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EVALUATION OF HEALTH RELATED QUALITY OF LIFE IN HAEMODIALYSIS PATIENTS IN A TERTIARY CARE HOSPITAL

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ABSTRACT: Patients undergoing Haemodialysis are mostly affected with their physical and mental function. Assessing Health Related Quality Of life is mainly to challenge these conditions in patients and provide a better quality of life. An observational prospective study was conducted in the dialysis ward of a tertiary care hospital for a period of 6 months using KDQOL, consisting of 36 valid items focusing on the physical, mental component summary, burden of kidney disease, symptoms and effects of disease in daily life. A total of 99 patients of all the age and sex groups and patients on Haemodialysis were included. Comparing all the aspects of HRQOL in patients undergoing Haemodialysis, majority (N=59) were illiterate, maximum of patients of age group (40-49) were mostly affected, males being more. The sleep pattern, as observed, a maximum of patients had either lack of sleep or average sleep, the scores being 5, 6, and 7 for a count of 10. Higher number of patients were affected with hypertension (N=48). When comparing the physical, emotional and mental health, the mean scores being 24.14, 66.75 and 48.64 simultaneously. In this study, a negative impact on the HRQOL of patients in Haemodialysis was observed.

INTRODUCTION: Haemodialysis is a highly successful renal replacement therapy; with its complementary treatments peritoneal dialysis and renal transplantation, has revolutionized the outlook for patients with end-stage renal failure (ESRF) over the last 40 years. Dialysis is expensive, and access to the treatment and its quality are under constant economic scrutiny¹.

End-stage renal failure (ESRF) occurs when nephrons are lost to the extent that the retention of non-volatile, metabolic waste products, salt, and water is potentially fatal.

ESRF is less common than such disorders as ischaemic heart disease, malignant disorders, and chronic obstructive airways disease, but when it occurs it leads rapidly to death unless renal replacement therapy (RRT) is started. The treatments available are life-long, complex, and costly².

Renal failure develops gradually in most cases and the end-stage is reached when the glomerular filtration rate (GFR) approaches 5 mL/min. Even before that stage, there are effects on metabolic processes—patients become anorexic and lose body mass; salt, water, and phosphate are retained; production of renal hormones (renin, calcitriol, erythropoietin) is perturbed; and production of endogenous vasodilator compounds such as nitric oxide and kinins is reduced³. Treatment must also restore the hormones that are not produced and provide as good a quality of life as possible for each patient⁴.

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The haemodialysis population is increasing rapidly in developed countries; elderly and dependent patients with coexistent disease are the most rapidly increasing group. Haemodiafiltration combines diffusive and convective clearance and has theoretical advantages, enabling solute removal over a wide range of molecular weights. The HEMO study has recently provided support for current adequacy targets for three times-weekly treatments. Despite recent advances, mortality on dialysis remains high⁵.

Principles of haemodialysis:

- Diffusive and convective mass transfer occurs across a semi permeable membrane, allowing changes in the composition of body fluids.
- Diffusive transport depends on solute molecular weight and charge, trans membrane concentration gradients, blood and dialysis fluid flow rates and membrane characteristics. Small molecules (e.g. urea) are cleared well.
- Convection is the bulk movement of solvent and dissolved solute (by solvent drag) across the membrane, down a trans membrane hydrostatic pressure gradient. Convection improves the clearance of poorly diffusible middle molecules (e.g. β_2 -microglobulin).
- Ultra filtration is convective movement of water across the membrane⁶.

Haemodialysis is a complex life-support system, of proven efficacy. It is expensive to operate, and there are substantial extra costs for medical and nursing care, particularly for the more frail patients. To keep alive by technical means a patient who is not deriving subjective benefit from the procedure cannot be justifiable. The moral dilemma is worse when public funds are expended. The quality of life that a patient achieves must be a key yardstick of the value of haemodialysis. To obtain and maintain the best available quality of life on haemodialysis, careful counselling of patients and their relatives is needed. They must be encouraged to accept discipline in eating and fluid intake and to make

adjustments that permit them to be socially and physically active within their natural potential. These steps are necessary complements to efficient haemodialysis if metabolic health and well-being are to be restored⁷.

