013¹⁸) have reported that learning and practice of various issues such as: disease process, strict adherence to renal diet , exercises, massaging, muscle relaxation and drug therapy have helped chronic kidney disease patients to manage their lifestyles as well as to self-regulate and improve their physical and social functioning. They have reported fewer symptoms by showing more confidence in their ability to manage the symptoms they do have.

There are many medical studies which have been conducted on patients with chronic renal failure within Kashmir valley but as such no nursing study related to non-pharmacological intervention for chronic kidney disease patients has been reported so far in the valley. With this background the investigator got strongly convinced to design some problem based non-pharmacological intervention strategies for patients through clinical research. It is expected that by implementing these strategies in day to day practice the patient's physical, physiological and psycho-social functioning may be improved to the optimum level.

Problem statement

A Study to Evaluate the Effectiveness of Nursing Intervention Strategies on Physiological Problems among Chronic Kidney Patients in a Tertiary Care Hospital of Shere Kashmir Institute of Medical Sciences Soura Srinagar Kashmir.

Objectives

The study was undertaken:

1. To assess the pre-interventional physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome)) among patients with chronic kidney disease in experimental and control group. (Pre-test)

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2. To assess the post-interventional physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome)) among patients with chronic kidney disease in experimental and control group. (Post-test)
3. To compare the pre and post-interventional physiological problems among patients with chronic kidney disease between experimental and control group.
4. To associate the demographic characteristics (age, gender, place of domicile, education, occupation, monthly family income, body mass index , co-morbidity and stage of chronic kidney disease) with physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome) among patients with chronic kidney disease.

Hypotheses

- H1:-** There is a significant decrease in physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome) among patients with chronic kidney disease after implementation of 'Nursing Intervention Strategies' in experimental group than in control group (at 0.05 level of significance)
- H2:-** There is a significant association between demographic characteristics (age, gender, place of domicile, education, occupation, monthly family income, body mass index, co-morbidity, Stage of chronic kidney disease) and physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome) among patients with chronic kidney disease (at 0.05 level of significance)

Materials and Methods

A quasi-experimental non -equivalent two group pre-test post-test design was used to conduct study on adult chronic kidney disease patients in nephrology ward of a tertiary care hospital of Jammu and Kashmir (SKIMS Soura Srinagar) from 5th March 2012 to 31st July 2013. The sample consisted of 200 study subjects, who were selected purposively after fulfilling the inclusion criteria and were randomly assigned to groups (100 each to experimental and 100 to control group respectively).

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The variables of present study were: i) Independent variable : “Nursing Intervention Strategies” which consisted of a package of 6 non-pharmacological therapies such as: dietary advice, progressive muscle relaxation therapy, deep breathing exercises, leg massaging therapy, leg elevation therapy and talk therapy and ii) Dependent variable :

“An outcome in terms of improvement in six physiological problems such as: hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome.

The study subjects in the experimental group received the ‘Nursing Intervention Strategies’ including : dietary advice, progressive muscle relaxation therapy, deep breathing exercises, leg massaging therapy, leg elevation therapy and talk therapy for one week during hospitalization. The study subjects were also given demonstration of ‘Nursing Intervention Strategies’ along with adherence checklist at the time of discharge for ensuring the practice of ‘Nursing Intervention Strategies’ at home till first follow up visit that was on 15th day of discharge . Whereas study subjects in the control group received simultaneously the routine care during hospitalization and routine discharge advice for home practice till first follow up visit.

For conducting pilot study and final study ethical clearance and permission was obtained from Ethical clearance committee and HOD nephrology of SKIMS. After obtaining individual informed consent from study subjects, the data on demographic variables such as: “Age, gender, education, occupation, place of domicile, monthly family income, body mass index (BMI), co-morbidity and stage of CKD” was gathered by using interview schedule while as data on physiological problems such as: hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome were measured by using standardized tools.

In experimental group 1st observation (pre-test) was conducted on 1st day of admission of CKD patients followed by 2nd observation (post-test 1) which was conducted on 6th day after patients were exposed to 1 & half hour treatment of ‘Nursing intervention strategies’ daily for 5 days. The 3rd observation (post-test 2) was conducted on patients in OPD during their first follow up visit on 15th day after the patients had performed ‘Nursing intervention strategies’ at home as per instructions given at the time of discharge. The same procedure was adopted for

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data collection for control group subjects except that they received only routine care during hospitalization and routine discharge advice. The pre and post test findings so gathered in both experimental and control groups were computed and analyzed by using descriptive and inferential statistics.

