

## The Bengali Adaptation of Edinburgh Postnatal Depression Scale

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**Abstract:** Assessment of postnatal depression is needed to provide comprehensive care to the mother having postpartum mood disturbances.

**Aims:** 1. To develop a Bengali version of the EPDS.

2. To establish the reliability and validity of the Bengali version of the EPDS.

**Design:** English version of 10 items Edinburgh Postnatal Depression Scale (EPDS) was translated into Bengali by a translation Committee using translation-re-translation technique. High Inter-rater reliability ( $\kappa = 0.754$ ) was observed between the English and Bengali version during initial practice session held amongst 20 bilingual patients. Again 105 postpartum mothers was administered EPDS-B, out of them 32 were cases as per diagnostic scale. For each patient, demographic and clinical data was collected.

**Results:** The Cronbach's Alpha was 0.711, which did not improve if any item was dropped. All items showed strong correlation with the total score. Area of ROC curve was 0.956,  $P < 0.001$ , area of the curve is very close that indicates strong validity of using EPDS-B as a screener since cut-off point 13. The instrument showed stable four factor structure- Suicide, Depression, Anxiety and difficulty in sleep.

**Conclusion:** Bengali version of EPDS (EPDS-B) is a valid and reliable instrument to assess the postnatal depression.

**Keywords:** EPDS, EPDS-B, Postpartum Depression

### I. Introduction

Despite some debate about the time frame of postpartum period, Diagnostic and Statistical Manual of Mental Disorders IV defined Postpartum Depression (PPD) as a major depressive episode that occurs within four weeks after delivery<sup>[1]</sup>. The prevalence of postpartum depression is about 10 to 15 percent<sup>[2-6]</sup>. Bengali adaptation and validation of such an instrument (EPDS-B) is aimed to provide a sensitive screening instrument that can help to identify the postpartum depression correctly and easily.

The EPDS is a 10-item, self-report scale which asks about the feelings of a postnatal women in the 7 days preceding the administration of the questionnaire.<sup>[3]</sup> It was validated using a sample of 84 mothers living in Edinburgh or Livingston (Cox, Holden & Sagovsky, 1987). It is a screening tool and is not a diagnostic for detection of PPD but has the advantage of being the first scale developed specifically for PPD screening and has been used for more than 20 years in both research and clinical settings. In cross-cultural research for its better use it has been translated and adapted in different Indian languages. Each item consists of a statement with four possible answer choices with a scoring system. Total EPDS scores range from 0 to 30, cut of point is 13. The psychometric properties of EPDS have been tested against and shown high agreement with standard diagnostic methods such as DSM-IV and ICD-10 classification for postnatal depression. It was felt that a Bengali translation of EPDS would be very useful for the 5<sup>th</sup> most commonly spoken language in the world.

### II. Aims And Objectives

1. To develop a Bengali version of the EPDS.
2. To establish the reliability and validity of the Bengali version of the EPDS.

#### Design and Development:

The study was carried out at the Post-Partum Unit of Calcutta National Medical College & Hospital (a general teaching hospital), Kolkata-14 West Bengal. The patients were selected on the basis of certain inclusion and exclusion criteria. Consent was obtained from all study participants.

Bengali translation of EPDS used the sequence of steps suggested by World Health Organization<sup>[4]</sup>

The steps were-

- a) establishment of a bilingual group of experts,
- b) Examination of the conceptual structure of the instruments by the experts,
- c) Translation,

- d) Examination of the translation by the experts,
- e) Examination of the translation by a monolingual group,
- f) Blind back translation
- g) Examination of the blind back-translation by the experts

The above steps were followed for the development of an appropriate Bengali version of the EPDS-

**D). Establishment of a bilingual group of experts:-** A bilingual local expert committee was formed at the beginning of the study. The committee comprised of one psychologist, two psychiatrists, a public health physicians, two educated laypersons from the community.

## **2. Examination of the conceptual structure of the instruments by the experts**

**3. Translation:** EPDS was translated from English to Bengali. This preliminary translated Bengali version was then available to a local expert committee for discussion.

**4. Examination of the Translation by the experts:** The committee sat over several meetings and worked extensively on the preliminary Bengali version of EPDS and named as EPDS-B. Repeated searches were made from an English-to-Bangla dictionary for appropriate wording whilst equal attention was given to retaining the connotative meaning of the word to ensure that the EPDS was easily understandable by all classes of people in West Bengal.

## **5. Examination of the translation by a monolingual group:**

**6. Blind back translation:** This intermediate Bangla version was back translated from the target language to its source by language expert who was unaware of the project and had no knowledge about the EPDS. The back translated version was then reviewed by two native English speaking health professionals to check for congruence with the original English version of the EPDS.

