ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 16, Issue, 10, pp. 71123-71129, October, 2026
https://doi.org/10.37118/ijdr.31253.10.2026



RESEARCH ARTICLE OPEN ACCESS

COGNITIVE FUNCTION AND DEPRESSION AMONG THE OLDEST-OLD SANTALS OF JHARGRAM, INDIA: ROLE OF FAMILY SUPPORT

Sovanjan Sarkar, Ph. D. *

Associate Professor, Department of Anthropology, Vidyasagar University, Midnapore – 721 102, India

ARTICLE INFO

Article History:
Received 24th July, 2026
Received in revised form
21st August, 2026
Accepted 23rd September, 2026
Published online 31st October, 2026

Key Words:

Depression, Cognitive function, Family support, Santal, West Bengal.
Running title: Psychosocial issues among Santals of West Bengal

Corresponding author:
Sovanjan Sarkar, Ph. D.

ABSTRACT

The present study aimed to determine the association of socio-demographic and social support with sex-specific levels of depression and cognitive function among the oldest-old Santals, a scheduled tribe (ST) residing in the Jhargram district of West Bengal, India. One hundred study participants were randomly chosen from each sex for the present study. Data on socioeconomic status (SES) and demographic variables were collected by administering a pretested schedule. Data on social support, depression, and cognitive function were also collected using universally accepted questionnaires after translating the same in local language and obtaining written informed consent. Sexual dimorphism was found for many SES and other demographic variables. Moreover, significant sexual differences were not found for social support, depression, or cognitive function levels. Thus, the data was pooled for sex for inferential analyses. Furthermore, no reciprocal relationship between depression and cognitive function was observed. Adjusted multinomial logistic regression analyses revealed that social support was the most significant predictor ($p < 0.01$) for both depression and cognitive function level. Adequate social support from family members plays an imperative role in maintaining healthy psychosocial conditions among the oldest-old study population, which may be cited as an example for other communities.

Copyright©2026, Sovanjan Sarkar. *This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.*

Citation: Sovanjan Sarkar, Ph. D. 2026. "Cognitive Function and Depression among the Oldest-old Santals of Jhargram, India: Role of Family Support.". *International Journal of Development Research*, 16, (10), 71123-71129.

INTRODUCTION

Aging is a process that includes a gradual decline in the age-specific mechanisms of an organism, including humans, owing to internal physiological deterioration (Rose *et al*., 2012). It is the universal phenomenon among human beings and according to most biologists the ageing begins from the fourth decade of life and ends with death (Dziechciaz& Filip, 2014). A demographic shift has been observed for a couple of decades or three, where a substantially higher number of elderly people have been noticed in both developed and developing countries. Back in 1999, the Government of India has implemented 'National Policy on Older Persons', and defined 'elderly' as a person who is aged 60 years and above. Concurrently, the United Nation (UN) has also considered the same age as the reference for the older population. The number of elderly people in developing nations has been growing at an unthinkable rate, with about 65% of older persons living in developing countries (World Population Ageing, 2015). In India, the elderly constitute approximately 8% of the total population (Census of India, 2011). Earlier, the World Health Organization [WHO], (2015) reported that the elderly population in India will increase significantly over the next four decades, and by 2050, it will constitute 19% of the total population. The lifestyle of older people has three major aspects: sociological, psychological, and biological. The biological features of elderly life are characterized by functional decline of few organs (Handler, 1960) and the sociological aspect is depicted by the changes in social behaviors and socialization stigma (Vatuk, 1980). Both stages may be prevented by adopting certain precautions and behavioral alterations, such as appropriate medical interventions for biological and adequate social support for sociological, respectively. However, the psychological characteristics of ageing is on the one way dynamic, while predominantly irreversible on the other, as this aspect is related to the psychological processing and associated with the state of mind (Vischer, 1967).

Psychosocial or mental health: The World Health Organization (WHO) defines mental health as *"a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community"* (WHO, 2025). Mental or psychosocial health has been addressed in several studies, including two key factors of the WHO definition: positive emotions and positive functioning. While conducting in-depth research on individuals, three components of psychosocial health have been identified: emotional, psychological, and social well-being (Gautam *et al*., 2024). Emotional well-being is characterized by happiness, interest in life, and satisfaction, while psychological well-being comprises liking most of one's own personality, managing the tasks of daily life, and maintaining a fair relationship with others. On the other hand, positive functioning towards social contribution and integration, social actualization (i.e., thinking in a way that the society is good for living for all human beings), and social coherence (i.e.,

that the way society works makes sense to them) are the main characteristic features of social well-being (Keyes, 2015).

Depression and cognitive function: Reciprocal relationships: The high prevalence of depression was found to be significantly associated with demographic and socioeconomic factors such as sex, residential and marital status, low literacy and economic status, and family type among those living alone and with less social support (Maulik and Dasgupta, 2012; Sandhya, 2010). Studies among the elderly population of India also revealed sex differences and social support as significant predictors of depression (Thakur *et al*., 2013; Pracheth, 2016). In another study, elderly females living without spouse and with chronic illnesses were found to have higher depression levels (Goswami *et al*., 2017). An individual's cognitive function is related to conscious intellectual activities such as thinking, reasoning, and remembering, based on or capable of being reduced to empirical factual knowledge. The majority of elderly people gradually develop some degree of decline in cognitive capacity, such as forgetfulness, decreased ability to maintain focus, diminished problem-solving capacity, and difficulties in memorizing things.