Results and Discussion

The data collected on demographic characteristics of 200 CKD patients who were equally assigned to two groups (experimental =100 and control= 100) was computed by descriptive and inferential statistics as per the objectives of the study in following tables:

Table: 1 Frequency and Percentage distribution of Demographic Characteristics of study subjects with CKD between Experimental and Control group (N=200)

S.No	Demographic Characteristics	Experimental Group (n1 = 100) Frequency(f)	Percentage (%)	Control Group (n2 =100) Frequency (f)	Percentage (%)	Unpaired 't' test Value	p Value
1	Age (in years)						
1.1	20 - 29	26	26%	25	25%	0.002	0.940 (NS)
1.2	30 - 39	16	16%	18	18%		
1.3	40 - 49	05	5%	06	6%		
1.4	50 - 59	38	38%	35	35%		
1.5	60-69	15	15%	16	16%		
2	Gender						
2.1	Male	46	46%	48	48%	0.080	0.777 (NS)
2.2	Female	54	54%	52	52%		
3	Place of domicile						
3.1	Urban	52	52%	50	50%	0.000	1.000 (NS)
3.2	Rural	48	48%	50	50%		
4	Educational status						
4.1	≤ Primary	55	55%	55	55%	0.418	0.812 (NS)
4.2	≤Higher secondary	44	44%	43	43%		
4.3	≥ Graduate	1	1%	2	2%		

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5	Occupation	63	63%	58	58%		
5.1	Unemployed (students/retired/ house wife)					0.362	0.948 (NS)
5.2	Employed (govt./private/ professional)	17	17%	20	20%		
5.3	Business	20	20%	22	22%		
6	Monthly family income	72	72%	71	71%		
6.1	(in rupees) ≤10,000					0.384	0.965 (NS)
6.2	10,001to 15,000	15	15 %	15	15 %		
6.3	15,001 to 20,000	12	12 %	13	13 %		
6.4	20,001 to 25,000	0	0 %	0	0 %		
6.5	>25,000	1	1 %	1	1 %		
7	Body mass index						
7.1	(Body wt. in kg/ht in m ²) <30.0(no obesity)	66	66%	69	69%	0.105	0.588 (NS)
7.2	30-34.9 (type I obesity)	18	18%	16	16%		
7.3	35-39.9 (type II obesity)	14	14%	12	12%		
7.4	> 40.0 (type III obesity)	2	2%	3	3%		
8	Co-morbidity						
8.1	Hypertension	64	64%	63	63%		
8.2	Diabetes mellitus & hypertension	28	28%	28	28%	0.201	0.904 (NS)
8.3	Hypertension, diabetes mellitus &Dsylipeemia	8	8%	9	9%		
9	Stage of CKD						
9.1	Stage IV	53	53%	53	53%	0.353	1.000 (NS)
9.2	Stage V	47	47%	47	47%		

Significant (p value ≤ 0.05); NS (Non-significant; p value > 0.05)

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Findings in table: 1 reveals that majority of CKD subjects (38% in experimental and 35% in control group) were in age group of (50 – 59) years. The gender distribution in both the groups was almost equal (46% in experimental group and 48 % in control group) were male and (54% in experimental group and 52 % in control group) were female. Approximately equal number i, e. 52% of CKD subjects were from urban and 48% were from rural domicile in experimental group. Similarly in control group 50% of subjects were equally from urban and rural domicile. About 55% of subjects in both the groups had primary education. Most of the subjects in both the groups were unemployed (63% in experimental group and 58% in control group). Monthly family income of majority of subjects in both the groups (71% in experimental group and 72% in control group) was up to Rs.10, 000. Majority of subjects (66 % in experimental group and 69% in control group) had no obesity ; 18 % in experimental group and 16% in control group subjects had type I obesity ; 14% in experimental group and 12% in control group had type II obesity whereas least number of subjects (2% in experimental group and 3% in control group) had type III obesity. Highest percentage of the subjects (64% in experimental group 63% in control group) were hypertensive and 28% in both the groups were hypertensive as well as diabetics whereas lowest percentage of subjects (8% in experimental group and 9 % in control group) were having all the three co-morbidities (hypertension, diabetes mellitus and dsylipedemia). Both the groups had 53% of subjects with Stage-4 CKD and 47% of subjects with Stage-5 of CKD respectively.

