

Physical Health Problems and Depression Among the Oldest-Old in a Rural Municipality of Palpa, Nepal: A Cross-Sectional Study

Deelip Kumar Karki,^{*,1} Samata Nepal,¹ Laxmi Prasad Sapkota,¹ Krishna Bahadur GC²

ABSTRACT:

Introduction: The oldest-old (aged 85 years and above) are a rapidly growing and particularly vulnerable subgroup, yet data on their health problems remain scarce in Nepal. This study aimed to describe the pattern of physical illnesses and depression among the oldest-old in a rural municipality of Palpa, Nepal, and to identify associated factors. **Methods:** An observational, descriptive cross-sectional study was conducted among 125 oldest-old individuals in Ribdikot Rural Municipality, Palpa district, from October 2019 to March 2020. Participants were selected by simple random sampling using computer-generated random numbers. Data were collected using an interview schedule, and physical health problems were identified from self-reports and hospital medical records. Depression was assessed using the 15-item Geriatric Depression Scale. Chi-square and Fisher's exact tests were used to assess associations, with $p < 0.05$ considered statistically significant. **Results:** Gastritis was the most prevalent physical illness (41.60%), followed by hypertension (40.00%), cataracts (34.40%), joint pain (29.60%), COPD (15.20%), and diabetes mellitus (8.80%). Depression was present in 32.80% of participants. Depression was significantly associated with living alone ($p=0.025$), low monthly family income ($p=0.007$), widowhood ($p=0.001$), and hypertension ($p=0.029$). **Conclusions:** Physical illnesses and depression were highly prevalent among the oldest-old. Living arrangement, marital status, income, and hypertension were significant correlates of depression. Targeted screening and community-based interventions are needed to address the health needs of this vulnerable population.

Keywords: Depression; Health problems; Oldest-old; Physical illnesses.

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1 - Department of Community medicine, Lumbini Medical College and teaching hospital, Palpa, Nepal

2 - Tribhuvan Multiple Campus, Tansen, Palpa, Nepal

Corresponding Author:

Deelip Kumar Karki

Email: deelipkarki2039@gmail.com

ORCID: [0000-0002-3838-9993](https://orcid.org/0000-0002-3838-9993)

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INTRODUCTION:

Ageing is a universal and inevitable biological process. Globally, the number of older persons is growing faster than any other age group.¹ Between 2015 and 2050, the proportion of the world's population aged 60 years and over is projected to nearly double, from 12% to 22%.² In Nepal, the 2021 National Population Census recorded 2,977,318 elderly people (aged 60 years and above), constituting 10.21% of the total population.³ While the life expectancy of the Nepali population has reached 71.3 years,³ the oldest-old, defined as those aged 85 years and above, have far exceeded this average, making them a distinct demographic requiring targeted study. Chronologically, old age is classified into three subgroups: the young-old (65–74 years), the middle-old (75–84 years), and the oldest-old (85 years and above), the latter being

a period that requires special care and support.⁴

The oldest-old are characterized by progressive tissue degeneration, which negatively impacts the structure and function of vital organs.⁵ This period involves physical changes such as skin wrinkling, muscle flabbiness, decreased vision and hearing, and reduced cardiovascular efficiency. A central feature of this stage is loss—including loss of physical abilities, loss of intellectual function, and loss of intimate relationships through the death of a spouse, friends, or relatives. Compared to the young-old and middle-old, the oldest-old experience a higher burden of multimorbidity, frailty, and functional dependency. Studies have reported that non-communicable diseases such as cardiovascular disease, respiratory disease, and diabetes are common in this age group, adding to the disease burden in both developed and developing countries.⁶ Common geriatric health problems among the oldest-old include hypertension,^{7,8} gastritis,⁷ cataracts,⁹ diabetes,^{10,11} COPD,¹² backache,⁷ joint pain,¹³ insomnia,⁷ and depression.^{14,15}

