Decomposing Male-Female Gap in Depressive Symptoms among Older Adults: Evidence from the Longitudinal Ageing Study in India

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Abstract

Background

Depression reduces the functioning of an individual leading to a prime cause of disability in terms of total years lost due to disability, starting from the younger ages. The study explored whether there is a difference in the prevalence of depressive symptoms among male and female older adults in India and identified the factors contributing to such differences in depression prevalence across sexes.

Methods

The study used data from the Longitudinal Aging Study in India (LASI) wave-I conducted during 2017-18. The analytical sample of the current study was 30,637 older adults aged 60 years and above (14,682 males and 15,655 females). Descriptive statistics and chi-square tests were used in the initial stages. Binary logistic regression and multivariate decomposition analysis were performed to fulfil the study objectives.

Results

A proportion of 7.3% older males and 9.3% older females had depressive symptoms. Poor self-rated health, multi-morbidity status, physical activity, difficulty in activities of daily living (ADL) and instrumental ADL (IADL) were the significant health-related factors for depression among older males and females. Not satisfied with one's life, not satisfied with once present living arrangement, receiving ill-treatment, being widowed, were the significant socio-demographic factors for depression among older males and females. It was revealed that there exists a gender disparity in prevalence of depression (CI: 0.049). If older men and women had similar marital status, the gender gap in depression would have reduced by 50.1%. Similarly, having equal ADL and IADL conditions among men and women would have reduced the gap by 15.0% and 39.0% respectively. Having equal self-rated health would have reduced the male-female gap by 19.5%, whereas, having equal morbidity status (6.1%), level of life satisfaction (13.1%) and satisfaction in present living arrangement (5.6%) would have reduced the gender gap in depression.

Conclusion

The depression has emerged as a major public health problem with a greater female disadvantage and it is important that there is a need to focus on gender specific policies to mitigate this problem.

1. Background

In the past, segregated and neglected attitude towards mental health problems has led to its rise globally [1]. Although the world has prioritized the policies and programs of mental health problems, multiple risk factors continue to pose severe health challenges, particularly in low- and middle-income countries [2]. Across all the mental health disorders, depression is a common illness affecting an estimated 280 million people globally and is the primary contributor to suicidal mortality (approximately 700,000 annually) [3]. A person suffering from depression experiences a melancholy mood (feeling sad, irritable, empty) or a loss of pleasure or interest in activities for most of the day, nearly every day or at least two weeks [4]. In 2011, the World Mental Health Survey from 17 countries found that, in general, one in 20 people experiences an episode of depression [4].

Among 3.8% of the depressed population worldwide, 5.7% are in 60 years and above age groups [3]. Such a higher presence of depression in older adults is explained by the rapid ageing population and the multiple risks of common and later life stressors. For instance, older people have a higher chance of experiencing physical and mental health problems due to complex social, psychological, and biological factors triggered by adverse life events like morbidity, retirement, bereavement, stress, and psychological trauma [5–8]. The attitude of considering depression as a part of the ageing process has also led to an increase in the percentage of depressed older adults, especially in low-income and middle-income countries like India [9]. Overall, the proportion of people experiencing mental health problems doubled from 1990 to 2017 in India [10]. Approximately 45.7 million people experience depression disorders, largely contributing to suicidal deaths in males and females [10]. However, the increasing geriatric population and rising burden of non-communicable diseases have recently increased the risk of depression in older adults in India [9–11]. According to the Longitudinal Ageing Study of India, 8.3% of older adults aged 60 years and above have significant depressive symptoms [12]. A bidirectional association of physical and mental health has further increased the growing depression burden in Indian older adults [13–16].

Several types of research have constantly demonstrated sex as a critical determinant of mental health problems [17, 18]. Evidence shows that the socially constructed roles, responsibilities, power, status of males and females interact with their biological capacities to contribute to differences in mental health problems [17]. Gender differences vary across ages and by the pattern and symptoms of disorders [17, 19, 20]. For instance, Girls have a higher prevalence of depression and eating disorders in adolescence, whereas boys are prone to anger and aggression issues during the same period. Genetic and biological factors play an essential role in increasing depressive disorders in girls and women. Such conditions may trigger the interaction of psychosocial factors with hormonal changes resulting in adolescence, antenatal and postnatal depression. In older age, degenerative brain diseases are more common among men and women; however, due to more prolonged survival, the chance of living with the mental disorder increases in women [17].

Ample evidence shows that depression is more prevalent among females than males; however, minimal evidence exists in the Indian context [21–24]. Life cycle vulnerabilities, gender-based violence, health-seeking behaviour, overrepresentation of disease and disorder and social consequences are a few factors playing a prominent role in the higher prevalence of depression among females [21]. However, gender stereotypes, especially in a multi-cultural country like India, may centrally explain the differences in depression prevalence across sex. The stereotypes of relating emotional problems with women and the stigma of expressing emotions among men have led to lower health-seeking behaviour among men for mental health issues resulting in the lesser prevalence of depression [17, 25]. Such stereotypes and health-seeking behaviour may vary with the individual's education, working status, socio-economic status and health condition [26–28]. The paradox in the male-female depression gap increases the curiosity to understand the contributing factors in the differences in depression across men and women, especially among the vulnerable older population.

Depression reduces the functioning of an individual leading to a prime cause of disability in terms of total years lost due to disability, starting from the younger ages [4]. The present study aims to explore whether there is a difference in the prevalence of depressive symptoms among male and female older adults in India using data from a recent nationally representative survey. Moreover, the current study identifies the factors contributing to such differences in depression prevalence across sexes.

2. Methods

2.1 Data Source

The study used data from the Longitudinal Aging Study in India (LASI) wave-I conducted during 2017-18. The LASI, which is the Indian version of the Health and Retirement Studies (HRS), is a nationally representative survey conducted by the International Institute for Population Sciences (IIPS) in collaboration with the Harvard T.H. Chan School of Public Health, and the University of Southern California (USC). LASI provides vital information on demography, chronic health conditions, symptom-based health conditions, functional health, mental health (cognition and depression), household economic status, healthcare utilization and health insurance, family and social networks, work and employment, retirement and life expectations of 72,250 adults aged 45 and above across all the states and union territories of India. LASI adopted a multistage stratified cluster sampling design intending to follow the sample biennially for 25 years. Further details regarding the sample design, survey instruments, fieldwork, data collection and processing, and response rates are publicly available elsewhere [12].

