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A comparative study on psychological distress and associated factors among mothers of severely acute malnourished children belonging to urban and rural area of Central India

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ABSTRACT

Background: Psychological distress commonly presents as comorbidities but is often unrecognized in clinical practice or undertreated as comorbidities in mothers of severe malnourished children. There is wide difference in psychological distress and associated factors among rural and urban area. **Aims and Objectives:** The objective of study was to compare the psychological distress and associated factors among the mothers of severely acute malnourished children belonging to urban or rural areas. **Materials and Methods:** This cross-sectional study was conducted on total 450 mothers of severely acute malnourished children admitted in nutritional rehabilitation centers (NRCs) of the central India from April 2019 to July 2020 using General Health Questionnaire. **Results:** Out of total 450 mothers, 94.7% (426) of mothers shown normal psychological state whereas 24 (5.3%) mothers shown probable case of psychological distress. Among the study participants, mean age of the mothers was found 23.54 years (SD 2.43). Majority of mother 311 (69.1%) belongs to rural area followed by 139 (30.9%) from urban area. Majority of the mothers 231 (51.3%) were from Scheduled Tribe caste followed by 123 (27.3%) other Backward Class caste. Majority of the mothers 404 (89.8%) were unemployed in our study. **Conclusions:** In the rural locality caste of the mother, primary caretaker of the child and money spent at health facility were the significant risk factors for the psychological distress among the rural mothers while in urban locality, wages loss during stay period at NRC and comorbidity present in the child were the significant risk factors for the psychological distress.

Key words: Psychological distress; Severe acute malnutrition; Nutritional rehabilitation center; Rural; Urban; Mothers

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INTRODUCTION

Psychological distress commonly presents as comorbidities but is often unrecognized in clinical practice or undertreated as comorbidities in mothers. This unrecognized cluster of comorbidities may lead to psychological distress and subsequently poor outcomes for mothers and their children. Psychological distress defined as depression, anxiety, and insomnia.[1] Factors causing psychological distress may be malnutrition of child, domestic violence, marital conflict, lack of support from the family network, sick baby or death of the baby and substance abuse by the husband, low birth weight baby, high parity, low maternal education, and female child.[2] According to the World Health Organization, 2001 social determinants are an important cause of mental health problems in pregnant women and mothers. Women, especially those living in developing countries, are more exposed to risk factors, which increase their susceptibility

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to develop mental health problems.[3] According to the WHO worldwide, about 10% of pregnant women and 13% of women who have just given birth experience a mental disorder, primarily depression. As a result, the children's growth and development may be negatively affected as well.[4] Maternal mental health problems can have far-reaching consequences not only on the mother's health and birth outcomes but also on the child's development.[5]

The objective of the present study was to compare the psychological distress and associated factors among the mothers of severely acute malnourished children belonging to urban or rural areas.

Aims and objectives

The aim and objective of the study was to compare the psychological distress and associated factors among the mothers of severely acute malnourished children belonging to urban or rural areas.

MATERIALS AND METHODS

Study subjects

This cross-sectional study was conducted at nutritional rehabilitation centers (NRCs) of Central India, from April 2019 to July 2020. Study subjects were mothers of severely acute malnourished children admitted in NRCs. Residential address of the subject was considered final as urban or rural subject irrespective of their admissions in urban or rural NRC.

The inclusion criteria were mothers of severely acute malnourished children who were willing to participate in the study. Exclusion criteria were mothers who were not willing to participate and who had psychological/neurological illness due to other known reasons.

The study was approved by the ethics committee of our institute. Written informed consent was obtained from all recruited participants before the study.

Sample size and study procedure

The sample size was estimated using formula $N=Z^2pq/d^2$ (Prevalence taken as 23.5% from the previous study,[2] q=(100-P), absolute error d as 5% and Z as 1.96 with 95% confidence interval and 50% non-respondents. A total of 450 mothers of severely acute malnourished children admitted in selected NRCs in Central India were taken as final sample size. After explaining the study protocol and obtaining informed consent, psychological stress was assessed by the General Health Questionnaire (GHQ-12) score. Equal no. of study subjects were taken from urban and rural NRCs, so total sample size divided into two equal parts. A total of 225 study subjects were taken from urban as well as rural NRCs, respectively. NRCs selected by simple random method using lottery method. Sampling technique-consecutive/sequential sampling technique was used for the selection of study subjects. Sample collection from each NRC was done till the completion of required study subjects within due time. Subjects admitted at NRCs were approached on planned weekly visit to the NRCs.