Physiological and psychological changes influence the prevalence and prognosis of depression in older adults.¹⁴ Depression in old age is an important public health problem associated with considerable morbidity and mortality worldwide.¹⁴ The World Health Organization (WHO) emphasizes that depression, the fourth most common illness worldwide, can lead to physical, emotional, social, and economic problems.² Among the oldest-old, depression is often underdiagnosed because its symptoms overlap with frailty, cognitive decline, and other chronic conditions.¹⁵ The oldest-old are more vulnerable to chronic diseases, physical disabilities, and mental health problems than any other age group. Studying these health problems helps identify the health needs, risk factors, and challenges faced by this population. It also supports the development of appropriate preventive, promotive, and rehabilitative health services. In Nepal, the Government provides free hospital services for senior citizens aged 85 years and above.¹⁶ Therefore, this study aims to describe the pattern of physical illnesses and depression among the oldest-old (aged 85 years and above) in a rural municipality of Palpa, Nepal, and to identify factors associated with these conditions.

METHODS:

An observational, descriptive cross-sectional study was conducted among the oldest-old (aged 85 years and above) in Ribdikot Rural Municipality,

Palpa district, Nepal. An interview schedule was developed, and pretested prior to data collection, and informed consent was obtained from all respondents. The sampling frame comprised 179 oldest-old individuals identified from municipal records. From this frame, 125 participants were selected by simple random sampling using computer-generated random numbers (Microsoft Excel 2016). No replacements were made for individuals who were unavailable or unwilling to participate. Data were collected over a period of six months, from October 2019 to March 2020. Ethical approval was obtained from the Institutional Review Committee of Lumbini Medical College (IRC-LMC 10-E/019) before data collection began.

The sample size was calculated using Slovin's formula for a finite population: $n = N/(1 + Ne^2)$. Where n is the estimated minimum sample size, N is the total population (179), and e is the margin of error (0.05). The calculated minimum sample size was 124.30, which was rounded up to 125. Therefore, a total of 125 participants aged 85 years and above who were residents of Ribdikot Rural Municipality, available during the study period, and willing to provide informed consent were included in the study. Those who were unwilling to participate, did not provide informed consent, or were unavailable during the study period were excluded from the study.

All physical health problems reported by respondents or identified from hospital medical records were considered. Hypertension was determined by blood pressure measurement. Participants currently on antihypertensive medication were also considered hypertensive. An aneroid sphygmomanometer with a Velcro cuff (no. 500-v) was used to measure blood pressure. Blood pressure was measured on the left arm with the participant seated quietly in a chair, feet on the floor, and arm supported at heart level. The first reading was taken after at least 15 minutes of rest with legs uncrossed. The second measurement was obtained after at least three minutes had passed since the first measurement. If the two readings differed, the mean of the two readings was used as the final measurement. Systolic blood pressure was recorded at Phase I Korotkoff sounds, and diastolic blood pressure was recorded at Phase V Korotkoff sounds. Depression was assessed using the 15-item Geriatric Depression Scale (GDS) developed by Sheikh and Yesavage.¹⁷ Scores of 0–4 were considered normal; 5–8 indicated mild depression; 9–11 indicated moderate depression; and 12–15 indicated severe

depression.

Data were entered, coded, and analyzed using Statistical Package for the Social Sciences (SPSS) software version 16. Descriptive statistics were presented as frequencies and percentages. The chi-square test was used to assess associations between dependent and independent variables. Fisher's exact test was used when expected cell frequencies were less than five. A p-value of <0.05 was considered statistically significant.

RESULTS:

A total of 125 respondents participated in the study. Of the total participants, 63 (50.40%) were in the 85–89 years age group, and 67 (53.60%) were female. Eighty-eight participants (70.40%) were married, 85 (68.00%) lived with their son, and 90 (72.00%) were illiterate. Detailed characteristics are presented in **Table 1**.

Regarding disease status, 11 respondents (8.80%) had diabetes mellitus, 50 (40.00%) had hypertension, 52 (41.60%) had gastritis, 37 (29.60%) had joint pain, 19 (15.20%) had chronic obstructive

pulmonary disease (COPD), and 43 (34.40%) had cataracts. For depression, mild depression was observed in 27 respondents (21.60%), while 9 (7.20%) and 5 (4.00%) had moderate and severe depression, respectively. Details are presented in **Table 2**.

