ORIGINAL ARTICLE

DEPRESSION AMONG OLD ADULTS IN UAE: A CROSS SECTIONAL STUDY

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ABSTRACT

In the UAE, limited data is available on depression among older adults, which is an important public health issue. This is a cross-sectional study that included 410 old adults (60 years and above), both genders, from any nationality, attending healthcare facilities in Ajman, Sharjah, and Centers attached to Civil Society Organizations in Dubai, accepting to sign an Informed consent form. Those who could not communicate were excluded. An interviewer-administered questionnaire was used that included two standardized questionnaires: Geriatric Depression Scale-30 (to assess the depressive symptoms) and WHOQoL-BREF (to assess the impact of depression on Quality of Life(QoL) and additional questions that were validated by two psychiatrists. The study approved by Institutional review board, and Ministry of Health and Prevention, UAE, and Civil Society Organisation authorities and official approval from the sites were obtained. SPSS version 29, Chi-square test and logistic regression analysis were used. Results showed that the prevalence of depression among participants was 39.3% and there were significant associations with: educational level(p<0.001), hypertension(p=0.041), perceived cost of treatment(P<0.009), social support(p<0.001), appetite(p=0.007), smoking(p=0.017), sleep(p=0.018) and exercise(p<0.001). Depression negatively affects perceived quality of life and health satisfaction(p=0.03). Depression was associated with physical health(p=0.008), psychological(p<0.001), social(p<0.001), and environmental(p=0.037) QoL domains. Level of education(p<0.001), sleep(0.012), exercise(p=0.029), appetite(p=0.025), perceived cost of treatment(P=0.005) were significant predictors of depression. To conclude, the prevalence of depression among old adults in UAE was high(39.3%). Depression was associated with physical, socio-economic and environmental factors. Depression negatively affects Quality of Life of older adults.

Keywords: *Depression; Quality of Life; Predictors; Old adults*

INTRODUCTION

An essential public health issue, depression increases the morbidity of many disorders. Age-related depression can be seen due to a variety of physical, mental, and social reasons. The World Health Organization describes depression as a common but treatable medical disease marked by sadness, disappointment, hopelessness, loss of interest or pleasure in once cherished activities, feelings of guilt, low self-worth or self-esteem, interrupted sleep or appetite, feelings of exhaustion or fatigue, and difficulty concentrating[1,2]. Various types of depression, including major depressive disorder, persistent depressive disorder, medication-induced depression, and sadness brought on by a medical condition, can affect older persons[3]. According to the World Health Organization, depending on the cultural context, the total prevalence rate of depressive disorders among the elderly often ranges between 10 and 20%[4]. The prevalence of depressive symptoms in older persons has been estimated to be around 17.6% in England and 14.6% in the United States, respectively[5-7]. In a different study conducted in Greece, older persons living in urban and semi-urban areas had rates that were noticeably higher (48.1%)[8]. Other research in industrialized nations have found that the important predictors of depression in older persons include poor health status, disability, limited social support, and female gender[7,9]. According to a recent systematic analysis from China, the prevalence of depression among Chinese who live in communities ranged from 11.0 to 79.7%[10].

Old age is typically portrayed as a time of relaxation, self-reflection, and opportunities to finish projects that were put off while pursuing a job and a family. Unfortunately, growing older is not always a pleasant process. The inability to engage in once-loved pastimes, the loss of friends and loved ones, and chronic and severe physical issues can all negatively affect an aging person's mental health[11]. Older adults and the elderly may experience depression as a direct result of medical conditions or as a psychological response. Depression can be brought on by or made worse by any chronic medical condition, especially one that is unpleasant, incapacitating, or life-threatening[5].

People with depression and a lingering physical health issue are particularly common in basic and general medical treatment. However, only a small proportion of patients who seek primary care identify psychiatric illnesses as a presenting issue. It is typical to experience a variety of somatic symptoms when depression does not co-occur with a chronic physical health problem. However, when depression does co-occur with a chronic physical health problem, it can be challenging to distinguish between the somatic symptoms of the physical health problem and those related to depression[12]. Stroke, high blood pressure, atrial fibrillation, diabetes, cancer, dementia, and chronic pain are among physical disorders that raise the risk of depression. The consequences of various ailments and the medications used to treat them are commonly confused with depression in elderly persons[6].

