

The Role of Rumination Related to Depression in Hemodialysis Patient

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Abstract—Rumination known as the main factor of depressed mood and it is related to many other psychological problem. It has relationships with negative mood states, internalizing disorders and interpersonal difficulties. In hemodialysis patient, depression is one of the most and highly common complications. The objective of the study was to determine the relationship between rumination and depression among HD patients. It was a descriptive correlational study. 80 participant was taken by total sampling. They who were consecutively enrolled for treatment at the study sites were included. The ruminative thinking questionnaire was used to assess the rumination level and BDI questionnaire was used to assess the depression level. Patients with cognitive limitations were excluded. Most of the participant were men (65%), age 46-55 (31.3%), high school graduated (33.8%), married (88.8%) and do hemodialysis treatment for 7-12 months (37.5%). The data showed that 67.5 % of our participant showed moderate score of rumination and 32.5 % have high score of rumination; 36.25 % showed mood disorders (BDI>11) and 15 % showed depression (BDI>16) in various degrees (8.75%-mild depression, 3.75%-moderate depression and 2.5%-severe depression). Test result using Pearson Chi-Square was $p=0.026$ ($p<0.05$) which means there was significant relationship between rumination and depression. Rumination becomes a contributing factor for depression in haemodialysis patients. It is important for hospitals to make a policy for therapy or treatment that can be given to reduce rumination in hemodialysis patients, so the depression will decrease.

Keywords—depression, hemodialysis patient, rumination

I. INTRODUCTION

Last stage of chronic kidney diseases that we called End Stage Renal Disease (ESRD) is a very serious and long-standing health condition in which the kidney is malfunctioned and requires artificial ways of emission in

order to keep the patient alive. The most common way to deal is by performing peritoneal dialysis, normally known as hemodialysis [1]. The ESRD patients have to undertake the dialysis in order to live and survive. ESRD is a very critical and life threatening condition in which patients' kidney does not function properly and the natural functioning may lower by 10 to 15% [2].

ESRD is a life-changing illness. When a person experience ESRD it extends to all aspects of their lives. ESRD is a long term and incapacitating condition that not only disturbs one's physical and psychological wellbeing but also affects the emotional and interpersonal relationships of a person. It also disrupts patient in a way that vulnerability of their health conditions raises with severe outcomes [3]. Hemodialysis as a treatment for ESRD patients, tends to cause limitations and decrease the quality of life. Some of them even got mental disorders. Depression is one of the most and highly common complications [4]. It mainly includes depressed mood and loss of interest or pleasure in previously pleasurable activities, in addition to other symptoms, such as low concentration, disturbance of appetite and sleep, guilt, low self-esteem, hopelessness, among others. People affected by the disease have their quality of life and daily life considerably impaired, influencing the professional, school and family spheres, and may result in suicide [5].

Research by Andrade and Sesso [6] show 41.6 % people with haemodialysis experience depressive symptom. Depression is a sustained negative mood state characterized by working memory (WM) and attentional impairments. One aspect of depression is rumination, which is the repetitive thinking of one's negative mood. Rumination known as the main factor of depressed mood and it is related

to many other psychological problem. It has relationships with negative mood states, internalizing disorders and interpersonal difficulties. The widely used definition of rumination is that proposed by Nolen-Hoeksema (1991), that emphasizes “behaviors and thoughts that focus one’s attention on one’s depressive symptoms and on the implications of these symptoms” (p. 569) [7]. The objective of the study was to determine the relationship between rumination and depression among HD patients.

II. METHOD

The research conducted in an outpatient hemodialysis unit from Muhammadiyah Hospital of Gombong, a territory city of Central Java Indonesia. 80 partisipant were recruited using total sampling eligibility criteria included : age 12 or over, able and willing to provide consent, receiving prevalent hemodialysis treatment. Patients with cognitive limitations were excluded.

Depression was measured using the Beck Depression Inventory-II (BDI-II) and Rumination measured with the Ruminative Scale questionnaire. Demographic and clinical data were collected via a self-report questionnaire. Data was analysed by using the IBM Statistical Package for Social Sciences version 24.0. Pearson Chi-Square analysis used to determine the correlations between study variables i.e., depression and rumination. p-value ≤0.05 was considered significant.

III. RESULT AND DISCUSSION

The sample were 80 patients of hemodialysis. Demografic information of the participants is presented in table 1. Most of the participant were men (65%), age 46-55 (31.3%), high school graduated (33.8%), married (88.8%) and do hemodialysis treatment for 7-12 months (37.5%).