Similar to depression, cognitive function is also known to be influenced by many factors, such as childhood home environment, genes, and socio-demographic factors (Richards *et al*., 2004). Cognitive decline is generally detected from middle age onwards and is found to be intense at comparatively higher ages (Schaie, 1994; Aartsen *et al*., 2002). Decline in cognitive function remains the foremost characteristic feature of Alzheimer's disease (AD) and other dementias that significantly lead to the risk of functional dependence and poor quality of life among the elderly (Lara *et al*., 2017a). According to the World Alzheimer's report, over 46 million people were living with dementia worldwide in 2015, and this number is estimated to reach an alarmingly high count of 131.5 million by 2050 (Prince *et al*., 2015). Many studies have demonstrated an association between cognitive decline and sociodemographic factors and chronic illnesses (Tervo *et al*., 2004), lifestyle habits (Tuon *et al*., 2010) and social support (Zunzunegui *et al*., 2003). However, extensive social support seems to protect the elderly from dementia (Wang *et al*., 2015; Fratiglioni *et al*., 2000).

Recently, a reciprocal relationship has been shown between depression and cognitive function/impairment among the elderly (Chen *et al*., 2025). A positive effect of late-life depression on cognitive function was shown among the elderly, along with the association of the former with quality of life (Riddle *et al*., 2017). Memory function and information-reciprocating capacity were also shown to have an effect on depression (Wang and Blazer, 2015). Furthermore, it has been depicted that late life depression exacerbates cognitive impairments and other psychosocial risks among the elderly (Lara *et al*., 2017b). A significant reciprocal relationship has also been demonstrated among the Chinese elderly (Lu and Ruan, 2023). However, the reciprocal relationship between depression and cognitive function has rarely been examined (van den Kommer *et al*., 2013; Olaya *et al*., 2019).

Studies have already considered depression and cognitive function among the elderly population worldwide. However, most of the studies were conducted among urban-based multi-ethnic populations or among patients. To the best of our knowledge, such studies have been rare among the oldest old population living in any part of India, in general, and in the eastern state of West Bengal, in particular. Moreover, a holistic approach to evaluate the association of socioeconomic, demographic, and social support with depression and cognitive function has never been attempted among any tribal population in West Bengal. Hence, the necessity of the present study has been felt, which principally aimed to evaluate the plausible association of social support and other socio-demographic factors on the magnitudes of depression and cognitive impairment among the oldest-old Santal people living in the Jhargram district of West Bengal, India. Moreover, the study will attempt to demonstrate the sex difference in depression and cognitive impairment, as well as to identify the reciprocal relationship between them, if any.

MATERIALS AND METHODS

Study area, population and participants: The present cross-sectional study was carried out among oldest-old (≥ 80 years) Santals residing in the Jhargram District.The santal tribe was chosen because of its dominant population size among all tribal groups in the district. Accessibility and ease of conversation were two additional reasons for choosing this population group. A total of 100 study participants of each sex were randomly chosen for the present study.

Sampling method: To locate and select the oldest-old Santal in the study area, voters' lists of 80 years and above were consulted from the office of the District Magistrate of Jhargram. The age of the participants was verified by any of the available official documents, such as retirement documents, Aadhaar cards, or ration cards. Initially, 122 and 132 men and women were randomly selected. However, 22 men and 32 women were excluded from the study for various reasons, such as discrepancies in age-related documents, sudden illness, and physical disabilities including hearing and speech problems.

Ethical issues: Ethical approval was obtained from the author's host institution, Vidyasagar University (reference no. VU/IHEC-6/1-25 dated 26.08.2025). Written informed consent was obtained from each study participant before data collection. The Helsinki Declaration (WMA, 2024) was followed throughout the study period.

Data types

Socio-demographic profile: Sociodemographic information was gathered using a pretested schedule. Information on age, sex, marital status, age at marriage, number of living/dead offspring, living arrangements, status of spouse, perceived notion of health status, and so on were collected. Moreover, data on socioeconomic profile including educational status, occupational status, present working status, occupation before 60 years of age, source of income, and family income of the study participants were also obtained.

Depression and Cognitive impairment: Data on depression and cognitive impairment were collected using universally accepted Likert-type questionnaires named "Geriatric Depression Scale" or GDS-15 (Yesavage, *et al*., (1983) and Mini Mental State Examination (MMSE) questionnaire (Jorm, *et al*., 1991), respectively. For depression, scoring was done after adding all the scores, which can range between 0 and 15. Categories of depression were as follows: Normal (Score: <5); Mild Depression (Score: 5-8); Moderate Depression (Score: 9-11); and Severe Depression (Score: 12-15). On the other hand, to find the score of cognitive impairment, one point for each correct answer was given and the scoring was done as, i) uncertain cognitive impairment (UCI=score 24-30); ii) mild to moderate cognitive impairment (MCI=score 18-23) and iii) severe cognitive impairment (SCI=score <18).

Social support

To ascertain social support, the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet *et al*. 1988) questionnaire was administered. The MSPSS is also a Likert-type questionnaire comprising 12 questions with seven answerable options (score 0-7). The questions were as follows:

- There is a special person who is around when I am in need.
- There is a special person with whom I can share my joys and sorrows.
- My family really tries to help me.
- I get the emotional help and support I need from my family.
- I have a special person who is a real source of comfort to me.
- My friends really try to help me.
- I can count on my friends when things go wrong.
- I can talk about my problems with my family.
- I have friends with whom I can share my joys and sorrows.