Our study is based on a sample of 31,464 older adults (15,098 male and 16,366 female) in India who were aged 60 years and above. However, information on depressive symptoms was not available for 827 older adults. Therefore, the analytical sample of the current study is 30,637 older adults among whom 14,682 and 15,655 were males and females respectively. All the methods were performed in accordance with the relevant guidelines and regulations.

2.2 Outcome Variable

The presence of major depression among older adults is the binary outcome variable for the present study. Major depression was assessed using the Composite International Diagnostic Interview short-form (CIDI-SF) scale which is widely used for the diagnosis of psychiatric depression [12, 29]. The LASI CIDI-SF questionnaire included the following ten questions:

- a. During the last 12 months, was there ever a time when you felt sad, blue, or depressed for two weeks or more in a row?
- b. Please think of the two weeks during the last 12 months when these feelings were worst. During that time did the feelings of being sad, blue, or depressed usually last all day long, most of the day, about half the day, or less than half the day?
- c. During those two weeks, did you feel this way every day, almost every day, or less often than that?
- d. During those two weeks, did you lose interest in most things?
- e. During those two weeks, did you ever feel more tired out or low in energy than is usual?
- f. During those two weeks, did you lose your appetite?
- g. During those two weeks, did you have a lot more trouble concentrating than usual?
- h. During those two weeks, did you feel down on yourself and worthless?
- i. During those two weeks, did you think about your death or someone else's in general?
- j. During those two weeks, did you have more trouble falling asleep than usual?

The response for all the items (except items "b" and "c") were binary, i.e., in "No" (coded as 0) and "Yes" (coded as 1). Again, those individuals who felt sad, blue or depressed "all day long" or "most of the day" were coded as "Yes", else they were coded as "No". Equivalently, individuals who felt sad, blue or depressed "every day" or "almost every day" were coded as "Yes", else they were coded as "No". The ten items had a Cronbach's α reliability coefficient of

more than 0.9. Next, the ten items were summated to obtain the depression scale with scores ranging from 0 to 10. Taking a cue from extant literature, older adults with a score of 5 and more were classified as “Depressed” and those with a score of 4 and less were classified as “Not depressed” [30, 31].

2.3 Explanatory Variables

Based on existing research, we included health-related, socio-demographic and household characteristics that explained the occurrence of major depression in older adults. The individual health-related characteristics are –

- a. Self-rated health (good, average, poor).
- b. Chronic morbidity status (no condition, single condition, multiple conditions). LASI collected information on whether an older adult was ever diagnosed with hypertension or high blood pressure, diabetes or high blood pressure, cancer or malignant tumour, chronic lung diseases, chronic heart diseases, stroke, bone or joint diseases, any neurological or psychological problems, high cholesterol. Individuals having no diseases, any one of the diseases and two or more diseases were categorized into “no condition”, “single condition” and “multiple conditions”.
- c. Physical activity status (physically inactive, physically active). Physical activity status was assessed based on WHO guidelines on physical activity for 18 years and above [32]. Older adults who performed at least 75 minutes of vigorous-intensity physical activity or at least 150 minutes of moderate-intensity physical activity in a day or a combination of both were classified as “Physically active” and otherwise were classified as “Physically inactive”.
- d. Difficulty in Activities of Daily Living (ADL) (no difficulty, faces difficulty). Information was collected on whether a person had difficulty in dressing, walking across a room, bathing, eating, getting in or out of bed and in using the toilet. Older adults who faced difficulty in any one of the activities for more than three months during the interview were categorized as “faces difficulty”. Those who did not face difficulty in any of the activities were included in the “no difficulty” category.
- e. Difficulty in Instrumental Activities of Daily Living (no difficulty, faces difficulty). LASI obtained information on whether an individual had difficulty in the following seven instrumental activities of daily living: preparing a hot meal, shopping for groceries, making telephone calls, taking medications, doing work around the house or garden, managing household finance and getting around or reaching an unfamiliar place. Those who faced difficulty in any one of the activities for more than three months during the interview were categorized as “faces difficulty” and otherwise were included in the “no difficulty” category.

Next, the socio-demographic characteristics of the older adults are –

- a. Level of life satisfaction (satisfied, somewhat satisfied, not satisfied). LASI assessed life satisfaction among respondents using the following questions about their life: “in most ways, life is close to ideal”, “the conditions of my life are excellent”, “I am satisfied with my life”, “So far, I have got the important things I want in life”, “If I could live my life again, I would change almost nothing”. Responses to these questions were recorded as strongly agree, somewhat agree, slightly agree, neither agree nor disagree, slightly disagree, somewhat disagree or strongly disagree (coded 1-7 serially). We added the responses to obtain a life satisfaction score (ranging from 5 to 35) for each individual. Next, older adults with a life satisfaction score of 5 to 20, 21 to 25 and 26 to 35 were categorized as “not satisfied”, “somewhat satisfied” and “satisfied” respectively.

- b. Social participation (socially active, socially inactive). LASI collected information on whether a person goes out of the house for eating, goes outdoors for relaxing, plays indoor games, plays outdoor games or exercises, visits relatives, attends cultural events, attends religious functions, attends group meetings, reads books, newspaper and/or magazines, watches television or listens to the radio, use a computer for electronic communication. Older adults who undertook any of the above social activities were classified as “socially active” and otherwise were classified as “socially inactive”.
- c. Satisfaction with the current living arrangement (satisfied, neutral, not satisfied).
- d. Received ill-treatment (no, yes) within one year from the interview.
- e. Age group (oldest-old, old-old, young-old). The young-old, old-old and oldest-old comprises older adults aged 60 to 69 years, 70 to 79 years, and 80 years or more respectively.
- f. Level of education (secondary and above, upto primary, no formal education),
- g. Marital status (currently married, currently not married, widowed).
- h. Working status (currently working, currently not working, never worked, retired).

