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RESEARCH ARTICLE

A GENDER AND EDUCATION BASED COMPARATIVE STUDY OF EXTENT OF DEPRESSION IN PATIENTS OF CHRONIC KIDNEY DISEASE ON HAEMODIALYSIS

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ABSTRACT

Chronic kidney disease (CKD) is a worldwide public health problem, both for the number of patients and cost of treatment involved. Globally, CKD is the 12th cause of death and the 17th cause of disability, respectively. For CKD patients, one of the choices to survive is haemodialysis . End Stage Renal Disease (final stage of CKD) has a significant impact upon the lives of sufferers. The experience of concurrent multiple losses which include kidney function, family role, work role, sexual function, time and mobility, impact significantly on the lives of patients and it often lead to depression. In this study a sample of 100 CKD patients on haemodialysis were taken, of which 50 were male and 50 were female and the level of education was either matriculate or non-matriculate. Using Beck Depression Inventory the level of depression of the CKD patients were estimated and the difference between the groups based on gender and level of education. Conclusion: It was found that the patients of CKD on haemodialysis were suffering from depression at different level and there was a significant difference in the level of depression between the groups based on gender and level of education.

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INTRODUCTION

Chronic kidney disease (CKD), also known as chronic renal disease, is a progressive loss in kidney function over a period of months or years. CKD is a worldwide public health problem, both for the number of patients and cost of treatment involved. Globally, CKD is the 12th leading cause of death and the 17th cause of disability, respectively. CKD is mainly caused by diabetes, hypertension, and obstruction of the urinary tract, hereditary lesions, vascular disorders, and infections, side effects of poly pharmacy or specific medications and severe renal trauma. For CKD patients, one of the choices to survive is haemodialysis. The main purposes of dialysis include removal of waste products of protein metabolism, toxins and excess water from blood, establishment or maintenance of the proper level of electrolytes and acid–base balance. The experience of concurrent multiple losses which include kidney function, family role, work role, sexual function, time and mobility, impact significantly on the lives of patients (Kimmel, 2001) and it may lead to depression. The current guideline of Kidney Disease Improving Global Outcomes (KDIGO) defines CKD as "abnormalities of kidney structure or function, present for >3 months, with implications for health" (Kidney Disease: Improving Global Outcomes 2012; Levey *et al*. 2011). Recent professional guidelines classify the severity of CKD in five stages, with stage 1 being the mildest and usually causing few symptoms and stage 5 being a severe illness with poor life expectancy if untreated. Stage 5 CKD is often called end-stage kidney disease, end stage renal disease (ESRD), or end-stage kidney failure, and is largely synonymous with the now outdated terms chronic renal failure or chronic kidney failure; and usually means the patient requires renal replacement therapy, which may involve a form of dialysis, but ideally constitutes a kidney transplant. Until recently, ESRD, the most severe stage of CKD, was uniformly fatal. Only after 1943, when Willem Kolff introduced his unique invention, the haemodialysis machine, enabling purification of blood of individuals with failed kidneys, life with ESRD became possible. The scientific and technologic improvements during the second half of the 20th century led to a wide establishment of renal replacement therapy (RRT) on a routine basis as a life-sustaining option for ESRD patients. Treating ESRD however imposes a large burden on patients, the health care system, and society, including high associated costs. From a public health perspective this is a phenomenon of a shift from premature death to years lived with disability what imposes new challenges on the health system (Murray *et al*. 2012; Foley and Collins 2007). Haemodialysis is one of three renal replacement therapies (the other two being renal transplant and peritoneal dialysis).