Increased age, female gender, chronic comorbidities, physical health, family-related issues, lower education, prior unemployment, low socioeconomic status, cognitive impairment, loss of spouse, living alone/ loneliness, bereavement (having to grieve over their loved ones), lack of social and financial support, restricted activities of daily living, having less mobility due to illness, vision or hearing or functional impairment have all been identified as risk factors with higher incidences of depression in various Asian countries, according to studies[13-15]. Living alone, experiencing a dwindling social network due to deaths or relocation, being less mobile due to illness, or losing privileges are all things that might cause depression. Retirement can raise the chance of developing depression, as well as cause a loss of identity, status, self-confidence, and financial security[16].

Numerous studies have been conducted all over the world to evaluate the quality of life (QoL is a tool used to show how people perceive their physical, mental, and social health) of elderly people, particularly those who may be suffering from depression. Except for the environmental domain, all QoL categories were negatively impacted by depression in a study that looked at the relationship between QoL and depression in older persons[17]. Similar findings in which three domains were affected were revealed by another study using WHOQoL-BREF to assess the association between depression and QoL in elderly participants; however, this study showed that social relationships were the domain with the least evidence to support a correlation between it and depression[18]. This study's results can help policy makers, health providers, and social workers to plan focused preventive and promotive strategies. Other researchers can use the study findings to investigate other issues related to the wellbeing of old adults in UAE, considering the holistic approach to health. The study aimed to assess the prevalence of depression among older adults attending Healthcare Facilities and Centers attached to Civil Society Organizations in UAE, and to determine the predictors of depression among the studied older adults and the impact of having depression on their QoL

METHODOLOGY

A cross sectional study was used to conduct this study. Old adults who are attending Healthcare Facilities and Centers attached to Civil Society Organizations in UAE. Ages above or equal to 60 years; both genders included, all nationalities were included. Participants who wish to take part in the study should accept and sign the informed consent form. The study excluded older adults who cannot communicate or comprehend due to any medical or mental illnesses and those who refuse to participate and sign the informed consent. The Sample size calculation was done using this equation $n = \frac{Z^2 pq}{L^2}$, by which n denotes sample size
q is 1-p, and p is the proportion of depression in the target population, which was estimated to be 0.63 from the results of a study from Korea[19]. The minimum sample size with the expected refusal rate of 10% was 394. The minimum sample size helped us to plan the minimum number of participants we needed to recruit per time. Mushairif Healthcare Centre, Ajman; Al-Hamidiya health center, Ajman.; Thumbay University Hospital, Ajman; Thukher Social Club in the community development authority building, Al-Barsha, Dubai; Thumbay Clinics, Sharjah were the siting places to collect the data for this study for around 6 months.

Study instrument & validation procedure, and Methods: Data was collected using a structured standardized questionnaire administered by the researchers/ interviewers. All survey questionnaires were completed through face-to-face interviews. The research used the Geriatric Depression Scale-30 (GDS-30) to assess depressive symptoms and the WHOQOL-BREF assessment to assess the correlation between depression and QoL. A few additional questions related to the socio-demographic profile, socio-economic factors, nutritional and lifestyle factors, and physical health were added, and this questionnaire was validated by two clinical Psychiatrists to check for the content validity of the questionnaire. English and Arabic translations of the standardized questionnaire were used. These forms are available to be used by the public. The few additional questions were forwarded and backward translated by a dual-language expert.

Data collection was started after obtaining permission from GMU-IRB, MOHAP, CSO authorities and official approval from the sites. The study population was approached individually, and participation was voluntary. Written informed consent was obtained from the study population before they took part in the study. Participants were recruited conveniently. Researchers clarified doubts when the participants had any. Completed questionnaires were entered into an excel sheet and analyzed by the SPSS-29 software. Data was stored in the community medicine department for a minimal period of three years. Data can be accessed by the ethics committees and research team.

Data was presented in the form of tables and figures. Descriptive statistics were used to show the data, Chi-square test was used to assess the significant association between the selected variables and logistic regression analysis was used to determine the possible significant predictors for depression in older adults. A pilot study was conducted including five older adults within the inclusion criteria to check for clarity of the questionnaire and time required. It was concluded that no major changes were required in the questionnaire and the participants were able to answer the questionnaire without any major difficulties. Data from pilot study was not included in the final analysis.

