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Validity and Reliability of Marathi Version of Edinburgh Postnatal Depression Scale as a Screening Tool for Post Natal Depression

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ABSTRACT

Context: The prevalence of Post natal depression in India ranges from 12 – 23 %. It has substantial impact on mother, father, family and thereby cognitive and emotional development of child. Therefore the post natal depression screening should be given foremost importance. The Edinburgh Postnatal Depression Scale (EPDS) is a reliable tool used in many countries. The study conducted to validate the Marathi version of EPDS

Method: All the mothers with history of delivery in last six months but not less than six weeks were included in study. Linguistically validated Questionnaire was posed by interviewer and recorded. To test the reliability, mothers were revisited after a period of 2 weeks to administer same questionnaire and assessed by expert.

Statistical analysis: SPSS 17 was used to know the floor and ceiling effect, exploratory factor analysis, receiver and operating curve, cronbach's alpha, intraclass correlation coefficient.

Result: Total mean score was 10.3 ± 4.1. No floor and ceiling effect seen. Three factors were extracted. Best cut off point was 12 with 95 % sensitivity and specificity. Depression was associated with birth of female child, pregnancy complications and health of newborn.

Conclusion: The findings of study indicates that Marathi version of EPDS has good validity, internal consistency and adequate reliability

Keywords: postnatal depression, EPDS, validity, reliability

INTRODUCTION

Depression is the most frequently occurring psychiatric condition among women of childbearing age, with more than 8% being affected at any given time.[1] Depression occurring amongst women specifically in the postnatal period has been the focus of a great deal of research. According to ICD-10 classification, postnatal depression is mild mental and behavioural disorder associated with the puerpurium and onset is considered to be within 6 weeks after delivery. The Postnatal depression can take a mild clinical course or it can range to suicidal ideations (thoughts).In the postpartum period, there are two major depressive disorders associated with maternal health: postpartum blues and postpartum depression, whereas a third psychiatric disorder, namely, postpartum psychosis, which is most widely responsible for cases involving maternal acts like infanticide, and lasts upto 4 yrs. The biological cause for depression is due to sudden drop in a woman's oestrogen and progesterone level following childbirth and low hormone production by the thyroid gland thereby leading to chemical changes in brain. Most commonly studied psycho-social risk factors for development of Post natal depression are younger age,[2,3] gender of the newborn child,[4,5] health of new born ,[6] antenatal and post natal complications ,[7] unwanted pregnancy [8] seems to be the strongly associated with depression. While other risk factors like low socioec-

onomic status, maternal education, social support, parity , occupation have synergistic effect on post natal depression.

In India, estimates of maternal depression among women accessing antenatal care range from 11.9%-23%.[9] Most cases develop within the first 3 postnatal months,[10] with a peak incidence at around 4–6 weeks. It can last for minimum of 3 mnths to 4 yrs.

Postnatal depression has a substantial impact on the mother and her partner, [11] the family, mother–baby interactions and the longer-term emotional and cognitive development of the baby, [12-14] especially when depression occurs in the first postnatal year of life. Postnatal depression screening and case identification strategies have been advocated as a remedy to this problem, but less than 50% of cases of Postnatal depression are identified by primary healthcare professionals in routine clinical practice. The Edinburgh Postnatal Depression Scale was thereby developed to assist primary health care professionals to screen whether mothers are suffering from postnatal depression. [15] The scale can be used at community level. The EPDS, only self administered scale consists of 10 items with acceptable sensitivity, specificity and positive predictive value. It has been very widely used and found to be acceptable screening tool in different cultures.[16] As no translation is still available in Marathi language commonly spoken in Maharashtra, we therefore took a task to translate the scale in Marathi and evaluate the validity and reliability of scale in this part of India.

METHOD

This was a cross sectional study done in Seloo Block of Wardha district. All the mothers with history of delivery in last six months but not less than six weeks willing to give consent were included in study. Those with previous history of any other severe mental disorders, family history of maternal depression, suicidal tendencies or on antidepressants were excluded.

