

Original Article

## Postpartum Stress in Relation with Depression and Anxiety in a Sample of Greek Postpartum Women

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### Abstract

**Purpose:** To examine the emotional disorders of postpartum women during their hospitalization in a maternity hospital and the investigation of stress levels and their correlation with the levels of anxiety and depression.

**Material and Method:** The sample of the present study consisted of 480 postpartum women, who gave birth to public and private maternity hospitals in Athens. The questionnaires DASS-21, Hung Postpartum Stress Scale questionnaire, the Depression Scale (CES-D) and a Demographic Questionnaire, were administered to them.

**Statistical analysis:** Data analysed using SPSS-20 software and the T-test, Mann-Whitney U, Kruskal Wallis and the Spearman's rho correlation coefficient tests were used.

**Results:** 318 postpartum women (66.3%) gave birth in a public maternity hospital of Athens and 162 (33.1%) in a private maternity hospital of Athens. The majority (267 women, 55.6%) was high school graduates, 120 (25.0%) were TEIs graduates, 63 women (13.1%) were graduates of HEIs and only 30 women (6.3%) had primary school education. Women who underwent treatment to achieve their pregnancy, had lower levels of depression (p-value <0.01), with a statistically significant difference in subscale "concerns about maternal role attainment" of Hung PSS scale (p-value <0.05), "concerns about lack of social support" of Hung PSS scale (p-value <0.05). Women who had attended antenatal education classes, had a higher mean in Hung PSS scale and in the subscales "concerns about maternal role attainment" and "concerns about negative body changes" (p-value <0.01, p-value <0.01 and P-value <0.01, respectively). Regarding the educational level, a statistically significant difference in the subscale "concerns about negative body changes" of Hung PSS scale, on the DASS-21 scale and the DASS-21 sub-scale (depression scale) (p <0.05, p <0.05, p <0.05, p <0.05, respectively) was observed. In the correlation of Hung PSS, DASS21, CES-D, and their sub-scales, there was a slight to strong positive correlation with the Spearman's correlation coefficient, ranging from 0.191 to 0.921 (p <0.01).

**Conclusion:** Women, treated for fertility problems, had greater concerns about achieving a parenting role. Women with tertiary education, were more concerned about their negative body changes, they were more stressed, but experienced lower levels of depression, than women with a lower level of education. Unmarried women were more alarmed about their maternal role, lack of social support and negative body changes, stress and depression, in relation to married couples and those who cohabited with their child's father.

**Keywords:** postpartum stress, depression, anxiety, postpartum emotional disorders, postpartum mental disorders

## Introduction

Motherhood is commonly considered, as a wonderful and essential experience. However, the postpartum period implicates various and rapid alterations, and is characterized as a distressing life event (Miller, Pallant & Negri, 2006; Terry, Mayocchi & Hynes, 1996), by the way a woman has to cope with, not only the new duties of her maternal role but the physical changes of her body (Hung, 2005).

Studies found that about 10% to 15% of postpartum women, suffered from psychological disorders such as anxiety, depression and stress after childbirth (Glavin & Leahy-Warren 2013), although the actual incidence, is unknown.

Many authors have focused on the significance of differentiating postpartum depression from postpartum anxiety (Austin, 2004; Heron, et al. 2004). It is well known, that there is a comorbidity between anxiety and depression (Matthey et al., 2004; Sanderson et al., 1990). This also happens in the postpartum period (Green, 1998; Milgrom, Martin & Negri, 1999; Ross et al., 2003).

According to Matthey et al. (2004), the differentiation of anxiety from depression is considered significant, because not all anxious mothers, are depressed. Studies in non postpartum samples of women, found that signs and symptoms in the case of the coexistence of depression and anxiety, are more severe, and linked with worse short and long-term results (Rivas-Vazquez et al., 2004). Treating both problems is more strenuous, demanding specific interventions (Emmanuel, Simmonds & Tyrer, 1998) and rises the suicide's risk (Fawcett, 1997). Authors focused on the "ranked problem-solving practice" that needs to give a priority in the depression, even though anxiety manifestations are the obvious characteristic. This attention care to depression may lead to hidden and untreated cases of anxiety. Correspondingly, in circumstances of the coexistence of depression and anxiety, there is a possibility that care plans, emphasize on the depressive manifestations, at the omission of precise managements for the signs of anxiety (Matthey et al., 2004). Some authors concentrated on the significance to determine if there is a link between anxiety manifestations and an initial depression, or whether they appear to be, a clinical unit (Ross et al., 2003).

