

Maternity Blues

II. A Comparison Between Post-operative Women and Post-natal Women

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A new scale for the detection and assessment of maternity blues was completed by 56 women daily for ten days after elective gynaecological surgery. When their responses were compared with those of 87 post-natal women, they differed significantly in frequencies of different symptoms at different times. The findings suggest that post-natal mood changes ('maternity blues') are characteristic of the puerperium and not simply non-specific reactions to physical and emotional stress.

There are two different views of 'maternity blues'. One is that the symptoms are characteristic in timing and intensity, and differ in these ways from symptoms after other types of stressful event. Related to this view is the suggestion that maternity blues may be induced by particular endocrine changes in the early puerperium. The other view is that maternity blues is not specific to childbirth but is a general 'end reaction' that can occur after any physical stressor (Yalom *et al*, 1968).

The main aim of the present study was to examine these two conflicting views by comparing the responses of post-operative and post-natal women on a new maternity blues scale (paper I). A further aim in studying the post-operative group was to compare their pre-operative psychological status with their post-operative blues scores.

Method

Recruitment of patients

Post-operative patients

These women were recruited over a four-month period from all women aged 18–40 who were admitted (on designated research days) to hospital in Oxford, for elective gynaecological surgery. The age range corresponded with that of the post-natal group (see below). The patients were recruited on the day before surgery, which was nearly always the day of admission.

Sixty-eight women entered the study, of whom 12 were excluded later because they did not provide complete daily ratings for ten post-operative days (the reason usually being that they felt too unwell at the time). The remaining 56 women provided complete recordings, and were included in the study. They were having a variety of surgical procedures (see 'Results').

Gynaecological surgery was chosen because it would not be associated with the endocrine changes characteristic of childbirth, but would probably present the patients with some similar psychological stressors.

Post-natal patients

These were 87 recently delivered women who returned full sets of questionnaires completed daily for ten days after childbirth (see paper I, group D).

Pre-operative interview

On the day before surgery, the post-operative patients were given an explanation of the study, and were asked to complete a questionnaire daily on the first ten post-operative days. They were not told that the questionnaire was designed for use in the puerperium. One investigator (SI) then interviewed each patient, using a semistructured schedule, to obtain obstetric, medical, and psychiatric histories, together with social and demographic information.

Although the study was mainly concerned with post-operative scores on the maternity blues scale, the opportunity was taken to administer the following scales before the operation: General Health Questionnaire (GHQ; Goldberg, 1972); Leeds Scales for Anxiety and Depression (Snaith *et al*, 1976); Modified Social Adjustment Scale (SAS–M; Cooper *et al*, 1982); Eysenck Personality Inventory (Eysenck & Eysenck, 1964).

Post-operative assessments

Each patient awaiting gynaecological surgery was given ten copies of the new blues questionnaire and was asked to complete it at the same time on each of ten consecutive evenings, starting on the first day after the operation.

One investigator (SI) visited the patients regularly in hospital to deal with any problems in completing the questionnaire. If patients were discharged before the tenth post-operative day, they were asked to continue completing their forms at home and to return them by post. Such patients were telephoned at home to deal with any problems in completing the questionnaire. Reminders were sent to any women who did not return their questionnaires within 14 days after the tenth post-operative day.

Data analysis

The blues scores

Responses of the 56 post-operative women were analysed in the same way as previously for the 87 post-natal women. Three main methods were used. First, total scores were calculated for each woman for each of the ten post-operative days. A mean percentage score for each of the ten days was then derived for the sample as a whole, together with an overall mean value for the ten days as a whole (see paper I, p. 356). Second, questionnaire responses were examined by cluster analysis, using the computer program CLUSTAN (Wishart, 1975). Third, analysis of variance was used to assess the significance of differences in scores between each of the ten post-operative days. Analysis of variance was also used to compare results from the surgical women with those from the post-natal women.

Relationship between blues scores and pre-operative measures

For each woman in the post-operative group, the relationship between her mean blues score over the ten post-operative days and her scores on pre-operative measures was examined with *t*-tests for discontinuous variables (for example, type of operation) and with Pearson's test for continuous variables (for example, GHQ total scores).