The objective of the present study is to assess the quality of life and Health related quality of life, to determine the factors influencing Quality of life and Health related quality of life in Haemodialysis patients, to evaluate Psychological factors depression anxiety, to evaluate influence on co morbid conditions on Quality of life and Health related quality of life in haemodialysis patients.

MATERIALS AND METHODS:

Patient information form/Patient Data collection form:

This form was specially prepared for this study by the authors. It consisted of five parts. Part one included questions about patient sociodemographic information: age, marital status, educational status, job, settlement, monthly income. Part two included questions about renal and other organic diseases, such as duration of renal illness and dialysis and co morbid systemic disease for all three groups of patients; type of peritoneal dialysis and existence and duration of previous hemodialysis, for peritoneal dialysis patients; and type of transplantation donor, existence, and duration of previous hemodialysis and peritoneal dialysis and duration of post transplantation time, for transplantation patients. Part three included questions to evaluate treatment adherence, such as habits that may worsen health like smoking or alcohol use, medication and diet nonadherence, missing hemodialysis sessions. Part four included a question about patient knowledge about their illness processes and treatments. Part five included a question about patient social support

Study Design:

Descriptive prospective, crosssectional study.

Study Site:

The study was conducted in Narayana Hrudayalaya hospital, super speciality tertiary care teaching hospital with a capacity of 300 beds.

Study Population:

Patients on haemodialysis

Study Duration:

Study duration will be of 0-6 months (From September 2014-February 2015).

Inclusion Criteria:

The following patients are included in the study:

- All age groups
- Any sex group
- Patients with chronic kidney disease undergoing haemodialysis.
- Patients who are already on haemodialysis.

Exclusion criteria:

The following are excluded from the study:

- Pregnant women
- Patients with peritoneal Dialysis.

Study size:

- Patients with age above 18 and upto 80 years undergoing haemodialysis and the expected population size is 100 subjects

Study data collection:

A data collection form is used for collecting information's at admission on demographics, co morbidities including history of hypertension and diabetes mellitus and number of haemodialysis underwent.

- A standard questionnaire i.e., WHOQOL, KDQOL-36, is used to assess the quality of life of haemodialysis patients.

Follow up:

- Patient will be followed up at every visit till the end of study duration.

Feedback:

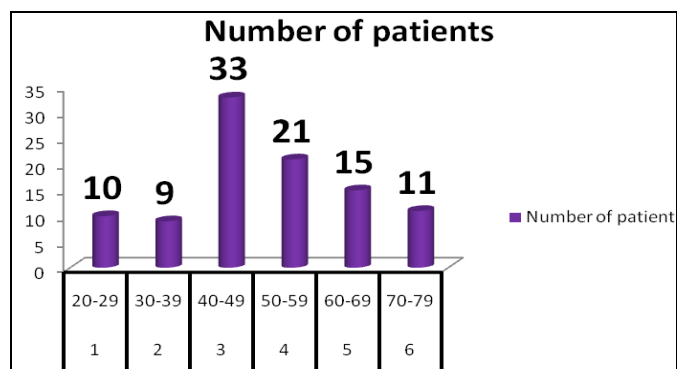
- All the patients will be given printed questionnaire meant for assessing Health related Quality of Life.

RESULTS:**TABLE: 1: REPRESENTING AGE GROUPS OF STUDY POPULATION**

S.No	Age Groups	Number of Patients(N=99)	Percentage (%)
1	20-29	10	10.10
2	30-39	9	9.09
3	40-49	33	33.33
4	50-59	21	21.21
5	60-69	15	15.15
6	70-79	11	11.11

A total number of N=99, Haemodialysis patients were enrolled in the study. Out of 99 patients majority of the patients were under the age group of 40-49(n=33) with a percentage of 33.33% and the least number of patients were between the age group 30-39(n=9) with a percentage of 9.09% and the remaining patient age groups were 20-29(n=10) with a percentage of 10.10%, 50-59(n=21) with a percentage of 21.21%, 60-69(n=15) with a percentage of 15.15%, 70-79(n=11) with a percentage of 11.11%. The below table concludes that irrespective of age groups all the population affected with renal failure, especially the young population may be due to irrational prescription of antibiotics and non steroidal anti inflammatory drugs, secondly due to chronic diseases like Diabetes Mellitus and Hypertension.