Further, the household-related characteristics are –

- a. Monthly per capita expenditure (MPCE) quintile of household (poorest, poorer, middle, richer, richest),
- b. Religion (Hinduism, Islam, Others),
- c. Caste (Scheduled Tribe (ST), Scheduled Caste (SC), Other Backward Class (OBC), Others). The people in the ST and SC category belong to the most socially backward group of people who historically belonged to the lower rung of the now constitutionally abolished Indian caste system. People in the OBC category, as the name suggests, also belong to a group of the socially and economically backward population group, with conditions better than that of the SC/ST people. The “other” category consists of all people who do not belong to either of the three caste groups.
- d. Place of residence (Urban, Rural),
- e. The country region that a household is situated (Southern, Northern, Central, Western, Eastern, North-eastern). We constructed the country regions by including the erstwhile 29 states and 6 union territories of India into six categories based on administrative similarity. The northern region includes Chandigarh, Delhi, Haryana, Himachal Pradesh, erstwhile Jammu and Kashmir, Punjab, Uttaranchal and Rajasthan. The north-eastern region includes Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. The central region consists of Madhya Pradesh and Chhattisgarh. The eastern zone consists of Bihar, Jharkhand, Odisha and West Bengal. The western region comprises Dadra and Nagar Haveli, Daman and Diu, Goa, Gujarat and Maharashtra. The southern region comprises Andhra Pradesh, Karnataka, Kerala, Pondicherry and Tamil Nadu.

2.4 Statistical Methods

At the start, we showed the absolute and weighted percentage distribution of older adults by background characteristics. The male-female difference in major depression for the whole and the age-group-wise population was assessed using the proportion test. The bivariate analysis involved examining the unadjusted relationship between major depression and the health-, socio-demographic- and household- covariates using the chi-square test for association. The multivariate association between major depression and the explanatory variables was assessed by estimating multivariable logistic regression models. Odds ratios in the multivariable models give the

odds of suffering from major depression relative to having no depression among older adults belonging to a particular category of an explanatory variable after adjusting for the effect of all the other explanatory variables [33]. The above analyses were performed separately for the male and female older adults. None of the multivariable models violated the assumptions of multicollinearity [34].

Further, we used the nonlinear multivariate decomposition technique to identify the contribution of the explanatory characteristics behind the male-female gap in major depression among older adults [35, 36]. We show both an overall and detailed decomposition of the gender gap in depression. In the overall decomposition, the male-female gap in major depression is decomposed into an endowments or characteristics (E) component and into a coefficients or effects (C) component. The detailed decomposition provides the contribution of each health-, socio-demographic- and household-related explanatory characteristics to each of endowment and coefficient components of the gender differential in depression. The endowments component (E) shows the expected change in the gender gap of depression if the distribution of male and female older adults were similar for a particular category of the explanatory variable. Equivalently, the coefficients component (C) gives the expected change in the gender differential if the male and female older adults had a similar risk of being in a particular category of the explanatory variable. Decomposition models can provide different estimates for different reference categories of the categorical covariates. To overcome this “identification problem”, we provide normalized decomposition estimates [35, 37]. All statistical estimations were performed using the STATA software version 14 [38].

3. Results

3.1 Descriptive Statistics

Table-1 represents the distribution of older adults by health-related, socio-demographic and household characteristics. A proportion of 7.3% older males and 9.3% older females had depressive symptoms. Nearly 21% and 25% of older males and females had poor self-rated health. Moreover, 22% and 25% of older males and females had multiple chronic morbidities. Further, male older adults (30%) were more physically active than female older adults (26%). About 20% and 25% of older males and females had difficulty in ADL whereas about 38% and 56% of older males and females had difficulty in IADL. Older males were more satisfied with their life (48%) than older females (45%). About 7% and 10% of older males and females were socially inactive respectively. Nearly, 5% of older males and 6% of older females were not satisfied with their present living arrangement. Almost 5% and 6% of older males and females received ill-treatment respectively. A higher percentage of older females had no formal education (73%) in comparison to older males (39%). Besides, 16% and 54% of older males and females were widowed respectively. About 4% of male and 47% of female older adults never worked.

3.2 Bivariate Analysis

Table-2 revealed the bivariate association between depression and health-related, socio-demographic and household characteristics of older adults in India 2017-18. Older adults who reported poor SRH had a higher prevalence of depression (Male: 15.4% and Female: 17.6%). Older adults with multiple chronic conditions had a higher prevalence of depression (Male: 11.0% and Female: 11.5%). Higher percentage of older adults with difficulty in ADL (Male: 14.3% and Female: 15.5%) and IADL (Male: 10.9% and Female: 12.2%) were depressed.

Older adults who were not satisfied with their life had a higher prevalence of depression (Male: 18.7% and Female: 20.5%). Older adults who were socially inactive had a higher prevalence of depression (Male: 11.8% and Female:

12.85). Older adults who were not satisfied with their present living arrangement had a higher prevalence of depression (Male: 20.2% and Female: 26.7%). A higher percentage of older adults who were ill-treated were depressed (Male: 19.9% and Female: 23.8%). Widowed older adults were more depressed (Male: 9.1% and Female: 10.1). Older adults from the rural place of residence had a higher prevalence of depression (Male: 7.8% and Female: 10.7%). Older adults from the central region of India had a higher prevalence of depression (Male: 12.8% and Female: 16.5%).

3.3 Multivariate Analysis

Table-3 reveals the results from multivariate analysis in the form of odds ratio (OR). Poor self-rated health, multi-morbidity, physical activity, difficulty in ADL and IADL were the significant health-related factors for depression among older males and females. Not satisfied with one's life, not satisfied with once present living arrangement, receiving ill-treatment, being widowed, were the significant socio-demographic factors for depression among older males and females. Additionally, belonging to Scheduled Caste and belonging from the central region of India had a significant association with depression older male and females India.

3.4 Decomposing the Gender Inequality in Depression

Figure-1 represents the concentration indices of depression score by male-female gender among older adults in India 2017-18. It was revealed that there exists a gender disparity in prevalence of depression (CI: 0.049). Additionally, it was found that the gender inequality increases with age and it was highest for older adults in oldest-old age group (0.089) in references to young-old (0.033) and old-old age group (0.069).

Table-4 represents the overall decomposition of male-female gap in depression among older adults in India 2017-18. It was found that differences in effects (C) account for 53.8% of the observed gender differences in prevalence of depression. However; 46.2% of the gender differentials in depression was explained by differences in compositional characteristics (E).

Table-5 represents detailed decomposition of male-female gap in depression among older adults. Firstly, difference due to characteristics were explained. It was found that if older male and female had similar marital status the gender gap in depression would have reduced by 50.1%. Similarly, equalizing the ADL and IADL conditions among male and females will reduce the gap by around 15.0% and 39.0% respectively. Having equal self-rated health would reduce the male-female gap by 19.5%, whereas, having equal chronic conditions (6.1%), level of life satisfaction (13.1%) and satisfaction in present living arrangement (5.6%) would have reduced the gender gap in depression. Impending on to difference due to coefficients it was found that age (in years) plays the most vital role in increasing the gender gap in depression. Additionally, older males had a same risk of living in rural areas as older females than it would increase the gender gap in depression by 55.4%. Similarly, if males had the same risk of developing any chronic morbidity condition as female this would increase the gender gap in depression by 25.7%.