Results

Patient characteristics

Women in the post-operative and post-natal groups did not differ significantly in age, marital status, or psychiatric history.

The 56 post-operative patients fell into two main groups: 33 who had major, and 23 who had minor surgery. The former consisted of 25 women who had a hysterectomy (four of them for carcinoma of the cervix), and eight who had other procedures involving laparotomy (e.g. ovarian cystectomy, division of pelvic adhesions, tubal reconstruction). The group undergoing minor surgery consisted of 17 women who had procedures such as dilatation and curettage, laparoscopy, cystoscopy, and examination under anaesthesia (often in combination), together with six who had a cone biopsy for carcinoma of the cervix.

Scores on the blues questionnaire

In Fig. 1, daily mean percentage scores are given for both groups of women. It can be seen from Fig. 1 that scores were higher among the post-operative women than among the post-natal women throughout the ten-day period. The overall mean percentage scores for the ten days as a whole were 31.5 (s.d. 7.77) for post-operative women, and 18.5 (s.d. 2.49) for post-natal women.

In the post-operative group mean percentage scores declined steadily from 42.9% on day 2 to 21.7% on day 10. Analysis of variance showed that the distribution of

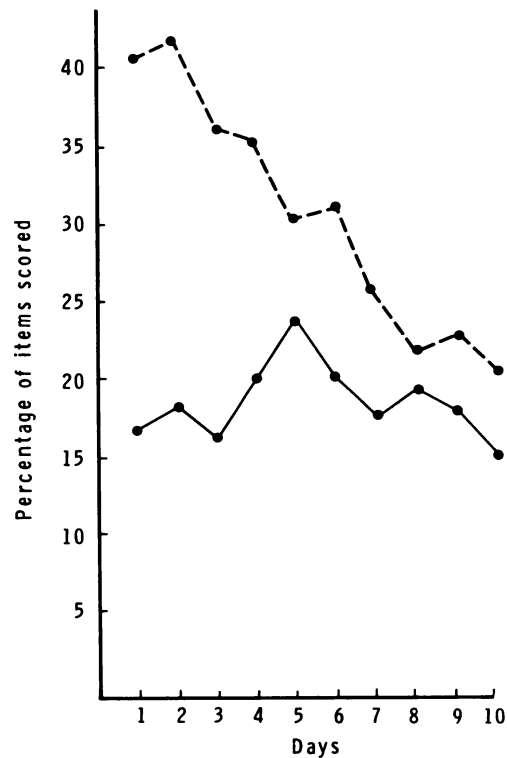


FIG. 1 Day-by-day distribution of total blues scores: comparison of post-partum (—) and post-operative (----) women.

the daily scores over ten days differed significantly from chance ($F=7.91$, d.f. = 9, $P<0.001$). In the post-natal group, mean percentage scores reached a peak (24.3%) on day 5, and tailed off towards day 10. When the mean percentage scores of the two groups of women were compared by analysis of variance, significant differences were found between their patterns of distribution over ten days ($F=4.22$, d.f. = 9, $P<0.001$).

Cluster analysis

When the responses of post-operative women were examined by cluster analysis, the resulting clusters were similar to those previously found in the 87 post-natal women (group D) and also in a separate group of 32 post-natal women (group C) (see paper I, Table II), although there were some minor discrepancies. (The matching of clusters in these three groups (one post-operative and two post-natal) is too detailed for presentation here but can be supplied on application.)

The resemblance of clusters made it possible to compare the patterns of scoring of post-operative and post-natal women. For each of the ten days, cluster frequency was determined by calculating the numbers of women scoring on more than half the items in a cluster; these numbers were then expressed as percentages of the numbers of women

completing the questionnaire. Among post-operative women, the most frequently endorsed cluster was 'retardation', followed by 'decreased self-confidence'. Among post-natal women, however, the most frequently endorsed cluster was 'primary blues', followed by 'retardation' and 'hypersensitivity'. In both groups, the least frequent clusters were 'depression', 'despondency' and 'reservation'. Cluster scoring over the ten-day period is shown graphically for post-operative women in Fig. 2. It can be seen that the clusters appear to co-vary, with a tendency to decline over the ten-day period. By contrast, among post-natal women it had previously been found that most clusters tended to peak in frequency about the fifth day (see paper I).

