ORIGINAL ARTICLE

Neuropsychiatric disorders in Rural and Urban areas of district Dehradun

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Article Cycle

Abstract

Background: Neuropsychiatric disorders are quite prevalent in the community and are on the rise due to changing lifestyles and lack of social support. Most of the published data is from hospital, which calls for more community-based studies to measure the actual burden of this menace. **Aim & Objective**: To estimate the prevalence of neuropsychiatric disorders in district Dehradun and to find out association of socio-demographic correlates with neuropsychiatric disorders **Settings and Design:** This community based cross-sectional survey was conducted in selected rural and urban areas of district Dehradun. **Methods and Material**: Study areas and households were selected by multistage stratified and systematic random samplings respectively. Participants were chosen from the selected households by Kish method. Respondents were screened for neuropsychiatric disorders by using MINI-6. **Statistical analysis used:** data was entered in SPSS 20.0 version and analysed by using percentages, chi-square test and logistic regression. **Results**: About one fifth of the respondents had a lifetime diagnosis of at least one neuropsychiatric disorder. Age, male gender, higher education, joint family and upper socio-economic status were found to be significantly associated with neuropsychiatric disorders. **Conclusions**: Factors determining psychological wellbeing are deeply rooted in socio-demographic environment and individual characteristics. Many of the respondents had one or more lifetime neuropsychiatric disorder and most of them were not diagnosed. More community-based research is required to determine the exact magnitude and responsible factors of neuropsychiatric disorders, so that a focused strategy may be developed to address its preventable aspect

Keywords

Introduction

Mental health, according to WHO is "... a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community." It makes up an integral part of an individual's capacity to lead a fulfilling life, including the ability to form and maintain relationships, and to take decisions regarding other responsibilities via educational, employment, housing etc. (1)

Mental and behavioural problems are among the most burdensome, around the globe, and are likely to increase in subsequent decades. The burden of

illnesses resulting from psychiatric and behavioural disorders is enormous. Neuropsychiatric disorders have a profound effect on a global level, influencing social, cultural, and economic perspectives all around the communities. The epidemiology of neuropsychiatric illnesses is still poorly understood, although most psychiatry and psychology texts provide information about various mental health disorders and their treatments. (2)

Neuropsychiatric disorders contribute to about 14% of the global disease burden, largely due to the chronically disabling nature of common mental disorders like depression, alcohol-use and substance-use disorders along with psychoses. (3)

Neuropsychiatric illnesses represent nearly one sixth of all health-related disorders in India. These contribute to about one fourth of the priority non-communicable disease burden and there is a prediction of a sharp increase in this share in coming years. The study by the National Commission on Macroeconomics and Health (NCMH) quotes that "at least 6.5% of the Indian population has some form of serious mental disorders, with no discernible rural–urban differences". (4)

In India most of the studies on Neuropsychiatric disorders have been done in hospital setups and very few studies are community based. In Uttarakhand, no published community-based study of neuropsychiatric disorders as a whole is available till date. This paper attempts to throw some light on the magnitude of this menacing problem in the community setting of urban and rural Dehradun.

Aims & Objectives

- To estimate the prevalence of neuropsychiatric disorders in district Dehradun.
- To find out association of socio-demographic correlates with neuropsychiatric disorders

Material & Methods

This community-based cross-sectional study was conducted in the selected rural and urban areas of district Dehradun among individuals aged 20 years and above over a period of 12 months. Ethical clearance was sought from the university ethical board before starting the survey. Based on the prevalence of Neuropsychiatric disorders from a community-based study i.e. 6.1% and assuming 10% of non-response rate, the sample size came out to be 1693, which was rounded off to 1700. (5)

Sample size was calculated by using formula: $n = 4pq/d^2$

Where p is prevalence of mental illness = 6.1%

q = 100 - p = 93.9%,

d (relative allowable error) = 20% of p i.e. 1.22

n = 4x6.1x93.9/1.22x1.22 = 1539

Assuming 10% of non-response rate i.e. 154; the total sample size came out to be: n = 1539+154= 1693≈1700

Multistage Stratified Random Sampling was used for the selection of study area. The desired sample size was distributed in rural & urban areas as per Probability Proportionate to Size (PPS) sampling. Study houses were selected by systematic random sampling and every 5th house was surveyed in all areas. One individual from each sampled household was selected for the study by applying "Kish" method. (6) The exclusion criteria were individuals below 20 years, not giving consent and not able to comprehend and respond to questions and resident of the study area for less than one year preceding the survey.