Table I. Demografic information of the participants (n = 80)

Characteristic	N	Percentage
Age		
12-16	1	1.2
17-25	5	6.2
26-35	12	15.0
35-45	13	16.2
46-55	25	31.2
56-65	14	17.5
>65	10	12.5
Sex		
Male	52	65.0
Female	28	35.0
Education Level		
Uneducated	6	7.5
Elementary School	22	27.5
Junior High School	21	26.2
Senior High School	27	33.8
University	4	5.0
Marital Status		
Married	71	88.8
Unmarried	7	8.8
Others	2	2.5
Duration for Dialysis		
0-6 months	15	18.8
7-12 months	30	37.5
1-3 years	21	26.2
4-5 years	6	7.5
>5 years	8	10.0

Table II describes the ruminative and depression score of the participant. From the table we know that 67.5 % of our participant showed moderate score of rumination and 32.5 % have high score of rumination. 36.25 % of our participant

showed mood disorders (BDI>11) and 15 % showed depression (BDI>16) in various degrees (8.75%-mild depression, 3.75%-moderate depression and 2.5%-severe depression).

TABLE II. RUMINATIVE AND DEPRESSION SCORE OF THE PARTICIPANTS (N=80)

Variable	N	Percentage
Ruminative Score		
High	26	32.5
Moderate	54	67.5

Variable	N	Percentage
Depression Score		
Normal	39	48.75
Mood Disorder	29	36.25
Mild	7	8.75
Moderate	3	3.75
Severe	2	2.5

Depression is a common psychological problem on hemodialysis patients. A research by Silva Junior et al. [8] that investigate the occurrence of depression in 148 hemodialysis patients showed depression symptoms in 101 (68.2%) cases, being mild (49.5%), moderate (41.5%) and severe (9%). 15.5% participants had an earlier depression diagnosis. It's also the same result with research by Ng, Tan, Mooppil, Newman, & Griva [9] that verify the course of depression and anxiety symptoms during 12 months of 159 hemodialysis patients showed that 39.6% of participants presented persistent symptoms of depression while 32.1% presented no or mild symptoms. Depression should be treated because it's related with quality of life (QOL) and mortality on hemodialysis patients. A research that verify the correlation between depression and quality of life on 166 hemodialysis patients showed that 13 (7.8%) patients with depression symptoms have lower scores on vitality, emotional aspects and mental health [10]. It's also have 37 % of suicidal ideas [11].

Rumination known as a mediator for depressive symptom. Rumination, or recursive self-focused thinking, has important implications for understanding the development and maintenance of depressive episodes. Rumination is associated with the worsening of negative

mood states, greater affective responding to negative material, and increased access to negative memories. Neural activity during rumination was greater for depressed than for normal participants in the amygdala, rostral anterior cingulate/medial prefrontal cortex, dorsolateral prefrontal cortex, posterior cingulate, and parahippocampus. These findings indicate that ruminative self-focus is associated with enhanced recruitment of limbic and medial and dorsolateral prefrontal regions in depression [12].

In the case of posttraumatic growth (PTG) in hemodialysis patients, research by Li [13] among 196 Chinese HD patients showed deliberate rumination moderately correlated to PTG ($r = .50, p < .001$), and intrusive rumination was lower negatively related to PTG ($r = -.26, p < .001$). Research by Zhang [14] show that rumination mediated the association between fatigue and depressive symptoms and the indirect effect was 0.19 (95% confidence interval: 0.10–0.28) on HD patients.

The correlation between rumination and depression on hemodialysis patients showed by table 3. The data analyze with pearson chi square and describe that p value = 0,026 ($p < 0,05$) means there was significant relationship between rumination and depression on HD patients.

TABEL III. CHI-SQUARE TEST RESULT

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.186E2 ^a	552	.026
Likelihood Ratio	258.834	552	1.000
Linear-by-Linear Association	8.799	1	.003
N of Valid Cases	80		

The study by Sinatra [15] with 103 hemodialysis patients and 101 healthy patients in Southern Italy confirmed high levels of depression in CKD patients, 79.3% of HD patients for less than 4 years and 64.4% for more than 4 years presented depression symptoms. Depression was influenced by perceived social support, alexithymia, and the cognitive elaboration of emotional troubles associated with the disease. Rumination was positively associated with depression in normal controls, but negatively related with depression in patients dialyzed for 4+ years. Rumination appeared as a dysfunctional consequence of emotions for normal controls, but had an adaptive function for patients dialyzed for 4+ years. That's why the more patients do haemodialysis treatment they will get adapted with the condition so the ruminative and depression scale will decrease.