Ethical issues: Data collection was started after getting approval from the Gulf Medical University (GMU)-IRB, MOHAP (Ministry of Health and Prevention), CSO (Civil Society Organizations) authorities and official approval from the sites. Prior to data collection, participants were asked to sign an informed consent form indicating that they have been informed about the study, its objectives, and their rights to refuse or accept participation. Confidentiality of the participants' information was respected and only the research team and the ethics committees have the right to access the data. The questionnaire was anonymous, and the data was analyzed group-wise so there was no link between results of this study and any of the individual participants. Researchers asked the site to prepare a set place and time for data collection to maintain the privacy of the respondents.

RESULTS

The research team had approached approximately 440 eligible participants, out of which 30 had refused to participate, giving a total response rate of 93.2% [(410/440) x100], and the final number of included participants was 410. It should be noted that although the calculated sample size was 394 however, our target was to include all eligible persons who accepted to be part of our study and were available at the time of data collection. Table 1. Shows the sociodemographic characteristics of respondents. participants were most commonly less than 65 years old, male, married, having children, their children live close to them, and were having university or higher level of education. Figure 1. Shows that the prevalence of depression among the studied participants was 39.3%.

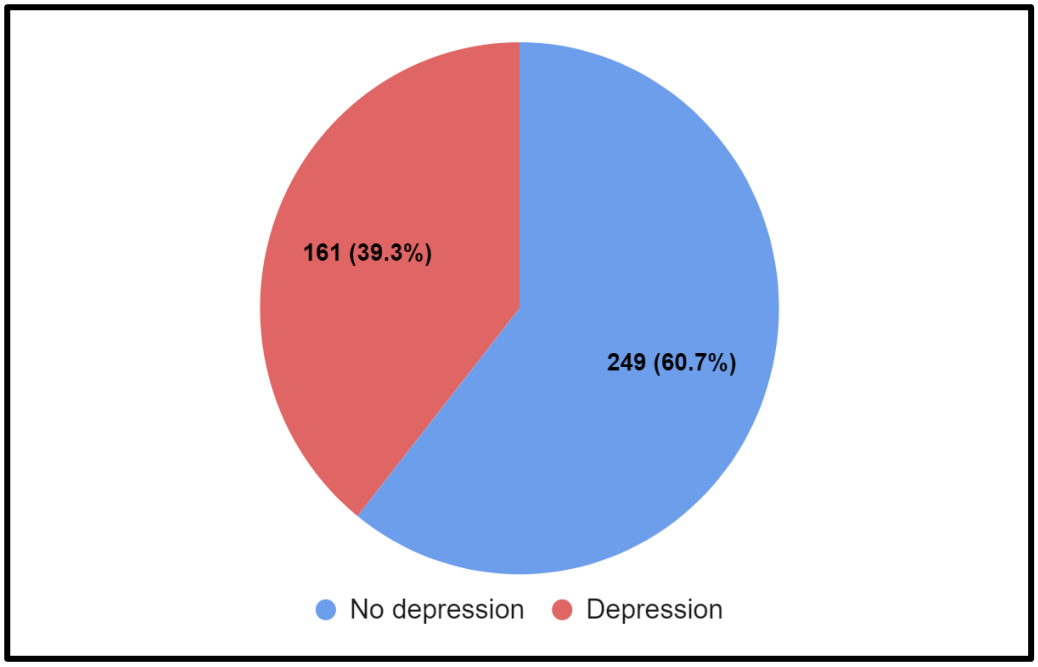

Figure 1: Prevalence of depression among the studied participants

Table 1. The sociodemographic characteristic of respondents

Variables	Subcategories	Frequency	%
Age	<65	137	33.4
	65-69	108	26.3
	70-74	95	23.2
	>75	70	17.1
Gender	Male	287	70
	Female	123	30
Current Marital Status	Not married*	89	22.2
	Married	312	77.8
Have Children	No	24	5.9
	Yes	386	94.1
Number of children	<4	334	86.5
	5-7	45	11.7
	>7	7	1.8
Children live close	No	124	32.1
	Yes	262	67.9
Highest level of education received	Higher secondary school & less	129	31.5
	University & higher	281	68.5

**Single, widow, divorce*

Table 2. The association between socio-economic, nutritional and lifestyle factors and depression

