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Research report

Maternity blues in Athens, Greece: A study during the first 3 days after delivery

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Abstract

Background: Although maternity blues have been studied in many countries worldwide the factors that influence the occurrence of this clinical entity are not well understood. The purpose of this study was to investigate the prevalence, time course and symptomatology of maternity blues in a Greek urban environment as well as the relation of maternity blues with certain clinical and sociodemographic factors.

Method: A study of a sample of 402 women that were recruited during the first day after delivery. Each woman completed the Kennerley's Blues Questionnaire on a daily basis for the first 3 days of puerpartum. Clinical and sociodemographic data were obtained through questionnaires and personal interview.

Results: 179 (44.5%) women experienced severe maternity blues during the first 3 days after delivery. Delivery by caesarian section ($P=0.006$), stressful events during pregnancy ($P=0.02$), depressive feelings the last month prior to delivery($P=0.002$), anxiety on the day of delivery ($P=0.001$) and hypochondriasis ($P=0.001$) were the factors that were found to relate significantly to maternity blues.

Conclusion: The women's emotional condition prior and after delivery, delivery via caesarotomy, as well as fears concerning somatic health had strong impact on the occurrence of maternity blues.

Keywords: Maternity blues; Puerpartum; Post-natal disorders

1. Introduction

Maternity blues is a mild and transient phenomenon that occurs during the first days of puerpartum. Reports of the phenomenon exist since the late 19th century (Savage, 1875). In the early 1950s, Moloney (1952) described a mild depressive reaction after delivery characterized by bursts of tears, fatigue and difficulty in thinking, which he named "third day depression", while Yalom et al. (1968) used the term post partum blues syndrome, in order to describe a cluster of similar symptoms. Finally, Pitt (1973) introduced the term "maternity blues".

Although well studied for the past 50 years there is still no standard definition of the maternity blues. The

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lack of diagnostic criteria, as well as the differences in the research methodology, are two of the main reasons for the wide range of prevalence rates that has been reported in various studies. Thus, the prevalence has been reported as high as 83% in a study from Tanzania (Harris, 1981) and as low as 8% in a study from Japan (Tsukasaki et al., 1991). Most of the authors report that the prevalence of the maternity blues varies between 40% and 60% (Hau and Levy, 2003; Nappi et al., 2001; Nagata et al., 2000). The fact that a number of studies reporting low prevalence of maternity blues are coming from Japan (Murata et al., 1998; Yoshida et al., 1997; Tsukasaki et al., 1991) has also raised the issue of cultural differences and especially the influence of culture in family support during puerpartum. Nagata et al. (2000) explored the effect of traditional support (satogaeri bunben) that Japanese women receive during puerpartum but did not found any correlation with the occurrence of maternity blues.

Although Greece's social structure is mainly Western European, Greek society is still keeping many of its traditions. As with most of the southern European societies family ties are still strong even in urban populations. Greek women in puerpartum receive a lot of attention and help usually from their mothers. Some of the women keep up with the tradition and stay inside their house, taking care of their newborn baby, for the first 40 days after delivery. Thorpe et al. (1992) studied maternity blues in a sample of British and Greek women and reported that both groups presented similar rates of maternity blues. To our knowledge this is the only published study of maternity blues in Greek women.

A number of psychosocial parameters have been tested in order to establish the risk factors of maternity blues. Most of the studies did not find any relation between the blues and sociodemographic factors such as age, education, occupation and marital status (O'Hara et al., 1991; Nagata et al., 2000). Unwanted pregnancy, parity, caesarian section, breastfeeding and family support have also been tested but with contradictory results (Hensaw, 2003). Negative emotions such as anxiety, fear of giving birth, and depression as well as stressful life events during pregnancy have been related to maternity blues (O'Hara et al., 1991; Pop et al., 1995; Bergant et al., 1999). Finally, the blues have been related to personality traits such as neurotism (Ehlert et al., 1990), as well as the hypochondriasis, depression and paranoia subscales of M.M.P.I. (Murata et al., 1998).

This study attempts to investigate maternity blues in Greece and the relation between the occurrence of maternity blues during the first 3 days of puerpartum and certain clinical and sociodemographic factors.

2. Method

2.1. Study design

The study was conducted in a university department of obstetrics in Athens. 445 women who consecutively gave birth were approached and examined the first day after delivery. The majority of the women were admitted to the hospital on the day of delivery. The inclusion criteria were adequate knowledge of the Greek language (read in Greek), birth of a healthy child (Apgas score of 9–10), absence of history of psychotic disorder, use of psychoactive substances and chronic somatic disease. Also women that were suffering from depression at the time of the first examination (score higher than 20 in the Montgomery–Asberg Depression Rating Scale (MADRS)) were excluded from the study. The above was decided in order to avoid misdiagnosing depression as maternity blues since some of the maternity blues symptoms although milder resemble those of depression. Demographic and clinical data concerning pregnancy, delivery and puerpartum were collected by questionnaire as well as from the women's medical records (Table 1).

