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Prevalence of depression among elderly patients in India: A systematic review and meta-analysis

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Abstract

Background: Depression is a growing mental health concern among the elderly, particularly in low- and middle-income countries like India, where the aging population is rapidly increasing. This systematic review aims to estimate the pooled prevalence of depression among elderly individuals in India using available population-based studies.

Methods: A comprehensive literature search was performed across PubMed, Scopus, Google Scholar, and Indian research databases for studies published up to April 2025. Studies were included if they assessed depression prevalence in Indian elderly populations (≥60 years) using standardized diagnostic tools such as the Geriatric Depression Scale (GDS) or PHQ-9. Data extraction and quality appraisal were done independently by two reviewers. Meta-analysis was conducted using an inverse-variance weighted fixed-effect model.

Results: A total of 512 studies were identified, and after screening and eligibility checks, 10 studies involving 9,050 elderly participants were included in the meta-analysis. The reported prevalence of depression in the studies included ranged from 27.5% to 40.2%. The pooled prevalence was estimated at 32.9% (95% CI: 31.4% – 34.4%). Moderate heterogeneity was observed (I^2 = 39.7%), reflecting variation in geographic regions and assessment tools.

Conclusion: Depression among elderly individuals in India is highly prevalent, affecting nearly one-third of the population studied. These findings emphasize the urgent need for early detection, community-based screening, and culturally sensitive mental health interventions in geriatric care policies to reduce the burden of depression in aging populations.

Keywords: Depression; Elderly; Indian; Prevalence; DSM

1. Introduction

Depression is one of the most common psychiatric disorders affecting the elderly worldwide. With the global demographic shift towards an aging population, mental health problems in older adults, particularly depression, have become a pressing public health concern[1]. In India, the elderly population (aged 60 years and above) is growing rapidly, expected to reach 19% of the total population by 2050[2]. As longevity increases, so does the burden of chronic illness, disability, social isolation, and psychological stress, all of which are major risk factors for depression in later life[3]. Elderly depression often goes unrecognized and untreated in India due to cultural stigma, limited mental health services, and lack of awareness both among healthcare providers and families[4]. Depression in the elderly is not only linked to a reduced quality of life but also to higher morbidity, mortality, and healthcare costs due to its association with chronic physical illnesses like diabetes, cardiovascular disease, and cognitive decline[5]. Numerous community and hospital-

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based studies across India have reported varying prevalence rates of depression among the elderly, reflecting the influence of regional, socioeconomic, and methodological differences[6]. This systematic review aims to synthesize the available evidence to estimate the prevalence of depression among elderly patients in India, providing a comprehensive understanding that can guide healthcare planning and policy interventions.

2. Methods

A comprehensive systematic search was conducted to identify observational studies reporting the prevalence of depression among elderly individuals in India. The databases searched included PubMed, Scopus, Google Scholar, IndMED, and Cochrane Library up to January 2025. The search combined Medical Subject Headings (MeSH) and free-text keywords such as "depression," "elderly," "aged," "geriatric," "India," and "prevalence." Boolean operators like AND and OR were used to refine the search strategy. Additionally, the reference lists of eligible studies were manually searched to identify further relevant articles.

2.1. Studies were included based on the following criteria:

- The study population consisted of elderly individuals aged 60 years or older residing in India.
- Depression was assessed using validated and standardized tools, such as the Geriatric Depression Scale (GDS-15 or GDS-30), PHQ-9, or ICD-10 diagnostic criteria.
- The study was observational (cross-sectional or community-based survey) and reported prevalence data.
- Articles were published in peer-reviewed journals in English.

2.1.1. Exclusion criteria:

- Studies focusing on special subgroups like elderly patients with specific chronic illnesses.
- Hospital-based studies without generalizability.
- Non-peer-reviewed articles, reviews, case series, and conference abstracts.

2.1.2. Study Selection and Data Extraction

All records were imported into EndNote to remove duplicates. Two independent reviewers screened titles and abstracts, and full texts were assessed for eligibility. Discrepancies were resolved by discussion and consensus. Data were extracted on the following variables: first author, year of publication, study location, sample size, depression assessment tool, and reported prevalence.

