

Parental depression before and after childbirth

An assessment with the Beck Depression Inventory

W. DEWI REES, M.B., B.S., M.R.C.G.P.

Llanidloes, Montgomeryshire

and

SYLVIA G. LUTKINS, M.Sc.

Senior Research Officer, Department of Statistics, University College of Wales, Aberystwyth

OF THE illnesses associated with pregnancy and childbirth, none is overlooked more frequently than depression. A rapid screening test for detecting this at risk group would be useful. For this reason a report on the use of the Beck Depression Inventory in obstetrical practice is given.

The Beck Depression Inventory

This is a simple self-answering questionnaire that is normally completed in a few minutes. It was devised by Beck and his colleagues (1961) and its use has been reported on by Metcalf and Goldman (1965), Schwab *et al.* (1967), Rawnsley (1968) and by Salkind (1969). It has a high reliability index and the advantage that the level of depression is recorded numerically. It is particularly useful for comparative studies. A crucial factor in a questionnaire of this type is the cutting score. A cutting score of 17 seems to be generally acceptable, though Schwab *et al.* (1967) suggests that a score of ten might be more appropriate. Beck (1969) considers that a cutting score of 14 is acceptable within a psychiatric service and a score of ten appropriate outside a psychiatric service. As a rough guide, one may consider that people scoring 25 or more are severely depressed, those scoring 17 to 24 are moderately depressed, and those scoring 10 to 16 have a mild form of depression.

Method

The investigation was undertaken by a general-practitioner obstetrician. The patients tested were those routinely seen by him. With one exception all the mothers were delivered or booked for delivery in hospital. Those requiring specialist care were delivered in a specialist unit, though their antenatal and postnatal care remained the concern of the general practitioner. Parents completed the questionnaire irrespective of the place or mode of delivery.

The people tested were: (1) parents whose babies had been delivered during the previous 12 months, (2) parents expecting a new baby, (3) a control group. This was obtained by asking all the nulliparous women working in the local factory and hospital to complete the questionnaire; 27 agreed to do so and there was one refusal. The age of the nulliparous group ranged from 15 to 38 with a mean age of 20 years.

Once the investigation was started mothers were asked to complete the questionnaire when seen at the next antenatal visit. In addition they were given a questionnaire for the husband to complete and return by post. Mothers attending for the first antenatal visit were not immediately included, nor were the husbands of women attending during the first trimester of pregnancy. One husband angrily refused to co-operate and his wife

was subsequently delivered under the care of another doctor. All the mothers and most of the fathers completed the forms when asked. In this way the scatter of mood of parents before and after childbirth was rapidly established.

Some parents were tested twice. These were people who, having completed the questionnaire antenatally, were delivered of a child whilst the investigation was still in progress. There were no refusals in this group of 14 couples. The ages and obstetrical history of this group was later found to reflect that of the rest of the sample.

TABLE I
BECK DEPRESSION INVENTORY SCORES OF MOTHERS BEFORE AND AFTER CHILDBIRTH

	<i>Weeks</i>	<i>Number tested</i>	<i>Mean score</i>	<i>S.D.</i>	<i>Range</i>	<i>Number who score</i>			
						<i>10+</i>	<i>14+</i>	<i>17+</i>	<i>25+</i>
Antenatal	—12	11	7.6	5.20	2—17	4	2	1	0
	—27	14	6.9	5.49	0—18	4	3	1	0
	to birth	22	8.5	6.77	0—25	8	6	2	1
	TOTAL	47	7.8	5.98	0—25	16	11	4	1
Postnatal	—12	26	7.4	6.44	0—26	8	4	2	1
	—27	15	7.6	6.48	0—20	5	3	2	0
	—52	26	8.2	8.92	0—37	7	4	3	2
	TOTAL	67	7.7	7.41	0—37	20	11	7	3

