Original Article

J Nepal Health Res Counc 2020 Jul-Sep;18(48): 459-65

DOI: https://doi.org/10.33314/jnhrc.v18i3.2556

Depression and Quality of Life among the Chronic Kidney Disease Patients

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ABSTRACT

Background: Depression and other mental illness are very common among chronic kidney disease and also Quality of life has been found significantly impaired in chronic kidney disease.The objective of our study is to study Depression, Quality of life and its associations in chronic kidney disease.

Methods: This was a descriptive cross-sectional study. We used convenient method of sampling for data collection. The World Health Organization Quality-of-Life 8-question scale was used for estimating quality of life and Beck Depression Inventory was used for the assessment of depression. Independent samples t-test was conducted to analysed bivariate relationship of sociodemographic factors with depression and Quality of life scores and multiple linear regression analysis was performed to determine predictors of Quality of life.

Results: The 75.5% participants found to have depression. Depression was found statistically significant across socioeconomic status (p value 0.04) and other medical comorbidities (p value 0.04). Variables found to be significantly associated with total quality of life in multiple linear regression analysis were caste (p value 0.03), socioeconomic status (p value 0.009) and depression (p value 0.001).

Conclusions: Depression and reduced quality of life is very common among chronic kidney patients. Low socioeconomic status and comorbid medical conditions were associated with depression and caste, low socioeconomic status and depression were associated with low quality of life. Screening and management of depression should be included in the routine care and it could help improving the quality of life of patients with chronic kidney disease.

Keywords: chronic kidney disease; depression; quality of life

INTRODUCTION

Chronic kidney disease (CKD) is a disease consisting of a wide spectrum of different pathophysiological processes, which is associated with abnormal renal function and a gradual degeneration of the glomerular filtration rate (GFR). [1]

Depression and other mental illness are very common among CKD patients.[2]In fact, depression has been described as the most frequent psychological problem among patients with ESRD being treated by hemodialysis.[3]

Quality of Life (QOL) is an important marker of disease burden and also can be used to assess treatment effectiveness and predict risk for adverse outcomes.[4] Evidence exists in the literature that depression is associated with decrease in quality of life in CKD patients and in fact depression has more impact on QOL than socio-demographic and clinical factors.[5] We undertook this research to study depression, quality of life and its association in chronic kidney disease.

METHODS

This was a descriptive cross-sectional study. All the patients diagnosed with chronic kidney disease under dialysis in Dhulikhel Hospital Kavre and national kidney center Lalitpur branch who were ready to participate were included in the study. Patients who were critically ill, not willing to participate were excluded from the study. We used convenient method of sampling and data collection was done in between March 2019 to May 2019. Informed consent was obtained once participants were agreed for the study. Some of the socio-demographic variables were dichotomized for better understanding and analysis. The study was initiated after receiving approval from the Institutional Review Committee

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(IRC), Kathmandu University School of Medical Sciences (KUSMS). Informed consent was obtained from all study participants.

We designed a questionnaire focusing on socio-demographic profile of patients. The questions concerned: age, marital status, occupation, education, religion, caste, socio economic status, personal history of psychiatric illness medical illness and alcohol use.Since we had more than 30 different caste we dichotomized the caste into two groups Mongolian and Non-mongolian. We used Kuppuswamy's socioeconomic status scale in context of Nepal but for further analysis we dichotomized into two groups. For quality of life assessment we use the World Health Organization Quality-of-Life 8-question scale (WHOQoL-8), it is the shorter Version of WHOQOL-BREF. Eight question has been extracted from it. There are four domains in the scale : the global subjective well-being, the physical or bodily well-being, the psychosocial well-being, and well-being or satisfaction related to the person's environmental circumstances. Two question assess the each domains of quality of life. Each question is rated From 1 to 5 and the sum total score ranges from 5-40.The higher the score the better the quality of life. WHOQOL-8 has been translated and culturally adapted among the Nepali population with an acceptable internal consistency (Cronbach's alpha 0.74) [6] and for depression we used Beck Depression Inventory, it is a 21 question scale for the assessment of Depression. Each question is rated from 0-3. BDI has been translated and validated in Nepali population. The cut off score of 16/17 for Nepali version of BDI provides sensitivity of 0.85 and specificity of 0.86.[7]

Descriptive and inferential statistics were used. The mean (±SD) of the total and domain specific QOL score were calculated. Bivariate analysis was done by comparing mean by using independent sample t test and multiple regression analysis was also done to establish specific association. The Statistical Package for Social Science software (IBM SPSS Statistics 21, Chicago, USA) was used for analysis.

