Original Article

# Depression and Quality of Life among Patients on Maintenance Haemodialysis

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**ABSTRACT**

**Background and Aim:** Chronic renal failure is a debilitating disorder effecting 100-200 per million people in India. Its chronic, progressive nature imposes healthcare burden taking toll on psychological, social, physical well being of an individual. Assessment of quality of life (QOL) and its correlation with depression can help in improvement of QOL via amelioration of depression among these patients. The aim of study was to assess the socio-demographic data, depression and the relationship between depression and quality of life in chronic renal failure (CRF) patients on haemodialysis.

**Materials and Methods:** A cross-sectional study enrolling 31 CRF patients (age group18-65 years) who are on maintenance haemodialysis for more than 6 months were administered Mini Mental Status Examination (MMSE) to rule out organicity, Hamilton Depression Rating Scale (HAMD) and World Health Organisation Quality of Life Brief (WHOQOLBREF). Data was analysed using Statistical Product and Service Solutions (SPSS) software, version19. Statistical measures obtained included descriptive (percentages, proportions, mean and standard deviation), tests of significance (Fischer's exact test) and Pearson's correlation coefficient.

**Results:** A total of 31 patients consented and participated in the study among whom, 16(51.6%) obtained scores higher than 7 on the HAMD scale while the remaining 15 (48.4%) were not depressed. There were no significant differences across age (P0.78), sex (P0.609), marital status (P0.6), family type (P0.886) and duration of dialysis(P0.623) across the depressed and non-depressed groups. There was a significant strong negative correlation-ship between the HAMD scores and the physical (r=-0.651, P0.001) and psychological (r=-0.684, P0.001) domains whereas the social (r=-0.521, P0.003) and environmental (r=-0.542, P0.002) domains exhibited a moderate negative correlation-ship.

**Conclusion:** To improve the quality of life in CRF patients on haemodialysis, it is important to alleviate depression among them.

**Keywords:** Haemodialysis, depression, quality of life

## INTRODUCTION

Quality of life among patients on maintenance haemodialysis is impacted owing to a myriad variety of factors including the chronic nature of the condition, the healthcare costs involved, changes in diet leading to malnutrition, the limitations on lifestyle imposed, associated co-morbidities, regular need of hospitalization and invasive procedures involved.[1,2,3] In addition, patients on haemodialysis have psychological impairments, the most common of which is depression which further hinders their treatment seeking behaviour, inflates treatment costs, negatively impacts patient outcome and affects physical health, mental health and long term survival. [4]

The incidence of chronic renal failure requiring maintenance haemodialysis in developing countries is 150 per million people. In India, the number is estimated to be 100-220 per million people, many of whom cannot undergo renal transplantation due to socioeconomic limitations. [3]

The healthcare costs of maintenance haemodialysis range from Rs. 15,000 to Rs. 20,000 per month,[1] and the chronic, progressive nature of the disease imposes this healthcare burden throughout the remainder of the patient's life placing a tremendous toll on the physical, psychological, social, environmental and financial milieu of the patient. Depression is a common sequel in chronic diseases with an odds ratio of 1.5 to 4 times a higher prevalence among these patients than the general population.[5] Several studies[4, 5] have observed a similar high incidence of depression in patients on maintenance haemodialysis with a four times higher prevalence of depression in patients with end stage renal failure.

Quality of life (QOL) is a composite index of well being and is affected by four domains of life, namely physical, psychological, social relationship and environment. World Health Organization (WHO) has defined QOL as 'an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations standards and concerns.

A measurement of QOL enables us to estimate the holistic impact of the disease condition and treatment in the natural settings of the patient's daily activities and life while encompassing the physical, psychological, social and environmental components. The physical and mental well being changes can be measured over time, using tools such as the WHO QOL BREF through subjective questionnaires enabling an estimate of the impact of the changing nature of disease and management measures.

The current study measures the prevalence of depression among patients on maintenance haemodialysis, socio-demographic and patient characteristics associated with depression and their impact on quality of life. Use of standardized instruments provides quantitative score of depression and the four domains of quality of life thereby enabling a correlation to be established among depression and the domains of quality of life which can help to assess the improvement of quality of life via amelioration of depression among these patients.

## MATERIALS AND METHODS

A cross-sectional study was done enrolling 31 chronic renal failure (CRF) patients in the Department of Nephrology at Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, for a period of three months, from July 2019 to September 2019.

The patients include both males and females, between the age group of 18 to 65 years, who were on regular maintenance haemodialysis, twice a week for more than 6 months and had no previous history of any psychiatric illnesses.

The socio demographic data of all the patients were obtained and later Mini Mental Status Examination (MMSE) was administered to rule out any cognitive impairment. Depression and the quality of life were assessed using Hamilton Depression Rating Scale (HAM-D) and World Health Organization Quality of Life Brief Scale (WHOQOL-BREF) respectively.