4. Discussion

Depression is the most prevalent psychiatric disorder globally and is emerging as a major public health problem. The present study aimed at finding the factors associated with depressive symptoms among older men and women and identifying factors that contribute to the gender gap in the prevalence of depressive symptoms in India. The study found that around 8.5% of older adults have depressive symptoms and the prevalence was found

higher among older women (9%) than men (7%). There is ample literature that has shown that the prevalence of depression is higher among females [39–43]. Past literature has also reported that the rates of depression are about twice as high among females than males [40, 44, 45]. On the contrary, there are studies that confirm the prevalence to be higher among females but have found no significant gender difference in depressive symptoms among older adults or have found the rate ratio of depression close to one [44–48].

It has been found that as one gets old (young-old to oldest-old), the prevalence of depression has increased from 8.3% in young adults to 10.8% in the oldest-old. There has been an increased risk of depression in females that increases from 9% in young-old to 12.2% in the oldest old, but the multivariate analysis shows that age is not a significant factor of depression among females. Although in many past studies it has been found that during a life span, female preponderance and a significant gender difference in major depression starts to emerge at adolescence [40, 44, 49] and have been seen remarkably consistent till the age of 55 years [44]. Also, it has been mentioned in a study conducted in Spain that being older is associated with more recurrences of depressive symptoms [50]. Previous study by Anstey et al. points out the fact that availability of population-based data matters a lot when dealing with depression [51]. As observed, there was no increase in the depressive symptoms with age in a cross-sectionally selected data and it has been found that age differences usually emerge longitudinally, because older participants had a greater increase in depressive symptoms relative to younger participants [51].

Depression in older age is typically associated with loss, and sometimes, multiple and interconnected losses. The loss could be health- and mobility-related or society-related [52]. Multivariate regression analysis in the present study showed that factors like poor self-rated health, multiple chronic morbidity status, physical activity status, difficulty in ADL and IADL are the significant health-related factors for depression among both the gender in India. It has been established that people with chronic physical conditions are at a higher risk of developing poor mental health and on the other hand, poor mental health can also become a major risk factor for chronic physical conditions [53]. Findings from other studies also show that factors like poor self-rated/perceived health, physical health, physical inactivity, life-limiting and long-term illness or pain, higher level of functional impairment, and even decline in cognitive capacity are significant factors associated with an increased likelihood of depression among older adults [43, 48, 51, 52]. Past literature has also found a strong relationship between the body mass index (which is highly correlated with the physical status) and depression [42]. In fact, it has been identified that being physically active (exercising) may be an important tool for lowering both anxiety and depression [42].

The present study also found that there are various common socio-economic and demographic factors that affect depressive symptoms in older male and female adults. These factors are the living arrangement, receiving ill-treatment, being widowed, belonging to scheduled caste, and wealth quintile. In line with the results, many other studies have also found that sex, marital status, residential care, race/ethnicity, less social support, financial hardship/strain are significant socio-economic and demographic factors that are highly associated with depressive symptoms in older males and females [40, 42, 48]. A report by WHO on mental health states that the key social factors impacting mental health are mainly social inclusion, ensuring adequate income, and social support [53]. Financial hardship, poverty, poor housing, and low-income levels are also highly associated with depressive symptoms and mental illness [43]. Another study confirmed that study participants who were in paid employment had a slightly lower risk of reaching the diagnostic threshold of major depression in both sexes [45].

The current study found that social participation, working status and place of residence are significant factors for depression in females and not in males. A study conducted in various European countries shows that pervasive

decline in the relative well-being of women was mainly evident in those women who remained at home and in those who are under pressure to be “successful” be it at work or as a family member or an important member in the society [49]. Although it has been found that women with anxiety appear to maintain social networks and have support from friends which acts be protective against loneliness, anxiety, and depression, unlike their male counterparts [43, 52]. On contrary to our results, depression in men is pre-assumed to have an association with negative employment experience [43].

The study conducted a decomposition analysis to examine the contribution of socio-demographic and health-related variables to the observed economic inequality in experiencing depressive symptoms among older Indian adults, and it was found that impending on to difference due to coefficients; age (in years) plays the most vital role in increasing the gender gap in depression. Marital status and living arrangements especially being separated/divorced and widowed in older adults have an adverse effect on depression status. It has been found that low spousal support and relationship strain were associated with mental ill-health. The study found that if older males and females had similar marital status and satisfaction in present living arrangements; the gender gap in depression would reduce by about 57.5% and 5.7% respectively. Similarly, if males had the same level of satisfaction with the present living arrangement as females; this would decrease the gender gap in depression by 30.7%. Also, depression has been found less prevalent in married men compared with married women due to increased parental-related strain among women [54, 55]. From the decomposition analysis, it is evident that equalizing the ADL and IADL conditions and even the self-rated health among males and females will reduce the gap by around 15.6%, 38.2%, and 17.3% respectively.

There are a number of possible reasons that explains why rates are higher among females and why there is a significant gender difference in depressive symptoms. Past literature suggests that there are differences in help seeking behaviour, sex specific roles, social and biological factors [54, 56], that contribute to the gaps in the prevalence of depression in older adults. It has been found that women have different age of onset, disease course and symptom profile in mental illnesses and are more willing to admit and report symptoms and affective depressed feelings when asked as compared to men [57, 58], that eventually influences the clinical samples too. Financial or economic dependencies on others/spouse is also a major factor that ultimately leads to increased risk of late-life mental illnesses and depression [59, 60]. Study by Parker and Brotchie explains that women are either differentially exposed to a greater number of life event stresses and/or are more vulnerable to them. The same study also suggests that over time, men are more likely to forget episodes (or remember fewer symptoms) while women are more likely to remember them which leads to reporting biases [49]. It has been reported that males and females have different coping mechanisms too as men are more likely to enhance their wellbeing by increasing their sports activity and alcohol consumption whereas women cope through emotional release [47].

4.1 Strengths and limitations of the study

There are several limitations of the current study. Firstly, it was difficult to resolve the causal direction of the association (physical health and chronic conditions have a bi-directional association with depression). Secondly, Interactions were not studied if different factors are important for males and females in elevated levels of depression. However, the major strength of the study is the comprehensive information on socioeconomics and physical and mental health of older population from a large national-representative survey data that strengthen the generalizability of the current findings.