All women were asked to complete the Kennerley's Blues Questionnaire (Kennerley and Gath, 1989) every evening for the first 3 days following delivery. A telephone interview was also conducted on the 7th day after delivery.

The face-to-face interviews were limited to the first 3 days of puerpartum as this was the minimum time that the women stayed in the hospital after delivery. During this period it was ensured that all women were observed under the same conditions i.e. staying in the obstetric ward, caring and feeding the baby with the help of midwifes, having visitors and sleeping the same hours. On the other hand, the 3-day period of direct observation is certainly a limitation, as we know that the blues peak for day 3 (Rodhe et al., 1997; Taylor et al., 1994) to day 5 (Hau and Levy, 2003; Kennerley and Gath, 1989) and they last sometimes more than the first week after delivery (Hensaw, 2003).

At day 1 women were also asked to complete the State Trait Anxiety Inventory, the Whitley Index of hypochondriasis, the revised Schalling–Sifneos Personality Scale, the Maudsley Obsessive–Compulsive Inventory and the List of Threatening Experience for the period of pregnancy. All the above questionnaires were self-administrated. Finally the Montgomery–Asberg Depression Rating Scale was completed by one of the authors (F.G.) following a 20-min face-to-face interview during which the woman's emotional status during the last month was discussed.

Table 1
Demographic, medical and data concerning pregnancy, delivery and puerpartum

	Category	Frequency	Percentage
Demographic and social variables			
Age	<20	8	2%
	20–29	212	52.7%
	30–39	173	43.1%
	>40	9	2.2%
Education level	Primary (0–6 years)	15	7.4%
	Secondary (6–12 years)	232	57.7%
	Tertiary (>13 years)	155	34.9%
Marital status	Married	394	98%
Years of marriage	1–5	248	63%
	6–10	106	27%
	>10	40	10%
Evaluation of marriage/relationship	Very good	247	62.7%
	Good	121	30.7%
	Average	25	6.3%
	Poor	1	0.3%
Husband's age	<20	0	0%
	20–29	90	22.4%
	30–39	243	60.5%
	>40	69	26.1%
Husband's education	Primary (0–6 years)	26	6.5%
	Secondary (6–12 years)	256	63.7%
	Tertiary (>13 years)	120	29.8%
Occupation	Housewife	117	29%
Nationality	Greek	262	65.3%
Medical data			
Previous stillbirths	Yes	8	2%
Previous births	0	218	54.2%
	1	139	34.6%
	>2	45	11.2%
Abortions	0	314	78.1%
	1	68	17%
	>2	20	4.9%
Treatment for conceiving difficulties	Yes	38	9.5%
	0	269	66.6%
Smoking during pregnancy (cigarettes/day)	1–10	56	14%
	10–20	62	15.4%
	>20	15	4%
Pregnancy and delivery			
Unwanted pregnancy	Yes	57	14.2%
Mother's reaction at the announcement of the pregnancy	Positive	311	77.4%
	Neutral	10	2.5%
	Negative	81	20.1%
Mother's satisfaction with the infants sex	Yes	306	76.1%
Method of delivery	Natural childbirth	249	61.9%
	Caesarotomy	153	38.1%
Puerperium			
Intention to breastfeed	Yes	361	89.8%
Breastfeeding (end of 1st week)	Yes	313	81.9%
Support and advice from family	Yes	238	59.2%
Peer support	Yes	276	68.7%

The women that actually participated in the study gave informed consent in order to be included in the study. Also each women was informed that if she experienced maternity blues a mental health specialist would be available for consultation.

2.2. Measurements

a) Kennerley's Blues Questionnaire (Kennerley and Gath, 1989) was used to measure maternity blues. The Blues Questionnaire (BQ) is a validated self-rating scale consisting of 28 questions concerning the emotional state of a woman. The available answers are "yes" or "no" so the maximum score is 28 and the minimum 0. For the calculation of the cut-off point for severe maternity blues the authors suggest that the mean peak score of all women should be used. The highest score on any of the days of observation is considered the peak score for each woman. For the present study the mean peak score was 7.4 so the cutoff point for the diagnosis of severe maternity blues was the score of 8.
According to Kennerley and Gath the 28 items of the BQ can be categorized in 7 clusters of symptoms: primary blues, reservation, hypersensitivity, depression, despondency, retardation and decreased self-confidence. If a woman scores positively on more that half of the cluster's items then she is considered to be positive for that cluster. Primary blues cluster includes 7 symptoms of maternity blues: feeling tearful, tired, anxious, forgetful/muddled, overemotional, changeable in mood, and low spirited. The authors suggest that these symptoms are the most common and characteristic of maternity blues.
It should be noted that the B.Q. was translated in Greek for the purposes of this study. The translation was done by one of the researchers (F.G.) and back translated by another bilingual psychologist. A panel of experts including two psychiatrists, a psychologist and an obstetrician confirmed B.Q.'s face validity.
b) The State–Trait Anxiety Inventory (STAI) is a widely used self-rating scale produced by Spielberger et al.