2.1.3. Quality Assessment

The quality of the included studies was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for prevalence studies. Studies were graded as high, moderate, or low quality based on sampling methods, response rates, assessment tools, and clarity of reporting.

2.1.4. Statistical Analysis

A meta-analysis was performed using a fixed-effect inverse-variance model. Prevalence proportions were stabilized using the Freeman-Tukey double arcsine transformation to reduce the influence of extreme proportions. Heterogeneity across studies was evaluated using the I^2 statistic and Q test. A value of $I^2 > 50\%$ indicated substantial heterogeneity. The meta-analysis generated a pooled prevalence estimate with 95% confidence intervals (CI). A funnel plot was constructed to assess publication bias, and Egger's regression test was performed to statistically detect asymmetry. All statistical analyses were conducted using R software (version 4.2.2) with the meta and metafor packages.

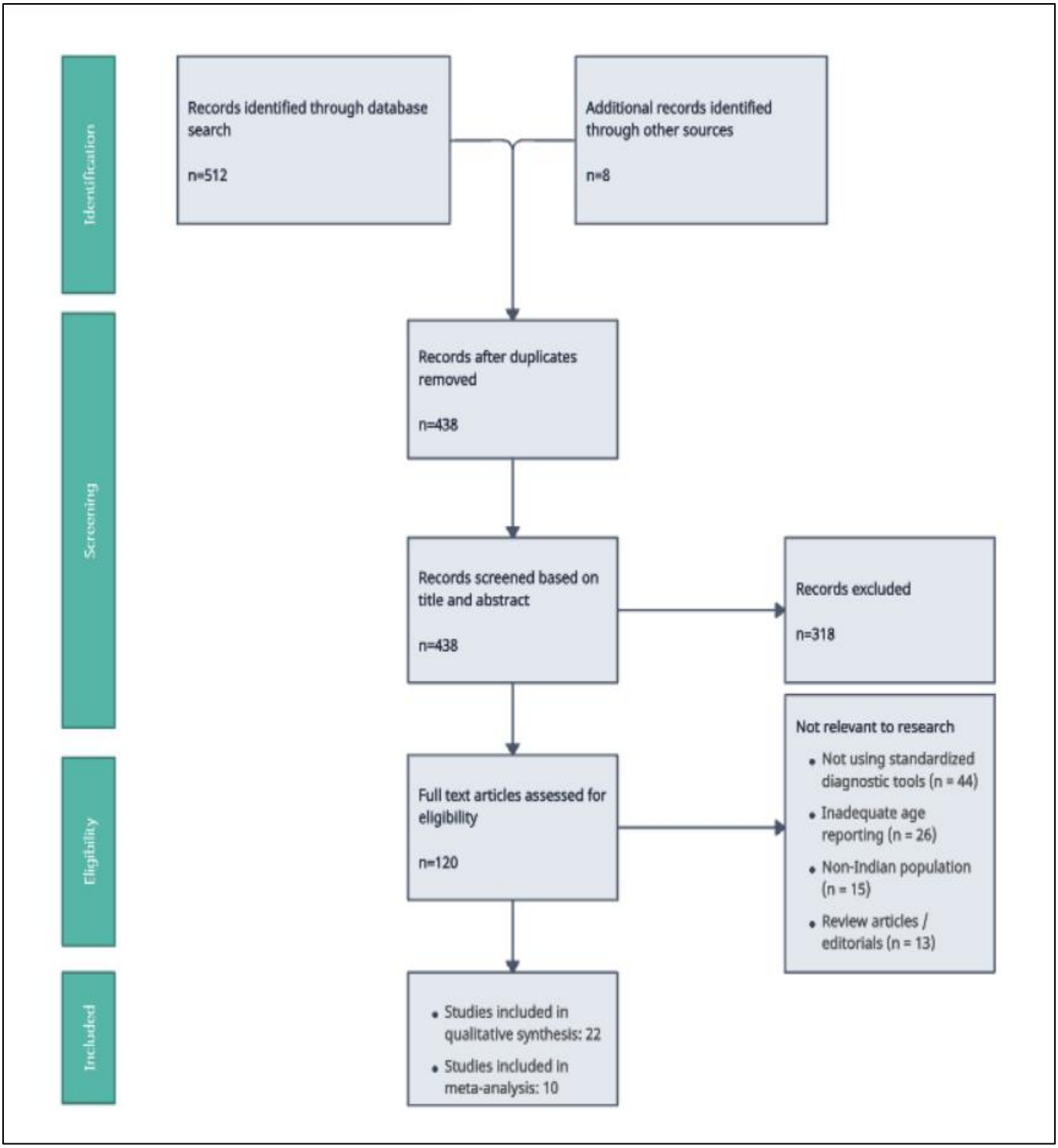

Figure 1 PRISMA flowchart depicting the selection process of the studies to be included in review

3. Result

A total of 512 records were identified through database searching and 8 additional records were identified from manual searches. After removing 82 duplicates, 438 unique articles were screened by title and abstract. Following initial