- There is a special person in my life who cares about my feelings.
- My family is willing to help me make decisions.
- I can talk about my problems with my friends.

Thus, 84 was the highest score that could be obtained by one study participant. The questions were specific to family members (FAM), friends (FRN), and significant others (SO). A higher mean score indicates higher perceived social support. The support scale and subscales of each individual were calculated as follows:

- Total scale – adding the score of all 12 items and then dividing by 12
- Family subscale – adding the scores of 3, 4, 8, and 11 and then dividing by 4
- Friends subscale – adding the scores of 6,7, 9, and 12 and then dividing by 4
- Significant other subscales – adding the scores of 1, 2, 5, and 10 and then dividing by 4

The final interpretation was as follows: a mean of 1.0 to 2.9 – low support; 3.0 to 5.0 – moderate support, and 5.1 to 7.0 – high support (Zimet *et al*., 1990). This questionnaire has already been used earlier among the Indian population after validation and translation into local languages (Osmany *et al*., 2014; Kaur and Beri, 2019). A similar method was adopted in this study after translating and pretesting the questionnaire in the local language. A Cronbach's (α) value of 0.856 was obtained by testing the reliability of the answers given by the study participants.

Statistical analyses: To fulfil the objectives of the present study, a series of statistical analyses of the data were performed sequentially. At the outset, prevalence (%) and mean (with standard deviation) were calculated for qualitative and quantitative variables, respectively. Chi-square and t-tests were performed appropriately for the binary/ordinal and quantitative variables, respectively, to determine the statistical differences between the sexes. To determine the reciprocal relationship between the sub-categories of depression and cognitive impairment, chi-square and Kendall's tau (τ)-b tests were used separately for sex. The data were pooled for sex because neither depression nor cognitive impairment scores had significant mean differences between the males and the females. Moreover, the sub-categories of depression and cognitive impairment also did not show significant sex differences in the chi-square statistics. As there were more than two sub-categories of both depression and cognitive impairment, multinomial logistic regression analysis was performed on the pooled sample using depression (categorical) and cognitive impairment (categorical) as the dependent variable. The normal categories of depression and cognitive impairment were used as references. To create a list of independent variables for regression analysis, the frequency distribution of the sub-categories of each variable was first calculated. Further re-categorization was done for variables that showed a substantial uneven distribution of frequencies. Marital status was re-categorized as i) married and others (unmarried/widowed/widower/separated); education level was re-categorized as i) up to class 10 and ii) others (higher secondary, graduation, and above); present working status was re-categorized as i) worker and ii) non-worker; monthly income (in Rs.) was re-categorized as i) up to 5000 and ii) above 5001; monthly income source was re-categorized as i) pension/other government schemes, ii) fixed or recurring deposits in bank and/or post office, and iii) no income; children sharing the common house and kitchen was re-categorized as i) at least one child; ii) none; whether living alone was re-categorized as i) yes and ii) no; notions about personal health was re-categorized as i) healthy and ii) not healthy, and mobility status was re-categorized as i) independent mobility and ii) dependent mobility (with wheel chair/walking stick). The reference category of each variable was logically chosen to determine the odds of other subcategories that might show adverse magnitudes of depression and cognitive impairment. Statistical Package for Social Science (SPSS) version 21.0 was used for the statistical analyses, and $p < 0.05$ was considered as significant level.

RESULTS

Table 1 depicts the socioeconomic and demographic profiles of the study population by sex. The mean age difference was not statistically significant. Among all the variables, marital and educational status, living arrangement, and current working status were found to have significant differences in prevalence between sexes. The results of the chi-square tests to find the statistical differences in perceived social support and psychosocial traits between sexes are shown in Table 2. None of the psychosocial traits or categories of perceived social support demonstrated significant sex differences. Table 3 underscores the results of the t-test, which was performed to determine the sex differences in mean values of social support, depression, and cognitive impairment scores. The mean score of family support was expectedly highest; however, similar to the Chi-square result, the t-test also did not find any significant sex differences for the said variables. The reciprocal relationship between depression and cognitive impairment for both men and women is depicted in Table 4. Chi-square and Kendall's τ-b tests did not show any relationship between the selected psychosocial variables, irrespective of sex. The adjusted multinomial logistic regression analysis was performed by using depression as dependent and socioeconomic, demographic, social support and other related variables as independent. As shown in Table 5, social support ($p<0.01$), mobility status ($p<0.05$), income source ($p<0.05$), and educational status ($p<0.05$) were significant predictors of the different stages of depression among the study population. Table 6 depicts the results of adjusted multinomial logistic regression analysis using cognitive impairment as dependent and the same set of socioeconomic, demographic, social support, and others as independent variables. Marital status ($p<0.05$) and income source ($p<0.05$) were found to be significant predictors of different degrees of cognitive impairment among the study participants. Furthermore, social support remains an important and significant predictor of cognitive impairment, with the severe category showing the highest odds ($p<0.01$) for low social support.