Variables	**Subcategories**	**No depression**		**Depression**		**P value**
		Number	%	Number	%	
Perceived cost of treatment	Expensive	73	51.8	68	48.2	0.009
	Moderate	94	69.1	42	30.9	
	Can manage	67	65	36	35	
Social Support	No	34	73.9	12	26.1	0.052
	Yes	215	59.1	149	40.9	
Social support received from	Family	127	53.1	112	46.9	<0.001
	Friends	41	54.7	34	45.3	
	Organizations	47	94	3	6	
Financial support	No	38	66.7	19	33.3	0.323
	Yes	211	59.8	142	40.2	
Social committees/ support groups	No	181	64.9	98	35.1	0.024
	Yes	68	52.3	62	47.7	
BMI classification	Underweight	16	88.9	2	11.1	0.002
	Normal	77	50.7	75	49.3	
	Overweight	144	65.5	76	34.5	
	Obese	12	60	8	40	
Rating of appetite	Good	224	63.3	130	36.7	0.007
	Poor	25	44.6	31	55.4	
Habit of smoking	No	185	64.2	103	35.8	0.017
	Yes	64	52.5	58	47.5	
Number of cigarettes per day	<10	51	61.4	32	38.6	0.003
	>10	13	33.3	26	66.7	
Hours of sleep	<6	117	63.9	66	36.1	0.018
	7-9	118	61.8	73	38.2	
	>10	14	38.9	22	61.1	
Exercise	No	56	44.4	70	55.6	<0.001
	Yes	40	74.1	14	25.9	
	Occasionally	153	66.5	77	33.5	

Table 3. The Association between Quality of life and Depression

Variables [QOL questions/ domains]	Subcategories	No depression		Depression		P value
		Number	%	Number	%	
1) Rate your quality of life	Poor	13	41.9	18	58.1	0.033
	Neither poor nor good	125	59.2	86	40.8	
	Good	111	66.1	57	33.9	
2) Satisfied with your health	Dissatisfied	7	35	13	65	0.033
	Neither satisfied nor dissatisfied	175	63.6	100	36.4	
	Satisfied	67	58.3	48	41.7	
Physical health domain	First tertile physical health	83	62.4	50	37.6	0.008
	Second tertile physical health	50	75.8	16	24.2	
	Third tertile physical health	71	53	63	47	
Psychological domain	First tertile psychological	11	37.9	18	62.1	<0.001
	Second tertile psychological	130	71	53	29	
	Third tertile psychological	72	51.8	67	48.2	
Social domain	First tertile social	22	43.1	29	56.9	<0.001
	Second tertile social	64	76.2	20	23.8	
	Third tertile social	27	55.1	22	44.9	
Environmental domain	First tertile environmental	77	60.2	51	39.8	0.037
	Second tertile environmental	111	67.3	54	32.7	
	Third tertile environmental	61	52.1	56	47.9	

DISCUSSION

Prevalence of depression: The prevalence of depression among studied old adults was 39.3%. This is close to Zenebe et al., systematic review of 42 studies, with a reported pooled prevalence of 31.74% [20]. Our finding is higher than results of two waves of population data from a county in the USA, with a given prevalence of 8.7% and 9.0% [21]. A higher prevalence (41.8%) was reported in a study from Ethiopia[22].

Regarding the socio-demographic factors: For age, there was no association between depression and age in our study, depression was high among older age groups (more than 75 years). This is in line with previous studies[20,21], that showed a higher prevalence among the older age groups [>75 years & ≥85 years respectively].

Concerning gender in this study, depression was more prevalent among females compared to males (45.5% vs 36.6%). This agrees with other researchers[21-23]. The mentioned difference in the proportion of depression by gender was not significant in our study, which differs from the Mirkena et al. study[22], in which "being female" increase the likelihood of depression significantly (AOR = 1.72; 95% CI = 1.12-2.66). According to Cheung and Mui study, that analyze National survey data, the proportion of depression among female was significantly higher than males (26.85% vs 19.87%)[23].