Study tool

Maternal psychological distress measured by the validated Hindi version of GHQ-12 (semi-structured).[6] Each item was rated on a 4-point scale (less than usual, no more than usual, rather more than usual, or much more than usual). Total score of 36 selected based on the Likert scoring method (0-1-2-3). The cutoff point 12 was used for optimal discrimination between cases and non-cases. Mothers whose score ≤12 classified as normal psychological state and score >12 classified into probable case of psychological distress. Predesigned semi-structured questionnaire was used to assess the sociodemographic profile and associated factor.

Statistical analysis

Data thus obtained were coded and entered into Microsoft Excel worksheet. This was analyzed using SPSS 20.0. For determining the association of psychological distress with the other factors Chi-square test, t-test was applied. The statistical significance was evaluated at 5% level of significance. $P<0.05$ was considered as statistically significant.

RESULTS

Table 1 shows the sociodemographic status of the study subject. Among the study participants, mean age of the mothers was found to be 23.54 years (SD 2.43). In the present study, 229 (50.9%) mothers had male child and 221 (49.1%) had female child. Mean age of children was 23.38 months (SD-11.96). Majority of mother 311 (69.1%) belongs to rural area and 139 (30.9%) from urban area. Most of the mothers 421 (93.6%) were Hindu by religion. Majority of the mothers 231 (51.3%) were from ST caste. All 450 (100%) mothers were married in our study. The 113 (25.1%) mothers were educated till primary school. Majority of the mothers 404 (89.8%) were unemployed in our study. Most of mothers 399 (88.7%) were from joint family. Most of the mothers 377 (83.8%) had 5 or more family members. Three hundred and ninety-two (87.1%) mothers were married at age 18 or more years. Two hundred and ten (46.7%) mothers had child with one sibling.

Table 2 shows out of total 450 mothers, 94.7% (426) of mothers shown normal psychological state whereas

Table 1: Distribution of mothers of severely acute malnourished children according to sociodemographic factors

Characteristics	Frequency (n=450)	Percentage
Age of the mother in years		
18–23	252	56
24–29	189	41.9
30–>30	9	2.1
Mean age	23.54±2.432	
Gender of child		
Male	229	50.9
Female	221	49.1
Age of child (in years)		
0–1 year	104	23.1
>1–2 years	161	35.8
>2–3 years	117	26
>3–5 years	48	10.7
Mean age (in months)	23.38±11.96	
Area of residence		
Urban	139	30.9
Rural	311	69.1
Religion		
Hindu	421	93.6
Muslim	24	5.3
Sikh	0	0
Christian	1	0.2
Others	4	0.9
Caste		
General	19	4.2
OBC	123	27.3
SC	77	17.1
ST	231	51.3
Marital status of the mother		
Married	450	100
Unmarried/widow	0	0
Education status of mother		
Graduate and postgraduate	17	3.8
Higher secondary	54	12
High school	77	17.1
Middle school	110	24.5
Primary school	113	25.1
Literate	29	6.4
Illiterate	50	11.1
Occupation status of mother		
Employed	46	10.2
Unemployed	404	89.8
Type of family		
Nuclear	51	11.3
Joint	399	88.7
Total family members		
<5	73	16.2
5 or>5	377	83.8
Age of the mother at the time of marriage		
<18	58	12.9
≥18	392	87.1
Mean age of marriage	18.53±1.67	
No. of siblings of child		
0	114	25.3
1	210	46.7
>1	126	28

24 (5.3%) mothers shown probable case of psychological distress.

Table 2: Frequency distribution of mothers of SAM children according to psychological distress

Psychological distress	Frequency (n=450)	Percent
Normal (GHQ* score<12)	426	94.7
Probable case (GHQ score>12)	24	5.3
Total	450	100

*GHQ: General health questionnaire. Total score of GHQ was 36 where cutoff point was taken as 12, SAM: Severe acute malnutrition

Table 3 depicts in out of 450 study subjects, the mean weight of their children was 7.20±1.68 for normal and 6.70±1.48 for probable case of psychological distress. Mean weight, mean height, and mean BMI of the overall 450 mothers were 46.41±5.05, 151.40±4.51, and 20.30±2.53 for normal and 45.46±3.47, 150.46±5.31, and 20.15±2.06 for probable case of psychological distress.