The findings reveal no significant difference (p value > 0.05) in demographic characteristics between the study subjects of experimental and control group. Hence the sample distribution in both the groups was homogeneous.

➤ **Objective :1**

To assess the pre-interventional physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome)) among patients with chronic kidney disease in experimental and control group. (Pre-test)

Table: 2 Pre-test Mean and SD score distribution of Physiological problems among study subjects with CKD between Experimental and Control group (N=200)

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S. No	Physiological problems	Experimental group(n ₁ =100)		Control group(n ₂ =100)		
		Pre-test score		Pre-test score		p value
		Mean ±SD		Mean± SD		
1	<u>Hypertension:</u>					
1.1	Systolic pressure	Blood 160.10 ± 10.62	158.48 ± 11.72	0.504 (NS)		
1.2	Diastolic pressure	Blood 99.50 ± 6.03	98.60 ± 6.63	0.317 (NS)		
2	Anemia (Hemoglobin mg/dl)	7.39± 0.33	7.60 ± 1.27	0	.247 (NS)	
3	Edema of feet	3.35 ± 1.07	3.12 ± 0.83	0.093 (NS)		
4	Insomnia	14.70 ± 1.84	14.99 ± 2.33	0.163(NS)		
5	Fatigue	24.54 ± 3.27	24.02 ± 2.15	0.137(NS)		
6	Restless syndrome	leg 11.70 ± 2.35	11.02 ± 1.931	0.101 (NS)		

Significant (p value ≤ 0.05); NS (Non-significant; p value > 0.05)

Table:2 shows baseline (pre-test) Mean and SD score distribution of physiological problems among study subjects with CKD between Experimental and Control group which reveals no significant difference (p > 0.05) in scores of subjects between experimental and control group, emphasizing homogenous distribution of subjects to groups in terms of magnitude of physiological problems.

➤ **Objective :2**

To assess the post-interventional physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome)) among patients with chronic kidney disease in experimental and control group. (Post-test)

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Table: 3 Post test Mean and SD score distribution of Physiological problems of study subjects with CKD between Experimental and Control group (N=200)

		Experimental Group (n ₁ =100)		Control Group (n ₂ =100)	
S.No	Physiological problems	Post-test 1	Post-test 2	Post-test 1	Post-test 2
		Score	Score	Score	Score
		Mean ₁ ±SD ₁	Mean ₂ ± SD ₂	Mean ₁ ± SD ₁	Mean ₂ ± SD ₂
1	<u>Hypertension</u>	158.90±9.5	155.42±9.21	155.0 ± 9.07	152.88 ± 8.65
1.1	Systolic Blood pressure	3			
1.2	Diastolic Blood pressure	98.30 ± 5.37	98.76 ± 5.83	97.78 ± 7.05	97.14 ± 6.44
2	<u>Anemia:</u>				
	Hemoglobin(mg / dl)	7.46 ± 0.40	7.66 ± 0.60	7.68 ± 1.09	7.36 ± 0.98
3	Edema of feet	2.92 ± 0.73	2.34 ± 0.15	3.09 ± 0.83	3.78 ± 1.37
4	Insomnia	10.59 ± 1.22	9.33 ± 0.96	11.51 ± 2.14	11.01 ± 1.85
5	Fatigue	14.48 ± 2.63	10.52 ± 1.77	17.99 ± 2.82	17.24 ± 2.18
6	Restless leg syndrome	7.70 ± 1.24	6.77 ± 0.90	10.01 ± 1.20	9.81 ± 1.03

Findings (table: 3) reveal that experimental group subjects who were exposed to the treatment of 'nursing intervention strategies' have shown substantial decline in post test Mean and SD scores in 5 physiological problems (systolic blood pressure, edema of feet, insomnia, fatigue and restless leg syndrome) whereas control group subjects who received routine care have reported a marginal decline in only 3 physiological problems such as: hypertension (systolic blood pressure only), insomnia and fatigue.