The subjects were personally interviewed by one of the investigators, using standard technique, after obtaining written informed consent. Pre-structured and pre-tested MINI-6 (diagnostic tool) questionnaire was used for the screening of Neurobehavioral disorder interview. (7)

Psychiatric morbidity was defined as "having at least one of the disorders included in the Mini International Neuropsychiatric Interview (MINI) Version 6 for Diagnostic and Statistical Manual 5th Edition (DSM-5)". For this study, permission to use the translated version of MINI was sought from Dr. Sheehan via e-mail. Modifications to suit the local requirements were done before finalization of the tools. Pilot study was conducted to test the final questionnaire before starting the actual survey.

Collected data was compiled, tabulated and analysed by using SPSS (20.0 version) and Microsoft windows 2010. Chi square test was applied to assess factors associated with mental disorders and regression and binary logistic regression was applied using the variables that were found significant in univariate analyses. All analyses were carried out at 95% level of Significance.

Results

A total of 1700 individual were interviewed, out of which majority of respondents were in the age group of 30-39 years (28.9%), closely followed by 20-29 years (26.9%) age group. The mean age of the

surveyed population was 39.36±13.9 years (males-40.06±14.3 years, females-38.62±13.5 years).

Prevalence of any DSM-5 neuropsychiatric disorder was found to be 20.5% in our study (Table-1). The prevalence was higher in urban area (33.1%) as compared to rural area (13.6%) and this difference was found to be highly significant statistically ($\chi 2$-111.351; df-2; p- <0.0001). Only 16.7% (58) of the screened positive respondents had ever been diagnosed with neuropsychiatric illness.

It can be seen from table-2 that the prevalence of Neuropsychiatric disorders in the studied subjects increased consistently with the increasing age (with exception of geriatric age group) with maximum being in 50-59 years age group (34.7%). The findings were more or less similar in both areas. The prevalence was found to be significantly higher in male subjects i.e. 33.8% as compared to females (6.5%). Similar trends were found in rural and urban areas. It was observed that Neuropsychiatric/ mental disorders increased consistently with the increasing literacy status, with maximum being in graduates and above (26.2%) and minimum in illiterates (13.7%).

The maximum prevalence of Neuropsychiatric disorders (37.2%) was observed in respondents who were employed under some agency (government/private), closely followed by the respondents who were doing their own business (including self-employed respondents and shop keepers), while unemployed respondents were least affected i.e. 9.1% only. Neuropsychiatric disorders were found maximally in respondents who were divorced/ separated/ widow (26.2%), while unmarried respondents were least affected with 14.7 % prevalence only.

The prevalence of Neuropsychiatric disorders was found to be highest amongst respondents belonging to Hindu religion (25.9%), followed by Sikhs (5.7%) and Muslims (2.4%). It was observed that it was more prevalent in respondents belonging to general caste (29.1%), followed by Schedule caste and Schedule tribe (25.6% and 16.3%), while respondents belonging to OBC caste were least affected with prevalence of 13.5%.

The occurrence of neuropsychiatric disorders increased with improving socio-economic status, with exception of upper lower class. The prevalence was highest in upper class (33.3%) and minimum in upper lower class i.e.14.2%.

Binary logistic regression analysis was run with the variables that were found to be significant in univariate analysis and significant association of neuropsychiatric disorders was found with different age groups, sex, area, education, marital status, religion, caste, type of family and socio-economic status

Discussion

This study provided us a glimpse of burden of neuropsychiatric disorders in rural and urban areas of district Dehradun of Uttarakhand state. The prevalence of Neuropsychiatric disorders was found to be 20.5% in the present study. It was higher in urban area (33.1%), as compared to rural area (13.6%). Some researchers have reported higher prevalence e.g. Kadri N *et al* (2010) in Morocco reported that 40.1% of the surveyed respondents had at least one current mental disorder. (8) Likewise, kwobah E *et al* (2017) in Kenya found that 45.0% of the participants had a lifetime diagnosis of at least one mental disorders.(9) Cooper S A *et al* (2007) in a study in Scotland also found the point prevalence of mental ill health to be 40.9%.(10)

In an another international study, Ghanem M *et al* (2009) in Kenya using MINI- Plus diagnostic interview found the overall prevalence of mental disorders to be 16.93% in the studied population, which is slightly lower than in our study. (11) Silvanus *et al* (2012) stated that overall prevalence of mental illness in the community was 6.1%, and Dadwani RS and Tintu T in their study in Gujarat (2014) reported a prevalence rate of any mental disorder to be 5.7% in all age groups which was much lower than in our study. (5,12) A much lesser prevalence of mental disorders was found in a study by Murali MS (2001) in India where the prevalence rates for all mental disorders was observed to be 6.5%.(13)

Math SB & Srinivasaraju R (2010), based on the data from epidemiological studies published from 1960 to 2009 reported that prevalence rates for psychiatric disorders vary from 9.5 to 370/1000 population in India i.e. 0.95% - 37.0%. (14)