Table 4: Predictors of Depression among the studied participants

Variables	Subcategories	No.	COR	C.I. (Lower)	C.I. (Upper)	P value	AOR	C.I (Lower)	C.I (Upper)	P value
Highest level of education received	Higher secondary school & less	129	2.477	1.616	3.797	<0.001	3.004	1.802	5.009	<0.001
	University & higher	281	1							
Hypertension	No	329	1							
	Yes	77	1.611	0.977	2.657	0.062				
Habit of smoking	No	288	1			0.026				
	Yes	122	1.628	1.060	2.501		1.111	0.607	2.033	0.733
Hours of sleep	<6	183	1							
	7-9	191	1.097	0.721	1.669	0.667	1.573	0.934	2.649	0.089
	>10	36	2.786	1.336	5.809	0.006	3.220	1.293	8.023	0.012
Exercise	No	126	2.484	1.591	3.878	<0.001	1.790	1.062	3.017	0.029
	Yes	54	0.695	0.357	1.356	0.286	0.561	0.239	1.319	0.185
	Occasionally	230	1							
BMI classification	Underweight	18	1							
	Normal	152	7.792	1.732	35.061	0.007				
	Overweight	220	4.222	0.946	18.847	0.059				
	Obese	20	5.333	0.954	29.808	0.057				
Rating of appetite	Good	354	1							
	Poor	56	2.137	1.209	3.776	0.009	2.316	1.111	4.829	0.025
Cost of treatment	Expensive	141	1.735	1.028	2.924	0.039	2.347	1.289	4.273	0.005
	Moderate	136	0.832	0.482	1.433	0.507	0.957	0.503	1.822	0.894
	Can manage	103	1							
Social Support	No	46	1							
	Yes	364	1.964	0.984	3.917	0.055	2.122	0.955	4.716	0.065
Social committees/ support groups	No	280	1							
	Yes	130	1.684	1.103	2.570	0.016	1.586	0.906	2.776	0.107

Regarding marital status, this study showed that depression was high among old adults who were not married (single/divorced/widow). This agrees with another study's conclusion that elderly people who are separated/divorced/widowed/never married had a higher risk of depressive symptoms[24].

Having children and the number of children showed no significant association between depression and these variables, and depression was higher among childless elderly and among those who had a higher number of children. Our results are supported by Zhang and Hayward, in the U.S., which found that the childless didn't significantly increase the prevalence of depression in the elderly[25]. A study from China showed that an increased number of children was associated with a 9% decrease in the likelihood of depression among females[26]. Studying the effect of their children living close to them, we noticed a higher prevalence of depression among participants whose children were not living close to them. This agrees with Ojagbemi and Gureje a study that co-residency with one child was found to be a protective factor against depression in the elderly[27].

Concerning the level of education, we noticed a significantly higher prevalence of depression among the elderly with a lower level of education, and this observation is supported by Chang-Quan et al., a meta-analysis study that included twenty-four cross-sectional and 12 prospective studies. The authors found that less education level conveyed a higher risk for depression (1.49, 95% CI:1.16–1.91)[28]. Having chronic conditions or health factors was investigated in the current study and showed that depression was high among old adults who had some types of medical illnesses like diabetes, hypertension, cardiovascular, and urinary-related conditions. A study from China found that old adults with chronic diseases were at higher risk for depression (Adjusted OR:1.55, 95% CI:1.37 - 1.75)[29]. In our study, having hypertension was significantly associated with depression. However, no significant increase in the risk of depression was noticed in the logistic analysis.

Concerning the cost of medical treatments, this study showed that depression was high among old adults who perceived the cost of treatments to be expensive. This is consistent with a study by Smit et

al., in the Netherlands which revealed that clinically relevant late-life depression had a prevalence of 16% and was associated with substantial societal costs through its disease burden and unfavorable prognosis[30]. As for social support and Financial support, our study showed that older adults who received social and financial support were more likely to have depressive symptoms; this could be due to the effect of other confounding factors that may be present. According to a study in China by Cheng et al., older adults experiencing social isolation and those who lack moral support had higher rates of depressive symptoms[31]. In a study by Morin et al., lower income and financial instabilities have proved to show distressed emotions in older adults[32].

The present data showed that the rate of poor appetite was 15.8%, with a significantly higher percentage of depression among old adults who had a poor appetite. Data from the Longitudinal Ageing Study Amsterdam showed that the prevalence of self-reported poor appetite was 15.6%. The authors found that depression was associated with an increased likelihood of poor appetite (OR:1.12 CI:1.04-1.21)[33]. We noticed that depression was high among old adults who had the habit of smoking. This is supported by a systematic review by Fluharty et al., which showed evidence linking depression/anxiety with elderly smoking[34]. In our study, depression was high among old adults who slept for a longer duration (>10h/day) and were 3.2 times more likely to be depressed. Our finding is supported by Jaussent et al. report that Excessive sleepiness/ hypersomnia increases the risk of elderly depression (OR = 2.05, 95% CI = 1.30-3.23], and that it can predict depression in the elderly[35].

