

ASSESSMENT OF DEPRESSION IN OLDER PATIENTS WITH END-STAGE KIDNEY DISEASE ON MAINTENANCE HEMODIALYSIS

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ABSTRACT

Background: Depression is one of the chronic diseases that has the potential to cause disability, increasing the burden of medical care for the elderly. Elderly patient with multiple medical conditions and multiple medications are at higher risk of depression than younger people. However, depression is not a normal part of aging. The prevalence of elderly people with chronic kidney disease on dialysis is increasing. These patients are at high risk of depression.

Methods: Cross-sectional descriptive study on 93 elderly outpatients with end-stage kidney disease (ESKD) on dialysis at the Department of Nephrology Thong Nhat Hospital, Ho Chi Minh City from December 2020 to June 2021.

Results: The prevalence of depression in elderly patients with end-stage kidney disease on maintenance hemodialysis was 43%. After multivariate regression analysis, there was a relationship between depression and stroke (OR = 4.01; 95% CI: 1.20 - 13.38; p: 0.024); cancer (OR = 13.91; 95% CI: 1.16 - 166.23; p: 0.038).

Conclusions: The prevalence of depression is high in elderly patients with end-stage kidney disease on maintenance hemodialysis and depression is independently associated with comorbidities of stroke and cancer.

Keywords: Depression; GDS-15; elderly; end-stage kidney disease on dialysis.

I. BACKGROUND

Chronic kidney disease is currently a worldwide health problem with increasing prevalence and frequency, poor prognosis and high treatment costs [1]. According to 2018 data in the US, about 37 million people (15% of the population) were diagnosed with chronic kidney disease. Chronic kidney disease is common in the elderly ≥ 65 years old, accounting for 38% [2, 3]. The prevalence of depression in the elderly population is reported to be 5%, whereas the prevalence of depression in patients with end-stage chronic renal failure on dialysis is much higher [4]. Depression in elderly patients with end-stage chronic renal failure is associated with increased rates of disability, hospitalization, and mortality [5]. In Vietnam, there have been no studies on depression in this population. Therefore, we conducted this study to investigate the rate of depression and related factors in elderly patients with end-stage kidney disease (ESKD) on dialysis.

In this study, we used the GDS-15 scale to assess depression. This is a shortened version of the GDS-30 geriatric depression scale. This scale includes 15 questions instead of 30 questions as before. Both scales have high correlation in diagnosing depression in the elderly [6]. The GDS15 scale has been translated into many languages, including Vietnamese, with high sensitivity and specificity [7].

II. MATERIAL AND METHODS

2.1. Study design

A descriptive, cross-sectional study design was conducted among 93 patients diagnosed with ESKD and on hemodialysis. The prevalence of depression among these patients and the factors that could potentially influence an individual's susceptibility to develop depressive symptoms were investigated.

2.2. Participants

Patients ≥ 60 years old diagnosed with end-stage kidney disease are undergoing dialysis at the Department of Nephrology in Thong Nhat Hospital,

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Ho Chi Minh City, from December 2020 to June 2021. The inclusion criteria were patients aged 60 years and older diagnosed with ESKD under hemodialysis. Besides, we exclude patients under 60 years with severe dementia, mental disorders, and reduced hearing and vision abilities affect the accuracy of information.

Patients were interviewed directly using the GDS-15 questionnaire to evaluate depression. In addition, the researcher will ask for additional information such as ADLs (Activities of Daily Living), IADLs (Instrumental Activities of Daily Living), nutritional status, and frailty. Depression: is a binary variable, assessed based on GDS-15. Score ≥ 6 : There is depression. In this scale, scores 6-7, 8-10 and 11-15 correspond mild, moderate and severe depression. Frailty: is a binary variable, assessed based on a scale clinical frailty score (CFS) [6].

2.4. Data analysis

Data were analyzed by SPSS Statistical software version 25.0. Descriptive statistics (median, interquartile range, frequencies, and percentages) were used to describe the quantitative

and categorical variables. Multivariate regression analysis to identify factors independently associated with depression. The difference is considered statistically significant when $p < 0.05$.

III. RESULTS

This study enrolled 93 elderly patients who met the sampling conditions during the study period. The average age is 75.3 ± 8.8 (years old), of which men account for 51.6% and women account for 48.4%. Of the 93 patients participating in the study, 40.9% decreased ADL; 84.9% decreased IADL; 43% depression according to GDS15; 47.3% malnourished according to MNA-SF.

The severity of depression based on GDS-15 is shown in Figure 1. Mild depression accounts for 10.8%, moderate depression accounts for 14% and up to 18.3% of patients have severe depression. The mean value of GDS-15 in our study with median (quartile range) is 5 (3-10).

Our study found a higher rate of frailty and malnutrition in the group of depressed patients compared to the group without depression, this difference was statistically significant with p values of 0.04 and 0.004, respectively (Table 1).

