Original Article

A study on the prevalence of depression and its risk factors among adult population of Siliguri subdivision of Darjeeling district, West Bengal

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Abstract

Introduction: Considering morbidity and mortality, depression is a burning issue in the modern civilization. Early diagnosis and treatment significantly reduces the incidence of morbidity and mortality. In this context, the present study was conducted to find the prevalence and associated factors of depression among adult population of Siliguri subdivision, Darjeeling district, West Bengal. **Materials and Methods:** A community-based cross-sectional study was conducted among adult population (≥18 years) of Siliguri subdivision of Darjeeling district, West Bengal. Thirty-cluster sampling method was used to identify the study participants. Beck's depression inventory–II was used as the screening tool. Binary logistic regression was done to find the associated factors of depression using IBM SPSS software Version 20.0 (Armonk, New York). **Results:** Overall, 36% of the study participants were depressed and 11% were significantly depressed. In binary logistic regression, female gender, rural resident, and lower educational status were found to be significantly associated with depression. **Conclusion:** Screening of depression and early identification of associated factors helps in reducing the adverse outcome of depression. More than one-third of the population depressed and there were some modifiable associated factors such as educational status and rural residence.

Keywords: Adults, depression, prevalence, risk factors, Siliguri

Introduction

Everyone occasionally feels blue or sad but these feelings are usually short-lived and pass within a couple of days.[1] However, sadness becomes problematic when duration increases. There is a critical level above which it is marked as depression. Depression is one of the most prevalent and treatable mental disorders presenting, in general, medical as well as specialty settings.[2]

Depression is a disorder of major public health importance.[3] In 2012, depression is estimated to affect 350 million people worldwide.[4] In different countries, the prevalence of depression was different. Lifetime prevalence rates range from approximately 3% in Japan to 16.9% in the United States, with most countries falling somewhere between 8% and 12%.[5]

In India also, the prevalence of depression varies from place to place. In a study conducted in Chennai among urban adult population, the age-standardized prevalence of depression was found to be 15.9%.[6] A meta-analysis conducted by Reddy and Chandrasekhar showed that the prevalence of depression was 7.9–8.9 per thousand population, and the prevalence rates were nearly twice in the urban areas.[7] A study done by Nandi *et al.*

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in a rural area of West Bengal, revealed that though overall psychiatric morbidity did not show a statistical significant change over a period of 20 years, prevalence of depression increased from 4.99% in 1972 to 7.39% in 1992.[8]

Some risk factors such as age, female gender, illiteracy, below poverty line, living alone, economical dependency, staying without spouse, not being consulted for decisions, and feeling of ill have been identified in different studies.[9,10]

Timely identification and adequate treatment saves valuable lives as well as decrease the suffering. In this context of paucity of relevant community-based studies in West Bengal, especially in Darjeeling district, the study was conducted to find the prevalence and different associated factors of depression among adult population in Darjeeling district.

Materials and Methods

The community-based cross-sectional study was conducted among adult population (≥18 years) of Siliguri subdivision of Darjeeling district, West Bengal. Siliguri subdivision has four blocks (Matigara, Naxalbari, Phansidewa, and Khoribari) and one municipal corporation (Siliguri municipal corporation). The study was conducted between May 2013 and April 2015. Participants who could read and understand Bengali and English were included in the study and seriously physical and mental ill patients were excluded from the study.

Assuming the anticipated population proportion of 15.9%, confidence interval (CI) 95%, absolute precision 5% and using the formula $N = Z^2_{1-\alpha/2}P\ (1 - P)/d^2$, sample size summed up to 206.[6] Here, N = sample size, Z = Standard normal deviate at 95% CI = 1.96, d = Absolute precision, P = Prevalence of disease.

Considering the design effect 2, sample size was taken as 412 as cluster sampling was used. Taking partial response as 15%, the sample size reached 474 and finally it has been rounded off to 480. After data collection, excluding incomplete data, ultimately 469 data were analyzed.

Wards in urban area and village in rural area were considered as cluster. Thirty-cluster sampling method was used. Using the population proportion to size 16, people from each cluster and maximum one eligible person from the selected household were randomly chosen.

Beck's depression inventory (BDI) was used and translated and validated into local Bengali language.[11] The questionnaire comprised two parts: the first part included general sociodemographic characteristics which were filled by the researcher and the second part included BDI questionnaire which was filled by the participants themselves. The BDI has 21 multiple-choice questionnaire and answers of each questionnaire have values from 0 to 3. According to BDI scoring, depression had been classified into low (0–16), moderate (17–30), and significant (>31).