Table 2
Comparison between women that were excluded and included in the study

	Women included	Women excluded	P
Age (mean score)	29.2	28.9	0.5
Years of education (mean score)	12.5	12.4	0.7
Greek nationality (percentage)	65.3%	53.5%	0.1
Weeks of gestation (mean score)	38.7	38.1	0.6
Number of previous births (mean score)	0.6	0.6	0.8
Caesarian section (percentage)	38.1	37.8	0.3

Mean scores ware compared by *t*-test and percentages by χ^2.

(1970) that consists of two 20-item subscales measuring anxiety as state (STAI-1) and trait (STAI-2). The scale has been translated and validated for the Greek language (Liakos and Giannitsi, 1984).

c) The Whitley Index (WI) is a 14-item self-rating scale produced by Pilowski (1967) for the measurement of hypochondriasis.
d) The revised Schalling–Sifneos Personality Scale (SSPS) (Sifneos, 1986) is a 20-item self-rating scale for the measurement of alexithymia.
e) The Maudsley Obsessive–Compulsive Inventory (MOCI) is a 30-item self-rating scale that was created by Hodgson and Rachman (1977). It consists of 4 subscales: checking, inhibition, doubts and cleaning.
f) The List of Threatening Experience (LTE) is a 12-item scale of stressful life events created by Brugha et al. (1985) that have been used successfully in puerpartum studies (Yamashita et al., 2000; Yoshida et al., 1997). The same procedure that was followed with the B.Q. for the translation and adjustment of the scale in the Greek language has also been followed with LTE.
h) The Montgomery–Asberg Depression Rating Scale (MADRS) (Montgomery and Asberg, 1979) is a semi-structured 10-item scale. The MADRS focuses more to the psychic manifestations of depression rather on the somatic ones and thus is more suitable for the measurement of depression in women that due to pregnancy and delivery are experiencing a lot of somatic disturbances that resemble the somatic symptoms of depression.

The WI, SSPS, MOCI and MADRS have been translated, back-translated and adjusted in Greek by other research groups in Athens Medical School. The scales have been used successfully in various Greek studies.

The data were analyzed with χ^2 for nominal parameters and two-tailed *t*-test for scale parameters. Also a stepwise logistic regression analysis was used to investigate factors that influence the occurrence of maternity blues.

3. Results

3.1. Response rate and sample characteristics

43 of the total 445 women were excluded from the study giving a response rate of 90.3%. 20 of the 43 women (46.5%) could not read in Greek (all 20 women were immigrants), 12 (28%) refused to participate, 4 (9.3%) gave birth to a child who faced serious medical problem, 4 (9.3%) were found suffering from depression in day 1 (MADRS > 20), 2 (4.6%) were suffering from a chronic somatic disease (Hepatitis C caused by iv heroin use and diabetes mellitus under treatment with insulin) and finally 1 (2.3%) woman was excluded because she was suffering from schizophrenia and was under treatment with antipsychotic medication. There were no statistically significant differences in demographic and clinical data between the group of women that participated in the study and the group that was excluded (Table 2).

Table 1 summarizes the sample characteristics.

3.2. Incidence and timing of the maternity blues

When the cutoff point of 8 was applied, 93 women (23.1%) experienced severe maternity blues during the first day after delivery, 87 (21.6%) during the second day and 107 (26.6%) during the third day. During the

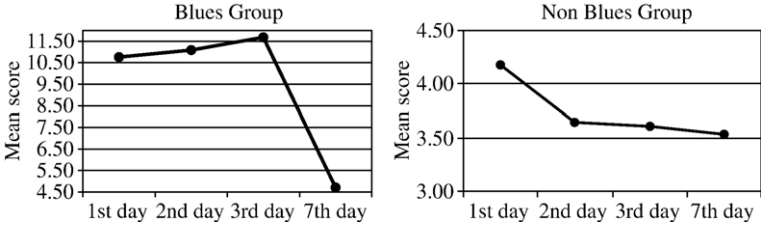

Fig. 1. Day-by-day mean scores of Blues Questionnaire.