5. Conclusion

The study analyzed the factors that explain the differentials in the prevalence of depression among males and female older adults in India and found that there are various socio-economic, demographic, and health-related factors that explain the gap between the two genders. The most significant factors for depression were age, gender, poor self-rated health, multiple chronic morbidity status, functional limitation, living arrangement and marital status. A few factors like social participation, working status, and the place of residence were significant for females only. The depression has emerged as a major public health problem with a greater female disadvantage and it is important that there is a need to focus on gender specific policies to mitigate this problem.

Declarations

Ethics approval and consent to participate:

The data is freely available in the public domain and survey agencies that conducted the field survey for the data collection have collected prior consent from the respondent. The Indian Council of Medical Research (ICMR) extended the necessary guidance and ethical approval for conducting the LASI.

Consent for publication:

Not applicable

Competing Interests:

The authors declare that they have no competing interests.

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Author's Contribution:

The concept was drafted by MT and SS; SS contributed to the analysis design, SS advised on the paper and assisted in paper conceptualization. RP, MT, SS, PS, RR contributed to the comprehensive writing of the article. All authors read and approved the final manuscript.

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Availability of data and materials: The study utilizes a secondary source of data that is freely available in public domain through request from https://iipsindia.ac.in/sites/default/files/LASI_DataRequestForm_0.pdf

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Tables

Table 1: Distribution of older adults by health-related, socio-demographic and household characteristics in India 2017-18

Characteristics	Older adults (60+ years)			
	Male older adults		Female older adults	
	N	WC %	N	WC %
Depression status				
Not depressed	13,786	92.7	14,775	90.7
Depressed	896	7.3	1,180	9.3
Self-rated health				
Good	2,374	15.6	1,950	11.8
Average	9,417	63.3	10,163	63.3
Poor	2,891	21.1	3,842	24.8
Chronic morbidity status				
No condition	7,096	49.5	6,955	44.7
Single condition	4,170	28.4	4,856	30.0
Multiple conditions	3,416	22.1	4,144	25.3
Physical activity status				
Physically inactive	10,626	70.4	11,993	74.1
Physically active	4,056	29.6	3,962	25.9
Difficulty in ADL				
No difficulty	12,148	79.9	12,216	74.6
Faces difficulty	2,534	20.1	3,739	25.4
Difficulty in IADL				
No difficulty	9,647	62.0	7,674	43.7
Faces difficulty	5,035	38.0	8,281	56.3
Level of life satisfaction				
Satisfied	7,475	47.6	7,458	44.6
Somewhat satisfied	5,711	40.2	6,520	41.3
Not satisfied	1,496	12.2	1,977	14.1
Social participation				
Socially active	13,699	92.6	14,519	90.3
Socially inactive	983	7.4	1,436	9.7
Living arrangement satisfaction				
Satisfied	11,766	77.6	12,230	72.5

Neutral	2,305	17.6	2,901	21.1
Not satisfied	611	4.8	824	6.4
Received ill-treatment				
No	14,145	95.2	15,222	94.5
Yes	537	4.8	733	5.5
Age group				
Oldest-old	1,486	10.7	1,641	10.8
Old-old	4,408	30.4	4,435	29.4
Young-old	8,788	58.9	9,879	59.9
Level of education				
Secondary and above	5,019	31.7	1,840	10.8
Upto primary	4,378	29.7	3,012	16.5
No formal education	5,285	38.6	11,103	72.6
Marital status				
Currently married	12,096	81.1	7,420	44.6
Currently not married	388	2.4	403	1.9
Widowed	2,198	16.5	8,132	53.6
Working status				
Currently working	5,963	43.0	2,926	19.2
Currently not working	5,740	39.8	4,841	32.3
Never worked	722	3.8	7,818	46.6
Retired	2,257	13.4	370	1.9
Household MPCE quintile				
Poorest	2,928	20.9	3,351	22.5
Poorer	2,991	21.7	3,313	21.7
Middle	2,978	21.0	3,277	20.5
Richer	2,921	19.4	3,109	19.3
Richest	2,864	17.1	2,905	16.0
Religion of household				
Hinduism	10,785	82.8	11,674	82.6
Islam	1,751	10.9	1,871	10.6
Others	2,146	6.3	2,410	6.8

Caste of household				
Scheduled Tribe	2,371	7.7	2,654	8.4
Scheduled Caste	2,380	19.0	2,625	19.0
Other Backward Class	5,634	45.6	5,960	44.9
Others	4,297	27.7	4,716	27.7
Place of residence				
Urban	4,866	27.3	5,565	30.7
Rural	9,816	72.7	10,390	69.3
Country region				
Southern	3,439	20.8	3,927	23.8
Northern	3,814	26.1	3,974	24.2
Central	1,011	9.1	1,035	8.1
Western	1,895	16.3	2,283	18.0
Eastern	2,786	24.7	2,833	22.9
North-eastern	1,737	2.9	1,903	3.0
Overall	14,682	100	15,955	100

Note – (a) N: Sample size, WC_%: Weighted column percentage; (b) ADL: Activities of daily living, IADL: Instrumental activities of daily living, MPCE: Monthly per capita expenditure.

Table 2: Bivariate association between depression and health-related, socio-demographic and household characteristics of older adults in India 2017-18

Characteristics	Male older adults (60+ years)				Female older adults (60+ years)			
	Total	Depressed			Total	Depressed		
	N	N	WR %	Chi ² (p-value)	N	N	WR %	Chi ² (p-value)
<i>Health-related characteristics</i>								
Self-rated health								
Good	2,374	57	3.9	346.35 (<0.001)	1,950	65	3.7	330.86 (<0.001)
Average	9,417	454	5.5		10,163	579	7.1	
Poor	2,891	385	15.4		3,842	536	17.6	
Chronic morbidity status								
No condition	7,096	316	5.6	77.81 (<0.001)	6,955	433	8.3	46.65 (<0.001)
Single condition	4,170	282	7.5		4,856	345	9.0	
Multiple conditions	3,416	298	11.0		4,144	402	11.5	
Physical activity status								
Physically inactive	10,626	656	7.6	0.33 (0.562)	11,993	868	9.1	1.76 (0.184)
Physically active	4,056	240	6.7		3,962	312	10.1	
Difficulty in ADL								
No difficulty	12,148	581	5.6	214.03 (<0.001)	12,216	696	7.2	219.53 (<0.001)
Faces difficulty	2,534	315	14.3		3,739	484	15.5	
Difficulty in IADL								
No difficulty	9,647	396	5.1	195.93 (<0.001)	7,674	347	5.6	178.32 (<0.001)
Faces difficulty	5,035	500	10.9		8,281	833	12.2	
<i>Socio-demographic characteristics</i>								
Level of life satisfaction								
Satisfied	7,475	289	4.3	352.03 (<0.001)	7,458	340	5.8	425.19 (<0.001)
Somewhat satisfied	5,711	359	7.5		6,520	480	9.4	
Not satisfied	1,496	248	18.7		1,977	360	20.5	
Social participation								
Socially active	13,699	802	7.0	22.01 (<0.001)	14,519	1,014	9.0	39.95 (<0.001)
Socially inactive	983	94	11.8		1,436	166	12.8	
Living arrangement satisfaction								