Exercise is an important that is usually overlooked in old age studies. This study showed that depression was high among old adults who did not exercise regularly. A meta-analysis by Klil-Drori et al. showed that exercise had a medium effect size of 0.64 in reducing depressive symptoms as it improves both physical and mental health[36]. We tried to assess the overall impact of depression on the perceived Quality of Life. This study showed a significant association between depression and all the QoL domains. A globally done systematic review on depression and quality of life in elderly individuals, 53 out of 74 studies showed negative correlation between depression and QoL; severity of depression is associated with poorer or lesser QoL[37].

CONCLUSION

The prevalence of depression among old adults in UAE was high(39.3%). Depression was associated with physical, socio-economic, and environmental factors. Depression negatively affects Quality of Life of older adults.

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REFERENCES

1. Rajkumar AP, Thangadurai P, Senthilkumar P, Gayathri K, Prince M, Jacob KS. Nature, prevalence and factors associated with depression among the elderly in a rural south Indian community. Int Psychogeriatr [Internet].[cited 2023 Feb 19];21(02):372. Available from: https://pubmed.ncbi.nlm.nih.gov/19243657/.

2. World Health Organization. Depression [Internet]. 2023. [cited 2023Feb19]. Available from: https://www.who.int/health-topics/depression#tab=tab_1

3. Depression and Older Adults [online]. [cited 2022 Jan 18]; Available from: URL:https://www.nia.nih.gov/health/depression-and-older-adults

4. Barua A, Ghosh MK, Kar N, Basilio MA. Prevalence of depressive disorders in the elderly. Ann Saudi Med [Internet]. 2011 [cited 2023 Feb 19];31(6):620–4. Available from: http://dx.doi.org/10.4103/0256-4947.87100

5. Fiske A, Wetherell JL, Gatz M. Depression in older adults. Annu Rev Clin Psychol [Internet]. 2009 [cited 2023 Feb 19];5(1):363–89. Available from: http://dx.doi.org/10.1146/annurev.clinpsy.032408.153621

6. Bruce DF. Depression in older people: Symptoms, causes, treatments [Internet]. WebMD. WebMD; 2022 [cited 2023Feb19]. Available from: https://www.webmd.com/depression/guide/depression-elderly#1

7. Zivin K, Llewellyn DJ, Lang IA, Vijan S, Kabeto MU, Miller EM, et al. Depression among older adults in the United States and England. Am J Geriatr Psychiatry [Internet]. 2010 [cited 2023 Feb 19];18(11):1036–44. Available from: https://pubmed.ncbi.nlm.nih.gov/20808088/

8. Argyropoulos K, Bartsokas C, Argyropoulou A, Gourzis P, Jelastopulu E. Depressive symptoms in late life in urban and semi-urban areas of South-West Greece: An undetected disorder? Indian J Psychiatry [Internet]. 2015 [cited 2023 Feb 19];57(3):295–300. Available from: http://dx.doi.org/10.4103/0019-5545.166617

9. Djernes JK. Prevalence and predictors of depression in populations of elderly: a review. Acta Psychiatr Scand [Internet]. [cited 2023 Feb 19];113(5):372–87. Available from: https://pubmed.ncbi.nlm.nih.gov/16603029/

10. Chen Y, Hicks A, While AE. Quality of life of older people in China: a systematic review. Rev Clin Gerontol [Internet]. 2013 [cited 2023 Feb 19];23(1):88–100. Available from: https://www.cambridge.org/core/journals/reviews-in-clinical-gerontology/article/abs/quality-of-life-of-older-people-in-china-a-systematic-review/FE36367277C310E2732C78907C2AECA7

11. Nimrod G, Kleiber DA, Berdychevsky L. Leisure in coping with depression [Internet]. ResearchGate. [cited 2023Feb19]. Available from: https://www.researchgate.net/profile/Galit-Nimrod/publication/257931535_Leisure_in_Coping_With_Depression/links/551d31b50cf2a15336261160/Leisure-in-Coping-With-Depression.pdf