IV. CONCLUSION

Rumination becomes a contributing factor for depression in haemodialysis patients. It is important for hospitals to

make a policy for therapy or treatment that can be given to reduce rumination in hemodialysis patients, so the depression will decrease.

REFERENCES

- [1] Naalweh KS, Barakat MA, Sweileh MW, Al-Jabi SW, Sweileh WM, Zyoud SH. Treatment adherence and perception in patients on maintenance hemodialysis: a cross sectional study from Palestine. *BMC Nephrol* 2017; 18(1): 178-87.
- [2] Nabolsi MM, Wardam L, Al-Halabi JO. Quality of life, depression, adherence to treatment and illness perception of patients on hemodialysis. *Int J Nurs Pract* 2015; 21(1): 1–10.
- [3] Anees M, Malik RM, Abassi T, Nasir Z, Hussain Y, Ibrahim M. Demographic factors affecting quality of life of hemodialysis patients - Lahore, Pakistan. *Pak J Med Sci* 2014; 30(5): 1123-7.
- [4] Condé, S. A. L., Fernandes, N., Santos, F. R., Chouab, A., Mota, M. M. E. P., & Bastos, M. G. (2010). Declínio cognitivo, depressão e qualidade de vida em pacientes de diferentes estágios da doença renal crônica. *Jornal Brasileiro de Nefrologia*, 32(3), 242–248. doi:10.1590/S0101-28002010000300004
- [5] World Health Organization (2017). Depression and other common mental disorders: global health estimates. Recuperado em 23 outubro, 2018, de http://www.who.int/mental_health/prevention_and_promotion/global_depression_report/

- who.int/mental_health/management/depression/prevalence_global_health_estimates/en/
- [6] Andrade, C. P., & Sesso, R. C. (2012). Depression in chronic kidney disease and hemodialysis patients. *Psychology*, 3(11), 974–978. doi:10.4236/psych.2012.311146
- [7] Healy, A., Cloutier, M., Owens, M. (2020) Rumination Decreases Cognitive Efficiency in a Working Memory Task. USFSP Student Research Symposium
- [8] Silva, G. B., Junior, Daher, E. F., Buosi, A. P. A., Lima, R. S. A., Lima, M. M., Silva, E. C., ... & Araújo, S. M. H. A. (2014). Depression among patients with end-stage renal disease in hemodialysis. *Psychology, Health & Medicine*, 19(5), 547–551. doi:10.1080/13548506.2013.845303
- [9] Ng, H.J., Tan, W.J., Mooppil, N., Newman, S., Griva (2014). Prevalence and Patterns of Depression and Anxiety in Hemodialysis Patients. *British Journal of Health Psychology* Vol 2 No 2. DOI: 10.1111/bjhp.12106
- [10] Santos, P. R. (2011). Depression and quality of life of hemodialysis patients living in a poor region of Brazil. *Revista Brasileira de Psiquiatria*, 33(4), 332–337. doi:10.1590/S1516-44462011000400005
- [11] Macaron, G., Fahed, M., Matar, D., Bou-Khalil, R., Kazour, F., Nehme-Chlela, D., & Richa, S. (2014). Anxiety, depression and suicidal ideation in Lebanese patients undergoing hemodialysis. *Community Mental Health Journal*, 50(2), 235–238. doi:10.1007/s10597-013-9669-4
- [12] Cooney, R.E., Joormann, J., Eugene, F., Dennis, E., Ghotlib, I.A. (2010). Neural Correlates in Rumination in Depression. *Cognitive, Affective, & Behavioral Neuroscience* 2010, 10 (4), 470-478 doi:10.3758/CABN.10.4.470
- [13] Li, T., Liu, T., Han, J., Zhang, M., Li, Z., Zhu, Q., et al. (2018). The relationship among resilience, rumination, and post traumatic growth in haemodialysis patients in North China. *Journal of Psychology, Health and Medicine*.
- [14] Zhang, R., Jia, J., Zhang, D., Zhao, X. (2018). Association between fatigue and depressive symptoms among kidney transplantation recipients: The mediating role of rumination. *Journal of Advance Nursing*. <https://doi.org/10.1111/jan.14200>
- [15] Sinatra, M., Curci, A., de Palo, V., Monacis, L., & Tanucci, G. (2011). How dialysis patients live: a study on their depression and associated factors in Southern Italy. *Psychology*, 2(9), 969–977. doi:10.4236/psych.2011.29146