Depression was most common among those who lived alone ($p = 0.025$) and was more prevalent among widowed participants ($p = 0.001$) than among married respondents. Hypertension was significantly associated with depression ($p = 0.029$). Additionally, depression was significantly associated with monthly family income ($p = 0.007$), with a higher prevalence among those earning less than 20,000. The associations between socio-demographic characteristics and depression are presented in **Table 3**.

Table 1: Socio-demographic Characteristics (N=125)

Variables	Characteristics	n (%)
Age group	85–89	63 (50.40)
	90–94	45 (36.00)
	95 and above	17 (13.60)
Gender	Male	58 (46.40)
	Female	67 (53.60)
Ethnicity	Dalit	16 (12.80)
	Janajati	46 (36.80)
	Brahmin/Chhetri	63 (50.40)
Marital status	Married	88 (70.40)
	Widow/Widower	37 (29.60)
Living with	Son	85 (68.00)
	Spouse	31 (24.80)
	Alone	9 (7.20)
Monthly family income	<20000	49 (39.20)
	≥20000	76 (60.80)
Previous occupation	Farmer	74 (59.20)
	Shopkeeper	10 (8.00)
	Government job	11 (8.80)
	Indian job	8 (6.40)
	Housewife	22 (17.60)
	Illiterate	90 (72.00)
Education	Primary	28 (22.40)
	Secondary	7 (5.60)

Table 2: Behavioral and Disease Status (N=125)

Variables	Characteristics	n (%)
Smoking	Yes	89 (71.20)
	No	36 (28.80)
Alcohol	Yes	43 (34.40)
	No	82 (65.60)
Diabetes	Yes	11 (8.80)
	No	114 (91.20)
Hypertension	Normal	75 (60.00)
	Stage 1	8 (6.40)
	Stage 2	6 (4.80)
	Under medication	36 (28.80)
Gastritis	Yes	52 (41.60)
	No	73 (58.40)
Joint pain	Yes	37 (29.60)
	No	88 (70.40)
COPD	Yes	19 (15.20)
	No	106 (84.80)
Cataract	Yes	43 (34.40)
	No	82 (65.60)
Depression scale	Normal	84 (67.20)
	Mild depression	27 (21.60)
	Moderate depression	9 (7.20)
	Severe depression	5 (4.00)

DISCUSSION:

This study aimed to describe the pattern of physical illnesses and depression among the oldest-old and to identify factors associated with these

Table 3: Relation Between Socio-demographic Characteristics and Depression

Variables	n (%)	Depression Absent	Depression Present	Statistics
Living with				
Son and Spouse	116 (92.80%)	81 (69.80%)	35 (30.20%)	p* = 0.025
Alone	9 (7.20%)	3 (33.30%)	6 (66.70%)	
Monthly family income				
<20000	49 (39.20%)	26 (53.10%)	23 (46.90%)	$\chi^2 = 7.30$, df = 1 p = 0.007
≥20000	76 (60.80%)	58 (76.30%)	18 (23.70%)	
Marital status				
Married	88 (70.40%)	67 (76.10%)	21 (23.90%)	$\chi^2 = 10.70$, df = 1 p = 0.001
Widowed	37 (29.60%)	17 (45.90%)	20 (54.10%)	
Blood pressure				
Normal	75 (60.00%)	56 (74.70%)	19 (25.30%)	$\chi^2 = 4.70$, df = 1 p = 0.029
Hypertension	50 (40.00%)	28 (56.00%)	22 (44.00%)	