Information about deliveries in past six months was obtained from Anganwadi worker, ASHA and/or ANM. Participants were approached by home visit and Immunisation clinics. A informed written consent, was obtained from all of the participants. Translated and linguistically validated Questionnaire was posed by trained interviewer in same order as original instrument. As large number of participants had little schooling, questions were posed verbally instead of self administered. The administration of EPDS as an interview is also been accepted method.[17,18] These mothers were again revisited at home after a period of 2 weeks to administer the same questionnaire to test the reliability of scale.

In the same visit, psychiatrist, psychologist, or psychiatry resident, trained for the administration of a semi-structured interview, based on ICD-10 diagnostic criteria,[19] explored the presence of depressed mood most of the days of the last two consecutive weeks. Mothers were classified as 'normal' or 'positive,'.

Statistical analysis: SPSS 17 was used for below analysis.

Floor and ceiling effects were defined by means of the percentage of the subjects who scored beyond the lower or upper bound, respectively, of the total possible score. Cut-offs for floor and ceiling effects were set at 5% of the total score. As a consequence, scores below 3 points and scores above 28 points on the EPDS scale were determined as a floor and/or ceiling effect, respectively. Significant floor and ceiling effects were considered to be present if more than 20% of the patients fell outside the lower or upper bound, respectively .[20]

Mean, standard deviation, range was calculated for each items in scale. Sampling size adequacy was tested by KMO and Barletts test. For classifying the factors related to the items of the questionnaires, explanatory factor analysis was used with Eigen value greater than 1. The cutoff point showing simultaneously the highest sensitivity and specificity was determined using a Receiver Operator Characteristic (ROC) curve considering gold standard (ICD-10). To test internal consistency Cronbach's alpha was calculated. Test –retest ability of scale was assessed by Intra class correlation coefficient for consistency.

Construct validity was assess from the hypothesis "Depression in Post natal period is related to Younger age, Female child, ANC/PNC Complications and Poor health of newborn"

RESULTS

EPDS questionnaire (English version) was translated in Marathi and then back translated to English till the best consensus between two questionnaire was obtained. The questionnaire was administered to All the Mothers with history of delivery in last six months but not less than six weeks. Further, were the test results to know the validity of translated EPDS scale in the rural Maharashtra.

Table 1: Floor and ceiling effect

Score	Frequency (n=280)(%)
5-10	173 (61.7
11-16	78 (27.85
17-23	29 (10.3

Table 2: Exploratory Factor analysis of EPDS scale

Questions	Anhedonia	Anxiety	Depression
1-I have been able to laugh and see the funny side of things	.710	-	-
2-I have looked forward with enjoyment to things	.606	-	-
3-I have blamed myself unnecessarily when things went wrong	-	.590	-
4-I have been anxious or worried for no good reason	-	.639	-
5-I have felt scared or panicky for not very good reason	-	.843	-
6-Things have been getting on top of me	-	-	.645
7-I have been so unhappy that I have had difficulty sleeping	-	-	.602
8-I have felt sad or miserable	-	-	.721
9-I have been so unhappy that I have been crying	-	-	.684
10-The thought of harming myself has occurred to me	-		.4
Eigen	1.01	1.2	3.85
% variance	16.8	17.7	26