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An alternative method for extracorporeal separation of blood components such as plasma or cells is aphaeresis. CKD has now grown into pandemic proportions. In India, it has been recently estimated that the age-adjusted incidence rate of ESRD is 229 per million population and more than 100,000 new patients enter renal replacement programs annually. The Indian CKD Registry, a voluntary reporting body of CKD patients data, initiated in June 2005, has 199 contributing centres. The database has 63,538 patients enrolled, 70% of them males and 73.6% of them have CKD stage 4 and 5. Diabetes is the cause of kidney disease in 30% of these patients. Only 20% of the ESRD registry patients are on some form of RRT. The existing registry has the limitation of being hospital-based and not accurate estimate of population data. Depression has been identified as a complicating co morbid diagnosis in a variety of medical conditions, including ESRD. Cytokine secretion is known to play an important role in the pathophysiology of depression, and levels of pro inflammatory cytokines are increased in chronic renal failure (CRF) patients. Current estimates suggest a 20 to 30% prevalence of depression that meets diagnostic criteria in this population. The extent of other psychopathology in patients with ESRD is largely unknown. Depression is characterised by both cognitive & somatic features. The somatic characteristic of depression are very similar to symptoms of uraemia such as anorexia, sleep disturbances, fatigue, gastrointestinal disorders.(1-3) Symptoms suggestive of depression include: depressed mood most of the time, loss of interest or pleasure in most of the activities for most of the time. Co-morbid depression impacts negatively on life in CKD and improved detection & intervention (pharmacological & non-pharmacological) will improves its outcomes. It is believed that having a chronic disease coupled with numerous restrictions, patients face with, during the course of the disease can cause physical as well as psychological problems. Depression is the most common psychopathological condition among patients with ESRD (Chilcot *et al*., 2008). Most patients experienced depression and Shea observed that up to 60% of them were depressed. Similar findings were reported by Retan and Lewis (1996) and Beard (1969).

Depression is the most common psychological problem in patients undergoing dialysis (Finkelstien 2000). Mental disorders may negatively affect on the quality of life in haemodialysis patients and their response to treatment. Depression is a common, but under-diagnosed and understudied problem in patients with renal disease. Researchers in the field of renal disease have often not distinguished between the diagnosis of major depression and high levels of depressive affect in studies. There are almost no data regarding the magnitude of depression in patients with chronic renal insufficiency, patients treated with peritoneal dialysis, and children with renal disease, compared with adults with end-stage renal disease treated with haemodialysis. It is believed that having a chronic disease coupled with numerous restrictions, patients face with, during the course of the disease can cause physical as well as psychological problems. Depression standing at the forefront, mental disorders (Sagduyu and Erten 1998) and depressive mood are frequently observed (Elal and Krespi 1999; Kimmel and Peterson 2005). Frequency of major depression among haemodialysis varies between 5-8.1% (Craven *et al* 1987; Hinrichsen *et al*. 1989; Smith *et al*. 1985), whereas minor depression is observed in 17.7% of the cases (Hinrichsen *et al*. 1989). The above mentioned facts and findings served as a template for the present study which was undertaken to measure the extent of Depression in patients of Chronic Kidney Disease on Haemodialysis

Hypotheses

The following hypotheses were framed for verification

- Different extent of depression will be present in CKD patients.
- Different groups of CKD patients based on gender and level of education will have different extent of depression
- There will be significant difference in the extent of depression among different groups of CKD patients based on gender and level of education.

Sample: The sample for this study consisted of 100 patients of chronic kidney disease taking haemodialysis selected on a stratified random basis from different clinics and hospitals located in Ranchi city (Capital of Jharkhand State). In the sample, there are 50 male and 50 female patients. And from each gender there are 25 matriculate and 25 non matriculate patients respectively. Patients who took any forms of renal therapy like peritoneal dialysis or conservative medications were not included in the study, only the one who took haemodialysis were taken into consideration. Only the patients who were aged between 30- 70 years were included.

Tools: Tools used in the collection of data

- Personal Data Questionnaire- This questionnaire was designed to elicit information about the subject's personal history viz. name, age, gender and education.

