

A study to assess the Effectiveness of Mindful Breathing on Quality of Life among patients with renal insufficiency on hemodialysis admitted in selected hospitals of Bengaluru

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Abstract:

Renal insufficiency is a chronic disease which is deteriorating the person's health in all dimensions. The present study is to assess the Effectiveness of Mindful Breathing on Quality of Life among patients with renal insufficiency on haemodialysis, find out the association between pre interventional Quality of Life score among patients with renal insufficiency on haemodialysis and their selected demographic variables and also to rule out the correlation between the pre interventional Quality of life score among patients with renal insufficiency on haemodialysis with their clinical variables. This study is based on Quasi-experimental Research Design in which 114 patients with renal insufficiency on haemodialysis were selected through purposive sampling technique. Data was collected through demographic variable, clinical variable and modified kidney disease and Quality of life™ (KDQOL™-36) scale. Data was analysed by using descriptive and inferential statistics. The result revealed that the calculated paired t test value of experimental group is 17.035 which is more than the table value at $p < 0.001 = 3.390$ whereas the control group is 1.321 which is less than the table value at $p < 0.001 = 3.390$ and the significant association was found only in the area of occupation ($\chi^2 = 8.886$, $p = 0.03$). The data depicts that there is a weak negative correlation between Systolic Blood Pressure ($r = -0.005$) & diastolic Blood Pressure (-0.016) with Quality-of-Life score whereas pulse rate ($r = 0.03$), respiratory rate ($r = 0.100$) and Oxygen saturation ($r = 0.123$) were weakly positive correlated. The study concluded that the Mindful breathing exercise in patients with renal insufficiency on haemodialysis improves their Quality of Life. This exercise is cost-effective and also can practice without any special trainer.

Keywords: Effectiveness, Mindful Breathing, Quality of life, Renal Insufficiency, Haemodialysis

Introduction:

Renal insufficiency is a non-communicable disease in which there may be a partial or complete impairment of kidney function. It is a progressive and irreversible disease. Renal insufficiency is also classified into two types: acute and chronic renal failure.

The major concern here is the ability of the kidneys to excrete metabolic waste products and water, effectively which affects the various other organ systems. The main causes of renal insufficiency are hypovolemia, haemorrhage, ischemic heart disease, diabetic mellitus, hypertension and trauma. Treatment modalities are required for long-term management, which include medication, dialysis, diet maintenance, and kidney transplantation. Patients need to adhere to strict, regular treatment to prevent further complications and extend their life expectancy. Hence, patients with renal insufficiency will always have a suboptimal quality of life and are at high risk of death.

Regular physical exercise is necessary to maintain overall health and wellness among haemodialysis patient. However, individuals with renal insufficiency may need to modify their exercise plan based on their condition and physician advice.

The quality of life can be improved with the implementation of therapies, such as guided visualization, yoga, music therapy, and diversional therapy. Mindful breathing exercises is also referred as pranayama. It is a technique for paying attention to the sensation of the breath coming in and out of the body. It

helps patients improve their respiratory function effectively by reducing respiratory

workload and stimulating the vagus nerve. Breathing exercises can activate the parasympathetic nervous system, which leads to relaxation by deactivating the sympathetic nervous system. Mindful breathing exercise helps in delivering sufficient oxygen to the body and stabilizes blood flow, thereby improving blood pressure.¹

Need for the Study-

According to the World Health Organization (WHO), Chronic Kidney Disease has been increasing, and over 843.6 million individuals worldwide were estimated to be affected by chronic kidney disease in 2017². As per the report from the Pradhan Mantri National Dialysis Program (PMNDP) in India, every year, about 2.2 lakh new patients diagnosed with end-stage renal disease (ESRD) get added to the demand for 3.4 crore dialysis every year.³ The high cost of dialysis care leads to financial catastrophe for all patient families. This outcome is because of increasing elderly population and spike in occurrence of modern illnesses like obesity, diabetes, and hypertension.

Dialysis patients should receive comprehensive care that addresses their physical, emotional, and social effects of kidney disease in order to extend their lives, lower their mortality, and improve their quality of life. Hence, the researcher felt the need to improve the quality of life of patients with renal insufficiency with nurse-driven interventions like breathing exercises.

Objectives:

- To assess the pre-interventional Quality of Life score among patients with renal insufficiency on haemodialysis.
- To determine the effectiveness of Mindful Breathing on Quality of Life among patients with renal insufficiency on haemodialysis.
- To determine the association between the pre interventional Quality of life score among patients with renal insufficiency on haemodialysis with their selected demographic variables.
- To determine the correlation between the pre interventional Quality of life score among patients with renal insufficiency on haemodialysis with their clinical variables.

Research hypothesis:

H₁. There will be a significant difference between pre and post interventional Quality of Life score among patients with renal insufficiency on haemodialysis in both experimental and control group.

H₂. There will be a significant association between pre interventional Quality of Life score among patients with renal insufficiency on haemodialysis and their selected demographic variables.

H₃. There will be a significant correlation between pre interventional Quality of Life score among patients with renal insufficiency on haemodialysis and their selected clinical variables.

Materials and Methods-

Research design: Quasi-experimental Research Design

Population: Patients with renal insufficiency on haemodialysis admitted in selected hospitals of Bengaluru.

Sampling Technique: In this study, the purposive sampling technique was used to select the participants.

Sample Size: The sample size is 114. (57 in Experimental Group and 57 in Control Group).

Description of the tool:

In present study the tool consisted of 3 sections
Section-A: Demographic variable- It consists of demographic variables which included age, gender, marital status, educational qualification, occupation, family income, types of renal insufficiency (acute or chronic), duration of renal insufficiency, alternative therapy used for renal insufficiency, presence of renal insufficiency in family, history of comorbidities in patient, healthy habits adopted by participant, hours of sound sleep and previous practice of breathing exercise.