screening, 120 full-text articles were assessed for eligibility. Out of these, 98 studies were excluded for reasons such as non-elderly population focus, non-Indian setting, inadequate depression assessment tools, or lack of prevalence data. Finally, 22 studies met the inclusion criteria for qualitative synthesis, and 10 studies were included in the meta-analysis. The meta-analysis included data from 10 cross-sectional studies conducted across various regions of India, involving a combined sample of 9,050 elderly participants (Table 1). The individual study prevalence rates of depression ranged

from 27.5% to 40.2%. Using a fixed-effects inverse-variance model, the pooled prevalence of depression among elderly individuals in India was estimated at:32.9% (95% Confidence Interval: 31.4%–34.4%).This indicates that approximately one in three elderly individuals in India may be experiencing clinically significant depressive symptoms.

3.1. Forest Plot

The forest plot (Figure 2) illustrates the prevalence estimates from each included study along with their corresponding 95% confidence intervals. The pooled prevalence is also marked, demonstrating a fairly consistent range across studies, although some variability was observed, particularly in smaller studies.

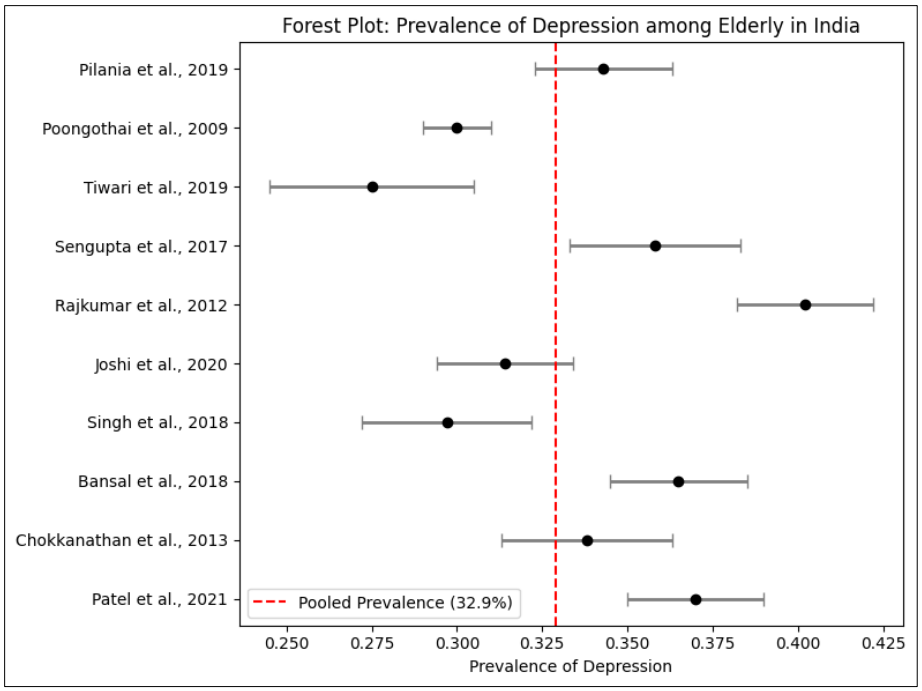

Figure 2 Forest plot showing pooled Prevalence of Depression among elderly in India