Beck Depression Inventory: The BDI, developed by Beck (1972), is a 21 question multiple choice self-report inventory that is widely used instruments for measuring the severity of depression. The scale evaluates key symptoms of depression including mood, pessimism, sense of failure, self-dissatisfaction, built, punishment, self-dislike, self-accusation, suicidal ideas, crying, irritability, social withdrawal, indecisiveness, body image change, work difficulty, insomnia, fatigability, loss of appetite, weight loss, somatic preoccupation, and loss of libido. Individuals are asked to rate themselves on a 0 to 3 spectrum (0=least, 3=most), with a score range of 0 to 63. Total score is a sum of all items. There are two subscales of the BDI, including a cognitive-affective subscale and a somatic performance subscale. The cognitive-affective subscale may be particularly useful for the evaluation of depression in the elderly or medically ill, and in those with substance abuse. There are three versions of the BDI the original BDI, First published in 1961 and later revised in 1971 as the BDI-IA, and the BDI-II, published in 1996.This inventory composed of 21 categories of symptoms and attitudes. Each category describes a specific behavioural manifestation of depression and consists of a graded series of 4 to 5 self-evaluative statements. The statements are ranked to reflect the range of severity of the symptom from neutral to maximum severity. Numerical values are assigned, each statement to indicate the degree of severity. Two alternative statements are presented at a given level and are assigned the same weight; those equivalent statements are labelled 'a' and

'b' for example 2a, 2b. Using the 4- point scale (low, mild, moderate and severe) to designated the intensity of depression. Severity of depression has been evaluated by using standard scoring procedure. These are as follows:

From

0 – 09 – Low level
10 – 16 – Mild Level
17 – 29 – Moderate level
30 – 63 – Severe level

The items in this inventory were primarily clinically derived. This procedure is designed to assess whether variation in response to a particular category is associated with variation in total score on the inventory. For each category, the distribution of total inventory scores for individuals selecting a particular alternative response was determined.

Procedure: 100 CKD patients were selected from different dialysis centres of Ranchi which matched in respect of the standard of treatment and service they are providing for the patients, expertise of their staffs and technicians and also the style of their maintenance .With the consent of the medical administration and the patients, appointments were fixed on scheduled times as per their convenience and all the patients underwent a detailed history taking in the form of Personal Data Questionnaire. On the appointed dates the researcher went to the specific centres and administered the test on each subgroups i.e., 25 subjects at a time. The test was administered in a single session.

RESULTS AND DISCUSSION

The extent of depression in Chronic Kidney Disorder patients: This section discusses the analysis which was derived by applying suitable statistical technique on the hypothesis and tries to establish a relationship between depression and chronic kidney disease.

Table 1.1. Extent of depression among patients of CKD

Level of depression	Frequency	Percentage
Low	42	42
Mild	16	16
Moderate	28	28
Severe	14	14
Total	100	100

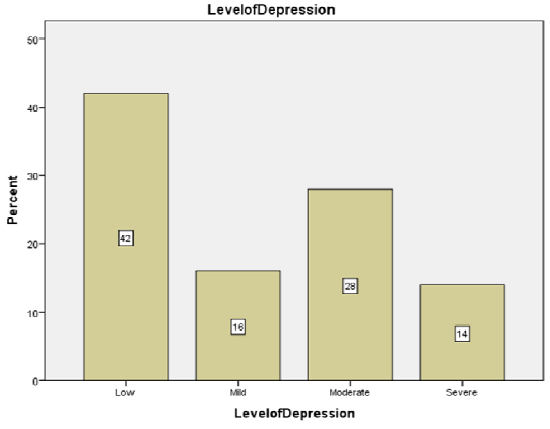

Figure 1.1. Percentage of scores of CKD patients on different levels of depression

Table .2.1. Extent of depression among matriculate male CKD patients

Level of Depression	Frequency	Percentage
Low	8	32
Mild	2	8
Moderate	11	44
Severe	4	16
Total	25	100