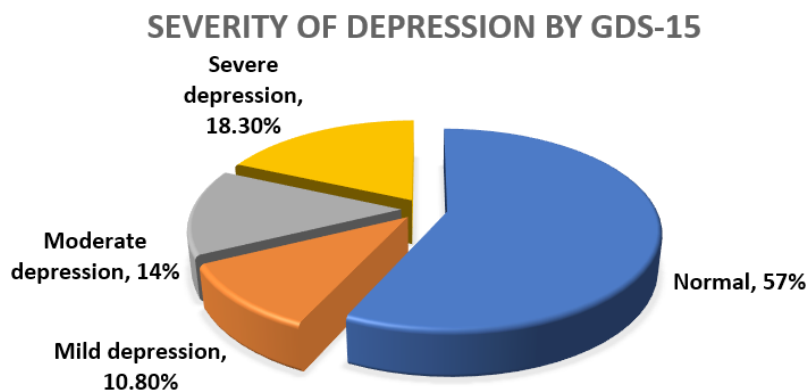


Figure 1: The severity of depression in patient ESKD on dialysis

Table 1: Distribution of socio-demographic characteristics of the participants

	Total (n=93)	Non-depression (n=53)	Depression (n=40)	P
Female	45 (48.4)	29 (54.7)	16 (40)	0.14
Age (≥ 80)	36 (38.7)	17 (18.3)	19 (47.5)	0.14
High education (a)	59 (63.4)	34 (36.6)	25 (62.5)	1.000
Live alone	3 (3.2)	0	3 (7.5)	0.076

	Total (n=93)	Non-depression (n=53)	Depression (n=40)	P
Polypharmacy (b)	68 (73.1)	39 (73.6)	29 (72.5)	1.000
High CCI (c)	88 (94.6)	50 (94.3)	38 (95)	1.000
Frailty (d)	66 (70.9)	33 (62.2)	33 (82.5)	0.04
History of falls	25 (26.9)	12 (22.6)	13 (32.5)	0.348
Malnutrition (e)	44 (47.3)	18 (33.9)	26 (65)	0.004

(a): patient with knowledge equivalent to high school level; (b): patient is being on 5 or more medicines; (c): CCI: Charlson Comorbidity Index ≥ 4 ; (d): Frailty based on CFS Canada, frailty when CFS ≥ 4 ; (e): malnutrition when MNA-SF ≤ 7

In table 2, we examined characteristics of comorbidities in elderly patients between the two subgroups of depression and non-depression. The highest rate of comorbidities is hypertension, 100%; diabetes 69.9%; heart failure 58.1%; dyslipidemia 54.8% and coronary artery disease 61.3%.

Table 2: The comorbidities in two subgroups of depression and non-depression

	Total (n=93)	Non-depression (n=53)	Depression (n=40)	P
Hypertension	93 (100)	53 (100)	40 (100)	
Chronic coronary artery disease	57 (61.3)	32 (60.4)	25 (62.5)	1.000
Stroke	26 (27.9)	10 (18.9)	16 (40)	0.035
Chronic heart failure	54 (58.1)	28 (52.8)	26 (65)	0.291
Diabetes	65 (69.9)	37 (69.8)	28 (70)	1.000
Cancer	7 (7.5)	1 (1.8)	6 (15)	0.04
Peripheral artery disease	4 (4.3)	1 (1.9)	3 (7.5)	0.311
COPD	11 (11.8)	7 (13.2)	4 (10)	0.752
Dyslipidemia	51 (54.8)	30 (56.6)	21 (52.5)	0.834
Gastritis	27 (29)	14 (26.4)	13 (32.5)	0.645

In our study, the incidence of cerebrovascular accident (40%) and the incidence of cancer (15%) in the group of depressed patients were higher than in the group of non-depressed patients. This difference was statistically significant with p values of 0.035 and 0.04, respectively (Table 2). After multivariate regression analysis, only two comorbidities include stroke and cancer, were found to be associated with depression in elderly patients with end-stage kidney disease undergoing hemodialysis (Table 3).

Table 3: Multivariate logistic regression analysis examining factors associated with depression

Variable	OR	95% CI	p
Age (≥ 80)	2.21	0.66 - 7.39	0.196
High education	0.80	0.29 - 2.21	0.680
Stroke	4.01	1.20 - 13.38	0.024

Variable	OR	95% CI	p
Diabetes	0.55	0.17 - 1.75	0.310
Cancer	13.91	1.16 - 166.23	0.038
Frailty	1.03	0.21 - 5.14	0.971
Malnutrition	3.31	0.99 - 11.06	0.052
Polypharmacy	0.59	0.19 - 1.81	0.359

IV. DISCUSSION

Our study found that the rate of depression in the elderly population with end-stage kidney disease undergoing hemodialysis was quite high at 43%. The results of this study are similar to the results of the study by author Nguyen Thanh Huan when examining the rate of depression in elderly inpatients with cardiovascular disease[8]. In some studies on the rate of depression in other countries around the world, depending on the study population and the scale used for assessment, this rate can range from 8-45% [9].