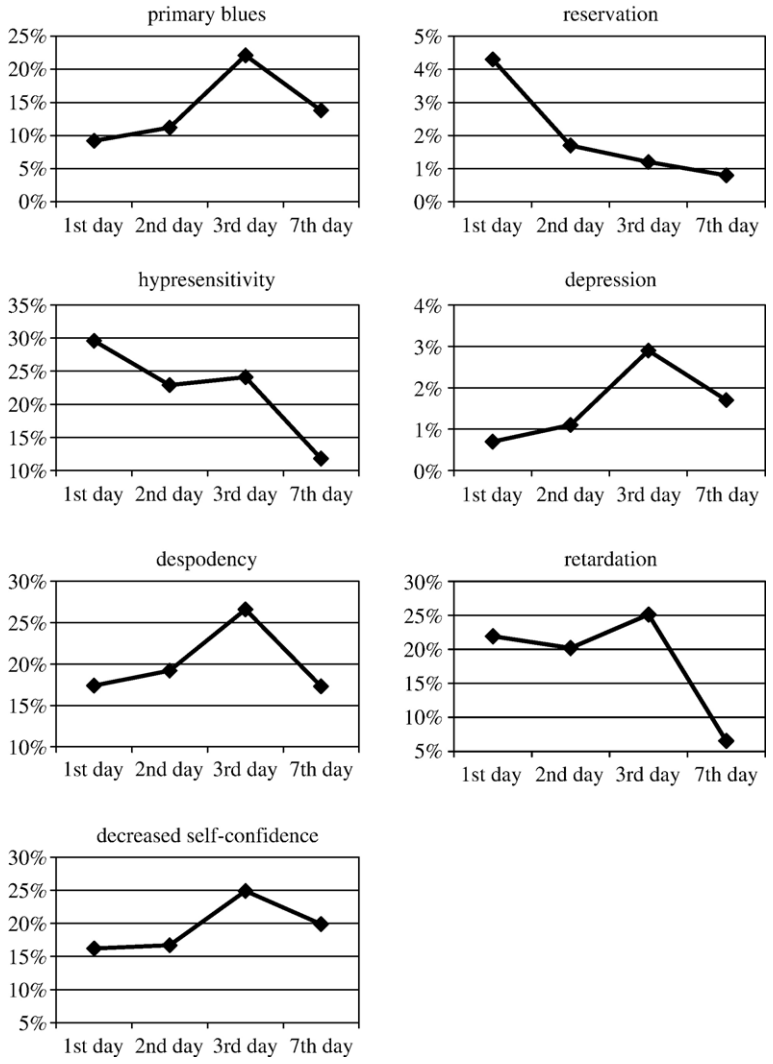

Fig. 2. Day-by-day percentage of women that scored positively in each symptoms cluster of Blues Questionnaire.

whole first 3 days of puerpartum 179 women (44.5%) in total experienced severe maternity blues. The 7th day after delivery 382 (95%) of the 402 women were reached through telephone interviews. 66 (17.3%) of them were still experiencing severe maternity blues.

The analysis of the daily mean scores indicated that there were different time patterns between the blues (MB) and the non-blues (NMB) groups. The time patterns are presented in Fig. 1. In the MB group the BQ mean score increased significantly in day 3 (mean=8.72, S.D.=4.69) compared to the mean scores of day 1 (mean=7.70, S.D.=3.85, two-tailed *t*-test=−00.2, $P=0.03$) and day 2 (mean=7.42, S.D.=3.96, two-tailed *t*-test=−0.3, $P=0.005$). There was no difference between the mean scores of days 1 and 2 (two-tailed *t*-test=0.5, $P=0.5$). In day 7 the mean score was much lower (mean=4.24 S.D.=4.47). One-way repeated measures ANOVA of the four measurements indicated that there were significant differences of the BQ scores over the week of observation (Wilks' Lambda: $F=41.1$, $df=3$, $P<0.001$).

Contrary in the NMB group the B.Q. mean score decreased significantly from day 1 (mean=3.99, S.D.=1.63) to day 2 (mean=3.30, S.D.=1.47, two-tailed *t*-test=4.7, $P=0.001$). There was no difference between day 2 and day 3 (mean=3.42, S.D.=1.65, two-tailed *t*-test=−0.8, $P=0.4$). In day 7, the mean score was lower (mean=3.19, S.D.=4.2). One-way repeated measures ANOVA of the four measurements indicated that there were also significant differences of the BQ scores (Wilks' Lambda: $F=8.9$, $df=3$, $P<0.000$).

Table 3
Demographic, medical and data concerning pregnancy, delivery and puerperium: (a) scale and (b) nominal variables

(a) Scale variables

	MB group (mean score)	NMB group (mean score)	*t*-test		
			t	df	P
Demographic and social variables					
Age	28.9	29.4	0.9	400	**0.4**
Years of education	12.6	12.5	−0.4	400	**0.7**
Years of marriage	3.7	4.7	2.7	400	**0.008**
Husband's age	33.9	33.9	−0.4	400	**0.9**
Husband's years of education	12.5	12	−1.2	400	**0.2**
Medical data					
Number of previous stillbirths	0.2	0.4	1.9	400	**0.007**
Number of previous births	0.6	0.7	0.4	400	**0.7**
Number of abortions	0.4	0.3	−0.8	400	**0.4**
Smoking during pregnancy (cigarettes/day)	5.1	5.3	0.1	400	**0.9**