12. Goodwin GM. Depression and associated physical diseases and symptoms. Dialogues Clin Neurosci [Internet]. 2006 [cited 2023 Feb 19];8(2):259–65. Available from: http://dx.doi.org/10.31887/dcns.2006.8.2/mgoodwin

13. Chalise HN. Depression among elderly living in Briddashram (old age home) [Internet]. Advances in Aging Research. Scientific Research Publishing; 2014 [cited 2023Feb19];03(01):6–11. Available from: https://www.scirp.org/journal/paperinformation.aspx?paperid=42627

14. Dasgupta A, Mukhopadhyay M, Das S, Majumdar S, Das A. Are our elderly really depressed?: A cross sectional study on depression among geriatric population in a slum of Kolkata [Internet]. Ijhsr.org. [cited 2023 Feb 19]. Available from: https://www.ijhsr.org/IJHSR_Vol.4_Issue.6_June2014/5.pdf

15. Chong MY, Tsang HY, Chen CS, Tang TC, Chen CC, Yeh TL, et al. Community study of depression in old age in Taiwan: prevalence, life events and socio-demographic correlates. Br J Psychiatry [Internet]. 2001 [cited 2023 Feb 19];178(1):29–35. Available from: https://pubmed.ncbi.nlm.nih.gov/11136207/

16. Ryu SI, Cho B, Chang SJ, Ko H, Yi YM, Noh E-Y, et al. Factors related to self-confidence to live alone in community-dwelling older adults: A cross-sectional study. BMC Geriatr [Internet]. 2021;21(1):291. Available from: http://dx.doi.org/10.1186/s12877-021-02214-w

17. Hussenoeder FS, Jentzsch D, Matschinger H, Hinz A, Kilian R, Riedel-Heller SG, et al. Depression and quality of life in old age: a closer look. Eur J Ageing [Internet]. 2021 [cited 2023 Feb 19];18(1):75–83. Available from: http://dx.doi.org/10.1007/s10433-020-00573-8

18. Figueira, H.A.; Figueira, O.A.; Figueira, A.A.; Figueira, J.A.; Polo-Ledesma, R.E.; Lyra da Silva, C.R.; Dantas, E.H.M. Impact of Physical Activity on Anxiety, Depression, Stress and Quality of Life of the Older People in Brazil. Int. J. Environ. Res. Public Health 2023;20;1127. https://doi.org/10.3390/ ijerph20021127

19. Kim J-I, Choe M-A, Chae YR. Prevalence and predictors of geriatric depression in community-dwelling elderly. Asian Nurs Res (Korean Soc Nurs Sci) [Internet]. 2009 [cited 2023 Feb 19];3(3):121–9. Available from: https://pubmed.ncbi.nlm.nih.gov/25030470/

20. Zenebe, Y., Akele, B., W/Selassie, M., & Necho, M. Prevalence and determinants of depression among old age: a systematic

review and meta-analysis. Annals of General Psychiatry. 2021;20(1), 55. https://doi.org/10.1186/s12991-021-00375-x

21. Roberts RE, Kaplan GA, Shema SJ, Strawbridge WJ. Does growing old increase the risk for depression? [Internet]. The American journal of psychiatry. U.S. National Library of Medicine; [cited 2022Nov3]. Available from: https://pubmed.ncbi.nlm.nih.gov/9326820/

22. Mirkena Y, Reta MM, Haile K, Nassir Z, Sisay MM. Prevalence of depression and associated factors among older adults at ambo town, Oromia region, Ethiopia. BMC Psychiatry. 2018 Oct 18;18(1):338. doi: 10.1186/s12888-018-1911-8. PMID: 30336773; PMCID: PMC6194620.

23. Cheung ESL, Mui AC. Gender variation and late-life depression: Findings from a National Survey in the USA - Ageing International [Internet]. SpringerLink. Springer US; 2021 [cited2022Oct31]. Available from: https://link.springer.com/article/10.1007/s12126-021-09471-5

24. Pan L, Li L, Peng H, Fan L, Liao J, Wang M, et al. Association of depressive symptoms with marital status among the middle-aged and elderly in rural China–serial mediating effects of sleep time, Pain and life satisfaction [Internet]. Journal of Affective Disorders. Elsevier; 2022 [cited 2022Oct31]. Available from: https://www.sciencedirect.com/science/article/pii/ S0165032722001288