Confidence interval 95% average Mean age in men 49.31 standard deviation 13.94 followed by Average Mean age in women 49.40 and Std 13.8

**GRAPH 1: AGE WISE DISTRIBUTION OF PATIENTS:**

In a total number of patients i.e., 99 included in the study of quality of life in hemodialysis patients, the majority of the population were occupied by the males i.e., 67 and the percentage is 67.67% and the number of female patients were 32 with a

percentage of 32.32%. This concludes that males are being more affected than females.

TABLE 2: REPRESENTING GENDER WISE DISTRIBUTION OF PATIENTS:

Gender	Number of Patents	% of Patients
Males	67	67.67
Females	32	32.32

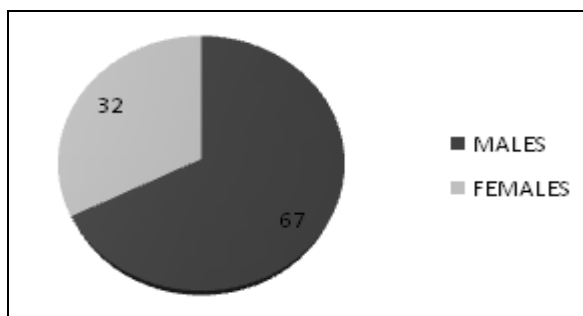
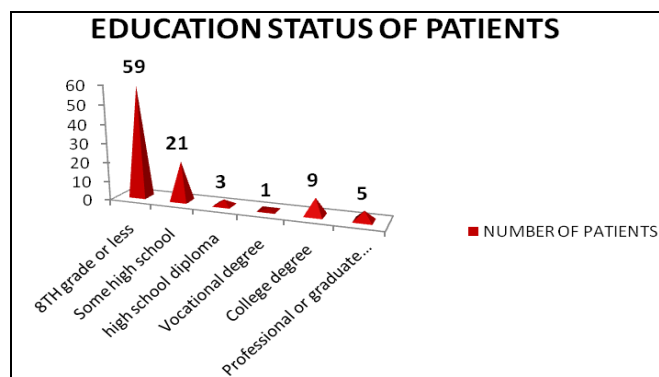


TABLE 3: EDUCATION STATUS OF PATIENTS:

S.no	Education level	Number of patients	% of patients
1	8 th grade or less	59	59.59%
2	Some high school	21	21.21%
3	high school diploma	3	3.03%
4	Vocational degree	1	1.01%
5	College degree	9	9.09%
6	Professional or graduate degree	5	5.05%

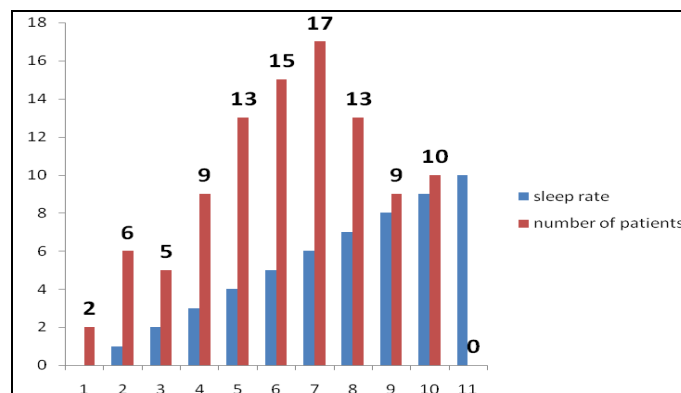
In the total number of patients enrolled in the study of quality of life in haemodialysis patients the education status of the patients is distributed as above. Majority is occupied by the patients 8th grade or less that is 59.59% (n=59) least is occupied by professional or graduate degree with percentage of 5.05%(n=5) and remaining patients educational status were high school 21.21% (n=21) vocational degree 1.01% (n=1) college degree 9.09% (n=9). The educational level is most important factor for the better understanding of the disease and hemodialysis.