The findings of this study are in conformity with the results of a longitudinal study conducted by Kuroki A¹⁹ in 2008 on chronic kidney disease patients, who has reported a considerable improvement in blood pressure levels, physical fatigue and sleep troubles after implementation of teaching program on strict adherence to renal diet and anti hypertension therapy to the participants with chronic kidney disease. Similarly Charlotte Thomas-Hawkins and Donna Zazworsky-2005²⁰ conducted a study on chronic kidney disease patients to test the effectiveness of 'nursing intervention program' on various aspects: teaching patients relaxation techniques, helping them to identify problem areas in their self-management. Participants who received the intervention showed improvements in each of these areas and also reported improvement in physical symptoms such as: fatigue and sleep disturbances.

➤ Objective :3

To compare the pre and post-interventional physiological problems among patients with chronic kidney disease between experimental and control group.

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Table: 4 Comparison of pre-test and post-test Mean and SD scores of Physiological problems of subjects with CKD between experimental and control group (N=200)

Experimental Group (n ₁ =100)					Control Group (n ₂ =100)				
S.No	Physiological problems	Pre-test	Post test 1	Post test 2	p value	Pre-test	Post test 1	Post test 2	p value
		Mean ± SD	Mean ₁ ±SD ₁	Mean ₂ ±SD ₂		Mean ± SD	Mean ₁ ±SD ₁	Mean ₂ ±SD ₂	
1	<u>Hypertension</u>	160.10	158.9	155.4	0.001*	158.48	155.0	152.88	0.002*
1.1	Systolic Blood pressure	±10.62	±9.53	±9.21		±11.72	±9.07	±8.65	
1.2	Diastolic Blood pressure	99.50 ± 6.03	98.30 ± 5.37	98.76 ± 5.83	0.608 NS	98.60 ±6.63	97.78 ± 7.05	97.14 ±6.44	0.703 NS
2	Anemia: (Hemoglobin mg/dl)	7.39 ± 0.33	7.46 ± 0.40	7.66 ± 0.60	0.121 NS	7.60 ±1.27	7.68 ± 1.09	7.36 ± 0.98	0.931 NS
3	Edema of feet	3.35 ±1.07	2.92 ± 0.73	2.34 ± 0.15	0.030*	3.12 ±0.83	3.09 ± 0.80	3.78 ± 1.37	0.571 NS
4	Insomnia	14.70 ± 1.84	10.59 ± 1.22	9.33 ±0.96	0.041*	14.99 ±2.33	11.51 ±2.14	11.01 ± 1.85	0.042*
5	Fatigue	24.54 ± 3.27	14.48 ±2.63	10.52 ± 1.77	0.001*	24.02 ±2.15	17.99 ±2.82	17.24 ±2.18	0.032*
6	Restless leg syndrome	11.70 ± 2.35	7.70 ± 1.24	6.77 ± 0.90	0.001*	11.02 ±1.93	10.01 ±1.20	9.81 ± 1.03	0.201 NS

*Significant (p value ≤ 0.05; <0.001); NS (Non-significant; p value >0.05)

Comparatively the Mean and SD scores of physiological problems of CKD subjects have revealed a highly significant decrease (p<0.001) during post test 2 in 5 physiological problems such as: hypertension (systolic blood pressure only) , edema of feet, insomnia, fatigue and restless leg syndrome in experimental group who received ‘Nursing Intervention Strategies’ than the subjects in control group who received

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routine care and have shown significant decrease ($p \leq 0.05$) in only 3 physiological problems such as: hypertension (systolic blood pressure only), insomnia and fatigue. The subjects have shown better functional and emotional well-being in interventional (experimental) group than the subjects in non-interventional (control) group which proved that 'Nursing Intervention Strategies' were effective in reducing physiological problems thereby improving physical and emotional wellbeing of chronic kidney disease subjects in experimental group.

Hence Research hypothesis:1 (H₁) : There is a significant decrease in physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome) among patients with chronic kidney disease after implementation of nursing intervention strategies in experimental group than in control group at (0.05 level of significance) is accepted for all physiological problems except diastolic blood pressure and anemia.

The above results are supported by findings of following studies:

[Kauric Klein Z²¹](#) in a randomized controlled study conducted on 118 End stage renal disease participants in the year 2012 to assess the impact of the supportive educational nursing intervention, reported a significant decrease ($p < 0.05$) in both systolic and diastolic blood pressures in the treatment group.

Similarly Shahram Baraz²² in his study conducted in 2006 on CKD patients to determine the effect of self-care educational package programs on problems and quality of life of CKD patients revealed a significant decrease in systolic blood pressure ($p = 0.045$), diastolic blood pressure ($p = 0.004$), edema ($p = 0.000$) and improvement in the quality of life of patients ($p = 0.030$) among subjects in treatment group as compared to the control group.