*Fisher Exact Test

conditions. The present study found that gastritis had the highest prevalence (41.60%), followed by hypertension (40.00%), cataracts (34.40%), joint pain (29.60%), COPD (15.20%), and diabetes mellitus (8.80%) among the oldest-old. A similar result was observed in a community-based study conducted in western Nepal, where the prevalence of gastritis was 41.90% among older adults.¹⁸ Gastritis is a common physical health problem among the oldest-old in Nepal, driven by natural stomach aging, frequent painkiller use, and bacterial infections.¹⁹ The prevalence of hypertension in the present study was 40.00%. This finding was consistent with other studies conducted in Nepal, which found that hypertension was more prevalent (37.40%), followed by joint pain, respiratory problems, and diabetes.^{10,20} Major arteries lose their elasticity and stiffen over time, forcing the heart to pump harder against increased resistance. Smoking and alcohol consumption damage blood vessel walls, leading to hypertension in the oldest-old.²¹ The prevalence of cataracts in our study was 34.40%. This was aligned with a study conducted in Rautahat district.⁹ The primary cause of cataracts is the natural aging process, which causes proteins and fibers in the eye's lens to break down and clump together.²² Joint pain was reported among 29.60% of the participants. Similar findings were observed in a nationwide cross-sectional STEPS survey.¹³ The prevalence of COPD was 15.20%. A community-based study conducted in Nepal found a similar result.¹² Natural decline in lung capacity combined with cumulative lifetime irritant exposure and active cigarette smoking sharply increases COPD risk in

the oldest-old.²³ In our study, diabetes mellitus was present in 8.80% of participants. This result was consistent with a study conducted in Nepal, where the prevalence of diabetes mellitus was found to be 8.50%.¹¹ Advanced age, growing insulin resistance, and rapid lifestyle changes are the primary drivers of diabetes in the oldest-old.²⁴

Regarding depression, our study showed that the prevalence of depression was 32.80%. In eastern and western Nepal, the prevalence of geriatric depression was similar, ranging from 30% to 35%.¹⁵ A similar result was found in a study conducted by Karki et al. in a rural municipality of Nepal.²⁵ Monthly family income was significantly associated with depression. This is comparable with a Nepalese study of community-dwelling older adults that found low family income to be associated with higher depressive symptoms. Financial hardship can limit access to health care, medicines, nutritious food, and social participation, thereby contributing to psychological distress.²⁶ The present study found that living arrangement was significantly associated with depression, with the lowest prevalence among respondents living with a spouse and the highest among those living alone. This finding is consistent with a study among older adults in Kaski, Nepal, which reported significant associations of depression with spouse status, living arrangement, family support, and loneliness.²⁷ Living with a spouse may provide emotional companionship, daily assistance, and a sense of security, whereas living alone may increase loneliness and reduce access to support during illness or stressful situations.^{27,28} Marital status showed a significant association with depression, with greater

risk found among widowed participants. This supports evidence that loss of a spouse can reduce companionship, emotional support, and practical care.²⁹ Furthermore, hypertension was significantly associated with depression. Depression was more common among respondents with hypertension. This agrees with evidence that hypertension and depression commonly coexist in the oldest-old, potentially through disease burden, functional limitations, medication demands, and concern about complications.⁸

This study has several limitations. The study was conducted in only one rural municipality with a relatively small sample size; therefore, the findings may not be generalizable to the entire population of Palpa or Nepal. As a cross-sectional study, causal relationships between geriatric problems and their associated factors cannot be established. Additionally, the use of self-reported data may introduce recall bias, and the findings may be influenced by unmeasured confounders. The Geriatric Depression Scale is a screening tool, not a diagnostic instrument; clinical interviews were not conducted to confirm depression diagnoses. Furthermore, physical health problems identified from hospital medical records may be subject to incomplete documentation. Finally, the study did not assess functional status, cognitive impairment, or social support, which are important determinants of health in the oldest-old.

CONCLUSION

This study provides valuable insights into the pattern of physical illnesses and depression among the oldest-old in a rural municipality of Nepal. Gastritis, hypertension, and cataracts were the most prevalent physical health problems, while depression affected nearly one-third of the participants. Living alone, widowhood, low monthly family income, and hypertension were significantly associated with depression. These findings highlight the vulnerability of the oldest-old and the need for targeted health interventions. The government's existing door-to-door health service program for those aged 85 years and above should be strengthened to include routine screening for depression and common physical illnesses. Community-based interventions that address social isolation and financial hardship among the oldest-old are also recommended. Future research should employ longitudinal designs, larger sample sizes, and multicenter sampling to better understand the causal relationships and generalizability of these findings

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Conflict of Interest:

Laxmi Prasad Sapkota did not take part in any editorial decision.