Among the patients (n=99) enrolled for the study of quality of life the sleep rates on the scale of 0 to 10 were distributed as above in which maximum number of patients were occupying scale 6 that is 17.17% (n=17) and least is seen under scale 0 that is 2.02% . and remaining patients distribution of sleep patterns were , under scale 1- 6.06% (n=6) ,under scale 2- 5.05% (n=5) , under scale 3- 9.09% (n=9) , under scale 4-13.13% (n=13) under scale 5- 15.15% , scale 7-13.13%(n=13) , scale 8- 9.09% (n=9) , scale 9- 10.10% (n=10) , scale 10- 0% (n=0) . This table concludes the presence of sleep disturbances in patients undergoing hemodialysis.

TABLE 4: SLEEP PATTERN IN HEMODIALYSIS PATIENTS:

S.no	Sleep rate	Number of patients	% of patients
1	0	2	2.02%
2	1	6	6.06%
3	2	5	5.05%
4	3	9	9.09%
5	4	13	13.13%
6	5	15	15.15%
7	6	17	17.17%
8	7	13	13.13%
9	8	9	9.09%
10	9	10	10.10%
11	10	0	0



Among the patients enrolled in the study (n=99) of quality of life in haemodialysis the cause of kidney disease is varied and in most of them the cause of chronic kidney disease is due to hypertension that is occupying 48.48% (n=48) and next to this is diabetes mellitus with 21.21% (n=21) due to other conditions of the cause of kidney disease is occupying 16.16%(n=16) polycystic kidney disease and chronic glomerular nephritis is occupying 2.02% (n=2) and 10.1%(n=10) are

suffering from chronic kidney disease of others category which includes due to the use of OTC medications for pain and kidney stones.

TABLE 5: CAUSES OF KIDNEY FAILURE:

S.no	Cause of ckd	Number of patients	% of patients
1	Don't know	10	10.1%
2	Hypertension	48	48.48%
3	Diabetes mellitus	21	21.21%
4	Polycystic kidney disease	2	2.02%
5	Chronic glomerulonephritis	2	2.02%
6	Chronic pyelonephritis	0	0
7	Others	16	16.16%

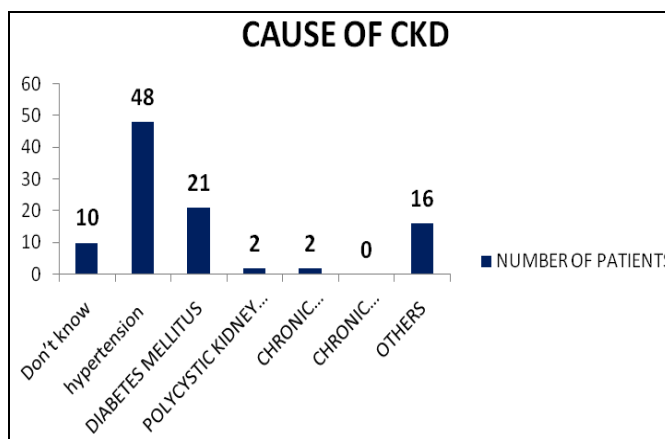
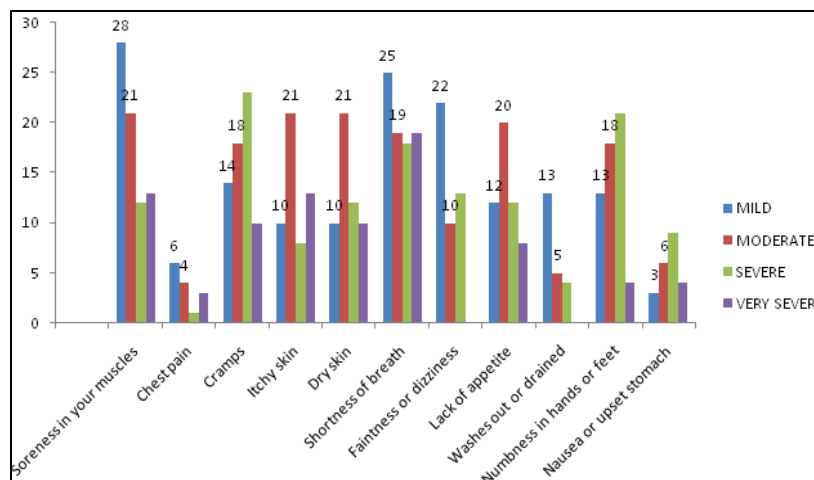