RESULTS

A total of 143 patients were included in our study. The mean age of the patients was 45.8 years and among them 64% were male. Majority of them 84% were Hindu by religion and 66.7% had formal education however 70% were unemployed. The most of the participants were from urban area 65% and Mangolian 57%. More than half 60% belonged to low socioeconomic status having family income less than 10000 NPR per month and most of them 70% had comorbid medical conditions. The 75.5% participants found to have depression. Depression was evaluated across different socio-demographic variables and found statistically significant across socioeconomic status and other medical comorbidities (Table 1).

Table 1. Socio-demographic and other Variables and its association with Depression.

Variables		N=143 (%)	Depression Yes N =108 (%)	Statistics x2 df p-value
Age	<45	69 (48)	53 (49)	0.12
	45 and above	74 (52)	55 (51)	1 0.73
Sex	Male	91 (64)	65 (60)	2.2
	Female	52 (36)	43(40)	1 0.13
Religion	Hindu	117 (82)	91(84.3)	1.76
	Non Hindu	26 (18)	17(15.7)	1 0.18
Education	No formal	44 (31)	36(33.3)	1.36
	Formal	99 (69)	72(66.7)	1 0.24
Caste	Mangolian	81 (57)	60(55.5)	0.21
	Non mangolian	62 (43)	48(44.5)	1 0.64
Socio-economic status	Upper lower/ Lower	86 (60)	70(65)	4.02
	Middle (upper/ lower) and upper	57 (40)	38(35)	1 0.04
Residence	rural	50 (35)	35(32.5)	1.2 1
	urban	93 (65)	73(67.5)	0.26
Occupation	Un employed	100 (70)	78(72)	1.10 1
	Employed	43 (30)	30(28)	0.29
Comorbidities	NO	42(29.5)	27(25)	4
	Yes	101 (70.6)	81(75)	1 0.04

The association of socio-demographic variables with WHOQOL-8 first question, the overall quality of life have been presented in Table 2. Nonmangolian (Bhramin , Chettri, Madheshi) and people belongs to low socioeconomic condition had poor quality of life (p value 0.000 and 0.01) respectively.

Table 2. Association of different variables with WHOQOL-8 First Item (overall quality of life).

Variables		N=143 (%)	Poor quality of life. Yes N=55 (%)	Statistics x2 df p-value
Age	<45	69(48)	23(41.8)	2.5 2 0.28
	45 and above	74(52)	32(58.2)	
Sex	Male	91(64)	65(60)	0.89 2 0.63
	Female	52(36)	43(40)	
Religion	Hindu	117(82)	46(83.6)	1.64 2 0.43
	Non Hindu	26(18)	9(16.4)	
Education	No formal	44(31)	23(41.8)	5.12 2 0.07
	Formal	99(69)	32(58.2)	
Caste	Mongolian	81(57)	24(43.6)	15.37 2 0.000
	Non mongolian	62(43)	31(56.4)	
Socio-economic status	Upper Lower/ lower)	86(60)	37(67.3)	8.0 2 0.01
	Middle (upper/ lower and upper	57(40)	18(32.7)	
Residence	rural	50(35)	21(38.2)	0.41 2 0.81
	urban	93(65)	34(61.8)	
Occupation	Un employed	1009 (70)	38(69)	.097 2 0.61
	Employed	43(30)	17(31)	
Comorbidities	No	42(29.5)	12(21.8)	5.0 1 0.08
	Yes	101 (70.6)	43(78.2)	

Furthermore, we have evaluated association of different variables across four domains of WHOQOL-8 scale and found statistically significantly different across caste, socioeconomic status of the patients, comorbidities and depression (Table 3).