TABLE II
BECK DEPRESSION INVENTORY SCORES OF FATHERS BEFORE AND AFTER THE BIRTH

	<i>Weeks</i>	<i>Number tested</i>	<i>Mean score</i>	<i>S.D.</i>	<i>Range</i>	<i>Number who score</i>			
						<i>10+</i>	<i>14+</i>	<i>17+</i>	<i>25+</i>
Antenatal	—27	9	3.3	5.17	0—16	1	1	0	0
	to birth	21	4.1	5.96	0—27	2	1	1	1
	TOTAL	30	3.9	5.66	0—27	3	2	1	1
Postnatal	—12	24	4.0	5.04	0—18	4	2	1	0
	—27	13	4.1	4.01	0—14	1	1	0	0
	—52	24	2.7	4.74	0—16	3	2	0	0
	TOTAL	61	3.5	4.69	0—18	8	5	1	0

Results

Ninety-nine mothers and 77 fathers completed the questionnaire, some twice. The husbands of the 11 wives tested during the first trimester of pregnancy were not sent forms and could not reply. One man was known to have a recent coronary and another was illiterate, so neither of these was included. One man had deserted his wife and could not be contacted and three mothers were not married. Of the fathers sent the form, only three failed to complete and return it.

Forty-seven mothers completed the questionnaire during pregnancy and 67 completed it during the 12-month period following delivery. The numbers who completed the questionnaire during the various trimesters are shown separately in the tables. Table I shows the number of women found to be depressed at the four cutting scores of

10+, 14+, 17+ and 25+. Similar data is given for the fathers in table II. Table III shows the relationship between the Beck Depression Inventory score and the mother's age.

TABLE III
RELATIONSHIP BETWEEN AGE AND BECK DEPRESSION INVENTORY SCORE OF MOTHERS

Age in years	Number tested	Mean score	S.D.	Range	Number who score			
					10+	14+	17+	25+
—20	7	10.9	4.14	5—15	5	3	0	0
—25	55	8.0	7.14	0—37	17	11	6	2
—30	30	7.1	5.58	0—30	8	5	2	0
—35	12	5.0	3.49	0—17	2	0	0	0
—40	6	7.1	6.24	1—17	2	1	1	0
—45+	4	16.3	14.27	0—31	2	2	2	2

Twenty-seven nulliparous women formed the control group. Of these, 24 scored less than ten and were not depressed. The remaining three were only slightly depressed, with two scoring 10 and the other 14. The mean score of the control group is 3.4, the S.D. 3.81 and the range 0 to 15.

In addition to the data shown the cutting scores were recorded according to the parity of the mother, to the father's age, to the place of delivery, whether this be general practitioner or specialist unit, and to the method of delivery. These data are not shown separately, as no significant variation in the incidence of depression was found to occur with any of these factors. There is also no significant variation in the incidence of depression with the mother's age. This absence of a significant relationship between the incidence of depression, as assessed by the Beck Depression Inventory, with the mother's age, parity or method of delivery reflects the clinical findings of Pitt (1968).

Results of statistical analysis

The differences between mean scores were tested by means of a one-way analysis of variance for unequal groups and by Scheffe's method of multiple comparisons when the variances for each group were unequal.

In the case of mothers it was found that at whatever level the cutting score is taken the incidence of depression remains uniformly even throughout the antenatal period and during the 12 months following delivery. There is no increase in depression with the puerperium. This constant level of depression, before and after childbirth, occurs whether the antenatal and postnatal groups are compared as total groups or as separate trimesters. At a cutting score of 17 the incidence of moderately severe depression during pregnancy is 9 per cent and during the 12 month period after delivery 10 per cent. These figures are similar to the finding of Pitt (1968) based on the use of a screening questionnaire and subsequent psychiatric interview, that 10 per cent of women delivered at a London teaching hospital suffer from postpartum depression. At a cutting score of 25, and this indicates a level of severe depression, the incidence of antenatal and postnatal depression detected by the Beck Depression Inventory becomes similar to the 3 per cent suggested by Ryle (1961) and Tod (1964). If the lower cutting score of ten is taken, the incidence of depression during pregnancy rises to 34 per cent and after delivery to 30 per cent.