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REFERENCES:

1. United Nations Department of Economic and Social Affairs, Population Division. World population ageing 2023. New York: United Nations; 2023. Available from: [this link](#)
2. World Health Organization. Ageing and health [Internet]. Geneva: WHO; 2025. Available from: [this link](#)
3. Government of Nepal, Office of the Prime Minister and Council of Ministers. National Population Census 2021. Kathmandu: National Statistics Office; 2021. Available from: [this link](#)
4. Ünal E, Özdemir A. Old Age and Aging. Recent Studies in Health Sciences. Sofia (BG): St. Kliment Ohridski University Press; 2019. Available from: [this link](#)
5. Guo J, Huang X, Dou L, Yan M, Shen T, Tang W, et al. Aging and aging-related diseases: from molecular mechanisms to interventions and treatments. Signal Transduction and Targeted Therapy. 2022;7:391. DOI: [10.1038/s41392-022-01251-0](#)
6. Chen QF, Chao N, Jiang Y, Chen L, Liao H, Gao J, et al. Global burden of disease and its risk factors for adults aged 70 and older across 204 countries and territories: A comprehensive analysis of the Global Burden of Disease Study 2021. BMC Geriatr. 2025;25(1):462. PMID: [40604507](#) DOI: [10.1186/s12877-025-06095-1](#)
7. Bista A, Joshi S. Health problems of elderly residing in urban areas, Kathmandu. Journal of Institute of Medicine Nepal. 2015;37(2):56-61. DOI: [10.59779/jiomnepal.72](#)

