ORIGINAL ARTICLE

Association of Depression with Anemia in Patients of End Stage Kidney Disease on Maintenance Hemodialysis Twice Weekly

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ABSTRACT

Aim: To assess the association of depression with anemia in patients of end stage kidney disease on maintenance hemodialysis twice weekly.
Methodology: It was cross-sectional study in which 232 patients were enrolled. Patients of end stage kidney disease on maintenance hemodialysis twice weekly and aged between 18-70 years were included. Anemia was identified by Hb values ≤11.0 g/dl and depression was assessed using Beck's Depression Inventory (BDI).
Results: Among 232 patients, 62.9% were males. The mean age of the patients was 47.2±11.5 years. The mean Hb level was 8.8±1.16g/dl and mean BDI score was 23.4±8.83. Anemia was prevalent among 97.8% patients. Among patients, 23.7% had mild depression, 50% had moderate depression and 16.8% patients had severe depression.
Conclusion: There was significant association between depression and anemia among patients with end stage kidney disease on maintenance hemodialysis twice weekly.
Keywords: Association, depression, anemia, end stage kidney disease, hemodialysis.

INTRODUCTION

In Pakistan, CKD incidence ranges from 12.5% to 22.6%[1]. The CKD comprises a range of the pathophysiological processes related to kidney abnormal malfunction as well as progressive decrease in GFR.[2] Patients are affected psychologically and physically caused by end-stage kidney disease. Physically related to several complications in which anemia is most common[4]. It is a reduction in Hb carried in red blood cell (RBC). In chronic kidney disease, anemia is mainly due to erythropoietin deficiency, an endocrine produced among elderly people mostly by kidneys, however, shortened RBC half-life as well as functional iron deficiency contribute to CKD anemia as well. Also, among chronic kidney disease patients, anemia is found related to enhanced cardiac output, heart failure, angina, congestive cardiac failure and left ventricular hypertrophy development, which are linked with enhanced morbidity as well as mortality[5].

Depression is much recognized psychological dilemma among patients with ESKD[6]. A significant variability is seen in researches reporting depression prevalence among patients experiencing dialysis from 10 percent to 60 percent depending upon study population demographics and evaluation tools utilized[7]. Generally, depression is linked with inadequate oral intake that can worsen anemia and undernourishment among patients on chronic dialysis. A study conducted among 68 patients with CKD on hemodialysis found that 24.1% patients had depression. Mean Beck's Depression Inventory score was found elevated among depressive patients when compared with non-depressive patients[10].

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METHODOLOGY

It was cross-sectional study in which 232 patients (dialysis unit of DHQ Gujranwala) were enrolled. Patients of ESKD on maintenance HD twice weekly and aged between 18-70 years were included in the study. Patients with other chronic debilitating diseases such as chronic liver disease, active infections, malignancies or recent trauma (both physical and mental), patients on medical treatment for psychiatric illness and patients already on antidepressants were excluded from study. Anemia was identified by Hb values, which were divided into two groups: anemia (Hb≤11g/dl) and non-anemia (Hb>11g/dl).Depression was assessed using Beck's Depression Inventory (BDI), it was translated in Urdu and Performa filled by interviewing each patients. Eventually total score of BDI was calculated against each patient. According to BDI score, depression was categorized to normal (1-10), mild (11-20), moderate (21-30) and severe (31 & above). Data collected through questionnaire was analyzed using computer software SPSS 24

RESULTS

The detail of results is given in tables 1,2,3 ,4,5,6

Table-1: Demographic characteristics

	n=	%age
Gender		
Male	146	62.9
Female	86	37.1
Total	232	100.0
Age		
18-30 years	23	9.9
31-50 years	114	49.1
51-70 years	95	41.0
Total	232	100.0
Mean±SD	47.2±11.5	

Table-2: Distribution according to vascular access

	N=	%age
AVF	180	77.6
AVG	10	4.3
CVC	7	3.0
DLC	24	10.4
LTC	11	4.7
Total	232	100.0

AVF = Arteriovenous fistula AVG = Arteriovenous graft
CVC = Central venous catheter DLC =Double lumen catheter
LTC =Long-term catheter

Table-3: Distribution according to co morbidities

	n=	**%age**
DM	4	1.7
HTN	70	30.2
HCV	3	1.3
DM, HTN	91	39.2
HTN, HCV	44	19.0
None	20	8.6
Total	232	100.0

