RESEARCH PAPER

Undiagnosed Depression and Suicidal Ideation Among Adults in Rural and Urban India: A Community-Based Comparative Study

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Abstract

Background: Depression and suicidal ideation are major public health concerns in India, with notable rural–urban disparities. Stigma, limited awareness, and inadequate availability of mental health services contribute to delayed identification and untreated psychological distress, particularly in rural communities.**Objectives:**To estimate the prevalence of undetected depression and suicidal ideation and to assess rural–urban differences and associated sociodemographic factors in Chengalpattu district, Tamil Nadu.**Methods:**Adults between the ages about 18 and 49 were included in a six-month community-based cross-sectional study using multistage Sampling.Data were collected through household interviews using validated tools including PHQ-9, SOSS, ATSPPH-SF, and SBQ-R. Standard cut-off scores were used to distinguish between depression and suicidal thoughts. IBM SPSS version 26 was used for data analysis, utilizing multivariate logistic regression, chi-square tests, and descriptive statistics.**Results:**Among 240 participants, 56.7% were females and 44.6% belonged to the 26–35-year age group. The prevalence of depression was 32.9%, while suicidal ideation was reported by 22.5% of participants. Rural residents showed significantly higher prevalence of depression (41.8% vs. 25.4%) and suicidal ideation (30.9% vs. 15.4%) compared to urban residents ($p < 0.05$). Multivariate analysis identified rural residence, age ≥30 years, and lower socioeconomic status as independent predictors of depression. Suicidal ideation was strongly associated with the presence of depression, along with rural residence and low socioeconomic status.**Conclusion:**A considerable burden of undetected depression and suicidal ideation exists, particularly in rural areas. Strengthening community-based screening, reducing stigma, and integrating mental health services into primary healthcare are urgently required.

Keywords: *Depression; Suicidal ideation; Rural health; Mental health services; Stigma; Primary health care.*

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Introduction

Depression and suicide are major public health concerns worldwide, contributing substantially to disability, reduced quality of life, and premature mortality. Beyond being medical conditions, they are shaped by social environments, cultural beliefs, and health-seeking behaviors. In the Indian context, psychological distress often remains hidden within families and communities, where emotional suffering is normalized or silenced, delaying recognition and care [1–3].Globally, depression ranks among the leading causes of years lived with disability. Although improved diagnostic tools and growing awareness have increased detection in high-income settings, large treatment gaps persist in low- and middle-income countries. In India, depressive symptoms frequently present as physical complaints such as fatigue, body pain, or weakness, leading to misdiagnosis and under-treatment at the primary care level [3,5]. Community-based studies from rural regions have demonstrated a substantial burden of undetected depression, highlighting silent suffering beyond the reach of formal health services [3].Rural–urban differences in depression have gained increasing attention. Evidence

suggests that individuals residing in rural areas face higher vulnerability due to poverty, limited availability of mental health professionals, weak referral systems, and long travel distances to psychiatric facilities [4,6]. Studies have shown that many rural patients seek treatment in urban centers, reflecting both inadequate local services and concerns related to privacy, trust, and stigma within close-knit communities [6]. Conversely, urban populations experience different but equally significant risks, including social isolation, occupational stress, chronic medical illnesses, and overcrowded healthcare systems, all of which contribute to delayed diagnosis despite better physical access to services [8].Sociocultural factors strongly influence mental health outcomes in India. Gender roles, financial insecurity, and family pressures shape symptom expression and help-seeking behavior. Maternal depression in rural Tamil Nadu, for instance, has been linked to marital stress, lack of social support, and economic dependency, underscoring the importance of context-specific risk factors [7]. Across age groups, stigma continues to be one of the most powerful deterrents to care. Studies from Kerala and North India reveal persistent negative beliefs toward mental illness across rural, urban, and tribal populations, resulting in shame, concealment, and social exclusion [9,10]. The interaction between stigma and poverty further intensifies barriers, limiting both treatment access and recovery [11,12].India's suicide burden reflects these unresolved gaps. Despite relatively strong health indicators, states such as Tamil Nadu report high suicide rates, particularly among young and economically productive individuals in rural areas [15]. Similar trends observed in other regions point toward underlying untreated depression, substance use, and limited psychosocial support [16]. These findings emphasize the urgent need for early detection and community-level mental health interventions.Given the persistent treatment gap, community-based comparative studies examining depression, suicidality, stigma, and barriers to care across rural and urban settings are critically important. Such evidence can guide equitable mental health planning and support the integration of mental health services within primary healthcare systems in India [5,17].