TABLE 6: COMPLICATIONS DURING AND AFTER HEMODIALYSIS:

S.no	Complications	Mild	Moderate	Severe	Very severe
1	Soreness in your muscles	28	21	12	13
2	Chest pain	6	4	1	3
3	Cramps	14	18	23	10
4	Itchy skin	10	21	8	13
5	Dry skin	10	21	12	10
6	Shortness of breath	25	19	18	19
7	Faintness or dizziness	22	10	13	0
8	Lack of appetite	12	20	12	8
9	Washes out or drained	13	5	4	0
10	Numbness in hands or feet	13	18	21	4
11	Nausea or upset stomach	3	6	9	4



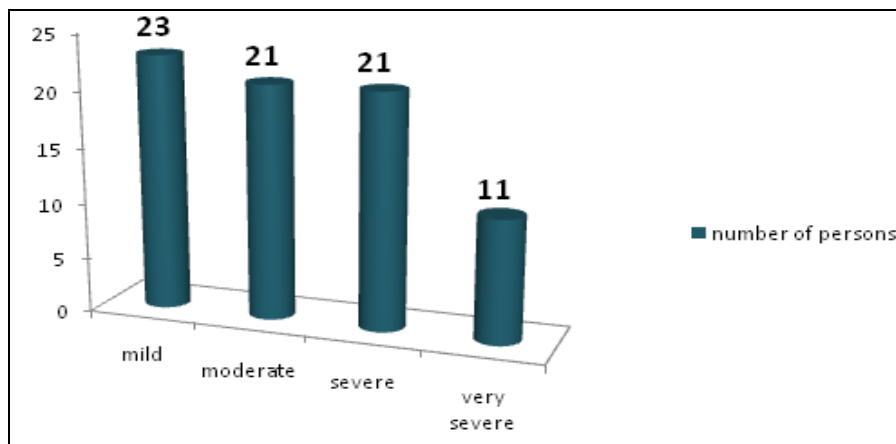
Among all the subjects who have undergone haemodialysis, the complications before and after were as follows, maximum of the patients underwent “shortness of breath” showing no much difference between number of patients under severe (n=18), moderate (n=19) and mild (n=25) conditions. Remaining of the patients were affected with soreness in muscles, cramps, numbness in feet at a higher number. Least number of patients were effected with chest pain and nausea or stomach upset.

Among the total number of patients enrolled for the study, most of them have certain comorbid conditions, in which hypertension stands first with total number of patients 56 in which 36 are males and 20 are females. Next to this is diabetes mellitus in which they are total of 24 patients in which 18 are males and 6 are females and 9 patients of 99 patients are having both diabetes and hypertension as comorbid conditions, in which 3 are females and 6 are males, polycystic kidney disease is seen in 2 members and both of them are males and chronic

glomerulonephritis is seen in 2 members and both of them are females. There are no patients found in our study with chronic pyelonephritis as comorbid condition.

TABLE 7: CO MORBIDITIES OF PATIENTS ALONG WITH CHRONIC KIDNEY DISEASE:

S.no	Type of comorbidities	Number of males	Number of females	Total number
01	Hypertension	36	20	56
02	Diabetes mellitus	18	6	24
03	Polycystic kidney disease	02	0	02
04	Chronic glomerulonephritis	0	02	02
05	Chronic pyelonephritis	0	0	0
06	HTN+DM	06	03	09