Satisfied	11,766	555	5.6	273.48 (<0.001)	12,230	724	7.6	320.08 (<0.001)
Neutral	2,305	224	11.4		2,901	273	9.9	
Not satisfied	611	117	20.2		824	183	26.7	
Received ill-treatment								
No	14,145	789	6.7	185.85 (<0.001)	15,222	1,015	8.5	256.26 (<0.001)
Yes	537	107	19.9		733	165	23.8	
Age group								
Oldest-old	1,486	86	9.1	1.08 (0.582)	1,641	155	12.1	14.54 (0.001)
Old-old	4,408	259	6.5		4,435	344	9.5	
Young-old	8,788	551	7.4		9,879	681	8.7	
Level of education								
Secondary and above	5,019	264	6.0	10.22 (0.006)	1,840	90	5.2	24.44 (<0.001)
Upto primary	4,378	276	8.3		3,012	203	8.7	
No formal education	5,285	356	7.6		11,103	887	10.1	
Marital status								
Currently married	12,096	691	7.0	19.43 (<0.001)	7,420	472	8.4	28.53 (<0.001)
Currently not married	388	26	5.7		403	20	7.8	
Widowed	2,198	179	9.1		8,132	688	10.1	
Working status								
Currently working	5,963	312	6.1	30.50 (<0.001)	2,926	215	10.7	26.65 (<0.001)
Currently not working	5,740	427	8.6		4,841	433	11.5	
Never worked	722	44	9.0		7,818	509	7.2	
Retired	2,257	113	6.9		370	23	12.0	
Household characteristics								
Household MPCE quintile								
Poorest	2,928	173	7.3	10.67 (0.030)	3,351	274	9.9	19.76 (0.001)
Poorer	2,991	162	5.7		3,313	248	9.2	
Middle	2,978	170	7.6		3,277	186	7.9	
Richer	2,921	182	7.4		3,109	235	9.4	
Richest	2,864	209	9.0		2,905	237	10.3	
Religion of household								
Hinduism	10,785	709	7.4	28.91	11,674	900	9.1	24.84

Islam	1,751	111	7.3	(<0.001)	1,871	159	11.4	(<0.001)
Others	2,146	76	5.9		2,410	121	8.6	
Caste of household								
Scheduled Tribe	2,371	71	4.0	56.84 (<0.001)	2,654	93	5.4	79.41 (<0.001)
Scheduled Caste	2,380	175	9.6		2,625	239	10.0	
Other Backward Class	5,634	400	7.3		5,960	503	10.3	
Others	4,297	250	6.7		4,716	345	8.5	
Place of residence								
Urban	4,866	249	6.0	12.33 (<0.001)	5,565	311	6.2	40.75 (<0.001)
Rural	9,816	647	7.8		10,390	869	10.7	
Country region								
Southern	3,439	151	4.6	115.63 (<0.001)	3,927	215	5.7	128.86 (<0.001)
Northern	3,814	297	9.0		3,974	369	11.5	
Central	1,011	101	12.8		1,035	125	16.5	
Western	1,895	109	5.6		2,283	175	9.0	
Eastern	2,786	200	7.3		2,833	236	9.0	
North-eastern	1,737	38	4.3		1,903	60	5.9	
Overall	14,682	896	7.3		15,955	1,180	9.3	

Note – (a) N: Sample size, WR_%: Weighted row percentage, Chi²: Chi-square test statistic; (b) ADL: Activities of daily living, IADL: Instrumental activities of daily living, MPCE: Monthly per capita expenditure.

Table 3: Multivariate association between depression and health-related, socio-demographic and household characteristics of older adults in India 2017-18

Characteristics	Depression among older adults (60+ years)			
	Male		Female	
	OR	95% CI	OR	95% CI
<i>Health-related characteristics</i>				
Self-rated health				
Good	1.00		1.00	
Average	1.62***	(1.21, 2.16)	1.31*	(1.00, 1.72)
Poor	2.94***	(2.15, 4.03)	2.34***	(1.76, 3.13)
Chronic morbidity status				
No condition	1.00		1.00	
Single condition	1.32***	(1.11, 1.58)	1.07	(0.91, 1.25)
Multiple conditions	1.52***	(1.26, 1.84)	1.43***	(1.21, 1.69)
Physical activity status				
Physically inactive	1.00		1.00	
Physically active	1.17*	(0.98, 1.41)	1.28***	(1.10, 1.50)
Difficulty in ADL				
No difficulty	1.00		1.00	
Faces difficulty	1.49***	(1.24, 1.78)	1.55***	(1.34, 1.79)
Difficulty in IADL				
No difficulty	1.00		1.00	
Faces difficulty	1.62***	(1.37, 1.91)	1.50***	(1.29, 1.74)
<i>Socio-demographic characteristics</i>				
Level of life satisfaction				
Satisfied	1.00		1.00	
Somewhat satisfied	1.26***	(1.06, 1.51)	1.39***	(1.19, 1.62)
Not satisfied	2.00***	(1.60, 2.51)	2.23***	(1.83, 2.71)
Social participation				
Socially active	1.00		1.00	
Socially inactive	1.23	(0.96, 1.59)	1.36***	(1.12, 1.65)
Living arrangement satisfaction				
Satisfied	1.00		1.00	
Neutral	1.54***	(1.28, 1.86)	1.17*	(1.00, 1.38)