(b) Nominal variables

	MB group	NMB group	Chi square test		
			χ^2	*df*	P
Demographic and social variables					
Marital status (married)	96.1%	97.3%	0.6	1	**0.7**
Evaluation of marriage (average/poor)	8%	6%	0.9	2	**0.6**
Occupation (housewives)	30.8%	27.8%	4.7	1	**0.1**
Nationality (Greek)	62.6%	67.6%	1.3	1	**0.3**
Medical data					
Treatment for conceiving difficulties	11%	8%	1.1	1	**0.3**
Pregnancy and delivery					
Unwanted pregnancy	17.3%	11.7%	2.6	1	**0.1**
Negative mother's reaction at the announcement of pregnancy	22.3%	18.8%	2.3	2	**0.5**
Mother's satisfaction with the infants sex	72.6%	78.9%	2.2	1	**0.1**
Method of deliver (caesarian section)	46.9%	30.9%	10.8	1	**0.001**
Puerperium					
Intention to breastfeed	85.4%	93.7%	7.6	1	**0.006**
Breastfeeding (end of 1st week)	75.4%	84.3%	4.8	1	**0.03**
Support and advice from family	58.1	60.1	0.2	1	**0.7**
Peer support	65.4	71.3	1.6	1	**0.2**

The same time patterns were observed also when the data were analyzed separately for the women who delivered by caesarian section both for the BQ group (mean scores: 8.21, 8.12, 9.12, 4.12 for the 1st, 2nd, 3rd and 7th days, respectively) and the NMB group (mean scores: 3.99, 3.20, 3.12, 2.97 for the 1st, 2nd, 3rd and 7th days respectively).

3.3. Clusters of symptoms

The time course for each of the 7 clusters of symptoms is presented in Fig. 2. Depression was the least often scored cluster followed by Reservation. On the contrary, Hypersensitivity and Retardation were the most often scored clusters followed by Despondency, Decreased Self-Confidence and Primary blues.

3.4. Demographic, medical and data concerning pregnancy, delivery and puerpartum

a) *Demographic and social variables*: The maternity blues group (M.B.) differed significantly from the non-maternity blues group (NMB) only in the mean score of the years of marriage (MB = 3.7, NMB = 4.7)
b) *Medical variables*: No differences were found between the two groups.
c) *Pregnancy and delivery*: Caesarian section was more frequent (47% vs. 31%) in the MB group
c) *Puerpartum*: Women in the MB group reported more often (14.6% vs. 6.3%) than those in the NMB group that they did not intend to breastfeed and also 1 week after delivery that they were not breastfeeding (24.6% vs. 15.7%) (Table 3a,b).

3.5. Clinical measurements

The MB group scored higher than the NMB group in all the scales with the exception of SSPS and the checking and inhibition subscales of MOCI. The most significant differences were observed with STAI 1 (state

Table 4
Clinical measurements

	MB group		NMB group		*t*-test		
	Mean	S.D.	Mean	S.D.	*t*	df	P
STAI (state)	32.2	8.6	26.7	4.7	7.9	373	**0.001**
STAI (trait)	35.1	8.7	32.1	15.1	2.2	373	**0.03**
WI	19.8	6.9	17.5	5.7	3.6	391	**0.001**
MOCI total	8.4	4.7	7.2	4.2	2.6	361	**0.01**
MOCI cleaning	3.5	2.4	3	2.2	2.4	361	**0.02**
MOCI doubt	2.2	1.5	1.7	1.4	0.3	361	**0.01**
MOCI checking	1.4	1.2	1.3	1.2	1.2	361	**0.2**
MOCI inhibition	1.3	1.3	1.3	1.2	3.2	361	**0.7**
MADRS	9.4	6.5	5.3	5.3	7	400	**0.001**
LTE	1.6	1.4	1.1	1.1	4.3	400	**0.001**
SSPS	5.61	2.54	5.2	2.4	1.8	385	**0.08**

Table 5
Stepwise logistic regression

Variables in the equation	*B*	S.E.M.	*df*	P
LTE	0.3	0.1	1	0.02
STAI state	0.1	0.3	1	0.001
WI	0.9	0.3	1	0.001
MADRS	0.77	0.02	1	0.002
Method of delivery	−0.8	0.3	1	0.006

R^2 Nagelkerkle=0.4.

anxiety), WI, MADRS and the LTE scores. The comparisons of the mean scores were conducted by the use of two-tailed *t*-test trial (Table 4).

The stepwise logistic regression analysis found that, LTE, MADRS, STAI 1, WI and delivery by caesarian section have a significant impact on the occurrence of maternity blues. The results of logistic regression are presented in Table 5.