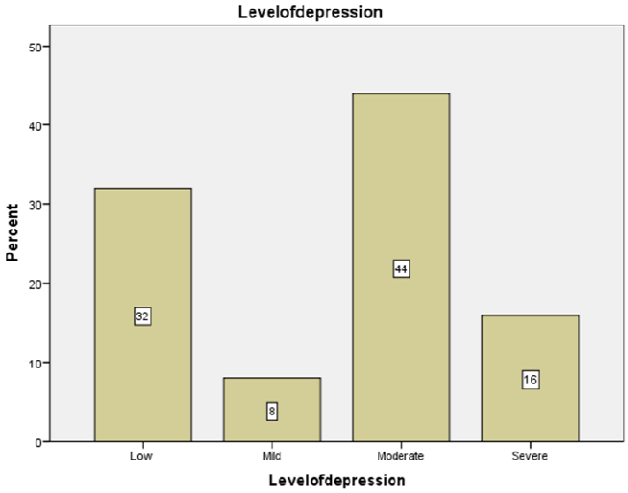

Figure 2.1. Percentage of scores of matriculate male CKD patients on different levels of depression

Table 2.2: **Extent of depression among non- matriculate male CKD patients**

Level of Depression	Frequency	Percentage
Low	20	80
Mild	3	12
Moderate	2	8
Severe	-	-
Total	25	100

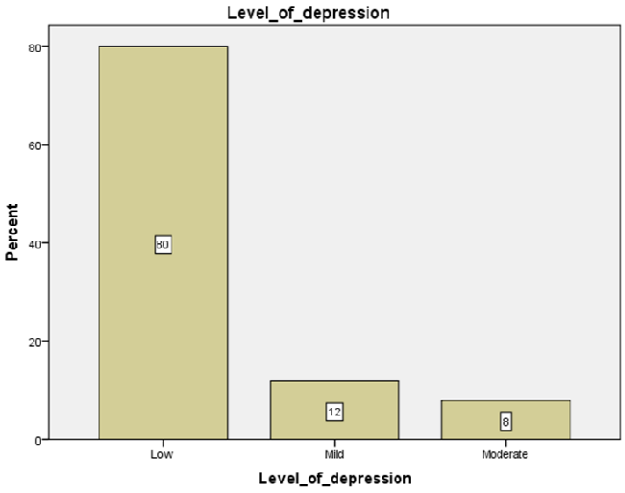

Figure 2.1. Percentage of scores of matriculate male CKD patients on different levels of depression

From the table and figure 1.1the following points have been derived:

- 42% of the sample has low level of depression
- 16 % of the sample has Mild depression
- 28 % has moderate depression
- 14 % has severe depression

Table 2.2. Extent of depression among non- matriculate male CKD patients

Level of Depression	Frequency	Percentage
Low	20	80
Mild	3	12
Moderate	2	8
Severe	-	-
Total	25	100

Table 2.3. Extent of depression among matriculate female CKD patients

Level of Depression	Frequency	Percentage
Low	2	8
Mild	3	12
Moderate	12	48
Severe	8	32
Total	25	100

Table 2.4. Extent of depression among non- matriculate female CKD Patients

Level of Depression	Frequency	Percentage
Low	12	48
Mild	8	32
Moderate	3	12
Severe	2	8
Total	25	100

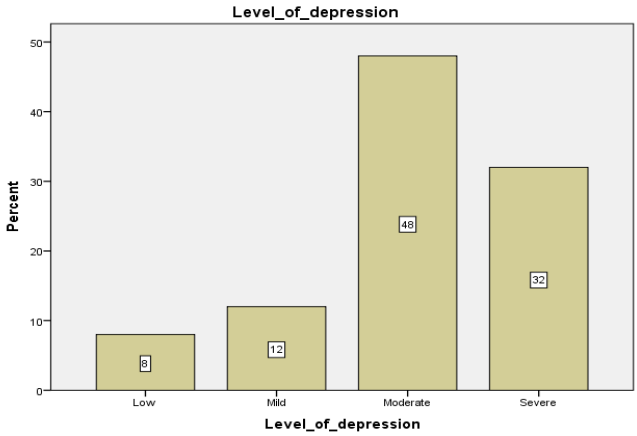

Figure 2.3. Percentage of scores of matriculate fe male CKD patients on different levels of depression