## **6. Examination of the blind back translation by the experts.**

During evaluation the experts were requested to compare each translated item with original in terms of the various forms of equivalence as suggested by Flaherty et al<sup>[5]</sup>----

1. Content equivalence. The content of each item of the instrument is relevant to the phenomena of each culture being studied.
2. Semantic equivalence-The meaning of each item is the same in each culture after translation into the language and idiom (written or oral) of each culture (both denotative and connotative meaning was taken into consideration).
3. Technical equivalence. The method of assessment (e.g. pencil and paper, interview) is comparable in each culture with respect to the data that it yields.
4. Criterion equivalence. The interpretation of the measurement of the variable remains the same when compared with the norm of each culture studied.
5. Conceptual equivalence. The instrument is measuring the same theoretical construct in each culture.

a) Apart from these issues the experts were requested to keep in mind issues pertaining to translated items being comprehensible, acceptable, and relevant and complete.<sup>[9 11]</sup>

## **Pilot testing:**

Pilot testing was carried out on three states as follows: a) self-administration of the EPDS-B, b) interview and self-administration of the EPDS-B, and c) interviews only with the EPDS-B. These three stages of piloting of EPDS-B were undertaken sequentially to make the scale comprehensible, culturally acceptable and usable for the Bengali knowing women in West Bengal. A convenience sampling strategy was adopted for each of the stages, as described in more detail below.

- **Self –administration of the EPDS and the EPDS-B:** Enveloped containing the EPDS-B and EPDS questionnaires were serially numbered from 1-20. Twenty female participants who were university graduates, fluent in both Bangla and English, and were unaware of the PPD study. The EPDS was administered during the morning while the EPDS-B was applied during the afternoon on the same day. It was ensured that the volunteers did not discuss items with each other while they were completing the questionnaires.

- **Interviews and self-administration of the EPDS-B:** Mothers of infants aged less than one year were recruited, after giving informed consent, from the PP Unit of CNMC&H, Kolkata-14. A total of 12 women were recruited. The EPDS-B was administered to participating women followed by self-administration of the EPDS-B on the same day. Before self-administration of the EPDS-B it was ensured the mothers read and understood the instructions at the beginning of the Bangla questionnaire.
- **Interviews only with the EPDS-B:** Another group of women were administered the EPDS-B by using interview technique only. These women were mothers of infants admitted to the Postnatal Ward and attending PP Unit, CNMC&H.

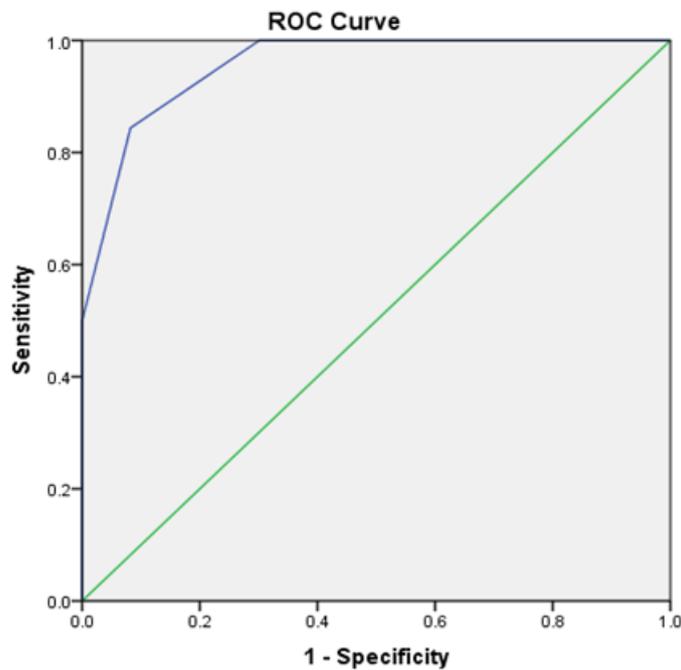
**Table 1- Item-wise kappa value with EPDS-B N-10**

	Item wise kappa	P value
item1b	0.765	< 0.001
item2b	0.625	P=0.02
item3b	0.721	< 0.001
item4b	0.833	< 0.001
item5b	0.727	< 0.001
item6b	0.874	< 0.001
item7b	0.714	< 0.001
item8b	0.815	< 0.001
item9b	0.84	< 0.001
item10b	0.625	P=0.02

Table-1 shows summary of kappa value which ranges from 0.625 to 0.874. Mean-0.754 and Median- 0.746.

**Table 2 Internal Consistency**

Cronbach's Alpha	N of Item
0.711	10



Diagonal segments are produced by ties.