Not satisfied	2.08***	(1.60, 2.71)	1.88***	(1.51, 2.33)
Received ill-treatment				
No	1.00		1.00	
Yes	2.50***	(1.96, 3.20)	2.35***	(1.91, 2.88)
Age group				
Oldest-old	1.00		1.00	
Old-old	1.33**	(1.02, 1.74)	0.92	(0.74, 1.14)
Young-old	1.88***	(1.45, 2.45)	1.07	(0.87, 1.33)
Level of education				
Secondary and above	1.00		1.00	
Upto primary	0.99	(0.81, 1.20)	1.14	(0.86, 1.51)
No formal education	0.93	(0.75, 1.14)	0.91	(0.70, 1.20)
Marital status				
Currently married	1.00		1.00	
Currently not married	0.95	(0.61, 1.47)	0.77	(0.47, 1.24)
Widowed	1.39***	(1.15, 1.68)	1.23***	(1.07, 1.41)
Working status				
Currently working	1.00		1.00	
Currently not working	1.08	(0.90, 1.30)	0.93	(0.76, 1.12)
Never worked	1.04	(0.72, 1.49)	0.76***	(0.62, 0.92)
Retired	1.05	(0.81, 1.36)	0.98	(0.60, 1.59)
<i>Household characteristics</i>				
Household MPCE quintile				
Poorest	1.00		1.00	
Poorer	0.98	(0.78, 1.24)	0.96	(0.79, 1.16)
Middle	1.10	(0.87, 1.39)	0.76**	(0.62, 0.94)
Richer	1.31**	(1.04, 1.65)	1.02	(0.84, 1.24)
Richest	1.57***	(1.24, 1.99)	1.14	(0.93, 1.40)
Religion of household				
Hinduism	1.00		1.00	
Islam	1.01	(0.80, 1.26)	1.14	(0.94, 1.39)
Others	0.84	(0.64, 1.10)	1.12	(0.90, 1.40)

Caste of household				
Scheduled Tribe	1.00		1.00	
Scheduled Caste	1.46**	(1.07, 1.99)	1.97***	(1.50, 2.58)
Other Backward Class	1.68***	(1.26, 2.23)	2.16***	(1.68, 2.79)
Others	1.29	(0.95, 1.75)	1.78***	(1.36, 2.33)
Place of residence				
Urban	1.00		1.00	
Rural	1.08	(0.91, 1.28)	1.38***	(1.18, 1.62)
Country region				
Southern	1.00		1.00	
Northern	2.38***	(1.90, 2.97)	2.57***	(2.11, 3.13)
Central	3.44***	(2.58, 4.59)	3.53***	(2.73, 4.57)
Western	1.99***	(1.52, 2.61)	2.15***	(1.71, 2.70)
Eastern	1.89***	(1.49, 2.41)	1.76***	(1.42, 2.17)
North-eastern	0.99	(0.67, 1.46)	1.15	(0.83, 1.57)
Analytical sample size	14,682		15,955	

Note – (a) OR: Odds ratio, CI: Confidence Interval; (b) Statistical significance denoted by asterisks where * p-value<0.1, ** p-value<0.05 and *** p-value<0.01; (c) ADL: Activities of daily living, IADL: Instrumental activities of daily living, MPCE: Monthly per capita expenditure.

Table 4: Overall decomposition of male-female gap in major depression among older adults in India 2017-18

Component	Male-Female gap in depression among older adults			
	Coefficient	95% CI	p-value	Percent
Explained difference (E)	0.00678	(0.00038, 0.01317)	0.038	49.3
Unexplained difference (C)	0.00697	(-0.00127, 0.01521)	0.097	50.7
Raw difference (R)	0.01375	(0.00831, 0.01919)	<0.001	

Note – CI: Confidence Interval.

Table 5: Detailed decomposition (with normalized coefficients) of male-female gap in depression among older adults in India 2017-18

Characteristics	Male-Female gap in depression among older adults (60+ years)							
	Difference due to characteristics (E)				Difference due to coefficients (C)			
	Coefficient	95% CI	p-value	Percent	Coefficient	95% CI	p-value	Percent
<i>Health-related characteristics</i>								
Self-rated health								
Good	0.00092	(0.00035, 0.00149)	0.001	6.7	0.00103	(-0.00074, 0.00280)	0.254	7.5
Average	0.00004	(0.00000, 0.00008)	0.038	0.3	-0.00189	(-0.00643, 0.00264)	0.413	-13.8
Poor	0.00142	(0.00082, 0.00203)	<0.001	10.3	-0.00069	(-0.00219, 0.00081)	0.366	-5.0
Chronic morbidity status								
No condition	0.00057	(0.00019, 0.00095)	0.003	4.1	0.00172	(-0.00131, 0.00476)	0.266	12.5
Single condition	-0.00009	(-0.00023, 0.00005)	0.200	-0.7	-0.00156	(-0.00345, 0.00033)	0.105	-11.4
Multiple conditions	0.00046	(0.00021, 0.00071)	<0.001	3.3	0.00045	(-0.00111, 0.00201)	0.570	3.3
Physical activity status								
Physically inactive	-0.00022	(-0.00038, -0.00006)	0.008	-1.6	-0.00090	(-0.00485, 0.00305)	0.655	-6.6
Physically active	-0.00022	(-0.00038, -0.00006)	0.008	-1.6	0.00033	(-0.00113, 0.00179)	0.655	2.4
Difficulty in ADL								
No difficulty	0.00107	(0.00055, 0.00158)	<0.001	7.8	-0.00063	(-0.00487, 0.00362)	0.773	-4.5
Faces difficulty	0.00107	(0.00055, 0.00158)	<0.001	7.8	0.00014	(-0.00080, 0.00107)	0.773	1.0
Difficulty in IADL								
No difficulty	0.00263	(0.00136, 0.00389)	<0.001	19.1	0.00108	(-0.00211, 0.00427)	0.507	7.9
Faces difficulty	0.00263	(0.00136, 0.00389)	<0.001	19.1	-0.00058	(-0.00229, 0.00113)	0.507	-4.2
<i>Socio-</i>								