4. Discussion

Although in order to avoid disturbing the women we tried to conduct the first interviews inside the 24 h window but as further as possible from the time of delivery it is still surprising that only 12 out of 445 women refused to participate in the study. One explanation for the above is that, as most of them told us, they found important to participate in the study since they had heard of other women becoming tearful or depressed after delivering their baby or in some cases they had themselves, after previous deliveries, experienced some kind of emotional discomfort.

The first aim of our study was to investigate the rate, symptomatology and timing of maternity blues in Greece. To our knowledge this would be the first study in Greece with a sample of that size. The overall prevalence of maternity blues in our study was 44.5%, a result that is similar to the rates reported from France (Sutter et al., 1997), United States (O'Hara et al., 1991) and Hong Kong (Hau and Levy, 2003).

Considering the timing of MB our results are leading to the conclusion that, although most of the women the first day after delivery experience some kind of discomfort, these symptoms are decreasing from the next day on. However, women who will eventually develop the blues, show an opposite trend, more pronounced in day 3. These results support the notion that MB, even in women who delivered by caesarian section, is differentiated, from a postoperative reaction which would be gradually decreasing after the first day (Iles et al., 1989), although there are authors that have suggested the opposite (Levy, 1987).

The most frequent symptoms cluster in our study was Hypersensitivity (days 1 and 2) and Despondency (day 3). Primary blues cluster, although not the most frequent cluster, presented the larger frequency increase from day 1 (9.2%) to day 3 (22.1%) measurements. These results are different from the ones reported by Kennerley and Gath (1989). According to the authors Primary blues was the most frequent cluster in their original study. The reason for the above differences could be attributed to cultural influence in the expression of emotions in British and Greek women.

Unfortunately the limitation of our study to the first 3 days did not enabled us to obtain data from the fourth and fifth days who are also crucial for the development of maternity blues. Thus the prevalence, time patterns and symptomatology reported in this study describe only the first 3 days and no conclusion can be drawn for the whole period that maternity blues last.

The second aim of our study was to investigate possible demographic, social and medical factors that might influence the occurrence of maternity blues. Our major hypothesis was that mothers who expect to be helped, advised and supported during puerperium would run a lower risk of developing maternity blues.

Demographic variables, with the exception of the duration of marriage, were not found to differ between the MB and the NMB. These findings are in agreement with previous studies (Nagata et al., 2000; O'Hara et al., 1991). The duration of marriage has not been studied in the past and its relation to the emotional status of women and MB needs further investigation. Our hypothesis that mothers that are expecting to receive more attention after discharge from the maternity ward run a lower risk of developing maternity blues was not backed up by our results.

Delivery by caesarian section, intention to breastfeed and actual breastfeeding at the end of the first week were found to differ between MB and NMB group.

Regression analysis indicated that caesarotomy was one of the independent variables that had a significant impact on the occurrence of MB. One possible explanation for this is that the stress of surgery when added to the endocrinological and psychological changes of puerperium makes women more vulnerable to the development of maternity blues. In a number of studies caesorotomy haw been found to have a positive relation with MB (Hannah et al., 1992), while others have not found any relation (Nagata et al., 2000).

Similar contradictory results have also been reported with breastfeeding. Some studies indicated that women who were breastfeeding showed lower prevalence of MB (Thalassinos et al., 1993), while others indicated a higher prevalence of MB (Lanczik et al., 1992). In

addition, some studies found no relation at all between breastfeeding and MB (Hau and Levy, 2003; O'Hara et al., 1991). In our study it was not only breastfeeding but also intention to breastfeed that differed between MB and NMB group. Since breastfeeding was not found in regression analysis to have a significant impact on maternity blues our hypothesis was that it might be indirectly related to maternity blues through anxiety and/or depressive feelings. Looking back at our data we found that women who were not willing to breastfeed had higher scores on STAI (state) (t-test=4.1, P=0.001) and MADRS (t-test=0.2, P=0.09) than women who intended to breastfeed.

The third aim of our study was to investigate the relation of maternity blues with depressive feelings and stressful life events prior to delivery and stress at the day of delivery. Unfortunately the evaluation of the first two factors was done respectively as women were asked to describe how they were feeling during the last month of their pregnancy after they had delivered their baby. This limitation was due to the fact that most of the women were not followed up during pregnancy in the obstetric clinic and they were admitted to the maternity ward on the day of delivery. Stressful life events during pregnancy have been reported in the literature to relate to the development of maternity blues (Pop et al., 1995; O'Hara et al., 1991). Depression and anxiety during pregnancy have also been reported as factors that have a strong influence on the development of the blues. Murata et al. (1998) reported that poor emotional condition prior to pregnancy was related with depressive emotions after delivery. Similar results have been reported by Hensaw (2003) and Adewuya (2005). It is noteworthy that even when women that scored higher than 20 in the MADRS were excluded the MADRS score was still related to the occurrence of maternity blues.