DISCUSSION

As the elderly population grows much faster, the 21st century is widely reported as the century of the elderly person and the 22nd century is expected to witness the phenomenon of the 'aging of the aged', which is a major shift in the age group of 80 years and above (India Ageing Report, 2023). The prevalence of depression and cognitive impairment is gradually increasing among the elderly in general and among people of the oldest-old age group, in particular, in developed and developing countries, including India. The effects of various bio-behavioral, socio-demographic, and socioeconomic variables such as increased age, pension status, lack of regular financial and other support from children, living arrangements, current working status, and most importantly, inability to perform regular work like movement without support, taking bath alone, and other such work were found to be associated with depression and cognitive impairment. Among the Indian tribal populations, however, research considering a set of psychosocial traits, such as depression, loneliness, and cognitive function, along with quality of life, activities, and instrumental activities of daily living and nutritional aspects among the oldest-old people has never been attempted. This forced us to undertake the present study among the oldest-old Santal, a scheduled tribe residing in Jhargram District of West Bengal, which aimed to find the association of socioeconomic, demographic, and social support with depression and cognitive impairment. Moreover, this study attempted to evaluate the reciprocal relationship between selected psychosocial traits. The present study expectedly underscored significantly higher prevalence of married males than their female counter parts, corroborating with a study done by Gjonca *et al*. (2010). Again, a lower level of education was generally observed among the Santal study participants, and the same was found to be significantly lower among females, as was found elsewhere (Barman *et al*. 2014). An overwhelming majority of the study participants lived with other family members, and the prevalence of living alone was found to be quite low.

Table 1. Statistical sex difference in socioeconomic and demographic profile of the study participants

Socio-demographic variable	Male (n=100)	Female (n=100)	t-value (df=198)
Mean (sd) of Age	83.93 (4.043)	83.77 (3.443)	0.301
	%	%	χ^2-value (df=1)
Age group			
80 – 84	63.0	62.0	0.021
85 & above	37.0	38.0	
Marital status			
Currently in wedlock and living with spouse	53.0	24.0	17.759***
Others *	47.0	76.0	
Educational status			
Up to class 10	9.0	29.0	12.995 ***
School final & above	91.0	71.0	
Currently worker			
Yes	82.0	33.0	49.125***
No	18.0	67.0	
Monthly income (INR)			
Up to 5000	54.0	42.0	2.885
> 5001	46.0	58.0	
Income source			
Pension/Government schemes	59.0	68.0	1.811
Fixed of recurring deposits in bank or post office	18.0	15.0	(df=2)
No income	23.0	17.0	
Children sharing common house & kitchen			
None	47.0	38.0	1.657
At least one	53.0	62.0	
Living arrangements			
Living alone	5.0	13.0	3.907*
Living with others	95.0	87.0	
Perceive notion about personal health			
Healthy	65.0	60.0	0.533
Not healthy	35.0	40.0	
Mobility status			
Independent mobility	78.0	73.0	0.676
Dependent mobility (stick, wheel chair)	22.0	27.0	

* Significant at p<0.05 level; *** Significant at p<0.0001 level

Table 2 Results of χ^2 test of percentage values, for perceived social support and psychosocial trait variables between males and females

Social support and psychosocial trait variable	Male (n=100)	Female (n=100)	χ^2-value	p-value
Social support (MSPSS Total Scoring)				
Low support (1.0-2.9)	17.0	26.0	2.717	0.257
Moderate support (3.0-5.0)	40.0	39.0		(df=2)
High support (5.1-7.0)	43.0	35.0		
Depression categories				
Normal	24.0	22.0	3.255	0.354
Mild	39.0	29.0		(df=3)
Moderate	21.0	27.0		
Severe	16.0	22.0		
Cognitive Impairment categories				
UCI	27.0	22.0	0.698	0.708
MCI	40.0	42.0		(df=2)
SCI	33.0	36.0		

Table 3. Results of t-test for mean (sd) values of perceived social support and psychosocial trait variables between males and females

Social support and psychosocial trait variable	Male (n=100)	Female (n=100)	t-value	p-value (df=198)
MSPSS subscale (Mean score range 1 - 7)				
Family	5.72 (1.12)	5.51 (1.57)	1.089	0.276
Friends	4.23 (1.53)	4.59 (1.88)	1.485	0.139
Special ones	3.61 (1.60)	3.20 (1.78)	1.713	0.088
Total	4.52 (1.51)	4.43 (1.62)	0.406	0.685
Depression (GDS-15) score	7.60 (3.55)	8.35 (3.84)	1.435	0.153
Cognitive impairment (MMSE) score	19.68 (5.34)	19.26 (5.30)	0.558	0.578

Table 4 Reciprocal relationship between depression and cognitive impairment, by sex

Sex	χ^2-value	p-value (df=6)	Kendall's τ-b	Bias	Std. Error	95% Confidence Interval	
						Lower	Upper
Male	7.320	0.292	.164	.001	.097	-.011	.372
Female	6.833	0.337	.058	.011	.095	-.132	.281

Table 5. Result of adjusted multinomial logistic regression analysis to find lifestyle and social support related predictors of depression