The Prevalence of mental disorders was found to be higher in males i.e.33.8% as compared to females i.e. 6.5% in our study. Similarly, Deswal BS & Pawar A (2012) in Pune found the prevalence rates among males (5.30%) to be higher as compared to females (4.73%), while Kwobah *et al* in a community sample in Western Kenya reported almost equal prevalence of any mental disorder in both the genders. (15,9) On

the Contrary, a study by Kadri N *et al* (2010) reported that females were more frequently affected than males.8 Ghanem *et al* also reported that women had a higher odds of having mental disorder as compared to males in their study.(11)

In the present study, neuropsychiatric disorders were found to be present maximally in divorced/separated/widow subjects (26.2%), closely followed by married respondents (21.2%); while unmarried respondents were least affected with 14.7 % prevalence only. Similarly Kwobah *et al* also reported the maximum prevalence of mental disorder in divorced/separated/widow subjects (60%),while the minimum prevalence was found in married respondents(42.2%).9 Ghanem *et al* also reported highest prevalence in divorced / widowed (25.1%), followed by 16.8% and unmarried 15.6% which was in accordance to our findings.(11) Deswal and pawar also reported a significant association of marital status and mental disorders with maximum prevalence in divorced/separated/widow (7.52%) and minimum in unmarried subjects (2.34%). (15)

In an Indian study by Tiwari SC *et al* (2013) in rural Lucknow reported that the prevalence of psychiatric morbidity in rural older adults was 23.7%, which is twice more than the prevalence of mental disorders in rural area of our study. (16) In another study from Bangalore in 2005, no significant differences among prevalence rates of mental disorders in urban middle class, slum and rural areas could be elicited. (17) Ghanem *et al* also reported no area wise difference in the prevalence of mental disorder (urban 16.5%; rural 17.4%). (11)

Prevalence of Neuropsychiatric disorders in the studied subjects was maximum being in 50-59 years age group (34.7%) while the least were younger i.e. 20-29 years age group (12.7%). Contradictory findings were reported in Kwobah *et al* where minimum prevalence was found in geriatric age group. (9)

Neuropsychiatric disorders increased consistently with the increasing literacy status, with maximum being in graduates and above (26.2%) and minimum in illiterates (13.7%). Our findings were contradictory to the observation of Kwobah *et al* (9) and Deswal and pawar. (15)

The maximum prevalence of Neuropsychiatric disorders (37.2%) was observed in respondents who were employed under some agency (government/private), while unemployed respondents were least affected i.e. 9.1% only.

Similarly, Ghanem reported 11.7% prevalence in unemployed. (11) Kwobah *et al* in their study reported that most of the unemployed respondents (52%) had history of any mental disorder while self-employed were found to be having least prevalence of lifetime mental disorder (42%).(9)

Conclusion

It was concluded from our study that about one fifth of the population surveyed had one or the other neuropsychiatric disorder and most of them were undiagnosed and therefore not treated. It was significantly higher in literate and employed males and in urban area. It was also observed that the prevalence was more in divorced/ widowed/separated respondents and among Hindus belonging to higher socio-economic strata.

Recommendation

The findings suggest that mental illnesses are present in the society and are still being neglected. Though people are coming out for treated themselves or with family support, but stigma is unresolved. Health care system is also not fully equipped to deal with this increasing non-communicable burden. Need of the hour is to empower community by increasing awareness as well as improve mental health services at community and primary health care level. Community involvement in the form of peer support groups should be encouraged, which can further be aided by health workers and primary health care providers. A strong political commitment is required for on the ground implementation of already existing policies in the National Mental Health Program.

Limitation of the study

As mental health is still a taboo in our country, occurrence of non-reporting bias may not be denied completely as people do not like to be labelled mentally ill. This might lead to lowering of the overall prevalence. Also, a larger study in terms of magnitude as well as duration is needed to characterize the burden and trend of mental health in community.

Relevance of the study

The situation for people with mental illness across the globe is grim. In our country, an effective system to address this problem is lacking.

Not all health care professionals are acquainted dealing with people with mental health issues. Communities have poor knowledge about mental

health and illness and hence are not able to do advocacy. Mental health services are either not accessible or of poor quality. This study was a small effort to assess the burden in our area and know the social factors responsible for this. We intend to carry put a bigger study to further explore this problem with a view to possibly find out some solutions to control it.

Authors Contribution

RJ, DS and RG conceptualized and designed the study as well as defined the intellectual content. Data collection was done by IWK and data analysis as well as literature search was done by IWK and VV. Statistical analysis was done by DS and VV. Manuscript was prepared by IWK and VV and edited by DS and RG. RJ did the manuscript review and will act as guarantor for the article.