The variables found significant association with total quality of life has been presented in Table 4. These variables found to be statistically significant in multiple regression analysis (Table 5).

Table 3. QOL domains and its association with different variables.

Variables		Subjective well-being (Global)	Physical well-being	Psychosocial well-being	Environmental circumstances
Age	<45	5.1±1.9	6.0±1.8	7.1±1.8	4.7±1.4
	45 and above	5.3±1.5	5.3±1.9	7.0±1.8	4.3±1.4
	p	0.51	0.04	0.57	0.12
Sex	Male	5.3±1.7	5.6±1.9	7.0±1.8	4.5±1.2
	Female	4.9±1.7	5.8±1.9	7.0±1.8	4.5±1.5
	p	0.16	0.55	0.95	0.77
Religion	Hindu	5.2±1.7	5.6±1.9	7.2±1.7	4.4±1.3
	Non Hindu	5.1±1.9	5.9±1.9	6.4±2.1	4.6±1.6
	p	0.90	0.48	0.05	0.53
Education	No formal	4.8±1.6	5.2±1.8	7.0±2.0	4.2±1.3
	Formal	5.4±1.7	5.8±2.0	7.0±1.7	4.6±1.4
	p	0.06	0.12	0.97	0.11
Caste	Mongolian	5.3±1.6	5.9±1.7	7.2±1.8	4.8±1.4
	Non Mongolian	5.0±1.8	5.3±2.1	6.8±1.8	4.1±1.3
	p	0.24	0.12	0.16	0.01
Socioeconomic status	upperLower/lower	4.8±1.7	5.4±2.0	6.9±1.8	4.1±1.3
	Middle(upper/ lower) and upper	5.7±1.6	6.0±1.7	7.2±1.8	5.1±1.3
	p	0.002	0.05	0.26	0.000
Residence	rural	5.0±1.9	5.8±2.1	7.2±1.7	4.5±1.3
	urban	5.3±1.6	5.5±1.8	7.0±1.9	4.5±1.5
	p	0.39	0.36	0.52	0.95

Occupation	Unemployed	5.1±1.7	5.7±2.0	7.0±1.8	4.5±1.4
	Employed	5.4±1.7	5.6±1.8	7.3±2.0	4.6±1.5
	p	0.23	0.84	0.35	0.60
Comorbidities	NO	5.3±1.9	6.2±2.0	7.2±1.6	4.7±1.2
	Yes	5.1±1.6	5.4±1.8	7.0±1.9	4.4±1.5
	p	0.58	0.01	0.46	0.21
Depression	NO	6.4±1.6	6.7±1.9	6.6±2.0	5.3±1.1
	Yes	4.8±1.6	5.3±1.8	7.2±1.7	4.2±1.4
	P	0.000	0.000	0.11	0.000

Table 4. Association of significant variables with Total quality of life score.

Variables		N (%) Mean (±SD)	QoL Score		t-test
			Mean difference (95%CI)	p- value	
Caste	Mongolain	81(57)	23.3±(4.6)	1.9 (0.3-3.5)	0.02
	Non- mongolian	62(43)	21.4±(5.1)		
SES	Upper lower/lower	86(60)	21.3±(4.5)	-2.8 (-4.4-1.2)	0.000
	Middle (upper/lower)and upper	57(40)	24.2±(4.9)		
Depression	No	35 (24.5)	25.2±(5.5)	3.5 (1.7-5.3)	0.000
	Yes	108 (75.5)	21.6±(4.3)		

Table 5. multiple regression analysis of QOL score with different variables.

Variables	Unstandardized Coefficients		Standardized coefficients	t	p	95% CI	
	B	SE	Beta			lower	upper
Caste	-1.74	0.78	-0.17	-2.18	0.03	-3.32	-0.16
Socioeconomic status	2.28	0.86	0.22	2.63	0.009	0.57	4.00
Depression	-3.08	0.93	-0.27	-3.31	0.001	-4.93	-1.24

DISCUSSION

The main findings from our study was that the 75.5% of all participants found to be have depression and socio-demographic factors associated with depression were low socioeconomic status and comorbid medical condition. Different variables were associated with different domains of QOL: Caste was associated with environment circumstances, socioeconomic status was associated with subjective wellbeing, physical wellbeing and environment circumstances, comorbid medical condition was associated with physical wellbeing and depression was associated with subjective wellbeing, physical wellbeing and environmental circumstances.