Table-4: Distribution according to anemia

	n=	**%age**
Anemia	227	97.8
Non anemia	5	2.2
Total	232	100.0
Mean±SD	8.8±1.16	

Table-5: Distribution according to depression

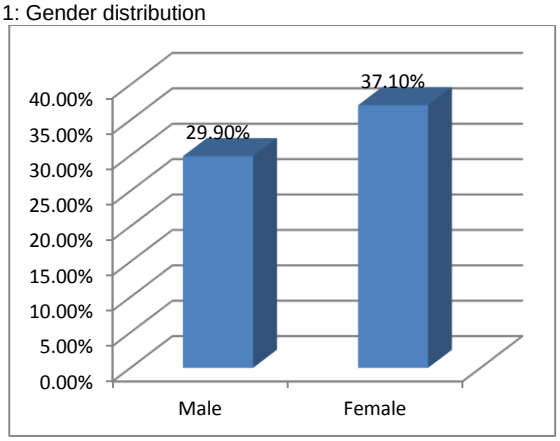
	n=	**%age**
Normal	22	9.5
Mild	55	23.7
Moderate	116	50.0
Severe	39	16.8
Total	232	100.0
Mean±SD	23.4±8.8	

Table-6: Association of depression with anemia

Depression	**Anemia**		**Total**
	Yes	**No**	
Normal	18 (7.7%)	4 (1.8%)	22 (9.5%)
Mild	55 (23.7%)	0 (0.0%)	55 (23.7%)
Moderate	115(49.6%)	1 (0.4%)	116 (50.0%)
Severe	39 (16.8%)	0 (0.0%)	39 (16.8%)
Total	227(97.8%)	5(2.2%)	232(100.0%)

P-value = 0.00

Fig 1: Gender distribution



DISCUSSION

In the study it is found that disease was more prevalent among males than females i.e., 62.9% were males and 37.1% were females. The finding of Nomani and teammates (2016) also confirmed that most of the patients (52%) were males while remaining proportion was of female patients[2].

As far as age of the patients is concerned, study revealed that mean age was 47.2±11.5 years. A recent study carried out by Khan and collaborators (2019) exhibited same results that the mean age of the patients was 47.2±17.7 years[8]. A study conducted by Teles and fellows (2014) reported similar results that mean age of the patients was 48.1±13.7 years[9] while Nomani and teammates (2016) elucidated in their study that patients mean age was 47.2±17.7 years[2].

The findings of our study showed that majority of (77.6%) patients were dialyzed through AV fistula, followed by double lumen catheter 24(10.4%), long-term catheter 11(4.7%), AV graft 10(4.3%) and central venous catheter 7(3%). But the results of a study done by Hussain and coworkers (2019) showed that majority (83.9%) of the patients were dialyzed through double lumen catheter and only 16.1% through AV fistula[1].

Study also showed co-morbidities among patients and found that 39.2% patients had DM, HTN followed by HTN (30.2%), HTN, HCV (19%), DM (1.7%) and HCV (1.3%) while 8.6% patients had no co-morbidities. A similar study performed by Teles and fellows (2014) highlighted that 77% patients had hypertension, followed by heart failure (18.7%), DM (14.5%)[9] Likewise, Baloch and associates (2018) reported in their study that 85% patients had hypertension, followed by DM (59%), heart failure (9%), HCV (8.5%) and HBV (2.8%)[3].

Anemia is mostly occurred among ESKD patients. The findings of our study indicated that majority (97.8%) of patients was anemic and only 2.2% were non-anemic while the mean Hb level of the patients was 8.8±1.2 g/dl. Virtually the findings of our study are comparable with a study done by Baloch and associates (2018) who also confirmed that most of the patients (81%) were anemic and 19% were non-anemic[3]. Likewise, findings of a study undertaken by Teles and fellows (2014) showed that anemia was prevalent among patients as the mean Hb was 9.9±1.6 g/dl[9]. But the results of a most recent study carried out by Khan and workers (2019) showed that anemia was not prevalent among ESKD patients as the mean Hb was 11.5±1.9 g/dl[8].

Among patients with ESKD, depression has been recognized most prevalent illness. Study revealed that 23.7% patients had mild depression, majority (50%) had moderate depression and 16.8% patients had severe depression while 9.5% patients had no depression. According to BDI score, the mean depression was 23.4±8.8. The results of a study carried out by Baloch and associates (2018) are better than our study results who asserted that 27% patients had mild depression and 25.8% had moderate depression while 30.3% patients had severe depression[6]. A study performed by Saeed and partners (2012) highlighted that 25% patients had mild, 36.1% moderate and 38.9% patients had severe depression[7]. But

the results of another study undertaken by Indrarini et al (2019) exhibited better results that major proportion (80%) of patients had mild depression, 18.6% had moderate depression and only 1.4% patients had severe depression[4].

When the association of depression with anemia was evaluated among patients with ESKD, study found significant association between depression and anemia (P=0.000). A similar study conducted by Saeed and partners (2012) indicated that anemia was found only co-morbidity highlighting significant association with depression among patients (P=0.023).[7] The findings of another study conducted by Teles and fellows (2014) showed signification association between depression and anemia (P=0.012)[9].

CONCLUSION

There was significant association between depression and anemia among patients with end stage kidney disease on maintenance hemodialysis twice weekly. Further studies are needed on vast level to evaluate the association between depression and anemia among patients with ESKD.

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