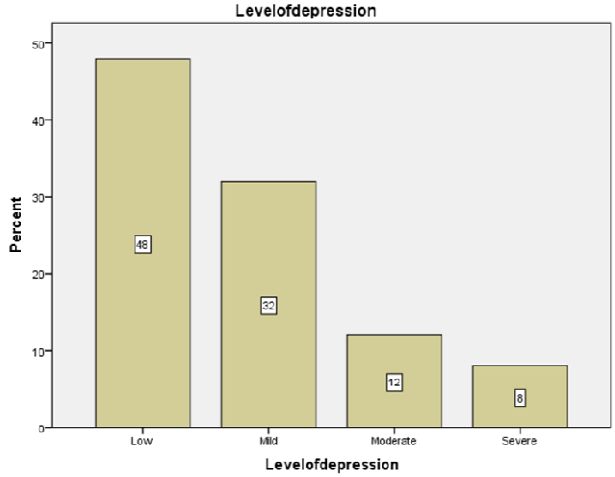

Figure 2.4. Percentage of scores of non- matriculate female CKD patients on different **levels of depression**

The results demonstrate that there is noticeably different extent of depression in the present sample of CKD patients. The following conclusions were drawn from the above discussion.

- Depression is present in different extent among the patients of chronic kidney disease taking haemodialysis.
- There are mostly patients with low level of depression.
- The second largest group is the patients with moderate level of depression.
- There are patients with mild and severe depression as well.

The extent of depression in different groups of CKD patients based on gender and level of education

The extent of depression among matriculate male patients of CKD: This section discusses the BDI scores obtained by the 25 matriculate male patients of our sample and the different extent of depression based on those scores

From the table and figure 2.1 the following points have been derived:

- 44% of matriculate male CKD patients has moderate level of depression.
- 32% of matriculate male CKD patients on has low level of depression
- 16% and 8 % of matriculate male CKD patients has severe and mild depression respectively.

The following conclusions were drawn from the above discussion.

- Maximum number of matriculate male CKD patients are moderately depressed
- The matriculate male patients with low level of depression come second in the hierarchy.
- Severely depressed and mildly depressed patients forms the third and fourth positions in the group of matriculate male patients of CKD.

The extent of depression among non matriculate male patients of CKD: This section discusses the BDI scores obtained by the 25 non- matriculate male patients of our sample and the different extent of depression based on those scores.

From the table and figure 2.2 the following points have been derived:

- 80% of non-matriculate male CKD patients have low level of depression.
- 12% of non-matriculate male CKD patients have mild level of depression
- 8 % of non-matriculate male CKD patients have moderate depression.
- There isn't any non-matriculate male CKD patient who has severe level of depression.

The following conclusions were drawn from the above discussion.

- Maximum number of non -matriculate male CKD patients has low level of depression

Table 3.1. Extent of depression among male and female CKD patients

Groups (Gender)	N	Low		Mild		Moderate		Severe		X^2
		N	%	N	%	N	%	N	%	
Male	50	28	56	5	10	13	26	4	8	9.631*
Female	50	14	28	11	22	15	30	10	20	

*Significant at 0.05 level

Table 3.2. Extent of depression among matriculate and non-matriculate CKD patients

Groups (Level of education)	N	Low		Mild		Moderate		Severe		X^2
		N	%	N	%	N	%	N	%	
Matriculate	50	10	20	5	10	23	46	12	24	32.488*
Non-matriculate	50	32	64	11	22	5	10	2	4	

**Significant at 0.01 level

- The non-matriculate male patients with mild level of depression come second in the hierarchy.
- Mildly depressed patients forms the third positions in the group of male patients of CKD
- Not a single non -matriculate male CKD patients has found to be severely depressed.