Variables found to be significantly associated with total QOL in bivariate and multiple linear regression analysis were caste, socioeconomic status and depression.

In this study we found 75.5% reported depression among all studied population using BDI.

Similar findings found in the study done by Agrawal et al from Nepal, in their study they found prevalence of Depression is 78%.[8] However, another study from Nepal carried out by Manandhar found only 51.8% having Depression among chronic kidney disease patients undergoing haemodialysis. Another study with higher prevalence was Khan et al from Malaysia which showed 71.3% at base line visit to 84.9% in final visit of prospective study which is comparable with our study.[10]

Study from our neighbouring country India has found 54% of point prevalence which is lesser than our study,[11] even lesser 39.3 % prevalence rate has been found in metanalysis conducted by Palmer et al.[12] The prevalence of depression varied among different studies, it might be because of use of different tools and techniques to assess the depression. Studies have shown that self or clinician administered scales have higher prevalence rate as compared to interview-based assessment.[12]

We could not found any association of Depression with age, sex, occupation and residence. Similar findings were observed from another study from Nepal.[9] Our study and other studies have shown that Depression was associated

with low economic status and comorbidities.[13]

The socio-demographic factor found to be associated with many domains of QOL was socioeconomic status. Socioeconomic status was significantly associated with global subjective well-being, physical well-being and environmental circumstances which was similar to another study from Nepal.[14] It was interesting to note that several socio-demographic factors that seems to be associated with many domains of QOL in other studies have not been found in our study.

Socioeconomic status was also significantly associated with total QOL score in bivariate analysis, after adjustment through multivariable linear regression analysis lower family income status was found to be predictor of low QOL.This finding was in agreement with studies from Nepal,[14] India,[15] Pakistan,[16] Saudi Arabia,[17] Ireland[18] and Portugal.[19] The result was not surprising because of the several reasons, first the socioeconomic status of our country in the world, secondly no medical insurance for the population and the patients have to bear their medical expenses from their own pocket and third dialysis is one of the expensive treatment in our country.

Different studies have shown different socio-demographic factors like age, gender, education and occupation associated with QOL in CKD patients.[20,21]

In our study participants belonged to more than thirty caste, so we dichotomize caste into Mongolian and non-Mongolian. We found environment circumstances domain was associated with caste and also caste was significantly associated with total QOL score. Even after multiple regression analysis caste remained significant with total QOL. There were no sufficient literature available regarding association of ethnicity or caste with quality of life in chronic kidney disease from Nepal however one study reported ethnicity affected overall general health in chronic kidney disease.[14] Co-existing medical conditions such as diabetes, hypertension and anaemia in a chronic kidney disease are the predictors of low QOL.[22-24]

In our study we have not found any association of comorbidities with total QOL but found significant association of comorbidities with physical wellbeing domain of QOL which was in agreement with the result of Kefale B et al.[25] The possible reason for this finding may be due to many comorbid medical conditions lead to CKD and all these factors together ultimately reduces the QOL.

The high light of our study was that Depression was very common in patient with CKD and Depression was significantly associated with all domains of QOL except psychosocial wellbeing, our finding was well in line with previous studies.[26,27]

Depression was also significantly associated with total QOL even in multiple linear regression which was comparable with other studies.[28-30]

Our study had several limitations, firstly the assessment was done during the time of dialysis, and it is possible that during haemodialysis patient could experience more symptoms or felt more difficulties in daily functioning. Secondly, because of cross-sectional design of study the casual relationship between depression and QOL cannot be established. Third, the major limitation was that we did not evaluate the possible outcome of biochemical measures on QOL in CKD patients and finally in the lack of similar studies in Nepal some of the findings could not be compared.