Pre-operative assessment

Mood scales

GHQ On the day before surgery, 32 of the 56 surgical women were potential cases as determined by a score of 12 or over on the 60-item GHQ. Total GHQ scores did not differ significantly between women having major operations (mean 13.85, s.d. 12.48) and those having minor operations (mean 17.87, s.d. 13.95) (t -test: $t=1.13$, d.f. = 54, $P=0.263$).

Leeds scales for anxiety and depression On the Leeds scales completed on the day before surgery, 34 of the 56 surgical women scored at or above the cut-off of 7 for anxiety, whereas only 14 (25%) scored 7 or more for depression. Scores for anxiety and depression did not differ

significantly between women having major surgery (for anxiety, mean 7.70, s.d. 3.89; for depression, mean 4.94, s.d. 2.46) and those having minor surgery (for anxiety, mean 7.91, s.d. 3.84; for depression, mean 5.65, s.d. 3.68) (t -test: $t=0.21$, d.f. = 54, $P=0.838$ for anxiety; $t=0.87$, d.f. = 54, $P=0.424$ for depression).

Relationship between blues scores and pre-operative measures

Psychological factors. Among the post-operative patients the following pre-operative measures were significantly associated with post-operative blues mean scores: GHQ total score (Pearson's $r=0.55$, $P<0.001$); Leeds anxiety score (Pearson's $r=0.55$, $P<0.001$); Leeds depression score (Pearson's $r=0.48$, $P<0.001$); and EPI neuroticism (Pearson's $r=0.50$, $P<0.001$). Mean blues scores of women who were GHQ potential cases on the day before surgery ('Bluemean' (see paper III, p. 367) 38.07, s.d. 17.16) were significantly higher than those of women who were not potential cases ('Bluemean' 23.70, s.d. 16.21) (t -test: $t=3.13$, $P<0.01$, d.f. = 52). On Pearson's test there was a significant association between mean blues scores and a history of past episodes of psychiatric consultation with a general practitioner ($r=0.34$, $P<0.01$).

Social functioning. Poor overall social adjustment, as assessed by the SAS-M, was significantly associated with mean blues scores (Pearson's $r=0.33$, $P<0.05$).

Physical health. There were no significant associations between mean blues scores and the subjects' physical health

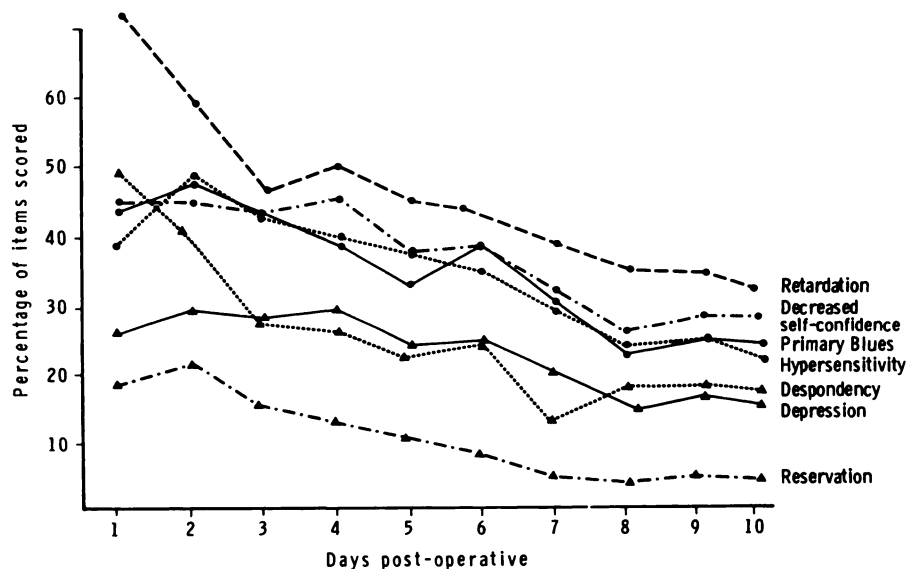


FIG. 2 Day-by-day distribution of cluster scores in post-operative women.

in the past year as evaluated by consultations with general practitioners or by hospital visits.