**Figure-1 ROC Curve**

**Table-3 Area of ROC Curve**

Test Result Variable(s): epdrsbenjalitotal				
Area	Std. Error <sup>a</sup>	Asymptotic Sig. <sup>b</sup>	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
.956	.017	.000	.922	.990

Figure-1, ROC showing sensitivity & specificity of EPDS-B using different cut-off value. Table-3 showing Area of curve 0.956,  $P < 0.001$ . Area of the curve is very close, it indicates strong validity of EPDS-B as a screener since cut-off point 13. We are able to achieve very good sensitivity without loosening specificity using cut-off 1

Coordinates of the Curve		
Test Result Variable(s): epdrsbengalitotal		
Positive if Greater Than or Equal To <sup>a</sup>	Sensitivity	1 - Specificity
-1.0000	1.000	1.000
2.0000	1.000	.918
4.5000	1.000	.849
6.0000	1.000	.699
7.5000	1.000	.562
9.0000	1.000	.507
11.0000	1.000	.301
13.0000	.844	.082
14.5000	.500	.000
15.5000	.344	.000
16.5000	.156	.000
18.0000	.000	.000

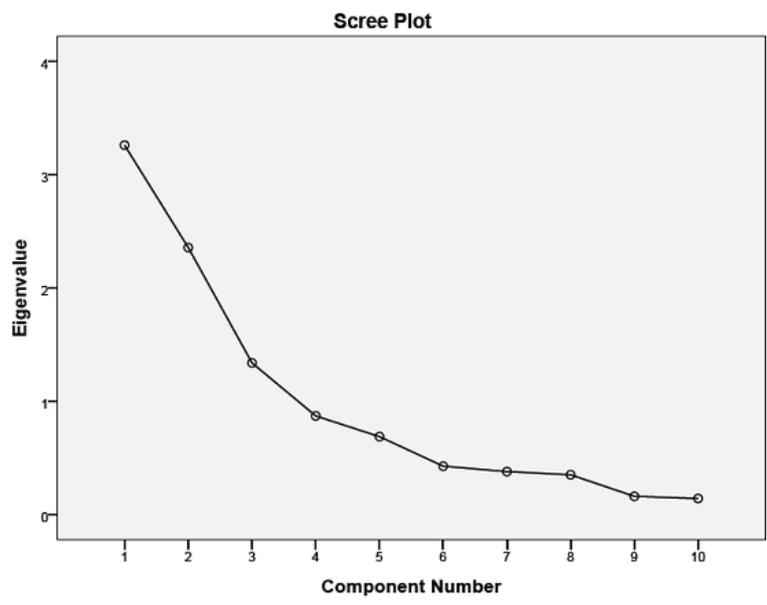


Figure-2 Scree Plot

Table-4 Factor Structure EPDS-B-Principal Component Analysis

Component	Initial Eigenvalues			Extraction Sums of Squared	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	3.263	32.633	32.633	3.263	32.633
2	2.359	23.588	56.221	2.359	23.588
3	1.341	13.412	69.632		
4	.873	8.732	78.364		
5	.691	6.905	85.269		
6	.430	4.298	89.567		
7	.382	3.817	93.384		
8	.354	3.538	96.922		
9	.163	1.634	98.557		
10	.144	1.443	100.000		

**Table –4A The Principal Component Analysis with varimax rotation**  
**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
item1b	.797	
item2b	.549	
item3b		.782
item4b		.811
item5b		.699
item6b	.733	
item7b		.777
item8b	.804	
item9b	.529	
item10b	.820	

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table-4 & Table -4A shows Principal Component Analysis was performing with EPDS-B scale to measure factorial analysis. During analysis minimum factor loading is 0.5 by using formula  $5.152/\sqrt{N}$ . Table shows EPDS-B with factors. Using factor naming methods as suggested by Pett (e.g. using item with highest loading on a factor as clue for possible name, the meaningfulness of the name in conveying meaning/congruence of item).- Factor I- Suicide, Factor II- Depression, Factor III-Anxiety, Factor IV- Difficulty in sleep.

When the Factor Analysis of EPDS-B Scale was done using Principal Component Analysis method. Eigen value >1 was found. However information from scree plot, only the first two component need to be given important. Two component explains 56.221% of variances.

### III. Discussion

In this study, the detailed translation procedure is presented for developing the Bengali version of EPDS. The pilot testing showed that the technical equivalence of the EPDS-B is well. The sequential stages of piloting, namely the self-administration of the two language versions, both self-administration and interview administration of the Bengali version, and interview administration of the Bengali version alone, refined and improved the translation procedure. Administration time is also less. The instrument being brief and linguistically simple, patients did not have much difficulty in understanding the questions and answering appropriately.

In conclusion the EPDS-B has good Internal Consistency and Factorial Analysis, It is a good screening instrument with

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