### *Socio-demographic data*

The collected data include age, sex, level of education, occupation, type of family, religion, family annual income per head, and the duration of haemodialysis. The level of socio economic status was graded using the Kuppuswamy classification.

### *Mini mental status examination*

The Folstein Mini Mental Status Examination is a screening instrument to evaluate cognitive functioning. It contains 30 items. These items screen for orientation, immediate recall, attention and concentration naming, reading, writing, verbal repetition and copying ability. A score of 23 or less for those with high school education, 25 or more for those with higher education and 20 or less for those of advancing age generally indicate impaired cognitive status. According to Pezzoti P, et al. the accuracy of the examination was good when administered by general practitioner. [6]

### *Hamilton depression rating scale*

Hamilton Depression Rating Scale was administered to assess the symptoms of depression. Subsequently, patients were divided into two groups according to HAM-D scores: Group 1, those who had low HAM-D scores (between 0 and 7) and Group 2, those who had a high HAM-D score (over 7).

The two groups were compared in terms of their QOL scores. The scores obtained were independent of socio-demographic, medical and biochemical parameters. [7] Inter-rater reliability of HAM-D observed in an Indian setting was excellent. [8]

### *WHOQOL-BREF*

WHOQOL-BREF, a generic health-related questionnaire developed by the WHOQOL group was selected to quantify the health-related quality of life in CRF patients. The WHOQOL-BREF consists of 26 facets and provides a profile of scores on four dimensions of quality of life: physical health, psychological, social relationships and the environment. WHOQOL-BREF is available in both self-administered and interviewer-administered forms. It has been validated and has demonstrated good content validity, discriminate validity, test-retest reliability and internal consistency. [9]

## STATISTICAL ANALYSIS

Data was analysed using statistical product and service solutions (SPSS) software, version 19. Statistical measures obtained include descriptives (percentages, proportions, mean and standard deviation), tests of significance (Fischer's exact test) and Pearson's correlation coefficient.

## RESULTS

A total of 31 patients consented and participated in the study among whom, 16 (51.6%) obtained scores higher than 7 on the HAMD scale while the remaining 15 (48.4%) were not depressed.

There were no significant differences across age (P 0.78) (table1), sex (P 0.609) (table 2), marital status (P 0.6) (table 3), family type (P 0.886) and duration of dialysis (P 0.623) (table 4) across the depressed and non-depressed groups.

**Table 1- Age and Depression in patients on Haemodialysis**

| | | | Depression | | Total |
|---|---|---|---|---|---|
| | | | No | Yes | |
| Age | 20 - 29 | Count | 2 | 2 | 4 |
| | | % | 6.5% | 6.5% | 12.9% |
| | 30 - 39 | Count | 2 | 4 | 6 |
| | | % | 6.5% | 12.9% | 19.4% |
| | 40 - 49 | Count | 4 | 4 | 8 |
| | | % | 12.9% | 12.9% | 25.8% |
| | 50 - 59 | Count | 4 | 5 | 9 |
| | | % | 12.9% | 16.1% | 29.0% |
| | 60 - 69 | Count | 3 | 1 | 4 |
| | | % | 9.7% | 3.2% | 12.9% |
| Total | | Count | 15 | 16 | 31 |
| | | % | 48.4% | 51.6% | 100.0% |

**Table 2: Sex and Depression in patients on Haemodialysis**

| | | | Depression | | Total |
|---|---|---|---|---|---|
| | | | No | Yes | |
| Sex | Female | Count | 5 | 4 | 9 |
| | | % | 16.1% | 12.9% | 29.0% |
| | Male | Count | 10 | 12 | 22 |
| | | % | 32.3% | 38.7% | 71.0% |
| Total | | Count | 15 | 16 | 31 |
| | | % | 48.4% | 51.6% | 100.0% |

The mean Hamilton D scores were 18.19 + 3.746 and 4.13 + 2.2 among the depressed and non-depressed groups

**Table 3: Marital status and Depression in patients on Haemodialysis**

| | | | Depression | | Total |
|---|---|---|---|---|---|
| | | | No | Yes | |
| Marital Status | Unmarried/ other | Count | 2 | 1 | 3 |
| | | % | 6.5% | 3.2% | 9.7% |
| | Married | Count | 13 | 15 | 28 |
| | | % | 41.9% | 48.4% | 90.3% |
| Total | | Count | 15 | 16 | 31 |
| | | % | 48.4% | 51.6% | 100.0% |