METHODOLOGY

The study was designed as a community-based cross-sectional descriptive study and was conducted over a fixed period of six months in the rural and urban field practice areas of the Department of Community Medicine, SRM Medical College Hospital & Research Centre. The study area included selected households from Chengalpattu district, representing both rural and urban populations. Ethical approval for the study had been obtained before the commencement of field work, and written informed consent was secured from all participants. The study population consisted of adults aged 18 to 49 years who were permanent residents of the selected households and were able to communicate in either Tamil or English. Those who declined participation, were unable to comprehend the questionnaire, or reported a previously diagnosed severe mental illness or cognitive impairment were excluded from the study.

Sample Size Determination

The sample size was calculated before data collection using the prevalence reported in the mother article by Prakash et al., which documented a 51% prevalence of depression among adolescents in urban and rural Mysuru. This prevalence estimate formed the basis for the calculation of the minimum required sample size. Using the formula:$n = Z^2 \cdot p \cdot q/d^2$ where Z = 1.96 for 95% CI, p = 51%, q = 49%, and precision d = 7%, the calculated sample size was: $n = \frac{3.84 \times 51 \times 49}{49} = 195$

A 20% addition was made to compensate for potential non-response, resulting in:

$$195 + 39 = 234$$

which was rounded off to a final sample size of 240 participants.

Sampling Technique

A multistage random sampling approach was used. In the first stage, the district was stratified into rural and urban sectors. In the second stage, one to two wards from an urban municipality (e.g., Maraimalai Nagar, Guduvanchery) and one to two villages from rural blocks (e.g., Kattankulathur, Maduranthakam) were randomly selected. In the third stage, households within each selected area were chosen using systematic random sampling. In the final stage, one eligible adult from each selected household was chosen using either the Kish grid method or simple random selection when multiple eligible participants were present.

Data Collection Procedure

Data were collected through house-to-house visits by trained field investigators during the six-month study period. A semi-structured questionnaire was administered, which included sociodemographic information, stigma and attitude scales, and mental health screening tools. The questionnaire used for data collection contained multiple validated instruments: the Stigma of Suicide Scale (SOSS), the Attitudes Toward Seeking Professional Psychological Help Scale—Short Form (ATSPPH-SF), the Suicidal

Behaviors Questionnaire–Revised (SBQ-R), and the Patient Health Questionnaire-9 (PHQ-9), all of which were applied uniformly across rural and urban groups. Responses for each scale were recorded according to the scoring formats provided in the tool.

For the PHQ-9, the severity of depressive symptoms was quantified by summing the scores for the nine items, generating a total score ranging from 0 to 27. Participants were categorised into minimal, mild, moderate, moderately severe, and severe depression based on standard interpretation guidelines. For the SOSS, ATSPPH-SF, and SBQ-R scales, Likert-based scoring was used to compute stigma and help-seeking attitude levels, which were later used to compare rural and urban differences.

Study Period and Recruitment

Although the scientific committee approval recorded a three-month recruitment window, the entire study—including sampling, field data collection, and follow-up household revisits—was completed over six months, ensuring adequate coverage of all selected households and minimising seasonal or temporal variations in mental health indicators.