Campbell KL, Ash S, Davies PS and Bauer JD- 2008²³ in an interventional study group of pre dialysis patients with chronic kidney disease (CKD - stages 4 and 5) who were subjected to individualized dietary counseling with regular follow-up to achieve an intake of 0.8 to 1.0 g/kg of protein and > 125 kJ/kg of energy reported a significant change i.e. greater increase in energy intake and greater improvement ($p < 0.01$) in fatigue in interventional (study group) than in control group which received written material only.

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Demographic Variables		Physiological problems						
		Hypertension		Anemia	Edem	Insomn	Restless	
1.Age		Systolic blood pressure	Diastolic blood pressure	(Hb mg %)	a ofia feet	Fatigue	leg syndro me	
Pearson Chi-Square test(π^2)		30.991	25.334	-	30.837	14.018	12.070	18.965
Fisher's Exact tes (F)		-	-	7.021	-	-	-	-
df		8	8	8	8	8	8	8
p value		0.001*	0.025*	0.534NS	0.053*	0.007*	0.037*	0.001*
2.Gender				6.696		1.142		9.397
Pearson Chi-Square test(π^2)		0.671	-	-	-	-	-	-
Fisher's Exact test (F)		-	5.202	-	5.415	-	0.469	-
df		2	4	2	5	1	2	2
p value		0.175NS	0.236 NS	0.035*	0.361 NS	0.285NS	0.902 NS	0.002*
3. Place of domicile			24.07	19.513	6.012	15.168		12.000
Pearson Chi-Square test(π^2)		8.216	-	-	-	-	9.495	-
df		2	4	2	5	1	2	1
p value			0.016*	<0.001*	<0.001*	0.297 NS	<0.001*	0.006*
								<0.001*
4. Education			12.128	-	34.428	0.540	2.897	-
Pearson Chi-Square test(π^2)		12.199	-	-	-	-	-	-
Fisher's Exact test (F)		-	-	7.331	-	-	-	0.192
df		4	4	4	10	4	4	4
p value		0.016*	0.046*	0.087 NS	<0.001*	0.763NS	0.575 NS	0.965 NS
5. Occupation				6.1700	20.45	53.59		
Pearson Chi-Square test(π^2)		-	-	-	-	-	-	-
Fisher's Exact test (F)		8.971	17.519	-	-	-	5.994	17.775
df		4	4	4	10	2	4	3
p value		0.050*	0.025*	0.187NS	0.050*	0.069NS	0.200 NS	<0.001*
6. Monthly family income			15.564	18.058	26.728	3.275	7.325	17.051
Fisher's Exact test (F)		16.256	-	-	-	-	-	-
df		6	6	6	15	3	6	3
p value		0.005*	0.023*	0.002*	0.058*	0.307 NS	0.292 NS	<0.001*
7. Body mass index			26.251	1.292	46.657	3.830	3.765	9.189
Fisher's Exact test (F)		24.185	-	-	-	-	-	-
df		6	12	6	15	6	6	3

p value	<0.001*	0.003*	0.980NS	<0.001*	0.263NS	0.619NS	0.024*
8. Co-morbidity Fisher's Exact test (F)	30.099	43.619	17.713	25.216	16.564	15.521	18.448
df	4	8	4	10	2	4	2
p value	<0.001*	<0.001*	0.007*	<0.001*	0.010*	0.023*	<0.001*
9. CKD Stage Pearson Chi-Square test(π^2)	-	-	20.016	-	0.532	-	0.164
Fisher's Exact test (F)	10.013	13.302	-	6.887	-	2.408	-
df	2	4	2	5	1	2	1
p value	0.020*	0.018*	0.013*	0.213NS	0.466NS	0.306NS	0.686NS

➤ **Objective :4**

To associate the demographic characteristics (age, gender, place of domicile, education, occupation, monthly family income, body mass index , co-morbidity and stage of chronic kidney disease) with physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome) among patients with chronic kidney disease.