Heron, et al. (2004) recommended that depression may follow anxiety because of transformed physiological paths, or may be a result of inadequate management of stress. Lovibond and Lovibond (1995), consider that stress is a discrete undesirable emotional situation of an individual that encompasses chronic stimulation and damaged function.

Hung (2001) defined the "postpartum stress" as a constraining force, produced by postpartum stressors. These stressors are referred to physical changes, maternal role attainment, and social support and act, within 6 weeks of childbirth all together (Hung, 2001).

Many authors, focusing on postpartum stress, found that postpartum stress is associated with psychological problems, such as depression and anxiety. These mental disorders may affect the mother-infant prenatal bonding and consequently the infant's mental, emotional, and behavioural development (Osman et al., 2014). Moreover, in other studies has been detected that postpartum stress might affect the wellbeing of other family members (Hung, 2007; Woolhouse et al., 2014). Maternal stress might be related to problems such as lactation issues, or infant's irritability and sleeping disorders (Azizzadeh Forouzi et al., 2009) that could negatively affect the woman's wellbeing, her relationship with the other family members, including the newborn (Perez-Blasco, Vigueur & Rodrigo, 2014) and could possibly lead to inadequate maternal competence (Bloomfield & Kendall, 2012).

Many studies investigated postpartum depression of women at risk, but only a few have focused on the relation of postpartum stress with psychological problems (Dennis, 2005; Azizzadeh Forouzi et al., 2009).

Hung (2007a) suggests that three factors are associated with the manifestation of postpartum stress: the "concerns about maternal role attainment", the "concerns about lack of social support" and the "concerns about negative body changes".

Maternal role attainment continuously needs information, competences, and enthusiasm. A deficiency of information, aptitude, or incentive could cause a deficit in mothering capability and become stressful for women (Flagler, 1993). A new mother needs information about the growth, development and how to take care of her child (Hung, 2007b).

Hung, Chang & Chin (1993) detected that social support is noteworthy to women after childbearing helping them adjust to their new role and help their close relationships. They recognized that supporting a family is significantly correlated with a low incidence of postnatal stress.

### **Purpose**

The purpose of this study was to examine the emotional disorders of postpartum women during their hospitalization in a maternity hospital and more specifically the investigation of stress levels and their correlation with the levels of anxiety and depression.

### **Materials and methods**

#### **Method:**

Population, sample and sampling method: For the data collection, 500 questionnaires were distributed to women, who gave birth to public and private maternity hospitals in Athens, but 20 of them were considered unanswered and could not be used for statistical analysis. So the final sample of this study was 480 postpartum women. This was a convenience sample and the participants completed the self-reported questionnaires, DASS21 (Lovibond & Lovibond, 1995), Hung Postpartum Stress Scale (Hung PSS) (Hung, 2005), Centre for Epidemiologic Studies- Depression Scale (CES-D) (Radloff, 1977), as well as a questionnaire with socio-demographic data. The questionnaires were translated into Greek after a permission received by the authors and then again in English by a different bilingual person to control the accuracy of the translation. Similarly, the apparent validity of the questionnaires was secured by four specialists, two psychologists and two psychiatrists. The Ethics Committee of the specific hospitals, in which the survey was conducted, gave permission to the researchers, for completion of the study.

#### **Instruments:**

##### **Hung Postpartum Stress Scale**

The Scale includes 62 Likert rated questions ranging from 1 (none) to 5 (always), which assess the feelings and thoughts of women after birth and the total score of the questions ranks from 62 to 310. The higher a woman's score is, the higher the psychological stress she is experiencing during her post-partum period. According to the authors who developed this

psychometric tool, the scale includes three individual dimensions of stress during the period after labour: a) concerns about maternal role achievement, consisting of 32 questions related to the woman's ability to respond to her physical care and acceptance of role obligations, with a score ranging from 32-160 b) concerns about negative body changes, with 13 questions, related to changes in body image, appearance and functioning of the postpartum body, ranging between 13-65 and c) concerns about lack of social support, that includes 17 questions about emotional support, counseling and active social support, with scores ranging from 17-85.