Blues scores versus type of surgery

Mean blues scores of women undergoing major surgery ('Bluemean' 33.27, s.d. 18.27) did not differ significantly from those of women undergoing minor surgery ('Bluemean' 29.18, s.d. 17.94) (*t*-test: $t=0.8$, $P=0.42$, d.f. = 52).

Discussion

Scores on the new maternity blues questionnaire differed significantly between post-operative and post-natal women in the ten days after surgery/childbirth: post-operative women had significantly higher scores throughout the ten days and their scores declined steadily from the second to the tenth post-operative day, while those of post-natal women peaked about the fourth or fifth day. When the data were examined by cluster analysis, cluster scores also declined steadily over the ten days in post-operative women, while peaking about day 5 in post-natal women.

These findings closely resemble those of Kendell *et al* (1984), who used a six-item visual analogue scale to compare mood in post-hysterectomy and post-natal women in Edinburgh. The findings here and from Edinburgh indicate that maternity blues is a distinct condition and not just a non-specific 'end reaction' to stressors. However, a different conclusion was drawn by Levy (1986), who used the blues questionnaire of Stein (1980) to compare post-operative and post-natal women. The results generally resembled those found here and in Edinburgh, but among post-operative women some individual items did peak. From this Levy concluded that "the dysphoria called Maternity Blues is not unique to the puerperium".

The findings here and in Edinburgh were strikingly similar. How are these findings to be explained? The explanation may be physical, psychological, or both.

Among physical factors, hormones may be important. For example, mood may be influenced by changes in cortisol in post-operative women, and by changes in oestrogen and progesterone in post-natal women. Despite careful research, no such association between mood and hormones has been confirmed.

Another physical explanation may be that anaesthesia influences mood in post-operative women.

This could explain two findings among the 56 post-operative women here: that their mean blues scores were high in the first and second post-operative days, and then declined; and that their most frequent symptom cluster was 'retardation' (consisting of reduced concentration, reduced alertness, and reduced liveliness).

A third physical factor could be the degree of physical trauma. However, post-operative responses to the blues questionnaire did not differ significantly between major and minor surgery, and the responses of post-natal women were not related to complicated labour or physical problems in the puerperium (see paper III).

Among psychological factors, neuroticism may be important. In Oxford and Edinburgh 'neuroticism' scores on the EPI (measured before surgery/delivery) were significantly associated with post-operative/post-natal scores on the blues scales. This finding is consistent with many reports that emotional responses to life events are more severe in neurotic people; and also with the finding that pre-operative neuroticism is significantly associated with complicated or delayed recovery after surgery (Matheus & Ridgeway, 1981).

Another psychological explanation could be that levels of anxiety differ before surgery and childbirth. It has been reported that high pre-operative anxiety is followed by high anxiety after surgery (Johnston, 1980). Among our surgical patients, on the day before surgery 51% scored high on the GHQ and 61% on the Leeds Anxiety Scale. There are no comparable data for the childbirth group, in whom anxiety was measured much earlier in pregnancy. However, it is understandable that surgery is likely to be anticipated with anxiety about the nature of any disease and the outcome, whereas childbirth is generally anticipated as a happy event.

Both the physical and the psychological factors mentioned above could explain the greater severity of blues scores among post-operative women, but it is difficult to see how they could explain the peaking of scores in post-natal women.

We conclude that in post-natal women maternity blues is a distinct puerperal condition, not just a non-specific 'end reaction' to stressful experience. It is less severe than the emotional distress that follows gynaecological surgery. The most distinctive feature of maternity blues is peaking about the third or fourth post-natal day; the cause of this peaking is yet to be found.

References and authors' details will be found at the end of paper III, page 373.