Table 4 depicts in the rural locality out of 311 study subjects, caste of the mother and primary caretaker of the child were the significant risk factors for the psychological distress (P≤0.05).

Table 5 shows that in urban locality out of 139 study subjects, wages loss during stay period at NRC and comorbidity present in the child were the significant risk factors for the psychological distress (P<0.05).

DISCUSSION

The present comparative study was conducted to assess psychological distress among mothers of severely acute malnourished children belong to urban and rural areas of Jabalpur district of Central India. Maternal psychological distress measured by the validated Hindi version of GHQ-12. Mothers whose score were ≤12 classified as normal psychological state and score >12 classified into probable case of psychological distress. Predesigned semi-structured questionnaire was used to assess the sociodemographic profile and associated factors. The probable case of psychological distress (GHQ>12) was observed in 5.3% of the total study subjects. There was little bit higher maternal distress in urban mothers (5.8%) compared to rural mothers (5.1%). In a study done by Stewert et al.,[5] found that psychological distress among mothers of severely acute malnourished children was about 33.2% of the total 244 mothers. While Patel et al.,[6] found 23.5% mothers had psychological distress among total 270 mothers. The reason of lower psychological distress in our study may be due good psychological well-being in our study area. Similarly maternal distress was found more among urban mothers in a study done by Patel et al.,[6] and Harpham et al.,[7] Anthropometric measurement of

Table 3: Association of the psychological distress of the mothers with regard to the anthropometry measurement

Variable	Psychological distress				
	Normal (<12)	Probable case (>12)	t-test value	P-value	Conclusion
	Mean±SD	Mean±SD			
Weight of child	7.20±1.68	6.70±1.48	1.440	0.150	Non-significant
Height of child	74.24±8.92	75.17±9.23	0.483	0.629	Non-significant
MUAC of child	11.58±0.81	11.62±1.13	0.235	0.815	Non-significant
Weight of the mother	46.41±5.05	45.46±3.47	0.907	0.365	Non-significant
Height of the mother	151.40±4.51	150.46±5.31	0.985	0.325	Non-significant
BMI of the mother	20.30±2.53	20.15±2.06	0.289	0.773	Non-significant

Table 4: Comparative analysis of psychological distress among mothers according to sociodemographic factors and primary care taker of child in urban and rural locality

Variable	Urban locality (n=139)			Rural locality (n=311)		
	Normal (<12)	Probable case (>12)	Total (%)	Normal (<12)	Probable case (>12)	Total
Caste of the mother						
General	12 (85.8)	2 (14.2)	14 (100)	5 (83.3)	1 (16.6)	6 (100)
OBC	35 (97.2)	1 (2.8)	36 (100)	78 (89.7)	9 (10.3)	87 (100)
SC	39 (92.9)	3 (7.1)	42 (100)	32 (94.1)	2 (5.9)	34 (100)
ST	45 (95.8)	2 (4.2)	47 (100)	180 (97.9)	4 (2.1)	184 (100)
Total	131 (94.2)	8 (5.8)	139 (100)	295 (94.9)	16 (5.1)	311 (100)
	X^2=2.811, Df=3, P=0.422, non-significant			X^2=10.416, Df=3, P=0.015, significant		
Primary caretaker of the child						
Mother	123 (94.6)	7 (5.4)	130 (100)	279 (95.5)	13 (4.5)	292 (100)
Grandparents	8 (88.9)	1 (11.1)	9 (100)	16 (84.2)	3 (15.8)	19 (100)
Total	131 (94.2)	8 (5.8)	139 (100)	295 (94.9)	16 (5.1)	311 (100)
	X^2=0.509, Df=1, P=0.476, non-significant			X^2=4.699, Df=1, P=0.030, significant		

Table 5: Comparative analysis of psychological distress among mothers according to associated factors urban and rural locality