CONCLUSIONS

The study revealed that depression was very common among patients with chronic kidney disease and study also demonstrated reduced quality of life among chronic kidney patients. Low socioeconomic status and comorbid medical conditions were associated with Depression and caste, low socioeconomic status and Depression were associated with low quality of life.Screeing and management of depression should be included in the routine care and it could help improving the quality of life of patients with CKD.

REFERENCES

1. Lysaght MJ: Maintenance dialysis population dynamics: current trends and long-term implications. J Am Soc Nephrol. 2002; 13:S37–S40. PMID: 11792760
2. Bossola M, Ciciarelli C, Conte GL, Vulpio C, Luciani G, Tazza L. Correlates of symptoms of depression and anxiety in chronic hemodialysis patients. Gen Hosp Psychiatry. 2010;32(2):125-31.DOI https://doi.org/10.1016/j.genhosppsych.2009.10.009
3. Kimmel PL: Psychosocial factors in dialysis patients. Kidney Int.2001; 59:1599–1613.
4. Hedayati SS, Grambow SC, Szczech LA, Stechuchak KM, Allen AS, Bosworth HB: .Physician-diagnosed depression as a correlate of hospitalizations in patients receiving long-term hemodialysis. Am J Kidney Dis.2005; 46:642–649. DOI https://doi.org/10.1053/j.ajkd.2005.07.002
5. Lee YJ, Kim MS, Cho S, Kim SR. Association of depression

and anxiety with reduced quality of life in patients with predialysis chronic kidney disease. Int J Clin Pract. 2013; 67(4):363-8. DOI https://doi.org/10.1111/ijcp.12020

6. Risal A. Major Disorders of the Brain in Nepal: Prevalence, Associations, Interactions and Public-Health Implications [dissertation]. Trondheim, Norway: Norwegian University of Science and Technology (NTNU); August 2017. [FullText]

7. Kohrt BA, Kunz RD, Koirala NR, Sharma VD, Nepal MK. Validation of a Nepali version of the Beck Depression Inventory. Nepalese Journal of Psychiatry. 2002;2(4):123-30.[GoogleScholar]

8. Agrawaal KK, Chhetri PK, Singh PM, Manandhar DN, Poude P, Chhetri A. Prevalence of Depression in Patients with Chronic Kidney Disease Stage 5 on Hemodialysis at a Tertiary Care Center. J Nepal Med Assoc. 2019;57(217) :172-5.PMID 31477957

9. Manadhar NR, Shakya R, Pandey B, Wagley P. Depression among patients undergoing maintenance hemodialysis at a tertiary care center in Kathmandu, Nepal. Journal of Patan Academy of Health Sciences. 2018;5(2):4-11.[FullText]

10. Khan A, Khan AH, Adnan AS, Sulaiman SAS, Mushtaq S. Prevalence and predictors of depression among hemodialysis patients: a prospective follow-up study. BMC Public Health. 2019; 19(1):531.[Springer]

11. Ahlawat R, Tiwari P, D'Cruz S. Prevalence of depression and its associated factors among patients of chronic kidney disease in a public tertiary care hospital in India: a cross-sectional study. Saudi J Kidney Dis Transplant. 2018 Sep 1;29(5):1165.[Link]

12. Palmer S, Vecchio M, Craig JC, Tonelli M, Johnson DW, Nicolucci A, et al. Prevalence of depression in chronic kidney disease: systematic review and meta-analysis of observational studies. Kidney Int. 2013;84(1):179-91. https://doi.org/10.1038/ki.2013.77

13. Nelson V, Gopalakrishnan S, Rakesh PS, Simon S. Depression among dialysis patients attending a tertiary care hospital in Kerala, Southern India. J Nephrol Soc Work. 2016; 40(2):34-7. https://www.kidney.org/sites/default/files/v40b_a4.pdf

14. Joshi U, Subedi R, Poudel P, Ghimire PR, Panta S, Sigdel MR. Assessment of quality of life in patients undergoing hemodialysis using WHOQOL-BREF questionnaire: a multicenter study. Int J Nephrol Renovasc Dis. 2017; 10:195-203.PMC 5529382

15. Manavalan M, Majumdar A, Harichandra Kumar KT, Priyamvada PS. Assessment of health-related quality of life and its determinants in patients with chronic kidney disease. Indian J Nephrol. 2017; 27(1):37–43. PMC 5255988

16. Anees M, Batool S, Imtiaz M, Ibrahim M. Socio-economic factors affecting quality of life of Hemodialysis patients and its effects on mortality.Pak J Med Sci. 2018;34(4):811–816.