Variable	Depression sub-category	Wald	Odds ratio	95% CI of Exp(B)	
				lower	upper
Age group (years)					
80-84	Ref.				
85 and above	Mild	0.872	1.495	0.643	3.476
	Moderate	0.000	1.005	0.411	2.459
	Severe	2.397	2.228	0.808	6.141
Marital status					
In wedlock	Ref.				
Others	Mild	4.144	0.411*	0.175	0.968
	Moderate	0.676	0.677	0.266	1.718
	Severe	1.211	0.565	0.204	1.562
Education status					
Class 10 & above	Ref.				
Up to Class 10 (not passes)	Mild	5.295	0.122*	0.052	0.869
	Moderate	0.829	0.610	0.210	1.768
	Severe	0.004	1.036	0.353	3.039
Current working status					
Working	Ref.				
Not working	Mild	0.438	1.037	0.439	2.448
	Moderate	2.239	0.504	0.205	1.237
	Severe	1.687	0.528	0.210	1.385
Sources of income					
Pension & Govt. schemes	Ref.				
FD & RD in bank/PO	Mild	2.091	0.352	0.085	1.450
	Moderate	2.620	0.260	0.051	1.328
	Severe	3.790	0.192*	0.037	1.011
No income	Mild	3.072	0.352	0.110	1.131
	Moderate	0.516	0.627	0.175	2.240
	Severe	2.665	0.349	0.098	1.235
Children sharing common house & kitchenAt least one	Ref.				
None	Mild	0.594	1.395	0.598	3.252
	Moderate	1.188	1.678	0.662	4.254
	Severe	1.443	1.842	0.680	4.988
living arrangement					
Not living alone	Ref.				
Living alone	Mild	0.292	1.903	0.184	19.653
	Moderate	0.673	2.684	0.254	28.337
	Severe	2.039	5.308	0.537	52.474
Self-notion on health					
Healthy	Ref.				
Unhealthy	Mild	2.333	0.502	0.207	1.216
	Moderate	0.490	0.709	0.271	1.857
	Severe	0.387	1.411	0.477	4.175
Mobility status					
Independent mobility	Ref.				
Dependent mobility	Mild	0.912	1.742	0.558	5.440
	Moderate	3.941	0.340*	0.117	0.986
	Severe	4.323	0.295*	0.093	0.932
Social support					
High	Ref.				
Moderate	Mild	7.295	0.192**	0.152	0.569
	Moderate	9.238	1.159**	1.130	2.046
	Severe	10.110	2.012***	1.856	3.011
Low	Mild	8.295	1.172**	1.052	1.569
	Moderate	9.111	1.212**	1.001	1.300
	Severe	11.157	2.121***	1.745	2.295

* Significant at p<0.05 level; ** Significant at p<0.01 level; *** Significant at p<0.0001 level

Earlier, it was a common scenario regarding employment at a very young age in India and elsewhere. The present study found that people engaged in jobs at a lower age and started earning their own and family livelihoods. As a result, the attainment of higher education was restricted, although significant sexual dimorphism was demonstrated in the results. They were forced to earn money because of the low incomes of their parents, which substantially hampered their sustenance. Pertaining to the family type, the trend of breaking large extended families to small-membered nuclear families has been noticed; however, complete detachment from the family has been extremely rare. Thus, the living arrangements of the study population were found to maintain family harmony, as expected in the tribal population. Eventually, the support system became ubiquitous in the study population.

Golandaj *et al*. (2013) also showed that older adults of multi-member families received substantial social support than single-member families in India. No sexual dimorphism in social support was observed in the study population. Considering the obvious biological, sociological, and psychosocial contrast between males and females, the present study attempted to find the sexual dimorphism pertaining to prevalence and mean scores of depression and cognitive impairment sub-categories, which were not obtained using the Chi-square and t-test statistics. In addition, no reciprocal relationship was found between depression and cognitive impairment, as indicated by values of the chi-square and Kendall's tau-b statistics, irrespective of sex. Although a few studies have reported a clear reciprocal relationship between late-life depression and cognitive impairment (Chen *et al*., 2025; Riddle *et al*., 2017), the results of the present study

Table 6. Result of adjusted multinomial logistic regression analysis to find lifestyle and social support related predictors of cognitive impairment

Variable	Cognitive Imp. sub-category	Wald	Odds ratio	95% CI of Exp(B)	
				lower	upper
Age group (years)					
80-84	Ref.				
85 and above	Mild to Mod.	0.706	0.705	0.312	1.593
	Severe	2.867	0.479	0.204	1.123
Marital status					
In wedlock	Ref.				
Others	Mild to Mod.	1.383	1.646	0.717	3.779
	Severe	4.751	2.638*	1.103	6.311
Education status					
Class 10 & above	Ref.				
Up to Class 10 (not passes)	Mild to Mod.	0.320	1.304	0.520	3.272
	Severe	1.968	0.457	0.153	1.365
Current working status					
Working	Ref.				
Not working	Mild to Mod.	1.187	0.642	0.289	1.425
	Severe	3.331	0.457	0.197	1.060
Sources of income					
Pension & Govt. schemes	Ref.				
FD & RD in bank/PO	Mild to Mod.	0.015	1.077	0.329	3.524
	Severe	0.687	1.849	0.432	7.905
No income	Mild to Mod.	0.256	0.792	0.321	1.953
	Severe	5.345	3.753*	1.223	11.517
Children sharing common house & kitchen					
At least one	Ref.				
None	Mild to Mod.	0.669	1.392	0.630	3.076
	Severe	0.387	1.308	0.561	3.053
living arrangement					
Not living alone	Ref.				
Living alone	Mild to Mod.	0.016	0.911	0.217	3.825
	Severe	0.464	1.690	0.373	7.654
Self-notion on health					
Healthy	Ref.				
Unhealthy	Mild to Mod.	1.756	0.571	0.250	1.308
	Severe	0.865	0.657	0.271	1.593
Mobility status					
Independent mobility	Ref.				
Dependent mobility	Mild to Mod.	0.071	1.133	0.452	2.842
	Severe	0.015	1.061	0.404	2.788
Social support					
High	Ref.				
Moderate	Mild to Mod.	2.295	0.192	0.052	3.569
	Severe	4.238	1.129*	1.110	5.046
Low	Mild to Mod.	3.295	1.163*	1.048	5.423
	Severe	4.923	2.416**	1.698	5.123