Finally the fourth aim of our study was to investigate the relation of maternity blues to personality traits. We chose hypochondriasis and obsessionality on the hypothesis that admission to a hospital, having responsibility of a newborn baby, staying in a ward with other women and using kitchen utilities and toilets other than their own would stress heavily hypochondriac and obsessive women.

Murata et al. (1998) reported a relation between the blues and the hypochondriasis subscale of MMPI. Our results support our hypothesis that women that worry about their physical health are more prone to develop maternity blues. Similar results concerning the relation between maternity blues and catastrophizing labour pain but not labour pain itself have been recently reported by Ferber et al. (2005).

OCD symptomatology has been found to worsen during pregnancy and puerperium (Abramowitz et al., 2003). The MB group was found to have higher scores in the MOCI total and two of the MOCI subscales (doubt and cleaning) but regression analysis did not indicate that obsessionality, as measured by MOCI, had any influence on the development of MB.

The third personality trait that was investigated was alexithymia. Alexithymia is characterized by difficulties in differentiating one's feelings and verbally expressing them (Kooiman, 1998). How would a woman who is facing difficulties expressing her feelings would react to a situation were everyone would expect her to be emotional; Alexithymia has never been studied in women that develop maternity blues. Our hypothesis that alexithymia might relate with MB was based on the relation between alexithymia and physical symptoms (Kooiman, 1998), depression (De Gennaro et al., 2004) as well as panic attacks (Marchesi et al., 2005). Alexithymia measurements did not differ between the MB and NMB group thus failing to verify our hypothesis.

To conclude, our study tried to offer a better understanding of maternity blues in a Southern European cultural environment. This study indicates that maternity blues are experienced by women in Greece in similar frequency and timing, regardless of family support but maybe through different symptoms than in Northern European countries. Also according to the results of this study anxiety and depressive feelings measured on the day of delivery as well as stressful life events during pregnancy and hypochondriac fears seem to have a strong impact on the development of the blues. The relation of maternity blues and caesarian section should alert obstetricians especially in Greece where around one third of women deliver through surgery.

References

Abramowitz, J.S., Schwartz, S.A., Moore, K.M., Luenzmann, K.R., 2003. Obsessive–compulsive symptoms in pregnancy and the puerperium: a review of the literature. J. Anxiety Disord. 17 (4), 461–478.

Adewuya, A.O., 2005. The maternity blues in Western Nigerian women: prevalence and risk factors. Am. J. Obstet. Gynecol. 193 (4), 1522–1525.

Bergant, A.M., Heim, K., Ulmer, H., Illmensee, K., 1999. Early postnatal depressive mood: associations with obstetric and psychosocial factors. J. Psychosom. Res. 46 (4), 391–394.

Brugha, T., Bebbington, P., Tennant, C., Hurry, J., 1985. The list of threatening experiences: a subset of 12 life event categories with considerable long term contextual threat. Psychol. Med. 15, 189–194.

De Gennaro, L., Martima, M., Curcio, G., Ferrara, M., 2004. The relationship between alexithymia, depression and sleep complaints. Psychiatry Res. 128 (3), 253–258.

Ehlert, U., Pattala, U., Kirschbaum, C., Piedmont, E., Hellhammer, D.H., 1990. Postpartum blues: salivary cortisol and psychological factors. J. Psychosom. Res. 34 (3), 319–325.

Ferber, S.G., Granot, M., Zimmer, E.Z., 2005. Catastrophizing labor pain compromises later maternity adjustments. Am. J. Obstet. Gynecol. 192 (3), 826–831.

Hannah, P., Adams, D., Lee, A., Glover, V., Sandler, M., 1992. Links between early post-partum mood and postnatal depression. Br. J. Psychiatry 160, 777–780.

O'Hara, M., Schlechte, J., Lewis, D., Wright, E., 1991. Prospective study of postpartum blues. Arch. Gen. Psychiatry 48, 801–806.

Harris, B., 1981. Maternity blues in East African clinic attenders. Arch. Gen. Psychiatry 38, 1293–1295.

Hau, F., Levy, V., 2003. The maternity blues and Hong-Kong Chinese women: an exploratory study. J. Affect. Disord. 75, 197–203.

Hensaw, C., 2003. Mood disturbances in the early puerperium: a review. Arch. Womens Ment. Health 6 (suppl 2), S33–S42.

Hodgson, R.J., Rachman, S., 1977. Obsessional–compulsive complaints. Behav. Res. Ther. 15, 389–395.

Iles, S., Gath, D., Kennerley, H., 1989. Maternity blues: II. A comparison between post-operative women and postnatal women. Br. J. Psychiatry 155, 363–366.

Kennerley, H., Gath, D., 1989. Maternity blues: I. Detection and measurement by questionnaire. Br. J. Psychiatry 155, 356–362.

Kooiman, C.G., 1998. The status of alexithymia as a risk factor in medically unexplained physical symptoms. Compr. Psychiatry 39 (3), 152–159.