In the present study, in order to check the reliability of internal coherence of the scales, the Cronbach's Alpha index was used. For the Hung Postpartum Stress Scale scale,  $\alpha = 0.95$ . For the sub scales, Cronbach's Alpha index, was as following: i) Concerns about the achievement of Maternal Role,  $\alpha = 0.93$  (English version  $\alpha = 0.93$ ) ii) Concerns related to body changes,  $\alpha = 0.89$  (English version  $\alpha = 0.85$ ) iii) Concerns related to lack of social support,  $\alpha = 0.93$  (English version = 0.85) (Hung 2005).

##### **DASS21 scale**

It is subdivided into three subclasses of seven questions, which assess stress, depression and anxiety during the previous week. This scale is the short version of the DASS42 scale and has been developed for the general population. The questionnaire includes 21 questions, rated Likert type, from 0 (did not apply to me at all), 1 (for me to a certain extent, or for some time), 2 (for me to a particular degree, or quite some time) to 3 (It's for me to a great extent or for most of the time), which evaluates the feelings and thoughts of women, during the postpartum period and the overall score of the questions, ranges from 0- 63. The interpretation of the results was achieved by doubling the score.

For the classification of women with stress, depression and anxiety, norms derived from study results, with a sample of 2914 participants (Lovibond & Lovibond, 1995), were used. Thus, women with a score of 0-9 were characterized as normal, for the depression scale, women with a score between 10 and 13, with mild depression, women presenting score from 14 to 20, had moderate depression, women with a 21-27 score had severe depression and women with a score over 28, suffered from extremely severe depression.

For the anxiety scale, women rated 0-7 were not anxious, women rated 8-9 had mild anxiety, women with a 10-14 score moderate anxiety, women rated 15-19 had severe anxiety and women with a score of over 20 had extremely severe anxiety. For the stress sub-scale, women rated 0-14 were not stressed, women with a 15-18 score, reported mild stress, women with a 19-25 score moderate stress, women with a 26-33 score had severe stress and women with a score of over 34, had extremely severe stress.

The Cronbach's Alpha index for the DASS-21 scale was  $\alpha = 0.94$ , with  $\alpha = 0.82$  for the stress sub-scale,  $\alpha = 0.91$  for the depression scale and  $\alpha = 0.77$  for the anxiety sub-scale.

### CES-D scale

The CES-D scale gives us information about the symptoms of depression. It is a self administered 20-item questionnaire, including emotional, psychological and physical symptoms that occurred during the previous week. Responses vary between "rarely or never" to "most often or always". The overall score ranges from 0 to 60 - the highest rating indicates more common symptoms of depression.

There are various score levels used as cut-off scores, for the characterization of depressed subjects (Bowling, 2001; Fountoulakis et al., 2001). In this study, the cut-off score of 23, used in a previous study (Fountoulakis et al., 2001), was taken into account with a representative sample of the Greek population with an increased specificity and sensitivity ( $> 90\%$ ) for the specific cut-off score. For the CES- D the Cronbach's Alpha index was  $\alpha = 0.91$ .

Then, a pilot study was conducted using 20 participants, in order to identify a possible difficulty in understanding some questions and cultural adaptation of the questionnaires to the Greek population. In addition, another questionnaire was used that included women's demographic data, obstetric history, and drug use during childbirth, to check for a possible correlation of the basic questionnaire variables with those of the demographic questionnaire.

The inclusion criteria for participation in the study, were, postpartum women who: (a) had given birth to a healthy full-term baby, without complications; (b) had no complications during the postpartum period or any underlying disease; and (c) they knew the Greek language.

The questionnaires were distributed by the researcher herself and the women completed the questionnaires after being informed about the purpose of the study and after giving their oral consent. This research was approved by the hospital administration offices and their scientific committees.

### Statistical analysis

Data were analyzed using SPSS v.20 for Mac. In particular, the comparison between two mean values was performed by the parametric statistical test, T-test, the non-parametric Mann-Whitney U, while the comparison between more than two values was made by the non-parametric Kruskal Wallis test and the linear correlation between two quantitative variables with Spearman's rho, non-parametric correlation coefficient, because some scales did not follow the normal distribution.