Data Entry and Statistical Analysis

All completed questionnaires were verified daily, and the data were entered into a Microsoft Excel spreadsheet. Cleaned data were analysed using IBM SPSS Version 26.0, which served as the sole statistical software for the study. Quantitative variables were summarised using mean and standard deviation when normally distributed, and median with interquartile range when skewed. Categorical variables were presented as frequencies and percentages. The χ^2 test was applied to examine associations between categorical variables such as depression status, stigma levels, and help-seeking factors across rural and urban populations. A p-value < 0.05 was considered statistically significant.

Study Setting and Ethical Considerations

The study was conducted exclusively among households in rural and urban localities of Chengalpattu district, ensuring representation from both socio-demographic environments. All participants were informed about the objectives, confidentiality safeguards, and voluntary nature of participation. No risks were anticipated, and no compensation was provided. Consent forms in both English and Tamil were used, and no waiver of consent was required

Study Results Tables and Figure

Table 1. Sociodemographic Characteristics of Study Participants (n = 240)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	18–25	62	25.8
	26–35	107	44.6
	>35	71	29.6
Gender	Male	104	43.3
	Female	136	56.7
Residence	Urban	130	54.2
	Rural	110	45.8
Education	Illiterate	34	14.2
	Schooling	119	49.6
	Graduate & above	87	36.2
Socioeconomic status	Low	96	40.0
	Middle	93	38.8
	High	51	21.2

The study included 240 participants, predominantly in the 26–35-year age group (44.6%), followed by those aged 18–25 years (25.8%) and above 35 years (29.6%). A slightly higher proportion of participants were female (56.7%) compared to males (43.3%). In terms of residence, urban participants formed 54.2% of the sample, while 45.8% were from rural areas, ensuring a reasonable representation from both settings.Regarding educational status, nearly half of the participants (49.6%) had schooling-level education, while 36.2% were graduates or above. A smaller proportion (14.2%) were illiterate. Socioeconomic status analysis shows that 40% belonged to the low SES group, 38.8% to the middle, and 21.2% to the high SES category, indicating that the study population mainly consisted of individuals from lower and middle socioeconomic backgrounds.

Table 2. Prevalence of Depression and Suicidal Ideation by Residence

Outcome	Urban n (%)	Rural n (%)	Total n (%)	Chi-square	p-value
Depression	33 (25.4)	46 (41.8)	79 (32.9)	3.92	0.047
Suicidal ideation	20 (15.4)	34 (30.9)	54 (22.5)	4.82	0.028

The overall prevalence of depression among the study participants was 32.9%. Depression was significantly more common among rural residents compared to urban residents (41.8% vs. 25.4%), and this difference was statistically significant ($\chi^2 = 3.92$, $p = 0.047$).

Suicidal ideation was reported by 22.5% of participants. A significantly higher prevalence of suicidal ideation was observed among rural participants than among urban participants (30.9% vs. 15.4%), with the association showing statistical significance ($\chi^2 = 4.82$, $p = 0.028$).

Table 3. Factors Associated with Depression: Univariate and Multivariate Analysis

Variable	Depression n (%)	Crude OR (95% CI)	Adjusted OR (95% CI)	p-value
Urban (Ref)	33 (25.4)	Ref	Ref	-
Rural	46 (41.8)	2.19 (1.00–4.93)	2.05 (1.88–4.79)	0.042
<30 years (Ref)	28 (23.5)	Ref	Ref	-
≥30 years	51 (42.1)	2.53 (1.03–6.17)	2.41 (1.02–5.65)	0.044
High SES (Ref)	11 (21.6)	Ref	Ref	-
Middle SES	27 (29.0)	2.32 (1.62–4.52)	1.89 (1.29–3.67)	0.025
Low SES	41 (42.7)	4.31 (1.63–11.36)	3.12 (1.21–8.02)	0.018

Univariate analysis showed that residence, age, and socioeconomic status were significantly associated with depression. Participants residing in rural areas had higher odds of depression compared to urban residents (crude OR = 2.19; 95% CI: 1.00–4.93). Individuals aged 30 years and above were more likely to have depression than those aged below 30 years (crude OR = 2.53; 95% CI: 1.03–6.17). A clear socioeconomic gradient was observed, with participants from low socioeconomic status demonstrating higher odds of depression compared to those from the high socioeconomic group (crude OR = 4.31; 95% CI: 1.63–11.36).