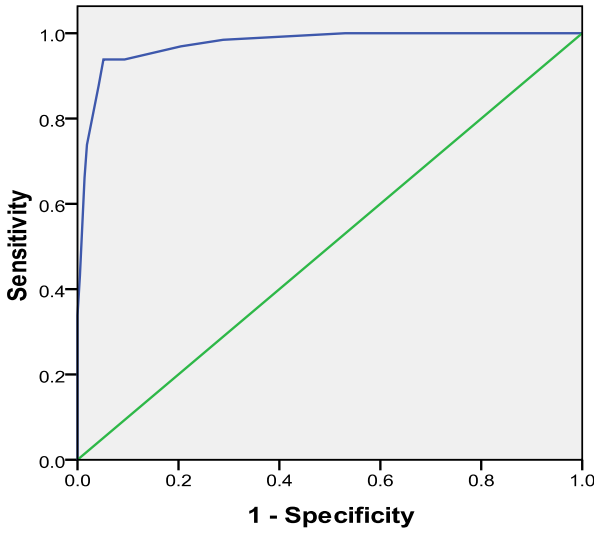

Fig 1 : ROC Curve using ICD 10

Table 3: Sensitivity and specificity of EPDS using different cut off points

Positive if Greater Than or Equal To[a]	Sensitivity	Specificity
>8	100%	47%
>9	98.5 %	71.2%
>10	96.9 %	79.5 %
>11	93.8 %	90.7%
>12	**93.8%**	**94.9 %**
>13	87.7 %	95.8 %
>14	73.8 %	98.1%
>15	66.2%	99.5%

Time required to complete questionnaire was an average of 7.10 minutes.

Range of all the items was 0- 3. Study participants rated lower for item 7 and 9 and higher on item 1 and 10.Each item score seems to be widely distributed around the mean. Total score mean was 10.3 ± 4.1. Lowest score obtained was 5 and highest 23. No floor and ceiling effect was seen. (Table 1)

Kaiser-Meyer-Olkin index for adequacy of sample size was 0.822 indicating sufficient items for each factor. Bartlell's test of sphericity (χ^2=785.6, df=45, P<0.001)), indicating that the correlation matrix is significantly different from an identity matrix, in which correlations between variables are all zero.

Explanatory factor analysis was done with Varimax rotation and three factors were extracted using principal component analysis method. On the whole, these three factors determined 60.5% of variance in all the questions (26 % for depression item, 16.8 % for anhedonia item and 17.7 % for anxiety). Table 2 shows these factors and their loads

Scale reliability calculated using Cronbach alpha was 0.719 indicating good internal consistency between items.

The same questionnaire when administered after two weeks period to same study population, Intraclass correlation coefficient for consistency was found to be 0.719 (95 % CI 0.667-0.766) indicating adequate reliability of scale.

The ROC curve plotted considering the ICD -10 as gold standard shows AUC as 0.968 with CI of 0.947-0.989 (fig 1). The best cut off point in this Marathi version would be 12 with 94 % sensitivity and 95 % specificity (table 4).

To assess the construct validity we tried to test the hypothesis that mothers with the selected risk factors are more prone to develop the depression than other group. Table 4 shows that Forty two percent Mothers of age group more than 25 years were found to depressed compared to 23 % below 25 yrs. 33.5% mothers having female child shows significant depression while only 20.4% mothers having male children presented with postnatal depression. Antenatal or Postnatal complications had shown significantly increase in depression among mothers. This was clearly found in the results where approximately half of the mothers with complications shows depression, while 27.7% found to be in depression, who were without any complications. Fifty five percent mothers having sick baby were found to be depressed compared to 26 % of mothers who had healthy baby.

Table 4: Relation of screened depressed mothers based on EPDS cut off point of 12 with selected Characteristic based on hypothesis.

Characteristics	Depressed (%)	Non depressed (%)	Total (%)	Significance*
Age group (in years)				
< 25 yrs	44 (22.8)	149 (77.2)	193 (100)	χ^2 =10.41
> 25 yrs	37 (42.5)	50 (57.5)	87 (100)	P =0.0012
Gender				
Male	20(20.4)	78(79.6)	98(100)	χ^2 =5.324
Female	61(33.5)	121(66.5)	182(100)	P = 0.021
Antenatal / Postnatal complications				
Yes	7(53.8)	6(46.2)	13(100)	χ^2 =10.837
No	74(27.7)	193(72.3)	267(100)	P = 0.002
Condition of newborn				
Healthy	65(25.9)	186(74.1)	251(100)	χ^2 =10.837
Sick	16(55.2)	13(44.8)	29(100)	P = 0.002
Total	81 (28.9)	199 (71.1)	280 (100)	

DISCUSSION

The EPDS scale is widely used to detect Postnatal depression and validated in many countries.[21,22] It can be applied anytime in antenatal or postnatal but it is more reliable and sensitive when applied after 6 weeks postnatally, [15] because most of the healthcare services like postnatal care along with the social and family support available for women till 6 weeks but after that the government benefits and social supports decreases. Ultimately the risk of getting stressed and depressed is more. So we have selected the mothers, having child in age group of 6 weeks to 6 months.