The levels of depression in elderly patients with end-stage chronic kidney disease on hemodialysis, severe depression accounted for the highest rate at 18.3%, followed by moderate depression and finally mild depression with rates of 14% and 10.8% respectively. Our study had lower results than the study of author Saeed Zeb et al., the author recorded the highest rate of severe depression in hemodialysis patients at 70%, the average rate of moderate depression was 65%, the rate of mild depression was 31% [10].

Also in this study, the author found factors related to moderate to severe depression such as marital status, employment status, low income, female gender, low education level. In our study, when analyzing univariate regression, we recorded some factors related to depression such as frailty, malnutrition, comorbidities of cerebrovascular accident and cancer. However, after multivariate analysis, we only recorded cerebrovascular accident and cancer as factors related to depression in elderly patients with end-stage chronic kidney disease. In another study in Saudi Arabia, in 2022, author LuJain Sallam and colleagues found a number of factors related to depression in patients with chronic kidney

failure undergoing dialysis 3 times/week, including female gender and low education level. In addition, the author found that common symptoms related to depression were fatigue and energy loss [11].

Our study was conducted on a small sample size, so it is necessary to expand the sample size to find out the classic factors that are really related to depression in elderly patients with end-stage chronic kidney disease undergoing hemodialysis

V. CONCLUSION

Depression in elderly people with end-stage kidney disease undergoing hemodialysis is high. Therefore, in addition to caring for the disease, medical staff also need to pay attention to assessing the psychological aspects of patients to help detect depression early in this special group. Recognize comorbidities related to depression such as stroke and cancer, these are subjects with a higher risk of depression.

Conflicts of interest

The authors declare no conflict of interest related to this research, authorship, or publication of this article.

Ethical considerations

This study was approved by the Ethics Committee in Biomedical Research of the University of Medicine and Pharmacy at Ho Chi Minh City (Approval No. 788/2020/HĐĐĐ-ĐHYD, dated November 2, 2020).

REFERENCES

1. Deng Y, Li N, Wu Y, Wang M, Yang S, Zheng Y, et al. Global, Regional, and National Burden of Diabetes-Related Chronic Kidney Disease From 1990 to 2019. *Front Endocrinol (Lausanne)*. 2021; 12: 672350.

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2. Eknoyan G, Lameire N, Eckardt K-U. KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. The International Society of Nephrology. 2013; 3(1).
3. Grams ME, Levey AS, Coresh J, Epidemiology of Kidney Disease, in Brenner & Rector's The Kidney. 2020, Elsevier. p. 616-639.
4. Kumar A, Raj D, Gupta A, Kumar A. Screening of Depression in Elderly Population Using a Geriatric Depression Scale in the Field Practice Area of Urban Health Training Centre Attached to SMS Medical College, Jaipur. Cureus. 2021; 13(6): e15859.
5. Huang F, Wang H, Wang Z, Zhang J, Du W, Jia X, et al. Is geriatric depression scale a valid instrument to screen depression in Chinese community-dwelling elderly? BMC Geriatr. 2021; 21(1): 310.
6. Sheikh JI, A YJ. Geriatric Depression Scale (GDS): Recent evidence and development of a shorter version. Clinical Gerontologist: The Journal of Aging and Mental Health 5. 1986: 165-173.
7. Đàm Văn Đức, Nguyễn Doãn Phương, Hiếu NT. Độ nhạy, độ đặc hiệu của thang đánh giá trầm cảm BECK và GDS 15 ở bệnh nhân Parkinson. Tạp chí nghiên cứu Y học. 2019; 22: 112-118.
8. Nguyen Thanh Huan, Hoang Thi Tuyet, Hai NVB. Trầm cảm ở bệnh nhân cao tuổi nội trú có bệnh tim mạch: Tỷ lệ và yếu tố liên quan. Tạp chí Y Dược Lâm Sàng 108. 2024; 19(1): 29-34.
9. Becker NB, Jesus SN, K J. Depression and sleep quality in older adults: A meta-analysis. Psychol Health Med. 2017; 22: 889-895.
10. Saeed Zeb, M. AA, Shakoor Abdul, Ghafoor Farkhanda, Shumaela K. Depression in Patients on Hemodialysis and their Caregivers. Saudi Journal of Kidney Diseases and Transplantation. 2012; 23(5): 946-952.
11. Sallam L, Alsharif F, Abaalalaa S, Alakeely R, Abdullah Z, Alkhamis Z, et al. Prevalence of depression in patients with end-stage renal disease undergoing hemodialysis in Saudi Arabia: A cross-sectional study. Belitung Nurs J. 2022; 8(4): 296-303.