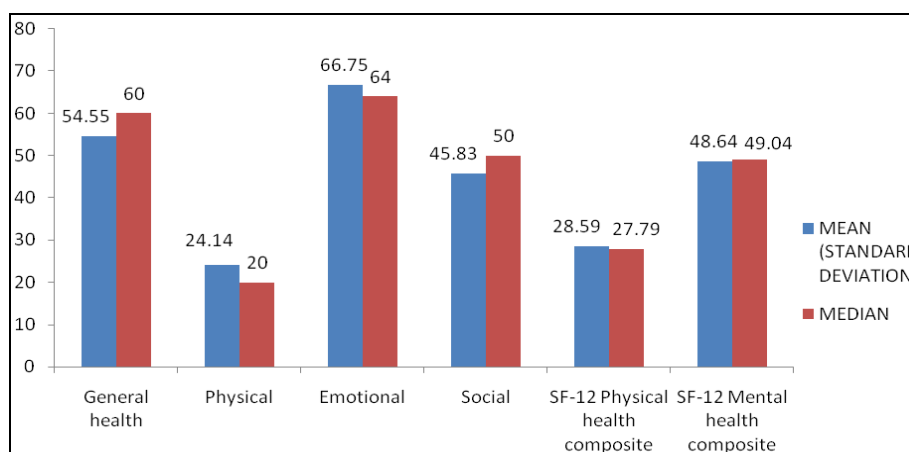


Hrql Scores of Hemodialysis Patients:

The most health related quality of life score of the study population was emotional factors of haemodialysis patient with a mean and standard deviation of 66.75+17.63, followed by general health issues with a mean and standard deviation of

54.55+18.25. The other scores of the health related quality life in this study population were includes physical health/activities with a mean and standard deviation of 24.14+15 the social determinats of quality of life was45.83+22.73. And mental health consisting of 48.06+10.5.

	Mean (standard deviation)	Median
General health	54.55 (18.25)	60.00
Physical	24.14 (15)	20
Emotional	66.75 (17.63)	64
Social	45.83 (22.73)	50
SF-12 Physical health composite	28.59 (8.22)	27.79
SF-12 Mental health composite	48.64 (10.05)	49.04



DISCUSSIONS: As per the U.S. Centers for Disease Control and Prevention, health-related quality of life is the impact of a chronic disease and its treatment on patients' perceptions of their own physical and mental function. Among people on dialysis, HRQOL scores are both a critical outcome and a predictor of hospitalization and death⁸.

Assessing health-related quality of life (HRQOL) can provide information on the types and degrees of burdens that afflict patients with chronic medical conditions, including end-stage renal disease (ESRD). Several studies have shown important international differences among ESRD patients treated with hemodialysis, but no studies have compared these patients' HRQOL. Our goal was to document international differences in HRQOL among dialysis patients and to identify possible explanations of those differences⁹.

In the present study the statistical analysis in KDQOL indicates that the means are less than the standard deviations which shows impact on the quality of life. This indicates the quality of life of the patients in the present study was below average according to the guidelines of KDQOL SF-36 administered.

The finding that gender did not show any statistically significant relationship with the total scores of SF-36 in the haemodialysis sample was consistent with findings from a similar US-based study done by Kalantar-Zadeh et al. (2001) and included a total of 339 community haemodialysis patients from seven haemodialysis units in Los Angeles South/East Bay area. Other studies (Covic et al., 2004; Kutner et al., 2005; Morsch et al., 2006) found that male dialysis patients had higher SF-36 scores¹⁰. Previous studies attributed these differences to biological factors and biases in the provision of care according to gender (Mustard, Kuafert, & Kozyrskyj, 1998) or to potential differences in clinicians' attitudes toward female patients (Safran, Rogers, Tarlov, McHorney, & Ware, 1997). Similar to the above study, study contains sample of 67.67% of men and mean age was 49.31 & standard deviation 13.94 followed by 32.32% women with a mean age in women 49.40 and Standard deviation was 13.86%¹¹.

Findings from this study did not yield significant relationship between education level and HRQOL Index scores in both the haemodialysis. However, haemodialysis patients who attended primary and secondary schools and tertiary education scored slightly significant higher scores than those who did not attend school on the SF-36 tool. These results compares with earlier studies where higher educational levels are correlated with a better HRQOL (Kao et al., 2009; Manns et al., 2003)¹².