The diiferential extent of depression among matriculate female patients of CKD: This section discusses the BDI scores obtained by the 25 matriculate female patients of our sample and the different extent of depression based on those scores

From the table and figure 2.3 the following points have been derived:

- 48% of matriculate female CKD patients has moderate low level of depression.
- 32% of matriculate female CKD patients has severe level of depression.
- 12 % of matriculate female CKD patients has mild level depression.
- 8 % of matriculate female CKD patients has low level depression

The following conclusions were drawn from the above discussion.

- Maximum number of matriculate female CKD patients has low level of depression
- The matriculate female patients with severe level of depression come second in the hierarchy.
- Patients with mild and low level of depression forms the third and fourth positions in the group of matriculate female patients of CKD.

The extent of depression among non- matriculate female patients of CKD

This section discusses the BDI scores obtained by the 25 non-matriculate female patients of our sample and the different extent of depression based on those scores

From the table and figure 2.4 the following points have been derived:

- 48% of non- matriculate female CKD patients has low level of depression.
- 32% of non-matriculate female CKD has mild level of depression
- 12 % of non-matriculate female CKD patients has moderate level depression
- 8 % of non -matriculate female CKD patients has severe level depression

The following conclusions were drawn from the above discussion.

- Maximum number of non-matriculate female CKD patients has low level of depression
- The matriculate female patients with mild level of depression come second in the hierarchy.
- Patients with moderate and severe level of depression form the third and fourth positions in the group of non-matriculate female patients of CKD.

The significance of difference in the extent of depression among different groups of CKD patients based on gender and level of education: This section firstly discusses the BDI scores obtained by the male and female patients of our sample and comparing the different extent of depression based on their scores to find any significant difference. In the second part the same was repeated for the matriculate and non matriculate patients of our sample.

From the table 3.1 the following points have been derived

- 56 % male and 28 % female CKD patients have low level of depression.
- 10% male and 22 % female CKD patients have mild level of depression
- 26 % male and 30 % female CKD patients have moderate level depression.
- 8 % male and 20 % female CKD patients have severe level depression.
- Chi square is 9.631 which is significant at 0.05 level
- The following conclusions were drawn from the above discussion
- Higher numbers of male CKD patients has low level of depression than female.
- Higher number of female CKD patients has mild level of depression than male
- Higher number of female CKD patients has moderate level of depression than male
- Higher number of female CKD patients has severe level of depression than male
- The extent of depression is significantly different among male and female CKD patients.

From the table 3.2 the following points have been derived

- 20 % matriculate and 64 % non-matriculate CKD patients has low level of depression.

- 10% matriculate and 22 % non-matriculate CKD patients has mild level of depression
- 46 % matriculate and 10 % non-matriculate CKD patients has moderate level depression
- 24 % matriculate and 4 % non-matriculate CKD patients has severe level depression
- Chi square is 32.488 which is significant at 0.01 level

The following conclusions were drawn from the above discussion

- Higher numbers of non-matriculate CKD patients has low level of depression than matriculate patients.
- Higher number of female non-matriculate patients has mild level of depression than matriculate patients
- Higher number of matriculate CKD patients has moderate level of depression than non-matriculate patients
- Higher number of matriculate CKD patients has severe level of depression than matriculate patients
- The extent of depression is significantly different among matriculate and non matriculate CKD patients.

Conclusion

The main conclusions of the present study are summarized according to the hypotheses formulated as following:-

Hypothesis 1. Different extent of depression will be present in CKD patients.

This hypothesis is accepted as CKD patients have been found to have depression in all four levels viz. low, mild, moderate and severe.

Hypothesis 2. Different groups of CKD patients based on gender and level of education will have different extent of depression.

This hypothesis is accepted as different groups of CKD patients based on gender (male/female) and level of education (matriculate/non matriculate) had different extent of depression.

Hypothesis 3. There will be significant difference in the extent of depression among different groups of CKD patients based on gender and level of education.

This hypothesis is accepted as male and female as well as matriculate and non- matriculate CKD patients' level of depression differed significantly.

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