Variable	Urban locality (n=139)			Rural locality (n=311)		
	Normal (<12)	Probable case (>12)	Total, n (%)	Normal (<12)	Probable case (>12)	Total, n (%)
Wages loss due to stay at NRC						
Yes	8 (80)	2 (20)	10 (100)	19 (90.4)	2 (9.6)	21 (100)
No	123 (95.3)	6 (4.7)	129 (100)	276 (95.1)	14 (4.9)	290 (100)
Total	131 (94.2)	8 (5.8)	139 (100)	295 (94.9)	16 (5.1)	311 (100)
	X^2=4.031, Df=1, P=0.045, significant			X^2=0.885, Df=1, P=0.347, non-significant		
Any comorbidity present in child						
Yes	8 (80)	2 (20)	10 (100)	20 (91)	2 (9)	22 (100)
No	123 (95.3)	6 (4.7)	129 (100)	275 (95.1)	14 (4.9)	289 (100)
Total	131 (94.2)	8 (5.8)	139 (100)	295 (94.9)	16 (5.1)	311 (100)
	X^2=4.031, Df=1, P=0.045, significant			X^2=0.755, Df=1, P=0.385, non-significant		
Money spent at the health facility						
Free of cost	107 (93.9)	7 (6.1)	114 (100)	252 (95.9)	11 (4.1)	263 (100)
<100 Rs.	17 (100)	0 (0)	17 (100)	25 (96.1)	1 (3.9)	26 (100)
100–500 Rs.	4 (100)	0 (0)	4 (100)	13 (81.2)	3 (18.8)	16 (100)
>500 Rs.	3 (75)	1 (25)	4 (100)	5 (83.3)	1 (16.7)	6 (100)
Total	131 (94.2)	8 (5.8)	139 (100)	295 (94.9)	16 (5.1)	311 (100)
	X^2=4.045, Df=3, P=0.257, non-significant			X^2=8.290, Df=3, P=0.040 significant		

children and mothers was almost similar in both urban and rural localities. There was no significant association of the anthropometric measurement with psychological distress in our study. Similar to our study, Mishra et al.,[8] found no significant association of anthropometry measurement with maternal psychological distress. In contrast to our study, Black et al.,[9] found significant association between psychological stress with maternal height and weight. In our study, caste of the mother was significantly associated with psychological distress in rural mothers. In our study, 16.6% of mothers of rural area general caste shown psychological distress followed by mothers belongs to OBC (10.3%), SC (5.9%), and ST (2.1%) category. It might be due to their higher education, status and caste-related custom

and cultural practice which make mothers more stressed toward child health. Similar finding found in study done by Prasot et al.,[10] who found that among rural mothers, caste of the mother was significantly associated factor with psychological distress. Children those having grandparents as their primary caregiver, mothers of these children had more psychological stress in rural locality it might be due to mother spent less time with their child. Michelson et al.,[11] also found that mothers were having more psychological stress in situation where mother was not a primary caretaker of their children. In contrast to our study Rahman et al.,[12] found that psychological distress among mothers was not statistically significant ($p<0.01$) with situation where mother was not a primary caretaker of their child.

In our study, urban mothers were having psychological distress which was significantly associated with daily wages loss. It might be due to most of the mothers in urban locality were daily wages working women and stay at NRC for 14 days causes loss of their daily wages which make them more stressed as compared to financial support, they were getting from N.R.C. In contrast to our study, Chandwani and Pandor[13] found that wages loss was not a significant factor for psychological distress among mothers. In our study among rural mothers, money spent at public health facility for purchase of the medicines was statistically significant with psychological distress ($P<0.01$); it might be due to out-of-pocket expenditure on health may lead to mother and their family toward economic crisis. Similar finding found in study done by Chandwani and Pandor[13] in which money spent at health facility was significant risk factor for psychological stress. In the present study, psychological distress among urban mothers was significantly associated with the comorbidity in affected children. It might be due to mother's education status and socioeconomic status, because previous comorbidity of their child makes them already stressed and malnutrition of child causes more stress on the mother. Similarly finding was also found in a study done by Abegaz et al.,[14] and Levinson and Noah[15] ($P<0.05$).

Limitations of the study

This study was conducted as cross-sectional study design due to feasibility constraints; however, the utmost efforts were made to represent the sample, all possible risk factors were taken into consideration in the study. Further detailed prospective studies are needed to address this issue.

CONCLUSION

In our study caste, primary caretaker of the child and money spent at health facility were significant in rural area while wages loss during stay at NRC and any comorbidity present in child were the significant risk factors for psychological distress among mothers of urban area. There is an urgent need to address these risk factors to decrease psychological distress in mother of severely acute malnourished children in rural and urban locality in the study subjects.

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Authors' Contributions:
SY- Concept and design of the study, prepared first draft of manuscript, interpreted the results, reviewed the literature and manuscript preparation, revision of manuscript, statistical analysis, and interpretation; **YS-** Statistical analysis and interpretation, preparation of manuscript, and revision of manuscript.

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