8. Gan Q, Yu R, Lian Z, Yuan Y, Li Y, Zheng L. Unraveling the link between hypertension and depression in older adults: a meta-analysis. *Front Public Health*. 2023;11:1302341. PMID: [38074728](#) DOI: [10.3389/fpubh.2023.1302341](#)
9. Sapkota YD, Sunuwar M, Naito T, Akura J, Adhikari HK. The prevalence of blindness and cataract surgery in rautahat district, Nepal. *Ophthalmic Epidemiol*. 2010;17(2):82-9. PMID: [20302430](#) DOI: [10.3109/09286581003624947](#)
10. Dhungana RR, Pandey AR, Shrestha N. Trends in the prevalence, awareness, treatment, and control of hypertension in Nepal between 2000 and 2025: A systematic review and meta-analysis. *Int J Hypertens*. 2021;2021:6610649. PMID: [33747559](#) DOI: [10.1155/2021/6610649](#)
11. Shrestha N, Karki K, Poudyal A, Aryal K, Mahato NM, Gautam M et al. Prevalence of diabetes mellitus and associated risk factors in Nepal: findings from a nationwide population-based survey. *BMJ Open* 2022;12(2):e060750. PMID: [35193925](#) DOI: [10.1136/bmjopen-2022-060750](#)
12. Adhikari TB, Neupane D, Karki A, Hansen M, Drews A, Cooper B et al. Prevalence of COPD in Nepal: findings from a community-based study. *European Respiratory Journal* 2020;56(Suppl 64):2605. DOI: [10.1183/13993003.congress-2020.2605](#)
13. Poudyal A, Bista B, Gyanwali P, Karki S, Bhattarai S, Sharma S et al. Prevalence and factors associated with joint pain in Nepal: findings from a countrywide cross-sectional STEPS survey. *BMJ Open* 2021;11(10):e051536. PMID: [34615678](#) DOI: [11/10/e051536](#)
14. Zenebe Y, Akele B, Selassie M, Necho M. Prevalence and determinants of depression among old age: a systematic review and meta-analysis. *Ann Gen Psychiatry*. 2021;20(1):55. PMID: [34922595](#) DOI: [10.1186/s12991-021-00375-x](#)
15. Thapa DK, Visentin D, Kornhaber R, Cleary M. Prevalence of mental disorders among older people in Nepal: a systematic review. *Kathmandu Univ Med J*. 2018;16(62):181-90. PMID: [30636762](#)
16. Ministry of Health and Population, Nepal. Geriatric Health Service Standards, 2078 (2021). Kathmandu: Government of Nepal; 2021. Available from: [this link](#)
17. Yesavage JA, Sheikh JI. 9/Geriatric Depression Scale (GDS): Recent evidence and development of a shorter version. *Clinical Gerontologist: The Journal of Aging and Mental Health*. 2008;5(1-2):165-73. DOI: [10.1300/J018v05n01_09](#)
18. Acharya S, Ghimire S, Jeffers EM, Shrestha N. Health care utilization and health care expenditure of Nepali older adults. *Front Public Health*. 2019;7:24. PMID: [30828573](#) DOI: [10.3389/fpubh.2019.00024](#)
19. Franceschi M, Di Mario F, Leandro G, Maggi S, Pilotto A. Acid-related disorders in the elderly. *Best Pract Res Clin Gastroenterol*. 2009;23(6):839-48. PMID: [19942162](#) DOI: [10.1016/j.bpg.2009.10.004](#)
20. Oliveros E, Patel H, Kyung S, Fugar S, Goldberg A, Madan N, et al. Hypertension in older adults: Assessment, management, and challenges. *Clin Cardiol*. 2020;43(2):99-107. PMID: [31825114](#) DOI: [10.1002/clc.23303](#)
21. Manandhar K, Koju R, Sinha NP, Humagain S. Prevalence and associated risk factors of hypertension among people aged 50 years and more in Banepa Municipality, Nepal. *Kathmandu Univ Med J (KUMJ)*. 2012;10(39):35-8. PMID: [23434959](#) DOI: [10.3126/kumj.v10i3.8015](#)
22. Cicinelli MV, Buchan JC, Nicholson M, Varadaraj V, Khanna RC. Cataracts. *Lancet*. 2023;401(10374):377-89. PMID: [36565712](#) DOI: [10.1016/s0140-6736\(22\)01839-6](#)
23. Fazleen A, Wilkinson T. Early COPD: current evidence for diagnosis and management. *Ther Adv Respir Dis*. 2020;14:1753466620942128. PMID: [32664818](#) DOI: [10.1177/1753466620942128](#)
24. Kalyani RR, Egan JM. Diabetes and altered glucose metabolism with aging. *Endocrinol Metab Clin North Am*. 2013;42(2):333-47. PMID: [23702405](#) DOI: [10.1016/j.ecl.2013.02.010](#)
25. Karki R, Paudel B, Chaudhary A, Bhatta R, Shah SK, Khanal J. Prevalence of geriatric depression and associated factors in Kalika Rural Municipality of Rasuwa District, Nepal. *International Journal of Health Sciences and Research*. 2022;12(1):188-94. Available from: [this link](#)
26. Yadav UN, Thapa TB, Mistry SK, Pokhrel R, Harris MF. Socio-demographic characteristics, lifestyle factors, multi-morbid conditions and depressive symptoms among Nepalese older adults. *BMC Psychiatry*. 2020;20(1):261. PMID: [32456611](#) DOI: [10.1186/s12888-020-02680-3](#)
27. Gaire, D, Gahatraj NR, Yadav RK, Shah G, Baral S. Study among geriatric people residing in urban and rural area and associated factor with depression in Nepal. *International Journal of Community Medicine and Public Health*. 2021;8(9):4167-73. DOI: [10.18203/2394-6040.ijcmph20213514](#)
28. Holt-Lunstad J, Smith TB, Baker M, Harris T, Stephenson D. Loneliness and social isolation as risk factors for mortality: a meta-analytic review. *Perspect Psychol Sci*. 2015;10(2):227-37. PMID: [25910392](#) DOI: [10.1177/1745691614568352](#)
29. Sasson I, Umberson DJ. Widowhood and depression: new light on gender differences, selection, and psychological adjustment. *J Gerontol B Psychol Sci Soc Sci*. 2014;69(1):135-45. PMID: [23811294](#) DOI: [10.1093/geronb/gbt058](#)