25. Zhang Z, Hayward MD. Childlessness and the Psychological Well-Being of Older Persons [Internet]. Academic.oup.com. 2001;56(5):S311-20 [cited 2022Oct31]. Available from: https://academic.oup.com/psychsocgerontology/article/56/5/S311/634257?searchresult=1

26. Wang, H., Chen, M., Xin, T. et al. Number of children and the prevalence of later-life major depression and insomnia in women and men: findings from a cross-sectional study of 0.5 million Chinese adults. BMC Psychiatry 2020, 29;20(1):267. [cited 2022Oct31]. Available from: https://doi.org/10.1186/s12888-020-02681-

27. Ojagbemi A, Gureje O. Typology of social network structures and late-life depression in low- and middle-income countries [Internet]. Clinical practice and epidemiology in mental health : CP & EMH. U.S. National Library of Medicine; 2019 [cited 2022Dec12]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7040469/

28. Chang-Quan, H., Zheng-Rong, W., Yong-Hong, L., Yi-Zhou, X., & Qing-Xiu, L. Education and risk for late life depression: a meta-analysis of published literature. International journal of psychiatry in medicine. 2010;40(1): 109-124. https://doi.org/10.2190/PM.40.1.i

29. Liu H, Zhou Z, Fan X, Shen C, Ma Y, Sun H, Xu Z. Association Between Multiple Chronic Conditions and Depressive Symptoms Among Older Adults in China: Evidence From the China Health and Retirement Longitudinal Study (CHARLS). Int J Public Health. 2023 Mar 3;68:1605572. doi: 10.3389/ijph.2023.1605572. PMID: 36938299; PMCID: PMC10020227.

30. Smit F, Ederveen A, Cuijpers P. Opportunities for Cost-effective Prevention of Late-Life Depression [Internet]. Jama Network. 2006 [cited 2022Dec13]. Available from: https://jamanetwork.com/journals/jamapsychiatry/fullarticle/209369

31. Cheng X, Cosco TD, Ariyo T. Decreasing social isolation to enhance mental health among older adults in China: A mediation analysis of aging attitude [Internet]. Frontiers. Frontiers; 1AD [cited 2022Nov3]. Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2021.735740/full

32. Morin RT, Gonzales MM, Bickford D, Catalinotto D, Nelson C, Mackin RS. Impaired financial capacity in late-Life Depression: Revisiting associations with cognitive functioning [Internet]. Journal of the International Neuropsychological Society : JINS. U.S. National Library of Medicine; 2019 [cited 2022Dec13]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9187218/

33. Scheufele P, Rappl A, Visser M, Kiesswetter E, Volkert D. Characterisation of community-dwelling older adults with poor

appetite. Eur J Nutr. 2023;62(5):1991-2000. doi: 10.1007/s00394-023-03129-5. Epub 2023 Mar 4. PMID: 36869911; PMCID: PMC10349734.

34. Fluharty M, Taylor AE, Grabski M, Munafò MR. The Association of Cigarette Smoking With Depression and Anxiety: A Systematic Review. Nicotine Tob Res. 2017;19(1):3-13. doi: 10.1093/ntr/ntw140. Epub 2016 May 19. PMID: 27199385; PMCID: PMC5157710.Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5157710/\

35. Jaussent I, Bouyer J, Ancelin ML, Akbaraly T, Pérès K, Ritchie K, Besset A, Dauvilliers Y. Insomnia and daytime sleepiness are risk factors for depressive symptoms in the elderly. Sleep. 2011;34(8):1103-10. doi: 10.5665/SLEEP.1170. PMID: 21804672; PMCID: PMC3138165.

36. Klil-Drori S, Klil-Drori AJ, Pira S, Rej S. Exercise Intervention for Late-Life Depression: A Meta-Analysis. J Clin Psychiatry. 2020;81(1):19r12877. doi: 10.4088/JCP.19r12877. PMID: 31967748.Available from: https://www.psychiatrist.com/jcp/depression/exercise-for-late-life-depression/

37. Sivertsen H, Bjørkløf GH, Engedal K, Selbæk G, Helvik AS. Depression and Quality of Life in Older Persons: A Review. Dement Geriatr Cogn Disord. 2015;40(5-6):311-39. doi: 10.1159/000437299. Epub 2015 Sep 12. PMID: 26360014. Available from: https://www.karger.com/DOI/10.1159/000437299.