Other studies went further, to suggest that higher levels of education positively promote healthy behaviours, and highly educated dialysis patients may volunteer to take some responsibilities of their own health and learn some strategies to cope with their disease and its symptoms, resulting in better HRQOL (Cruz et al., 2011). The differences in the findings between the two tools could be related to the design and structure of the questions in both tools¹³. The HRQOL Index tool has specific questions that ask the participants about their level of satisfaction and importance of their educational achievement, whereas the SF-36 does not have any direct questions related to the level of education. In our study the total number of patients enrolled in the study of quality of life in haemodialysis patients the education status of the patients is distributed as above. Majority is occupied by the patients 8th grade or less that is 59.59% (n=59) least is occupied by professional or graduate degree with percentage of 5.05% (n=5) and remaining patients educational status were high school 21.21% (n=21) vocational degree 1.01% (n=1) college degree 9.09% (n=9). The educational level is most important factor for the better understanding of the disease and hemodialysis

The finding that age was not statistically correlated SF-36 or HRQOL Index scores in the haemodialysis sample is not consistent with earlier findings. Bohlke et al. (2008) found that higher SF-36 scores were associated with younger age¹⁴. On the other hand, Valderrábano, Jofre and López-Gómez (2001) reported that older patients were more satisfied with their life on dialysis and accept their limitations better than younger patients. Similarly and in a study using HQOL Index, Greene (2005) found that some of the HRQOL Index scores increased as age increased¹⁵. This

again suggests that older chronically ill patients tend to exhibit a greater level of comfort with their health and social status. A possible explanation for the positive correlation between age and both SF-36 and HRQOL Index scores is that as persons grow older they tend to achieve what they want in life, such as owning a house, having a well-established job, more financial security and family. In contrast, younger persons tend to be struggling with getting their lives together and encounter more stressors.

A total number of N=99, Haemodialysis patients were enrolled in the study. Out of 99 patients majority of the patients were under the age group of 40-49(n=33) with a percentage of 33.33% and the least number of patients were between the age group 30-39(n=9) with a percentage of 9.09% and the remaining patient age groups were 20-29(n=10) with a percentage of 10.10%, 50-59(n=21) with a percentage of 21.21%, 60-69(n=15) with a percentage of 15.15%, 70-79(n=11) with a percentage of 11.11%. The below table concludes that irrespective of age groups all the population affected with renal failure, especially the young population may be due to irrational prescription of antibiotics and non steroidal anti inflammatory drugs, secondly due to chronic diseases like Diabetes Mellitus and Hypertension.

Although the observed association between insomnia, female sex and depression is well known to apply to general population samples and is not specific to haemodialysis patients, the results of the present study indicate that insomnia in haemodialysis patients may be more strongly associated with depression and, consequently, with women in their 50s than any other clinical or biochemical factor reported in the literature to be important for the development of sleep problems in this population. Similar results were reported in two other studies by Iliescu et al. In the first study, quality of sleep was measured using the Pittsburgh Sleep Quality Index (PSQI); 63 (71%) of the 89 HP were poor sleepers (global PSQI N5) and had a higher prevalence of depression, lower haemoglobin and lower health-related QoL in all SF-36 domains¹⁶. In the second study, quality of sleep was measured again using the PSQI in 120 ESRD patients. Sixty-three subjects (63%) had

'poor sleep' defined as a global PSQI score N5, and history of depression was the only independent predictor of 'poor sleep'¹⁷. Unfortunately, similarly to the aforementioned studies, our study design does not allow to come to a conclusion regarding the causal relationship of dialysis person the development of depression and insomnia, which is a limitation of the present study.

Whatever the case, it is important to emphasize that unrecognized depression may compromise the patients' quality of life and may cause sleep disorders which contribute to an increased mortality risk in haemodialysis patients. Therefore, incorporating a standard assessment and eventually treatment of depressive symptoms into the care provided to haemodialysis patients might improve psychological well-being, insomnia and quality of life, and, consequently, reduce mortality risk in this population.

In similar to above study among the patients (n=99) enrolled for the study of quality of life the sleep rates on the scale of 0 to 10 were distributed as above in which maximum number of patients were occupying scale 6 that is 17.17% (n=17) and least is seen under scale 0 that is 2.02%. and remaining patients distribution of sleep patterns were, under scale 1- 6.06% (n=6), under scale 2- 5.05% (n=5), under scale 3- 9.09% (n=9), under scale 4-13.13% (n=13) under scale 5-15.15%, scale 7- 13.13% (n=13), scale 8- 9.09% (n=9), scale 9- 10.10% (n=10), scale 10- 0% (n=0). This table concludes the presence of sleep disturbances in patients undergoing hemodialysis.