Results

Of the 469 study participants, 50.7% belonged to 18–29 years' age group. The mean age of the study population was 33.17 years (±13.5 standard deviation). Nearly 56.7% of the study participants were female. Almost 64.6% of the study population were from rural area and rest were from urban area. About 28.7% of participants completed high school and 15.4% graduation [Table 1].

Among the 469 study participants, 22 were either widowed or divorced whereas 292 were currently married. A major proportion of the study participants were homemakers (31.8%) and students (18.7%).

Table 1: Distribution of the study participants according to different sociodemographic characteristics (*n*=469)

General characteristics	*n* (%)
Age (years)	
18-29	238 (50.7)
30-39	88 (18.8)
40-49	75 (16.0)
50-59	31 (6.6)
≥60	37 (7.9)
Gender	
Female	266 (56.7)
Male	203 (43.3)
Residence	
Rural	303 (64.6)
Urban	166 (35.4)
Religion	
Hindu	422 (90.0)
Muslim	22 (4.7)
Christian	21 (4.5)
Buddhist	4 (0.8)
Caste	
General	247 (52.7)
Scheduled caste	141 (30.1)
Scheduled tribe	44 (9.3)
Other backward classes	37 (7.9)
Education	
Primary	22 (4.7)
Middle school	118 (25.2)
High school	135 (28.7)
Higher secondary	122 (26.0)
Graduate and above	72 (15.4)
Marital status	
Currently married	292 (62.3)
Never married	155 (33.0)
Widowed and divorced	22 (4.7)
Occupation	
Skilled worker	30 (6.4)
Unskilled worker	80 (17.1)
Semi-professional and professional	31 (6.6)
Student	88 (18.7)
Homemaker	149 (31.8)
Businessperson	46 (9.8)
Retired	16 (3.4)
Unemployed	29 (6.2)

It was found that overall 36% of the study participants were depressed and 11% were significantly depressed [Table 2].

In univariate analysis, among the participants, the proportion of depression was highest in 30–39 years' age group (43.2%). It was found that females (39.8%) and rural population (41.6%) were significantly depressed. It was found that though proportion of depression was more among those who had any type of substance dependence (40.3%) compared to those who did not (32.8%), it was not statistically significant [Table 3].

Another important observation, proportion of depression, was less (25.5%) among those whose educational qualification was higher secondary and above.

Among the different associated factors, binary logistic regression was done and it was found that female gender, rural habitant, and lower educated are the risk factors associated with developing depression.

Discussion

With the advent of modern civilization along with other noncommunicable diseases, mental diseases are increasing. Early detection and timely adequate intervention reduces the morbidity as well as mortality. Using the BDI as screening tool for understanding the magnitude of depression among adult population will help us for future planning. Besides this, identification of associated factors of depression will also help take adequate preventive measures. Compared to other studies, mean age group of study participants (33.17 ± 13.5) in the current study was 2–6 years less, but the variation from mean was almost similar.[12,13] In comparison with other studies, we have to remember the age, sex, and other composition of the population. The percentage of female (56.7%) study participants was 4%–5% higher or lower compared to other similar studies.[6,12]

The findings of this analysis illustrate that the prevalence of depression was 36% among adult population which was relatively higher compared to the findings of most of the previous researchers.[6,8,14,15] Reddy and Chandrasekhar conducted a meta-analysis which included 13 different community-based studies reported that the prevalence of depression was between 7.9 and 8.9 per thousand population, and the prevalence rates were nearly twice in the urban areas.[7] The prevalence of depression was found to be 39.1% by Nakulan *et al.* in Kerala, which may be due to the fact that older age group was their study participants.[16] Nautiyal *et al.*, in Dehradun city, found that 29.1% of their study participants were depressed which was lower than that of our finding. This difference is attributed to different age group, area, and different scale used in that study.[17]

Similar to other health issues, prevalence of depression is also a dynamic entity. Day by day, stresses and other risk factors of depression are increasing, so the chance of increase in prevalence of depression is also increasing in recent studies.