### Results

A descriptive analysis of the data, revealed that the 320 postpartum women (66.7%) had given birth to a public hospital, 160 (33.3%) participants had given birth to a private maternity hospital in Athens. The majority (243 women, 50.6%) were between 30-39 years old, 219 women (45.6%) between 20-29 years and only 18 women (3.8%) below 20 years of age. With regard to their marital status, most women (300 women, 62.4%) were married, 90 women (19.8%) were not married, and another 90 women (19.8%) cohabited with their child's father. As for the parity, 144 women (30%) were primiparous and the remaining 336 women (70%), were giving birth to their second or third child. Concerning the type of delivery, 228 women (47.5%) had a vaginal labour, 3 women (0.6%) had an instrumental vaginal delivery (vacuum extraction), while the majority (249 women, 51.9%) gave birth by caesarean section.

Anxiety, stress and depression levels according DASS21 scale and CES-D scale, are shown in Table 1. For further analysis, some variables of the demographic data, were correlated with the overall scores of the DASS21, CES-D scales and their sub-scales, in order to draw more conclusions. Thus, as shown in Table 2, when comparing the mean values of the scales and sub-scales between women treated with fertility drugs to get pregnant and non-treated women, there was a statistically significant difference, in the mean scores of the DASS-21

scale, with women who followed a treatment to get pregnant, to show a lower mean value, than women who did not receive treatment for pregnancy (63.00 vs. 83.90, p-value <0.05).

For the DASS-21 depression sub-scale, a statistically significant difference was found, with the women who received fertility treatment to show a lower mean score than women who did not receive treatment to achieve pregnancy (49.87 vs. 86.44, p-value < 0.001). For the anxiety and stress subscales of the DASS-21 scale, there was no statistically significant difference. Additionally, there was a statistically

significant difference between the mean scores of the “concerns about maternal role attainment” subscale of the Hung PSS scale, with fertility treated women, receiving a higher mean value than women who were not treated with fertility drugs (99.58 vs. 76.17, p-value <0.05). On the other hand, in the subscale “concerns about lack of social support” of the Hung PSS scale, the women who received treatment for pregnancy showed a lower mean score, than women who did not receive fertility treatment (57.42 vs. 84.41, p-value <0.05). Table 2).

**Table 1. Distribution of postpartum women’s depression, anxiety and stress levels**

Scale		N	(%)	Range
<b>DASS-21</b>		<b>(n=480)</b>		
<b>Depression levels</b> (range of scale 0-42)	Normal	174	36.3	<b>0-42</b>
	Mild	63	13.1	
	Moderate	93	19.3	
	Severe	48	10.0	
	Extremely severe	102	21.3	
<b>Anxiety levels</b> (range of scale 0-42)	Normal	117	24.3	<b>0-32</b>
	Mild	12	2.5	
	Moderate	105	21.9	
	Severe	93	19.4	
	Extremely severe	153	31.9	
<b>Stress levels</b> (range of scale 0-42)	Normal	144	30.0	<b>2-40</b>
	Mild	69	14.3	
	Moderate	93	19.4	
	Severe	81	16.9	
	Extremely severe	93	19.4	
<b>CES- D</b> (range of scale 0-60)		<b>(n=297)</b>		
	No Depression	120	40.4	<b>3-41</b>
Depression	177	59.6		

**Table 2. Comparison of Hung PSS, DASS-21, CES-D scales mean scores between women who followed therapy to become pregnant and women who did not**

Scale	Therapy to become pregnant	N	Mean Rank	*p-value
		(n=474)		
Hung PSS (total score)	Yes	78	85.50	0.464
	No	396	78.32	
		(n=477)		
Concerns about maternal role attainment	Yes	78	99.58	<b>0.018</b>
	No	399	76.17	
Concerns about lack of social support	Yes	78	57.42	<b>0.006</b>
	No	399	84.41	
		(n=480)		
Concerns about negative body changes,	Yes	78	87.46	0.402
	No	402	79.15	
		(n=480)		
DASS-21 (depression subscale)	Yes	78	49.87	<b>0.000</b>
	No	402	86.44	
DASS-21 (anxiety subscale)	Yes	78	75.73	0.565
	No	402	81.43	
DASS-21 (stress subscale)	Yes	78	69.13	0.170
	No	402	82.71	
DASS-21 (total score)	Yes	78	63.00	<b>0.035</b>
	No	402	83.90	
		(n=297)		
CES-D	Yes	63	39.31	0.054
	No	234	52.88	