Although there is no significant difference in the level of depression occurring before and after childbirth in mothers, a highly significant difference is found when the incidence of depression of mothers is compared with that of young nulliparous women. The control group of nulliparous women is remarkably free from depression and includes no case of severe or moderate depression. At a cutting score of ten, their incidence of mild

depression is only 11 per cent. This lower incidence of depression amongst nulliparous women is at the 1 per cent level significantly less than for mothers, whether these are compared antenatally or postnatally. Apart from the fact of pregnancy, the two groups differ in age. This could be an important variable, though its importance is greatly diminished by the fact that no variation in incidence of depression occurs with age amongst the mothers.

The incidence of depression amongst fathers is significantly lower than for mothers. At a cutting score of 17, only 3 per cent of fathers are moderately depressed during their wives' pregnancy and 2 per cent after the birth of the child. At a cutting score of ten, the respective figures for fathers, before and after childbirth, is 10 per cent and 13 per cent. The figures for fathers resemble those for mothers, in that the incidence of depression remains uniformly even throughout the antenatal and postnatal periods. This constant level of depression occurs, whether the antenatal and postnatal groups are compared as total groups or as separate trimesters.

The matched scores for parents, tested both before and after childbirth, are given in table IV. When depression occurred antenatally no specific physical or drug treatment was given. The change in antenatal scores during the postpartum period indicates that

TABLE IV
MATCHED SCORES OF 14 COUPLES BEFORE AND AFTER BIRTH

<i>Antepartum</i>			<i>Postpartum</i>		
<i>mothers</i>	<i>fathers</i>	<i>combined score</i>	<i>mothers</i>	<i>fathers</i>	<i>combined score</i>
20	27	47	14	10	24
16	0	16	26	3	29
7	0	7	3	0	3
9	1	10	0	0	0
2	0	2	3	0	3
6	4	10	2	3	5
14	10	24	1	15	16
13	0	13	2	1	3
8	6	14	11	12	23
3	4	7	6	3	9
7	3	10	4	2	6
5	0	5	11	8	19
12	0	12	0	0	0
0	5	5	0	2	2
122	60	182	83	59	142

puerperal depression has a dynamic character and that the depressed group is not a static entity. It is of interest that the total score for mothers postnatally (83) is less than the total score antenatally (122). Though this difference is not significant we should have expected the opposite to occur if postpartum depression is more common than antepartum depression. The scoring for men is more stable than for women, though both are relatively stable. (The t-test for the difference between matched pairs before and after childbirth, gives a non-significant value for mothers, fathers and the two combined.) The difference between the separate scores for the two parents is significant before the birth (t-test significant at 5 per cent), but not after the birth. Looking at the regression of the postpartum scores for the fathers on their antepartum scores we find a significant trend (b, the regression coefficient=0.415 is significant at 5 per cent from the f-test). This reflects the stability of the fathers' scores before and after the birth. The relative

instability of the mothers' scores antenatally and postnatally is reflected in the non-significance of the f-test, indicating there is no trend.

The 21 categories of depression comprising the Beck Depression Inventory were analysed separately. Each of these categories contain three to five statements, one of which the respondent marks as applicable to himself. In each category the statements

TABLE V
STATISTICAL SIGNIFICANCE OF THE DIFFERENCES RECORDED FOR THE VARIOUS CATEGORIES OF THE BECK DEPRESSION INVENTORY

<i>Category</i>	♀ <i>AN</i> v ♀ <i>PN</i>	♂ <i>AN</i> v ♂ <i>PN</i>	♀ <i>AN</i> v NCG	♀ <i>PN</i> v NCG	♀ <i>AN</i> v ♂ <i>AN</i>	♀ <i>PN</i> v ♂ <i>PN</i>
Lack of satisfaction ..				5.0		
Self-accusation		5.0				0.1
Crying spells			5.0		1.0	0.1
Irritability			0.1	0.1	1.0	5.0
Social withdrawal ..				5.0		
Indecisiveness						5.0
Worried about body image				5.0		1.0
Work inhibition ..	5.0		0.1	5.0	0.1	5.0
Fatigability			0.1	1.0	0.1	0.1
Weight loss	—5.0		—5.0			5.0
Somatic preoccupation ..			5.0			
Loss of libido			1.0	1.0	5.0	0.1

AN=Antenatal. PN=Postnatal. NCG=Nulliparous control group.

are listed in increasing order of severity with the first statement alone showing an absence of depression. The proportion of nulliparous women, fathers and mothers recording the first in contrast to alternative answers was compared for each category. Significant differences occur within 12 categories and are absent in 9 categories. Thus there is no difference in the proportions who report: (1) feeling sad, (2) being pessimistic, (3) experiencing a sense of failure, (4) feelings of guilt, (5) a sense of punishment, (6) self-hate, (7) self-punitive wishes, (8) loss of appetite or (9) sleep disturbance.