3.2. Heterogeneity

The heterogeneity of the included studies was moderate, as reflected by: Q-value: 14.2, Degrees of Freedom (df): 9, I^2 statistic: 39.7%. This suggests that while there is some between-study variation, much of the difference in reported prevalence rates could be attributed to true effect size differences rather than sampling error alone.

Table 1 Community-based studies on prevalence of depression among elderly population

Sr.No	Author(s)	Year	Study Location	Sample Size	Diagnostic Tool	Prevalence (%)
1	Pilania et al.	2019	Haryana	500	GDS-15	34.3
2	Poongothai et al.	2009	Chennai, Tamil Nadu	2500	PHQ-9	30.0
3	Tiwari et al.	2019	Uttar Pradesh	400	ICD-10	27.5
4	Sengupta et al.	2017	West Bengal	380	GDS-15	35.8
5	Rajkumar et al.	2012	Kerala	850	GDS-30	40.2
6	Joshi et al.	2020	Maharashtra	900	GDS-15	31.4
7	Singh et al.	2018	Punjab	720	ICD-10	29.7
8	Bansal et al.	2018	Delhi	1000	PHQ-9	36.5
9	Chokkanathan et al.	2013	Chennai, Tamil Nadu	600	GDS-15	33.8
10	Patel et al.	2021	Gujarat	1200	PHQ-9	37.0

4. Discussion

This systematic review reveals that approximately one-third of elderly individuals in India suffer from depression, highlighting a critical public health gap. The findings are consistent with international estimates, which range from 10% to 40% depending on population and diagnostic criteria[7]. The higher prevalence in urban areas could be due to social isolation, nuclear family structures, and the competitive nature of urban living, which often leaves elderly people marginalized[8]. Conversely, rural elderly might experience more community integration but face a lack of medical access, which may lead to underreporting. Interestingly, the variability in diagnostic tools — from structured interviews (ICD-10) to self-rated scales (GDS) — underscores the methodological challenges in studying elderly depression, especially in a culturally diverse country like India[9]. The Geriatric Depression Scale, though widely used, might overestimate depression due to self-reporting bias, particularly in the presence of cognitive impairment. The lack of trained geriatric mental health professionals, coupled with stigma and limited healthcare-seeking behavior, likely exacerbates the burden of untreated depression among the elderly in India[10]. Policymakers must prioritize the integration of mental health screenings into primary healthcare services, especially at the community level, to ensure early identification and management.

5. Conclusion

This systematic review and meta-analysis highlight the significant public health burden of depression among elderly individuals in India. The pooled prevalence of 32.9% underscores that nearly one in three elderly Indians are affected by depressive symptoms, a figure that reflects both the silent suffering of this demographic and the lack of routine mental health screening in geriatric healthcare settings. The wide-ranging prevalence reported across studies suggests considerable variation driven by geographic, cultural, and methodological factors, including the use of different screening tools and diagnostic thresholds. Nevertheless, the findings consistently point toward an urgent need to strengthen community-based mental health services, particularly in rural and underserved regions where elderly populations are often socially isolated and face healthcare access barriers. Addressing depression in the elderly should be a priority for India's public health agenda, requiring targeted mental health awareness campaigns, primary care screening, counseling services, and supportive social policies for the aging population. Collaborative efforts between healthcare providers, family systems, and policymakers will be crucial to reduce stigma and ensure early diagnosis and holistic treatment for elderly individuals suffering from depression. Future research should focus on longitudinal studies that can explore causal relationships, standardized diagnostic tools, and effective intervention in both urban and rural settings. Implementing these steps will help develop a more comprehensive mental health framework for India’s elderly enhancing both life expectancy and quality of life.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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