The health related quality of life also influenced by emotional, social and psychological disturbances. In our study similar to the most of the previous studies, most health related quality of life score of the study population was emotional factors of haemodialysis patient with a mean and standard deviation of 66.75+17.63, followed by general health issues with a mean and standard deviation of 54.55+18.25. The other scores of the health related quality life in this study population were includes physical health/activities with a mean and standard deviation of 24.14+15 the social determinants of quality of life was 45.83+22.73. And mental health consisting of 48.06+10.5.

The co-morbid conditions also profound effects on quality of life including the complications of haemodialysis method. Quality of life indicator scores were compared, grouping the patients by the Friedman co-morbidity index into three groups¹⁸.

A strong relation- ship was found between co-morbidity and the adjusted scores on all indicators used, showing patients with a higher co-morbidity index as having a lower quality of life in all cases. Among the total number of patients enrolled for the study, most of them have certain comorbid conditions, in which hypertension stands first with total number of patients 56 in which 36 are males and 20 are females. Next to this is diabetes mellitus in which they are total of 24 patients in which 18 are males and 6 are females, and 9 patients of 99 patients are having both diabetes and hypertension as comorbid conditions, in which 3 are females and 6 are males, polycystic kidney disease is seen in 2 members and both of them are males and chronic glomerulonephritis is seen in 2 members and both of them are females.

There are no patients found in our study with chronic pyelonephritis as comorbid condition. Among the patients enrolled in the study (n=99) of quality of life in haemodialysis the cause of kidney disease is varied and in most of them the cause of chronic kidney disease is due to hypertension that is occupying 48.48% (n=48) and next to this is diabetes mellitus with 21.21% (n=21) due to other conditions of the cause of kidney disease is occupying 16.16% (n=16) polysystic kidney disease and chronic glomerular nephritis is occupying 2.02% (n=2) and 10.1%(n=10) are suffering from chronic kidney disease of others category which includes due to the use of OTC medications for pain and kidney stones.

It is known, however, that the subjective assessment of HRQOL is multifactorial, and therefore the progression of renal dysfunction may not be the only determinant in its deterioration¹⁹. In our study, more sociodemographic factors (age, ethnicity, gender, professional activity, education, income) were associated with decreased HRQOL than physical factors. Added to this, it is possible that subjective factors such as adaptation to disease and treatment, satisfaction with the medical staff

and social support, among others, may interfere directly in the assessment of HRQOL. These factors also influence the assessment of HRQOL. Some limitations of the present study are the relatively small sample size. The cross-sectional design of the study only permitted us to determine associations between variables and not causal relationships. Thus, longitudinal studies that take into account qualitative assessments should be conducted to seek a better understanding of the influence of the progression of haemodialysis on HRQOL.

CONCLUSION: In conclusion, in this study, we observed a negative impact on the HQOL of patients in the haemodialysis, although we were not able to detect a significant association between the stages of the disease and the SF-36 domains. However, it was possible to establish sociodemographic, clinical and laboratory risk factors for a worse HQOL in this population (educational level, gender, individual income, professional activity, age, diabetes and comorbidities). Although several of the variables that were associated with alterations in the HRQOL cannot be changed (e.g., age, gender, ethnicity), efforts should be made to decrease the effects of those factors that can be changed, such as adequately managing the comorbidities. The health professionals responsible for the care provided to this population should ideally be familiar with and trained in the application of the HRQOL assessment tools, which may be valuable in the global assistance of these patients, even in the earlier stages of disease, and allow timely health care interventions in the course of the disease.

The instruments used to assess quality of life in this study have amply proved their efficiency and sensitivity for haemodialysis patients. The results found here contribute to confirming their usefulness with haemodialysis patients, since they have been able to discriminate between groups of patients regarding age, co-morbidity and as they exist in present clinical practice. Random, long-term studies are needed to determine if the variations in dialysis technique (type of dialyser membrane, dialysis solution, haemodiafiltration or dialysis duration) can influence patients quality of life. Finally, efforts to improve the quality of life in

patients on dialysis must reach beyond strictly nephrological care.

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