The association between demographic characteristics (age, gender, place of domicile, education, occupation, monthly family income, body mass index, co-morbidity, Stage of chronic kidney disease) and physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome) among patients with chronic kidney disease was calculated by Pearson Chi-Square test (π^2) and Fisher's Exact test (F) as shown in (table: 5)

Table. 5 Pearson Chi-Square test (π^2) and Fisher's Exact test (F) showing association between Demographic Variables and Physiological problems among subjects with CKD (N=200) *Significant (p value \leq 0.05; <0.001); NS (Non-significant; p value >0.05)

The findings related to association between demographic characteristics and physiological problems show that 1) age is significantly associated (\leq 0.05) with hypertension, edema of feet, insomnia, fatigue and restless leg syndrome; 2) gender is

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significantly associated (≤ 0.05) with anemia; 3) place of domicile is significantly associated (≤ 0.05) with hypertension, anemia, insomnia, fatigue and restless leg syndrome 4) education is significantly associated (≤ 0.05) with hypertension and edema of feet. 5) occupation has shown significant association (≤ 0.05) with hypertension, edema of feet and restless leg syndrome; 6) monthly family income has shown significant association (≤ 0.05) with hypertension, anemia, edema of feet and restless leg syndrome; 7) body mass index is significantly associated (≤ 0.05) with hypertension, edema of feet and restless leg syndrome; 8) Co-morbidity is associated (≤ 0.05) with all physiological problems i.e. hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome and 9) CKD Stage is significantly associated (≤ 0.05) with only hypertension and anemia. It was also found that majority i.e. 106 (53%) were female and out of these 53(50%) were reported to have severe restless leg syndrome. Majority of subjects i.e. 106 (53%) were female. Of them maximum 65(32.5%) were reported to have moderate anemia. About 92(46%) of CKD patients had moderate hypertension, while showing a strong association (p value ≤ 0.001) between severity of hypertension and increase in the age.

Hence it can be inferred that majority of demographic characteristics in all 200 CKD subjects have shown a significant association (≤ 0.05) with majority of physiological problems.

Hence **Research hypothesis: 2 (H₂)**:-There is a significant association between demographic characteristics such as: (age, gender, place of domicile, education, occupation, monthly family income, body mass index, Co-morbidity and CKD Stage) and physiological problems (hypertension, anemia, edema of feet, insomnia, fatigue and restless leg syndrome) among patients with chronic kidney disease (at 0.05 level of significance) is accepted.

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The findings are supported by following research studies:

Various studies (Maurizio Bossola, Carlo Vulpio, Luigi Tazza-2011²⁴; Marcello Tonelli , Miguel Riella-2014²⁵ ; Ann Bonner, Sally Wellard, Marie Caltabiano-2010¹² have reported a higher prevalence of CKD in older people which was strongly associated ($p < 0.05$) with severity of hypertension, fatigue and sleep disturbances.

According to Novak M, Mendelssohn D, Shapiro CM and Mucsi I-2006¹¹ as many as 8 in 10 people with stage-5 of CKD may have restless leg syndrome (RLS) which has strong association ($p < 0.05$) with female gender and obesity

Fishbane S, Pollack S, Feldman HI, Joffe MM -2009²⁶ reported prevalence of anemia in adult women as (69.9 to 72.8%) and (57.8 to 58.8%) in men with CKD stages 3–5, which was comparatively higher ($p = 0.004$) in females than in the males.

In this study restless leg syndrome was found more in elderly patients. [Gian L, Massimo A, Pierluigi D, Antonella P, Mariarosaria V, Stefania B](#) and [Riccardo B](#)- 2004²⁷ have also reported increased prevalence of restless leg syndrome in the elderly people.

Conclusion

Based on findings of the study it can be concluded that 'Nursing Intervention Strategies' such as : Dietary advice, progressive muscle relaxation, deep breathing, leg massaging , leg elevation and talk therapy were effective in minimizing the magnitude of physiological problems among chronic kidney disease patients and have shown better functional and emotional well-being. However the long term efficacy of these strategies need to be investigated individually on these patients to find out which one was more effective in reducing the intensity of the physiological problems. The investigator recommended that for those patients who have stage-5 CKD (end stage renal disease) and for whom cure is not a realistic goal; maximizing functioning and well-being should be a primary objective of the nursing care. The findings also call the attention of Govt. Health care sector for the tremendous need of providing the most appropriate , highly adequate, easily accessible, cost effective and efficient nephro treatment and care facilities to all sections of chronic kidney disease population and also to provide an aggressive approach towards the prevention, early detection and management of increasing risk of chronic kidney disease in order to control the increasing morbidity and mortality rates.

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