Acknowledgement

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Tables

TABLE 1 PREVALENCE OF NEUROPSYCHIATRIC DISORDERS:

Neuropsychiatric Disorders	Rural		Urban		Total	
	N=1098	%	N=602	%	N=1700	%
Present	149	13.6	199	33.1	348	20.5
Absent	949	86.4	403	66.9	1352	79.5
χ2-111.351; df-2; p- <0.0001						

TABLE 2 ASSOCIATION OF NEUROPSYCHIATRIC DISORDERS WITH SOCIO-DEMOGRAPHIC CORRELATES:

Variables/ Neuropsychiatric disorders	Rural			Urban			Total		
	N	Present	%	N	Present	%	N	Present	%
Age groups									
20-29 years	310	32	10.3	148	26	17.6	458	58	12.7
30-39 years	310	39	12.6	182	50	27.5	492	89	18.1
40-49 years	217	24	11.1	142	52	35.6	359	76	21.2
50-59 years	118	23	19.5	81	46	56.8	199	69	34.7
60 and above	143	31	21.7	49	25	51.0	192	56	29.2
	χ^2-15.755;df-4; p-<0.003			χ^2-47.188;df-4;p0.0001			χ^2-52.543;df-4;p-<0.0001		
Gender									
Male	574	120	20.9	297	174	58.6	871	294	33.8
Female	524	29	5.5	305	25	8.2	829	54	6.5
	χ^2-55.186;df-1;p<0.0001			χ^2-172.651;df-1; p<0.0001			χ^2-193.595;df-1;p-<0.0001		
Educational status									
Illiterate	147	24	16.3	8	1	12.5	155	25	16.1
Just literate	42	2	4.8	41	9	22.0	83	11	13.3
Upto Primary	211	19	9.0	33	11	33.3	244	30	12.3
Jr.High School	255	32	12.5	71	20	28.2	326	52	16.0
High School-Intermediate	332	58	17.5	216	82	38.0	548	140	25.5
Graduate & Above	111	14	12.6	233	76	32.6	344	90	26.2
	χ^2-17.103;df-8;p-<0.05			χ^2-15.568;df-8;p-<0. 05			χ^2-45.847;df-8;p<0.0001		
Occupational status									
Employed	236	38	16.1	226	134	59.3	462	172	37.2
Agriculture work	70	10	14.3	31	15	48.4	101	25	24.8
Shop keeper / Self employed	197	56	28.4	26	12	46.2	223	68	30.5
Unemployed	595	45	7.6	319	38	11.9	914	83	9.1
	χ^2-56.698;df-3;p<0.0001			χ^2-140.05;df;3;p<0.0001			χ^2-167.429;df-3;p-<0.0001		
Marital status									
Married	863	116	13.4	506	174	34.4	1369	290	21.2
Unmarried	180	20	11.1	71	17	23.9	251	37	14.7
Divorced/ separated/widow	55	13	23.6	25	8	32.0	80	21	26.2
	χ^2-7.203; df-4;p->0. 05			χ^2- 3.082;df-2;p->0. 05			χ^2- 8.449;df-4;p->0. 05		
Religion									
Hindu	695	135	19.4	584	196	33.6	1279	331	25.9
Muslim	204	4	2.0	8	1	12.5	212	5	2.4
Sikh	199	10	5.0	10	2	20.0	209	12	5.7
	χ^2-56.140;df-2;p-<0.0001			χ^2- 2.365;df-2;p->0. 05			χ^2-93.554;df-2;p-<0.0001		
Caste									
General	119	39	32.8	420	118	28.1	539	157	29.1
Scheduled Caste	165	26	15.8	97	41	42.3	262	67	25.6
Scheduled Tribe	84	8	9.5	20	9	45.0	104	17	16.3
O.B.C	730	76	10.4	65	31	47.7	795	107	13.5
	χ^2-45.472;df-3;p-<0.0001			χ^2-15.972;df-3;p-<0. 001			χ^2-54.097;df-3;p-<0.0001		
Family type									
Joint	383	62	16.2	173	62	35.8	556	124	22.3
Nuclear	715	87	12.2	429	137	31.9	1144	224	19.6
	χ^2-3.437;df-1;p->0. 05			χ^2-0.849;df-1;p->0. 05			χ^2-1.702;df-1;p->0. 05		
Socio-economic status*									
Upper	36	9	25.0	15	8	53.3	51	17	33.3
Upper middle	107	20	18.7	199	71	35.7	306	91	29.7
Lower middle	277	34	12.3	280	86	30.7	557	120	21.5
Upper lower	436	51	11.7	79	22	27.8	515	73	14.2
Lower	242	35	14.5	29	12	41.4	271	47	17.3
	χ^2-8.268;df-4;p->0. 05			χ^2-5.975;df-4;p->0.05			χ^2-35.889;df-4;p-<0.0001		

* SES was calculated by using modified BG Prasad classification for rural and Kuppuswamy classification for urban area.