On multivariate logistic regression analysis, rural residence remained independently associated with depression (adjusted OR = 2.05; 95% CI: 1.88–4.79; p = 0.042). Participants aged 30 years and above continued to show significantly higher odds of depression (adjusted OR = 2.41; 95% CI: 1.02–5.65; p = 0.044). Socioeconomic status also remained a significant predictor, with individuals belonging to the middle socioeconomic group (adjusted OR = 1.89; 95% CI: 1.29–3.67; p = 0.025) and low socioeconomic group (adjusted OR = 3.12; 95% CI: 1.21–8.02; p = 0.018) showing higher odds of depression compared to those from the high socioeconomic category.

Table 4. Factors Associated with Suicidal Ideation: Univariate and Multivariate Analysis

Variable	Suicidal ideation n (%)	Crude OR (95% CI)	Adjusted OR (95% CI)	p-value
Urban (Ref)	20 (15.4)	Ref	Ref	-
Rural	34 (30.9)	2.68 (1.09–6.56)	2.12 (1.01–4.48)	0.046
No depression (Ref)	5 (3.1)	Ref	Ref	-
Depression present	49 (62.0)	42.1 (9.10–195.0)	31.4 (6.88–143.1)	<0.001
Low SES	33 (34.4)	4.36 (1.01–18.73)	3.52 (1.02–12.13)	0.047

In univariate analysis, rural residence, presence of depression, and low socioeconomic status were significantly associated with suicidal ideation. Participants residing in rural areas had higher odds of suicidal ideation compared to urban residents (crude OR = 2.68; 95% CI: 1.09–6.56). The presence of depression showed a strong association with suicidal ideation (crude OR = 42.1; 95% CI: 9.10–195.0). Participants belonging to the low socioeconomic group also demonstrated significantly increased odds of suicidal ideation (crude OR = 4.36; 95% CI: 1.01–18.73).

After adjustment for potential confounders, rural residence remained independently associated with suicidal ideation (adjusted OR = 2.12; 95% CI: 1.01–4.48; p = 0.046). Depression emerged as the strongest predictor, with individuals having depression showing markedly higher odds of suicidal ideation compared to those without depression (adjusted OR = 31.4; 95% CI: 6.88–143.1; p < 0.001). Low socioeconomic status also remained significantly associated with suicidal ideation on multivariate analysis (adjusted OR = 3.52; 95% CI: 1.02–12.13; p = 0.047).

Figure 1. Overall Prevalence of Depression and Suicidal Ideation

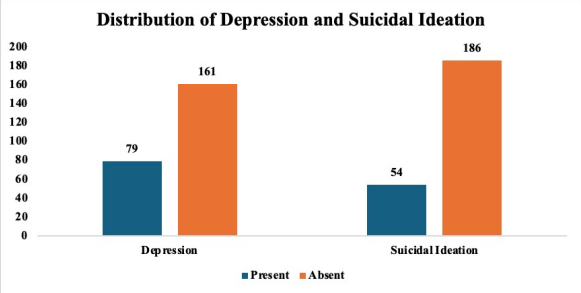

Figure 1 illustrates the overall prevalence of depression and suicidal ideation among the 240 study participants. Depression was present in 79 individuals (32.9%), while the remaining 161 participants (67.1%) did not report depressive symptoms. This shows that nearly one-third of the study population experienced depression.

Suicidal ideation was reported in 54 participants (22.5%), whereas 186 participants (77.5%) did not exhibit suicidal thoughts. Although suicidal ideation was less common than depression, it still affected more than one-fifth of the sample, indicating a substantial mental health burden. Overall, the figure highlights a high prevalence of both depression and suicidal ideation, underscoring the importance of early screening, timely psychological assessment, and appropriate mental health interventions among the study population.