17. Bayoumi M, Al Harbi A, Al Suwaida A, Al Ghonaim M, Al Wakeel J, Mishkiry A. Predictors of quality of life in hemodialysis patients. Saudi J Kidney Dis Transplant. 2013;24(2):254.[GoogleScholar]

18. Blake C., Codd MB, Cassidy A and O'Meara YM. Physical function, employment and quality of life in end-stage renal disease. J Nephrol. 2000; 13(2): p. 142–9. PMID 10858978

19. Moura A, Madureira J, Alija P, Fernandes J, Oliveira J, Lopez M, et al. Predictors of health-related quality of life perceived by end-stage renal disease patients under online hemodiafiltration. Quality of LifeResearch. 2015; 24(6): 1327–1335.[Springer]

20. Coelho-Marques FZ, Wagner MB, Figueiredo CE, Avila DO. Quality of life and sexuality in chronic dialysis female patients. Int J Impot Res. 2006; 18:539–543.[Link]

21. Patti F, Pozzilli C, Montanari E, Pappalardo A, Piazza L, Levi A. Effects of education level and employment status on HRQoL in early relapsing-remitting multiple sclerosis. Mult Scler.2007; 13:783–791.DOI https://doi.org/10.1177/1352458506073511

22. Pagels AA, Soderkvist BK, Medin C, Hylander B, Heiwe S. Health-related quality of life in different stages of chronic kidney disease and at initiation of dialysis treatment. Health Qual Life Outcomes.2012; 10:71.[Springer]

23. Finkelstein FO, Story K, Firanek C, Mendelssohn D, Barre P, Takano T, et al. Health-related quality of life and hemoglobin levels in chronic kidney disease patients. Clin J Am Soc Nephrol.2009; 4(1):33–8.DOI https://doi.org/10.2215/CJN.00630208

24. Okubo R, Kai H, Kondo M, Saito C, Yoh K, Morito N, et al. Health-related quality of life and prognosis in patients with chronic kidney disease: a 3-year follow-up study. Clin Exp Nephrol.2014; 18(5):697–703.[Springer]

25. Kefale B, Alebachew M, Tadesse Y, Engidawork E. Quality of life and its predictors among patients with chronic kidney disease:A hospital-based cross sectional study. PLoS One. 2019; 14(2):e0212184.DOI https://doi.org/10.1371/journal.pone.0212184

26. Perlman RL, Finkelstein FO, Liu L, Roys E, Kiser M, Eisele G, et al. Quality of life in chronic kidney disease (CKD): a cross-sectional analysis in the Renal Research Institute-CKD study. Am J Kidney Dis. 2005;45(4):658-66.DOI

https://doi.org/10.1053/j.ajkd.2004.12.021

27. Seidel UK, Gronewold J, Volsek M, Todica O, Kribben A, Bruck et al. Physical, cognitive and emotional factors contributing to quality of life, functional health and participation in community dwelling in chronic kidney disease. PloS One. 2014;9(3):e91176.DOI https://doi.org/10.1371/journal.pone.0091176

28. Cukor D, Fruchter Y, Ver Halen N. A preliminary investigation of depression and kidney functioning in patients with chronic kidney disease. Nephron Clin Pract. 2012;122:139–145. DOI https://doi.org/10.1159/000349940

29. Lee Y J, Kim M S, Cho S. Association of depression and anxiety with reduced quality of life in patients with predialysis chronic kidney disease. Int J Clin Pract. 2013; 67:363–368.DOI https://doi.org/10.1111/ijcp.12020

30. Porter A C,Lash J P, Xie D. Predictors and outcomes of health-related quality of life in adults with CKD. Clin J Am Soc Nephrol. 2016;11:1154–1162.DOI https://doi.org/10.2215/CJN.09990915