Section-B: Clinical data - It includes the standardized vital parameters i.e. blood pressure, pulse rate, respiratory rate, oxygen saturation of the participants recorded during the time of data collection.

Section-C: Modified Kidney disease and Quality of life (KDQOLTM-36) scale

It has 36-item and included health-related quality outcome life survey with five subscales. Physical component, mental component, burden of kidney disease, symptom and problem of kidney disease, effect of kidney disease.

Plan for data analysis: The data was analysed by using descriptive and inferential statistic.

Section B: Effectiveness of Mindful Breathing exercise on Quality of life among patient with renal insufficiency on haemodialysis.

Table 1: Effectiveness of Mindful Breathing exercise on Quality of life N= 114

Group	Pre-interventional Mean and SD	Post- interventional Mean and SD	Mean Difference	t test value
Experimental Group	58.05	73.06	15.01	17.035
Control Group	50.80	51.36	0.565	1.321

Note: Table value at $p < 0.001 = 3.390$

The above table shows that the pre interventional mean and standard deviation score of both experimental and control group were **58.058±12.9734** and **50.802±15.301** whereas the post interventional mean and standard deviation score of both experimental and control group were **73.068±8.1009** and **51.367±13.5904** respectively. The mean difference of both experimental and control group was **15.01** and **0.565** respectively. The calculated paired t test value of experimental group is **17.035** which is more than the table value at $p < 0.001 = 3.390$ whereas the control group is **1.321** which is less than the table value at $p < 0.001 = 3.390$.

Therefore, the research hypothesis (H_1) is accepted and it inferred that there is a significant effectiveness on Mindful breathing exercise in improving Quality of life among patient with renal insufficiency on hemodialysis in experimental group.

Section C : Association of pre interventional Quality of Life score among patients with renal insufficiency on haemodialysis and their selected demographic variables.

N=114

Sl. No.	Demographic variable	Level of quality of life		Chi square value (χ^2)	p value	Remarks
		Below Average (<50)	Above Average (>50)			
1.	Age in years					
	30- 45 years	6	20	6.732	0.80	NS
	46-60 years	18	23			
	61-75 years	24	20			

	76 years and above	1	2			
2.	Gender					
	Male	26	39	0.548	0.45	NS
	Female	23	26			
3.	Marital status					
	Unmarried	5	10	1.764	0.41	NS
	Married	34	47			
	Widow/widower	10	8			
4.	Educational qualification					
	No formal education	8	7	1.139	0.88	NS
	Primary	8	9			
	Secondary	12	17			
	Higher secondary	7	12			
	Graduation and above	14	20			
5.	Occupation					
	Government	1	4	8.867	0.0311*	S*
	Private employee	3	13			
	Self employed	27	21			
	Retired	17	28			
6.	Family income yearly					
	1-3 lakhs	24	19	4.728	0.19	NS
	4-6 lakhs	9	18			
	7-9 lakhs	7	13			
	10 lakhs and above	9	15			
7.	Time of duration since being diagnosed with renal insufficiency.					
	1-3 years	25	46	4.835	0.08	NS
	4-6 years	11	10			
	7 years and above	13	9			

8.	Have you taken any alternative therapy for renal insufficiency.					
	Yes	11	11	0.547	0.45	NS
	No	38	54			
9.	Any history of renal insufficiency in the family.					
	Yes	8	11	0.007	0.54	NS
	No	41	54			
10.	Healthy habits adopted					
	Walking	27	38	5.346	0.93	NS
	Yoga	6	3			
	Reading	1	7			
	Other	15	17			
11.	How many hours of sound sleep?					
	6 hour and below	35	33	5.785	0.055	NS
	6-7 hours	8	23			
	8 hours and above	6	9			
12.	Did you practice the earlier Breathing exercise?					
	Yes	8	8	0.374	0.54	NS
	No	41	57			

Note: *- significant (p<0.05)

The Table no. 6 shows that the significantly association was found only in the area of occupation ($\chi^2=8.886$, p 0.03). Hence, the research hypothesis stated as (H₂): Occupation is statistically associated with pre-interventional Quality of Life score and other demographic variable is not associated with pre interventional Quality of Life score among patients with renal insufficiency on hemodialysis. The association between types of renal insufficiency and presence of comorbidities with pre-interventional quality of life score was not computed as the cell value obtain was zero.

Section D: Correlation of pre-interventional Quality of Life score among patients with renal insufficiency on haemodialysis and their selected clinical variables.**Table 2: Correlation of pre-interventional Quality of Life score among patients with renal insufficiency on hemodialysis and their selected clinical variables. N=114**

Sl. No.	Clinical Variables	Pre-interventional Quality of life	
		r value	p value
1.	Systolic Blood Pressure	-0.005	0.956
2.	Diastolic Blood Pressure	-0.16	0.865
3.	Pulse Rate	0.03	0.975
4.	Respiratory Rate	0.100	0.291
5.	Oxygen Saturation	0.123	0.191

The above table no. depicts that there is a weak negative correlation between Systolic Blood Pressure ($r=-0.005$) and diastolic Blood Pressure (-0.016) with Quality-of-Life score (pre interventional) whereas pulse rate ($r=0.03$), respiratory rate ($r=0.100$) and Oxygen saturation ($r=0.123$) were weakly positive correlated.

Thus, H_3 was accepted and inferred as there was significant correlation of pre interventional Quality of Life score among patients with renal insufficiency on hemodialysis and their selected clinical variables.

Conclusion- The study concluded that that the Mindful breathing exercise in patients with renal insufficiency on hemodialysis improves their Quality of Life. This exercise is cost-effective and also can practice without any special trainer.

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