Discussion:

A recent local comparison involving 240 adults from Chengalpattu showed nearly one-third faced depression (32.9%), while over two in ten had thoughts of suicide (22.5%). People living in villages were more affected - depression reached 41.8%, suicidal thinking hit 30.9% - whereas city dwellers reported lower levels at 25.4% and 15.4%. Differences between regions appear significant despite similar age groups.

Comparable trends have been reported in earlier Indian studies. Chettri et al. observed higher suicide rates among rural and economically disadvantaged families, attributing this pattern to limited mental health services and strong societal stigma (16). Our finding of nearly double the prevalence of suicidal ideation in rural areas supports this explanation and suggests that such systemic gaps remain prominent in rural Tamil Nadu. The Lancet Commission on global mental health also emphasized that untreated depression contributes substantially to disability, particularly in regions with inadequate access to care and uneven health system coverage (17).

The independent association between rural residence and depression (AOR 2.05) in our study is consistent with findings by Rai et al., who reported poorer mental health outcomes among rural adults due to restricted healthcare availability and delayed help-seeking (18). Similar explanations have been noted across studies conducted among adolescents and older adults, indicating that barriers such as stigma, low awareness, and weak support systems persist across the life course rather than being age-specific (19,21,31).

Socioeconomic status emerged as another strong determinant of depression. Individuals belonging to lower socioeconomic strata had more than threefold higher odds of depression (AOR 3.12), paralleling findings by Mohan Kumar et al., who reported a comparable prevalence of depressive symptoms among rural adults in Tamil Nadu (20). Although urban participants overall showed lower depression levels, subgroup analysis revealed high prevalence among economically disadvantaged urban residents, reinforcing the consistent role of poverty in shaping mental health outcomes across settings (22).

Depression was the most powerful predictor of suicidal ideation in the present study (AOR 31.4), aligning with evidence from Sathiyaseelan et al., who identified undiagnosed depression as a major contributor to suicide risk in South India (23). Furthermore, nearly two-thirds of individuals with depressive symptoms reported suicidal thoughts, supporting previous

research linking internalized stigma and emotional distress to heightened suicide vulnerability (27).

The demonstrated utility of PHQ-9 in Indian primary care settings further supports the integration of routine mental health screening into community and outpatient services (24).

A significant proportion of participants with depression had not been previously diagnosed, indicating major gaps in community-level detection. Prior studies from rural India and neighboring regions have reported poor help-seeking behavior due to stigma, financial constraints, and reliance on informal or non-professional support systems (25,26).

Finally, evidence suggests minimal spontaneous recovery from untreated depression in rural populations, leading to prolonged morbidity and increased suicide risk (29). The high prevalence observed in this study therefore highlights an urgent need for early identification, stigma reduction strategies, and strengthened rural mental health services to mitigate long-term psychological and social consequences (30,32).

Limitations

The cross-sectional design restricted causal inferences between depression, suicidality, stigma, and care-seeking. Even when utilizing validated scales, self-reported responses might be influenced by recall and social desirability biases. Limiting participants to 18-49 years old and to specific sections of one district reduces generalizability. The lack of qualitative interviews and single-time assessments hampered further exploration and longitudinal understanding of mental health trajectories.

Conclusion

The study identified a substantial burden of untreated depression and suicidal ideation in Chengalpattu district, with greater vulnerability in rural populations. Depressive symptoms showed a strong association with suicidal thoughts, emphasizing the importance of early detection. Socioeconomic disadvantage and increasing age further elevated risk, underscoring the need for strengthened primary mental health services, stigma reduction, and context-specific interventions to promote equitable mental health care across rural and urban communities.

Recommendation

Routine community-based screening for depression and suicide ideation should be incorporated into primary care, especially in rural regions. Strengthening mental health training for frontline health professionals, increasing referral links, and introducing stigma-reduction programs may aid in early detection and timely intervention, lowering the burden of untreated depression and suicide risk.

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