*demographic
characteristics*

Level of life satisfaction								
Satisfied	0.00117	(0.00064, 0.00170)	<0.001	8.5	-0.00143	(-0.00514, 0.00227)	0.448	-10.4
Somewhat satisfied	-0.00007	(-0.00021, 0.00006)	0.304	-0.5	0.00034	(-0.00202, 0.00269)	0.779	2.4
Not satisfied	0.00067	(0.00037, 0.00097)	<0.001	4.9	0.00020	(-0.00058, 0.00098)	0.610	1.5
Social participation								
Socially active	0.00029	(0.00008, 0.00050)	0.006	2.1	-0.00171	(-0.00835, 0.00494)	0.615	-12.4
Socially inactive	0.00029	(0.00008, 0.00050)	0.006	2.1	0.00013	(-0.00039, 0.00065)	0.615	1.0
Living arrangement satisfaction								
Satisfied	0.00070	(0.00034, 0.00107)	<0.001	5.1	0.00523	(-0.00081, 0.01127)	0.090	38.0
Neutral	-0.00020	(-0.00042, 0.00001)	0.067	-1.5	-0.00102	(-0.00225, 0.00021)	0.103	-7.4
Not satisfied	0.00028	(0.00014, 0.00043)	<0.001	2.1	0.00001	(-0.00038, 0.00040)	0.966	0.1
Received ill-treatment								
No	0.00030	(0.00017, 0.00042)	<0.001	2.2	0.00166	(-0.00518, 0.00851)	0.634	12.1
Yes	0.00030	(0.00017, 0.00042)	<0.001	2.2	-0.00006	(-0.00031, 0.00019)	0.634	-0.4
Age group								
Oldest-old	-0.00001	(-0.00005, 0.00004)	0.817	0.0	0.00141	(0.00016, 0.00265)	0.028	10.2
Old-old	0.00013	(-0.00005, 0.00030)	0.150	0.9	-0.00066	(-0.00281, 0.00149)	0.549	-4.8
Young-old	0.00012	(-0.00001, 0.00026)	0.068	0.9	-0.00661	(-0.01182, -0.00140)	0.013	-48.1
Level of education								
Secondary and above	-0.00046	(-0.00338, 0.00246)	0.758	-3.3	-0.00024	(-0.00337, 0.00289)	0.879	-1.8
Upto primary	-0.00067	(-0.00169, 0.00035)	0.195	-4.9	0.00085	(-0.00141, 0.00311)	0.460	6.2

		0.00035)				0.00311)		
No formal education	-0.00276	(-0.00619, 0.00068)	0.116	-20.1	-0.00078	(-0.00352, 0.00195)	0.574	-5.7
Marital status								
Currently married	-0.00050	(-0.00528, 0.00429)	0.839	-3.6	0.00417	(-0.00493, 0.01327)	0.369	30.3
Currently not married	0.00003	(-0.00001, 0.00007)	0.113	0.2	-0.00016	(-0.00069, 0.00037)	0.547	-1.2
Widowed	0.00703	(0.00178, 0.01228)	0.009	51.1	0.00014	(-0.00156, 0.00184)	0.870	1.0
Working status								
Currently working	-0.00169	(-0.00455, 0.00116)	0.245	-12.3	0.00264	(-0.00173, 0.00702)	0.237	19.2
Currently not working	-0.00012	(-0.00110, 0.00085)	0.805	-0.9	-0.00033	(-0.00382, 0.00317)	0.855	-2.4
Never worked	-0.00596	(-0.01242, 0.00050)	0.070	-43.4	-0.00043	(-0.00115, 0.00028)	0.235	-3.1
Retired	-0.00058	(-0.00404, 0.00287)	0.740	-4.2	0.00043	(-0.00224, 0.00311)	0.751	3.1
Household characteristics								
Household MPCE quintile								
Poorest	0.00002	(-0.00007, 0.00011)	0.617	0.2	0.00174	(-0.00022, 0.00369)	0.081	12.6
Poorer	0.00000	(-0.00005, 0.00005)	0.982	0.0	0.00162	(-0.00028, 0.00351)	0.095	11.8
Middle	-0.00003	(-0.00005, -0.00001)	0.005	-0.2	-0.00146	(-0.00345, 0.00052)	0.149	-10.6
Richer	-0.00001	(-0.00005, 0.00002)	0.504	-0.1	-0.00074	(-0.00242, 0.00095)	0.392	-5.3
Richest	-0.00014	(-0.00028, -0.00001)	0.033	-1.0	-0.00111	(-0.00282, 0.00061)	0.206	-8.0
Religion of household								
Hinduism	0.00002	(-0.00001, 0.00004)	0.127	0.1	-0.00468	(-0.01043, 0.00107)	0.111	-34.0
Islam	-0.00001	(-0.00003, 0.00001)	0.472	-0.1	-0.00005	(-0.00120, 0.00111)	0.934	-0.4
Others	0.00001	(-0.00004, 0.00007)	0.675	0.1	0.00100	(-0.00062, 0.00261)	0.227	7.2

Caste of household								
Scheduled Tribe	-0.00024	(-0.00036, -0.00012)	<0.001	-1.7	-0.00184	(-0.00421, 0.00053)	0.128	-13.4
Scheduled Caste	0.00003	(0.00000, 0.00006)	0.019	0.2	0.00060	(-0.00089, 0.00209)	0.432	4.4
Other Backward Class	-0.00021	(-0.00032, -0.00010)	<0.001	-1.5	0.00115	(-0.00176, 0.00406)	0.438	8.4
Others	0.00001	(-0.00001, 0.00003)	0.189	0.1	0.00138	(-0.00118, 0.00394)	0.289	10.1
Place of residence								
Urban	-0.00021	(-0.00034, -0.00008)	0.001	-1.5	-0.00192	(-0.00403, 0.00019)	0.074	-14.0
Rural	-0.00021	(-0.00034, -0.00008)	0.001	-1.5	0.00386	(-0.00037, 0.00809)	0.074	28.1
Country region								
Southern	-0.00053	(-0.00074, -0.00031)	<0.001	-3.8	-0.00079	(-0.00327, 0.00168)	0.530	-5.8
Northern	-0.00026	(-0.00040, -0.00011)	<0.001	-1.9	0.00026	(-0.00194, 0.00246)	0.817	1.9
Central	-0.00019	(-0.00028, -0.00011)	<0.001	-1.4	-0.00003	(-0.00087, 0.00080)	0.941	-0.2
Western	0.00017	(0.00000, 0.00034)	0.051	1.2	0.00031	(-0.00112, 0.00173)	0.675	2.2
Eastern	0.00008	(-0.00006, 0.00021)	0.272	0.6	-0.00096	(-0.00279, 0.00087)	0.303	-7.0
North-eastern	-0.00007	(-0.00012, -0.00002)	0.003	-0.5	0.00066	(-0.00126, 0.00257)	0.503	4.8
Constant	-	-	-	-	0.00571	(-0.01146, 0.02288)	0.514	41.5

Note – (a) CI: Confidence interval; (b) ADL: Activities of daily living, IADL: Instrumental activities of daily living, MPCE: Monthly per capita expenditure.

Figures

Figure 1

Percentage of total, male and female older adults with major depression in India 2017-18