The study aim to determine the validity and reliability of EPDS scale in Marathi version. Marathi is local language in Maharashtra, India. The time taken for questionnaire completion was more than as given in original document (5 min). This may be due to poor schooling and understanding of rural mothers. All the questions were in easy language and no ambiguity was found. The sample size of 280 was found to be adequate for factor analysis.

Present study showed no floor and ceiling effect indicating good content validity. . In the present version of EPDS the Cronbach alpha was found to be 0.72 which suggest the good internal consistency. Khierabadi et al determine the Cronbach alpha of 0.79. [22] Cronbach alpha reported in Other studies was 0.72[23] and 0.70. [24]

In the present study, the good sensitivity of 94%, specificity of 95%, and the area under the curve of 0.968 with CI of 0.947-0.989 was obtained by ROC curve considering ICD-10 as gold standard. This findings allows the use of this score in the community screenings but ideal timeframe for screening has not yet been established. [25] As most of the studies applied the scale in the second or third postpartum period and was found to be valid and reliable [25,26] we used the same time frame. The first validation study,[27] suggested the 9/10 as the cut-off score for use of community survey but later on many studies came with different cut off points for different population. A cut off of 11/12 was reported as more suitable for screening a French population,[28] and a cut-off score of 8/9 was more appropriate in an Italian population . [29] As we need to only screen mothers and later on do the definite diagnosis a cut off point with good sensitivity is needed.

The factor analysis of EPDS indicates three-factor structure: anhedonia" (items 1-2). anxiety" (items 3-5) and "depression" (items 6-10). Item 10 indicates the suicidal thoughts and need to be given special attention while excluding the cases of depression. This confirms the multidimensionality of EPDS, demonstrating a three factor structure. Cox et al. Suggested that EPDS had a one dimensional aspect, [27] a number of studies have found the EPDS to be multidimensional as two or three factors. Petrozzi A and Gagliardi L (2013) [30] who administered the EPDS to mothers just after delivery, also demonstrated three factors but in contrast to our study, their anxiety pre dominantly loaded than depression. These findings may be explained by the different periods of application of EPDS or the different culture backgrounds.

In the current study it was found that mothers above 25 years were more depressed that other age group. This contradicts findings from other study. [2,3,26] This can be explained by the fact that Of the total depressed mothers only 14 were nulliparous and all of them belong to age group below 25 years. While all others, either had one (61) ,two (5) or three (1) living children. From this we can conclude that the societal (responsibility of previous child, work load, gender issues) and financial pressure contribute more to PPD than pregnancy related anxiety in this part of world.

Pregnancy and childbirth appear to be provoking factors for some women, in the context of a bias against daughters as revealed by earlier stud-

ies.[9,26,27] In current study too ,A large proportion of the mothers in the depressed group belongs to the mothers having female child.

More than half of the mothers with complications got postnatal depression and there is a significant association found between these complications and depression. Results of Iyengar K et al [7] coincides with study findings.

More than half of the depressed mothers were from mothers giving birth to sick child. The poor health of the child adds to the depression among mothers. Similar results found by Ghosh A and Goswami S. [33] Sick child or poor obstetric outcome had a highly significant relationship with depression.

From the four hypothesis put forward we can confirm the three, proving the construct validity of scale in Marathi version.

CONCLUSION

The finding of study indicates that Marathi version of EPDS has good validity, internal consistency and adequate reliability. The best cut off point could be taken as 12 for community screening for detecting PPD. It can be use by lay interviewers in a face-to-face interview.

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