* Significant at p<0.05 level; ** Significant at p<0.01 level

were consistent with those of a few other recent studies, which also did not find an intertwined relationship between these two important psychosocial traits (Glei and Weinstein, 2026; Yuan *et al*., 2023). Hence, it could be clearly stated that the observed level of depression and magnitude of cognitive impairment were definitely affected by certain other socioeconomic, demographic, and social support-related factors among the study population. Therefore, adjusted multinomial logistic regression analysis was separately performed to identify the socioeconomic, demographic, and social support-related predictors(s) of depression and cognitive impairment among the study participants. As mentioned earlier, the data were pooled for sex because neither depression nor cognitive impairment showed statistically significant sex differences. In this study, depression was significantly predicted by mobility status, educational level, and income. However, perceived social support was found to be the most significant predictor, showing a gradual increase in odds with the severity of depression. It was also demonstrated that income and social support significantly predicted cognitive impairment in the regression analysis, whereas marital status was a different predictor of cognitive impairment in relation to depression. A significant association of various depression levels and cognitive impairment with personal independent immobility (Bamonti *et al*., 2024), low level of educational status (Naik and Nirgude, 2015; Fu et. al., 2018) and lower income (Maulik and Dasgupta, 2012; Miu et. al., 2016) have also been reported elsewhere. The Santals were predominantly agriculturists, and they spent the majority of the daytime in agricultural fields. Moreover, at a younger age, they preferred to live independently, with minimum support from other individuals. Declining performance due to restricted mobility results in lower agricultural yields, which, according to their opinion, substantially exacerbates their monthly or yearly income. This combined situation causes them to experience depression when they age. However, active support, principally from family members and friends, lessens the level of depression and degree of cognitive impairment, which is evident from the results of the present study. Lower levels of depression and cognitive impairment among older adults with higher social support have been demonstrated in many studies (Li et. al., 2023; Hasler and Kupferberg, 2023). Thus, the results clearly demonstrated that a better profile pertaining to depression and cognitive impairment might be the result of affectionate social support among the Santals of oldest age group.

CONCLUSION

The present study evidently underscored the importance of social support from family members and friends in shaping the depression and cognitive function level of oldest-old people. In addition, getting

rid of less monthly income at an older age should be considered seriously at a younger age, and awareness should be provided to enhance education level to get a good job and to deposit some amount of money on a regular basis in reliable organizations such as banks and post offices. Further large-scale studies should include other psychosocial parameters such as loneliness and anxiety to gather information on the holistic scenario of the Santals and other tribal groups to address the research gap in the aging process. The present study could be considered as a baseline to design more such studies to promote the processes of healthy aging among many population groups.

Limitations of the study: In addition to the valuable outcomes, the present study has a few limitations. First, the sample size was restricted because of the less availability of the people of this vulnerable age group. The small sample size was also due to the mismatch between verbal and documental information on age and sudden health-related decline of a few individuals. Second, physiological and biochemical information, along with the current morbidity profile, were absent in the present study, which might have enhanced the logic of searching for actual support.

Acknowledgements

The author is deeply indebted to the study participants for providing the required data, even at their vulnerable ages. The author's host institution authority and the authorities of the Jhargram District are thankfully acknowledged for their necessary support.

Funding: No official funding was used to conduct the present study.

Ethical issues: Ethical approval was obtained from the author's host institution, Vidyasagar University (reference no. VU/IHEC-6/1-25 dated 26.08.2025). Written informed consent was obtained from each study participant before data collection. The Helsinki declarations were followed thoroughlyduring the entire research.

Conflict of interest: The author declares no conflict of interest of any kind to disclose.

REFERENCES

Aartsen, M. J., Smits, C. H. M., van Tilburg, T., Knipscheer, K. C. P. M., & Deeg, D. J. (2002). Activity in older adults: Cause or consequence of cognitive functioning? A longitudinal study on everyday activities and cognitive performance in older adults. *The Journals of Gerontology: Series B*, 57(2), 153–162.

Bamonti, P. M., Kennedy, M. A., Ward, R. E., Travison, T. G., Bean, J. F. (2024). Association between Depression Symptoms and Disability Outcomes in Older Adults at Risk of Mobility Decline. *Archives of Rehabilitation Research and Clinical Translation,* 6(2), 100342 https://doi.org/10.1016/j.arrct.2024.100342

Barman, S., Lata, K., Ram, R., Ghosh, N., Sarker, G., & Shahnawaz, K. (2014). A study of morbidity profile of geriatric population in an urban community of Kishanganj, Bihar, India. *Global Journal of Medicine and Public Health,* 3(1).

Census of India. (2011). *Population Composition, 2014*, Government of India, New Delhi.

characteristics of the Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *55*, 610-17.

Chen, C., Tahamata, V. M., Chuang, Y. F., Huang, Y. S., Chuang, Y. H., Lin, Y. T., Cheng, W., Fan, W. T., Chiu, Y. L., Martinez, R. M., Liao, T. T., & Tzeng, O. J. L. (2025): Perceived loneliness mediates the relationship between mild cognitive impairment and executive function deficits. *Nature: Humanities and Social Sciences Communication*, https://doi.org/10.1057/s41599-025-05367-w

Dziechciaż, M., & Filip, R. (2014). Biological psychological and social determinants of old age: Bio-psycho-social aspects of human aging. *Annals of Agricultural and Environmental Medicine,* 21(4), 835–838.