Lanczik, M., Spingler, H., Heidrich, A., Becker, T., Kretzer, B., Albert, P., Fritze, J., 1992. Post partum blues: depressive disease or pseudoneurasthenic syndrome? J. Affect. Disord. 25 (1), 47–52.

Levy, V., 1987. The maternity blues in post-partum and post-operative women. Br. J. Psychiatry 151, 368–372.

Liakos, A., Giannitsi, S., 1984. The validity of the revised Greek Spielberger State Train Anxiety Inventory. Encefalos 21, 71–76 (in Greek).

Marchesi, C., Fonto, S., Balista, C., Cimmino, C., Maggini, C., 2005. Relationship between alexithymia and panic disorder: a longitudinal study to answer an open question. Psychother. Psychosom. 74 (1), 56–60.

Moloney, J., 1952. Post partum depression or third day depression following childbirth. New Orleans Child Parent Digest. 6, 20–32.

Montgomery, S.A., Asberg, M., 1979. A new depression scale designed to be sensitive to change. Br. J. Psychiatry 134, 382–389.

Murata, A., Nadaoka, T., Morioka, Y., Oiji, Saito, H., 1998. Prevalence and background factors of maternity blues. Gynecol. Obstet. Investig. 46, 99–104.

Nagata, M., Nagai, Y., Sobajima, H., Ando, T., Nishide, Y., Honjo, S., 2000. Maternity blues and attachment to children in mothers of full term normal infants. Acta Psychiatr. Scand. 101 (3), 209–217.

Nappi, R., Petraglia, F., Luisi, S., Polatti, F., Farina, C., Genazzani, A., 2001. Serum allopregnanolone in women with postpartum. Blues Obst. Gynaecol. 97 (1), 77–80.

Pilowski, I., 1967. Dimensions of hypochondriasis. Br. J. Psychiatry 134, 382–389.

Pitt, B., 1973. Maternity blues. Br. J. Psychiatry 122, 431–433.

Pop, V.J., Wijnen, H.A., Van Montfort, M., Essed, G.G., De Geus, C.A., Van Son, M.M., Komproe, I.H., 1995. Blues and depression during early puerperium: home versus hospital deliveries. Br. J. Obstet. Gynaecol. 102, 701–706.

Rodhe, L.A., Busnello, E., Wolf, A., Zomer, A., Shansis, F., Martins, S., Tramontina, S., 1997. Maternity blues in Brazilian women. Acta Psychiatr. Scand. 9, 231–235.

Savage, G., 1875. Observations on the insanity of pregnancy and childbirth. Guy's Hosp. Rep. 20, 83–117.

Sifneos, P., 1986. The Schalling–Sifneos Personality Scale revised. Psychother. Psychosom. 45, 161–165.

Spielberger, C.D., Gorsuch, R.L., Lushene, R.E., 1970. Manual for the State–Trait Anxiety Inventory. Consulting Psychologists Press, Palo Alto, CA.

Sutter, A.L., Leroy, V., Dallay, D., Verdoux, H., Bourgeois, M., 1997. Post partum blues and mild depression symptomatology at days three and five after delivery. A French cross sectional study. J. Affect. Disord. 44, 1–4.

Taylor, A., Littlewood, J., Adams, D., Dorė, C., Glover, V., 1994. Serum cortisol level is related to mood of elation and dysphoria in new mothers. Psychiatry Res. 54 (3), 241–247.

Thalassinos, M., Zittoun, C., Rouillon, F., Engelmann, P., 1993. Anxiety and depressive disorders in the postpartum period in pregnant females. J. Gynecol. Obstet. Biol. Reprod. 22 (1), 101–106.

Thorpe, K.J., Dragonas, T., Golding, J., 1992. The effects of psychosocial factors on the mother's emotional well being during early parenthood: a cross-cultural study of Britain and Greece. J. Reprod. Infant Psychol. 10, 205–216.

Tsukasaki, M., Ohta, Y., Oishi, K., Miyaichi, K., Kato, N., 1991. Types and characteristics of short-term course of depression after delivery: using Zung's Self-Rating Depression Scale. Jpn. J. Psychiatry Neurol. 45 (3), 565–576.

Yalom, I., Lunde, D.T., Moos, R.H., Hamburg, D.A., 1968. Postpartum blues syndrome. Arch. Gen. Psychiatry 18 (1), 16–27.

Yamashita, H., Yoshida, K., Nakano, H., Tashiro, N., 2000. Postnatal depression in Japanese women. Detecting the early onset of postnatal depression by closely monitoring the postpartum mood. J. Affect. Disord. 58, 145–154.

Yoshida, K., Marks, M.N., Kibe, N., Kumar, R., Nakano, H., Tashiro, N., 1997. Postnatal depression in Japanese women who have giver birth in England. J. Affect. Disord. 43, 69–77.