Table 2: Distribution of the study participants according to severity of depression (*n*=469)

Severity of depression (Beck's score)	Frequency (%)	Total (%)
Low* (0-16)	300 (64.0)	
Moderate (17-30)	118 (25.0)	169 (36.0)
Significant (≥31)	51 (11.0)	
Total	469 (100.0)	

*According to Beck's depression inventory, low score (0-16) clinically not considered as depression

Table 3: Sociodemographic and other correlates of depression (*n*=469)

Variables	Depression		Total (%)	Statistical test OR (95% CI)
	Absent (%)	Present (%)		
Age (years)				
18-39	216 (66.3)	110 (33.7)	326 (100.0)	0.830 (0.388-1.774)
40-59	62 (58.5)	44 (41.5)	106 (100.0)	1.046 (0.463-2.364)
60 and above	24 (64.9)	13 (35.1)	37 (100.0)	1 (referent)
Gender				
Female	160 (60.2)	106 (39.8)	266 (100.0)	1.871 (1.196-2.925)*
Male	142 (70.0)	61 (30.0)	203 (100.0)	1 (referent)
Address				
Rural	177 (58.4)	126 (41.6)	303 (100.0)	1.972 (1.248-3.117)*
Urban	125 (75.3)	41 (24.7)	166 (100.0)	1 (referent)
Education				
Primary-high school	159 (57.4)	118 (42.6)	277 (100.0)	1.955 (1.250-3.057)*
Higher secondary and above	143 (74.5)	49 (25.5)	192 (100.0)	1 (referent)
Socioeconomic status				
Class I and II	155 (68.3)	72 (31.7)	227 (100.0)	1.065 (0.680-1.668)
Class III and IV	147 (60.7)	95 (39.3)	242 (100.0)	1 (referent)
Substance abuse				
Yes	105 (59.7)	71 (40.3)	176 (100.0)	1.412 (0.891-2.239)
No	197 (67.2)	96 (32.8)	293 (100.0)	1 (referent)

*$P \leq 0.05$. OR: Odds ratio; CI: Confidence interval

It was observed that the prevalence of depression in nearby country like Bangladesh among the adults was 4.6% in a study in 2007.[18] Reason of international variation may depend on the level of sociocultural deference.

Hence, in short, deference in the prevalence of depression could be attributed to different ethnicity and demographic characteristics of the study populations, different diagnostic criteria, study instruments employed, and time frame.

The study also revealed that 11% of the study participants had a significant level of depression and 25% had moderate level of depression. Hence, among the depressed participants, more or less one-third required special care and psychiatric consultation in urgent basis.

In the current study, the proportion of depression was lowest (30.3%) among 18–29 years' and highest (43.2%) among 30–39 years' age group. Again, there was a gradual reduction in the proportion of depression after 39 years. This type of finding is due to the fact that 30–39 years' age group carries major burden of the family and after that there was shifting of responsibilities to younger family members though some age-related physical and mental changes may affect 60 years and above age group. Similarly, increased trend of depression with age was reported in different studies[6,14] In another study, Danesh and Ladeen reported that the highest prevalence rate of lifetime depression (14.3%) was in the age group between 20 and 24 years.[19]

The study revealed that the proportion of depression was more among female (39.8%) than among male (30%) and it was statistically significant. This finding is consistent with most of the studies conducted in different parts of the world.[6,19-21]

In the present study, the proportion of depression was more among rural population (42.2%) than among urban population (24.6%), and the distribution was found to be statistically significant. Reddy and Chandrasekhar's meta-analysis revealed that the prevalence rates were nearly twice in the urban areas.[7] The area where the current study was conducted includes both urban and rural areas, but here urban area was not so much crowded like metros whereas rural areas were not very much in touch with urban area. However, there were other studies which found similar finding like the current study.[22]

The present study revealed that the proportion of depression was less among the study participants who had higher secondary and above level of education (25.5%). It also revealed that the proportion of depression was decreasing with increase in the level of education. This distribution was found to be statistically significant. Similarly, Kennedy *et al.*[23] and Penninx *et al.* reported a significantly higher prevalence of depression among individuals with lower level of education.[24] Contrary to this, Danesh and Ladeen revealed that the proportion of depression was high among those who had higher education level.[19]

The current study showed that depression was higher among those who belonged to socioeconomic Class III and IV (39.3%) and lowest among the study participants of socioeconomic Class I and II (31.7%) according to B. G. Prasad scale. Although this was not statistically significant, this was consistent with different studies conducted in India and in different parts of the world.[20,13]

Conclusion

A considerable proportion of the population was found to be depressed which may serve as important baseline information for future research. A longitudinal study would help in better understanding of risk factors which can facilitate targeted preventive efforts to people exposed to risk, and would also help in increasing our knowledge on the etiology of depression and other comorbid disorders.

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Conflicts of interest

There are no conflicts of interest.

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