Fratiglioni, L., Wang, H. X., Ericsson, K., Maytan, M., & Winblad, B. (2000). Influence of social network on occurrence of dementia: A community-based longitudinal study. *The Lancet,* 355(9212), 1315–1319.

Fu, C., Li, Z., & Mao, Z. (2018). Association between Social Activities and Cognitive Function among the Elderly in China: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health,* 15(2), doi:10.3390/ijerph15020231

Gautam, S., Jain, A., Chaudhary, J., Gautam, M., Gaur, M., Grover, S. (2024). Concept of Mental Health and Mental Well-being, It's Determinants and Coping Strategies. *Indian Journal of Psychiatry,* 66(Suppl 2), S231-S244 10.4103/indianjpsychiatry.indianjpsychiatry_707_23

Gjonça, E., Stafford, M., Zaninotto, P., Nazroo, J., & Wood, N. (2010). Health and social engagement among the oldest old. In J. Banks, C. Lessof, J. Nazroo, N. Rogers, M. Stafford & A. Steptoe (Eds). *Financial circumstances, health and well-being of the older population in England* (pp. 227-253). London, UK: The Institute for Fiscal Studies.

Glei, D, A., & Weinstein, M. (2026). Depression and Cognition: Is There a Bidirectional Relationship? *Aging and Mental Health,* 30(9), 2088-2098.

Golandaj, J. A., Goli, S., & Das, K. C. (2013). Living arrangements among the older population and perceptions on old age assistance among adult population in India. *International Journal of Sociology and Social Policy,* 33(5/6), 367-379.

Goswami, S., Deshmukh, P. R., Pawar, R., Raut, A. V., Bhagat, M., & Mehendale, A. M. (2017). Magnitude of Depression and its correlates among elderly population in a rural area of Maharashtra: A cross-sectional study. *Journal of Family Medicine & Primary Care,* 6(4), 803-812.

Handler, P. (1960). Radiation and Aging. In N. W. Schock (Ed.), *Aging*. Washington DC. USA

Hasler, G., & Kupferberg, A. (2023). The Social Cost of Depression: Investigating the Impact of Impaired Social Emotion Regulation, Social Cognition, and Interpersonal Behavior on Social Functioning. *Journal of Affective Disorders Report,* 14, 100631 https://doi.org/10.1016/j.jadr.2023.100631

India Ageing Report. (2023). *International Institute for Population Sciences & United Nations Population Fund 2023., Caring for Our Elders: Institutional Responses*. United Nations Population Fund, New Delhi.

Jorm, A. F., Scott, R., Cullen, J. S., & Mackinnon, A. J. (1991). Performance of the informant questionnaire on cognitive decline in the elderly (IQCODE) as a screening test for dementia. *Psychological Medicine,* 21, 785-790.

Kaur, K., & Beri, N. (2019). Psychometric properties of multidimensional scale of perceived social support (MSPSS): Indian adaptation. *International Journal of Scientific Research and Technology*, 8, 2796-2801.

Keyes, C. L. M. (2015): Human flourishing and salutogenetics. In M, Pleuss (Ed.) *Genetics of psychological well-being: The role of heritability and genetics in positive psychology (pp.* 3-22*)*. London: Oxford University Press.

Lara, E., Ai, K., Caballero, F., Domènech-Abella, J., Miret, M., Olaya, B., Rico-Uribe, L., Ayusomaeos, J. L., & Haro, J. M. (2017a). Cognitive reserve is associated with quality of life: A population-based study. *Experimental Gerontology,* 87, 67–73.

Lara, E., Koyanagi, A., Domenech-Abella, J., Miret, M., Ayuso-Mateos, J. L., Haro, J. M. (2017b): The impact of depression on the development of mild cognitive impairment over 3 years of follow-up: A population-based study. *Dementia and Geriatric Cognitive Disorders*, 43, 155–169.

Li, G., Lam, A. F., Tang, W., Seedat, S., Barbui, C., Papola, D., Panter-Brick, C., van der Waerden, J., Bryant, R., Mittendorfer-Rutz, E., *et al*. (2023). Understanding the Protective Effect of Social Support on Depression Symptomatology from a Longitudinal Network Perspective. *BMJ Mental Health,* 26(1), e300802 10.1136/bmjment-2023-300802

Lu, J, & Ruan, Y. (2023): Exploring the reciprocal relationship between depressive symptoms and cognitive function among

Chinese older adults. *Healthcare*, 11(21), 2880 https://doi.org/10.3390/healthcare11212880

Maulik, S., & Dasgupta, A. (2012). Depression and its determinants in the rural elderly of West Bengal - a cross sectional study. *International Journal of Biological & Medical Research*, 3(1), 1299-1302.

Miu, J., Negin, J., Salinas-Rodriguez, A., Manrique-Espinoza, B., Sosa-Ortiz, A. L., Cumming, R., & Kowal, P. (2016). Factors associated with cognitive function in older adults in Mexico. *Global Health Action*, 9(1). http://dx.doi.org/10.3402/gha.v9.30747.

Naik, P. R., &Nirgude, A. S. (2015). Depression among the Elderly: A Cross Sectional Study in a Rural Community of South India. *National Journal of Community Medicine*, 6(2), 394-397.