Table V lists the 12 categories in which significant differences occur and the levels of significance found. Compared with fathers and nulliparous women, mothers experience a significant increase in irritability, fatigability, work inhibition and loss of libido, both during pregnancy and for 12 months afterwards, (anaemia is not a factor; routine Hb estimations were made and all the mothers received supplementary iron and folic acid). The table also shows that some of the differences, particularly those for irritability, fatigability and work inhibition are highly significant. In a society that encourages its mothers to resume their non-maternal careers soon after childbirth, it is worth emphasizing that irritability, fatigability and work inhibition persist throughout the 12-month period following childbirth. However, the level of work inhibition is not so great post-

nately as antenatally and, apart from weight change, this is the one category in which a significant difference (5 per cent level) exists between the antenatal and postnatal group of mothers. Amongst fathers the one significant difference (5 per cent level) existing between the antenatal and postnatal groups is that the former are more self-accusatory.

Summary

The incidence and severity of depression in parents, before and after the birth of their child, was assessed with the Beck Depression Inventory. Ninety-nine mothers and 77 fathers were examined.

The most interesting finding is that the incidence of depression remains uniform throughout the pregnancy and the 12 months following delivery. There is no increase in incidence of depression with the puerperium.

Ten per cent of mothers are moderately depressed during pregnancy and for 12 months afterwards. Three per cent of fathers are moderately depressed and three per cent of mothers severely depressed. The detection of these depressed people is rapidly achieved with the Beck Depression Inventory and this can be usefully included as a routine screening test in pregnancy.

REFERENCES

- Beck, A. T., Ward, C. H., Mendelson, M., Mock, J. and Erbaugh, J. (1961). An inventory for measuring depression. *Archives General Psychiatry*, **4**, 561.
- Beck, A. T. (1969). Private communication.
- Metcalf, M. and Goldman, E. (1965). Validation of an inventory for measuring depression. *British Journal Psychiatry*, **111**, 240.
- Pitt, B. (1968). 'Atypical' depression following childbirth. *British Journal Psychiatry*, **114**, 1325.
- Rawnsley, K. (1968). *The early diagnosis of depression*. O.H.E. Early diagnosis paper no. 4.
- Ryle, A. (1961). The psychological disturbances associated with 345 pregnancies in 137 women. *Journal Mental Science*, **107**, 279.
- Salkind, M. R. (1969). Beck depression inventory in general practice. *Journal of the Royal College of General Practitioners*, **18**, 267.
- Schwab, J., Bialow, M., Clemmons, R., *et al.* (1967). The Beck depression inventory with medical in-patients. *Acta psychiatrica scandinavica*, **43**, 255.
- Tod, E. D. M. (1964). Puerperal depression. *Lancet*, **2**, 1264.

ACCOMMODATION AT COLLEGE HEADQUARTERS

Temporary residential accommodation for members and associates and their families is provided at college headquarters.

The charges, including breakfast, are as follows:

For single rooms	£2 10s. 0d. per night
For double rooms	£4 5s. 0d. per night
For a flatlet (bed-sitting room for two, bathroom and dressing room)	£6 per night or £36 per week
For a self-contained flat (double bedroom, sitting room, hall, kitchen and bathroom)	£42 per week

Children under the age of 12 years cannot be admitted, and dogs are not allowed.

A service charge of 10 per cent is added to all accounts to cover gratuities to domestic staff.

Car ports may be hired, at a cost of 10s. 6d. per 24 hours.

Enquiries should be addressed to the Administrative Secretary, The Royal College of General Practitioners, 14 Princes Gate, London, S.W.7. (Tel. 01-584 6262).