**Table 4: Depression and Haemodialysis duration in months**

| | | | Depression | | Total |
|---|---|---|---|---|---|
| | | | No | Yes | |
| HD Duration in months | 1 - 12 | Count | 6 | 6 | 12 |
| | | % | 19.4% | 19.4% | 38.7% |
| | 13 - 24 | Count | 2 | 1 | 3 |
| | | % | 6.5% | 3.2% | 9.7% |
| | 25 - 36 | Count | 4 | 4 | 8 |
| | | % | 12.9% | 12.9% | 25.8% |
| | 37 - 48 | Count | 3 | 2 | 5 |
| | | % | 9.7% | 6.5% | 16.1% |
| | 49 - 60 | Count | 0 | 2 | 2 |
| | | % | 0.0% | 6.5% | 6.5% |
| | 73 - 84 | Count | 0 | 1 | 1 |
| | | % | 0.0% | 3.2% | 3.2% |
| Total | | Count | 15 | 16 | 31 |
| | | % | 48.4% | 51.6% | 100.0% |

respectively. The mean scores obtained on the WHO BREF QOL scale across the depressed and non-depressed groups on each of the domains were as follows: physical (19.69+3.005 and 25.00+3.295), psychological (14.63+2.630 and 20.53+3.314), social (9.56+1.504 and 11.00+1.464) and environmental (20.63+3.138 and 26.67+4.655) respectively (table 5).

There was a significant strong negative correlationship between the HAMD scores and the physical (r=-0.651, P=0.001) and psychological (r=-0.684, P 0.001) domains whereas the social (r=-0.521, P=0.003) and environmental (r=-0.542, P=0.002) domains exhibited a moderate negative correlationship (Table 6).

## DISCUSSION

The studies on the QOL of patients with chronic disease have increased these days. It has become an integral parameter to assess the patient satisfaction and improvement with therapy. This is very true, especially in conditions like CRF.

**Table 5: HAM D and components of WHO BREF QOL**

| Depression | | Hamilton D scores | Physical health | Psychological health | Social relation-ship | Environment |
|---|---|---|---|---|---|---|
| No | Mean | 4.13 | 25.00 | 20.53 | 11.00 | 26.67 |
| | Std. Deviation | 2.200 | 3.295 | 3.314 | 1.464 | 4.655 |
| Yes | Mean | 18.19 | 19.69 | 14.63 | 9.56 | 20.63 |
| | Std. Deviation | 3.746 | 3.005 | 2.630 | 1.504 | 3.138 |
| Total | Mean | 11.39 | 22.26 | 17.48 | 10.26 | 23.55 |
| | Std. Deviation | 7.762 | 4.107 | 4.194 | 1.632 | 4.945 |

**Table 6: Correlation between HAMD and WHO BREF QOL**

| | | Physical health | Psycho-logical health | Social rela-tionship | Environ-ment |
|---|---|---|---|---|---|
| Hamilton D scores | Pearson Correlation | -0.651** | -0.684** | -0.521** | -0.542** |
| | Sig. (2-tailed) | <0.001 | <0.001 | 0.003 | 0.002 |

Improvement in the QOL has become the major treatment goal in CRF patients because these patients might be having several other comorbidities such as hypertension, diabetes, dyslipidemia, etc., and they have to take different medications for each of these comorbidities. These may have significant adverse effects and may be associated with drug interactions. Moreover, the patients are prone to non-compliance and all these will affect the QOL of the patients.

In a previous study by CP Andrade et al (2012), patients on haemodialysis were 41.6% depressed compared to 37.3% depressed among those with CRF but not on haemodialysis.[10] Suja Abraham, et al (2012) study obtained a P value < 0.001 indicating impaired QOL in haemodialysis patients.[1]

M L Patel, et al (2012), has reported an incidence of 46.6% depression in haemodialysis patients leading to marked decrease in QOL and an incidence of 28.6% with suicidal ideas.[11]

In our study, only patients on haemodialysis were taken into consideration and an incidence of 51.6% depression was noted. There was an associated decrease in the QOL of depressed individuals as they had to depend on accompanying person for his frequent visit of twice in a week to the hospital. They also have to pay for their disturbance in daily routine and loss of income for daily labourers.

In the study, by Ambar Khaira, et al where in depression and marital adjustment scale was taken into consideration, 57.1% of CRF patients were depressed with an incidence lower in the patients living in a joint family and with good social support.[12]

In another study by B S Satwik et al (2008) a high score was obtained in the environmental and social domains compared to the psychological and physical domains of WHOQOL-BREF. The QOL score was low in patients on haemodialysis when compared to renal transplant patients.[2]

Betul Kalender et al (2007) reported the incidence of 24.1% depressed CRF patients showing a gross improvement in both depression and QOL when they were treated with the antidepressant citalopram, thereby implicating that treating depression improves QOL. [13]

In our study, there is a significant impairment in physical and psychological domains in a patient with depression and a moderate impairment in that of social and environmental domain. The QOL of non-depressed patients was comparatively better in all the four domains.

## CONCLUSION

In chronic renal failure patients the physical domain is treated by dialysis and the psychological domain can be addressed with both psychopharmacological and psychotherapeutic tools. In addition to these domains, priority should be given to educate the care giver to make the patient feel socially supported and that too in a healthy environment. Thus we shall be heading towards treating the patient in all the possible modes and improve their QOL in a much better perspective.

**CONFLICT OF INTEREST:**

The authors declared no conflict of interest.

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