Olaya, B., Moneta, M. V., Miret, M., Ayuso-Mateos, J. L., & Haro, J. M. (2019): Course of depression and cognitive decline at 3-year follow-up: The role of age of onset. *Psychology and Aging*, 34, 475–485.

Osmany, M., Ali, M. S., Rizvi, S., Khan, W., & Gupta, G. (2014). Perceived social support and coping among alcohol/cannabis dependents and non dependents. *Delhi Psychiatric Journal*, 17, 375-382.

Pracheth, R. (2016). Urban–rural comparison of depression among the elderly population: a cross-sectional study. *International Journal of Medical Science and Public Health*, 5(5), 866-872.

Prince, M. J., Wimo, A., Guerchet, M., Ali, G. C., Wu, Y., & Prina, A.M. (2015). *World Alzheimer Report 2015: The Global Impact of Dementia.* London, UK: Alzheimer‟s disease International (ADI).

Richards, M., Shipley, B., Fuhrer, R., & Wadsworth, E. J. M. (2004). Cognitive ability in childhood and cognitive decline in mid-life: Longitudinal birth cohort study. *British Medical Journal*, 328(7439), 552-556.

Riddle, M., Potter, G. G., McQuoid, D. R., Steffens, D. C., Beyer, J. L., & Taylor, W. D. (2017): Longitudinal cognitive outcomes of clinical phenotypes of late-life depression. *American Journal of Geriatric Psychiatry*, 25, 1123–1134.

Rose, M. R., Flatt T., Graves, J. L., Greer, L. F., Martinez, D. E., Matos, M., Mueller, L.D., Reis, R. J. S., & Shahrestani, P. (2012). What is aging? *Frontires in Genetics*, 134(3).

Sandhya, G. I. (2010). Geriatric Depression and Related Factors - A Cross Sectional Study from a Rural Community in South Kerala. *Journal of The Indian Academy of Geriatrics*, 6(2), 61-63.

Schaie, K. W. (1994). The course of adult intellectual development. *American Psychologist*, 49(4), 304-313.

Tervo, S., Kivipelto, M., Hänninen, T., Vanhanen, M., Hallikaninen, M., Mannermaa, A., & Soininen, H. (2004). Incidence and risk factors for mild cognitive impairment: A population-based three-year follow-up study of cognitively healthy elderly subjects. *Dementia and Geriatric Cognitive Disorders*, 17(3), 196–203.

Thakur, R.P., Banerjee, A., &Nikumb, V.B. (2013). Health Problems Among the Elderly: A Cross-Sectional Study. *Annals of Medical and Health Science Research*. 3(1), 19-25.

Tuon, T., Valvassori, S. S., Lopes-Borges, J., Fries, G. R., Silva, L. A., Kapczinski, F., Quevedo, J., & Pinho, R. A. (2010). Effects of moderate exercise on cigarette smoke exposure-induced hippocampal oxidative stress values and neurological behaviors in mice. *Neuroscience Letters*, 475(1), 16-19.

van den Kommer, T. N., Comijs, H. C., Aartsen, M. J., Huisman, M., Deeg, D. J., & Beekman, A. T. (2013): Depression and cognition: How do they interrelate in old age? *American Journal of Geriatric Psychiatry*, 21, 398–410.

Vatuk, S. (1980). Withdrawal and disengagement as a cultural response to aging in India. In C. L. Fry (Ed.) *Aging in Culture and Society: Comparative Viewpoints and strategies* (pp. 104-125). New York: J.F. Bergin Publications.

Vischer, A. L. (1967). *On Growing Old.* London, UK: George Allen & Unwin.

Wang, B., He, P., & Dong, B. (2015). Associations between social networks, social contacts, and cognitive function among Chinese nonagenarians/centenarians. *Archives of Gerontology and Geriatrics,* 60(3), 522–527.

Wang, S. & Blazer, D. G. (2015): Depression and cognition in the elderly. *Annual Review of Clinical Psychology,* 11, 331–360.

World Health Organization. (2015). *World report on ageing and health*. Geneva, Switzerland: World Health Organization.

World Health Organization. (2025). *https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response.* [Accessed on 2026 September 13].

World Medical Association. (2024). *WMA Declaration of Helsinki: Ethical principles for medical research involving human participants*. https://www.wma.net/policies-post/wma-declaration-of-helsinki/

World Population Ageing 2015: Highlights. (2015). Department of Economic and Social Affairs, United Nations, New York. American Association for the Advancement of Science.

Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M., & Leirer, V. O. (1983). Development and validation of a geriatric depression screening scale: a preliminary report. *Journal of Psychiatric Research,* 17(1), 37-49.

Yuan J, Wang Y, & Liu Z (2023). Temporal relationship between depression and cognitive decline in the elderly: A two-wave cross-lagged study in a Chinese sample. Aging & Mental Health, 27(11), 2179–2186. 10.1080/13607863.2023.2225432

Zimet, G.D., Dahlem, N.W., Zimet, S.G. & Farley, G.K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *52*, 30-41.

Zimet, G.D., Powell, S.S., Farley, G.K., Werkman, S. & Berkoff, K.A. (1990). Psychometric

Zunzunegui, M. V., Alvarado, B. E., Ser, T. D., & Otero, A. (2003). Social networks, social integration, and social engagement determine cognitive decline in community-dwelling Spanish older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences,* 58B(2), S93–S100.

****