\* Mann-Whitney U

**Table 3. Comparison of Hung PSS, DASS-21, CES-D scales mean scores between women who attended antenatal classes for childbirth preparation and women who did not**

Scale	Attending of antenatal classes	N	Mean Rank	*p-value
		(n=474)		
Hung PSS (total score)	Yes	75	103.12	<b>0.005</b>
	No	399	75.06	
		(n=477)		
Concerns about maternal role attainment	Yes	75	107.56	<b>0.001</b>
	No	402	74.86	
Concerns about lack of social support	Yes	78	75.12	0.554
	No	399	80.95	
		(n=480)		
Concerns about negative body changes,	Yes	78	113.56	<b>0.000</b>
	No	402	74.09	
		(n=480)		
DASS-21 (depression subscale)	Yes	78	73.54	0.402
	No	402	81.85	
DASS-21 (anxiety subscale)	Yes	78	89.77	0.263
	No	402	78.70	
DASS-21 (stress subscale)	Yes	78	82.98	0.765

	No	402	80.02	
DASS-21 (total score)	Yes	78	83.52	0.716
	No	402	79.91	
		(n=297)		
CES-D	Yes	66	43.75	0.246
	No	231	51.79	

\* Mann-Whitney U

**Table 4. Hung PSS, DASS-21, CES-D scales mean scores of women in relation with their marital status**

Scale	Marital status	N	Mean Rank	*p-value
Hung PSS (total score)	Married	294	72.27	<b>0.000</b>
	Unmarried	90	112.30	
	Cohabitation with the child's father	90	70.33	
		(n=474)		
Concerns about maternal role attainment	Married	297	74.56	<b>0.004</b>
	Unmarried	90	105.23	
	Cohabitation with the child's father	90	72.72	
Concerns about lack of social support	Married	297	71.22	<b>0.000</b>
	Unmarried	90	115.32	
	Cohabitation with the child's father	90	73.65	
Concerns about negative body changes,	Married	300	75.40	<b>0.029</b>
	Unmarried	90	100.67	
	Cohabitation with the child's father	90	77.33	
DASS-21 (depression subscale)	Married	300	78.25	<b>0.000</b>
	Unmarried	90	114.28	
	Cohabitation with the child's father	90	54.23	
DASS-21 (anxiety subscale)	Married	300	82.66	<b>0.001</b>
	Unmarried	90	98.62	
	Cohabitation with the child's father	90	55.18	
DASS-21 (stress subscale)	Married	300	80.22	<b>0.000</b>
	Unmarried	90	109.93	
	Cohabitation with the child's father	90	52.02	
DASS-21 (total score)	Married	300	80.97	<b>0.000</b>
	Unmarried	90	109.78	
	Unmarried	90	49.67	
		(n=297)		
CES-D	Married	207	51.86	<b>0.002</b>
	Unmarried	39	65.62	
	Cohabitation with the child's father	51	30.53	

\* Kruskal-Wallis test

### 5. Hung PSS, DASS-21, CES-D scales correlation

Spearman's rho	DASS-21	DASS-21_stress	DASS-21_anxiety	DASS-21_depression	Hung-Negative_Body_Change	Hung_Maternal_Role	Hung_Lack_Social_Support	Hung
CES-D	,871**	,860**	,817**	,779**	,200*	,499**	,434**	,460**
DASS-21		,914**	,913**	,921**	,284**	,436**	,420**	,502**
DASS-21_stress			,770**	,752**	,220**	,412**	,460**	,491**
DASS-21_Anxiety				,785**	,226**	,466**	,243**	,436**
DASS-21_depression					,330**	,326**	,481**	,465**
Hung_Negative_Body_Change						,605**	,462**	,789**
Hung_Maternal_Role							,271**	,868**
Hung_Lack_Social_Support								,661**

Spearman's rho, \*\*p<0.01, \*p<0.05

As shown in Table 3, when comparing the mean scores of the scales and sub-scales, there was a statistically significant difference, between the scores of women who had attended antenatal education classes and those who had not, for the overall Hung PSS scale's score as well as for the subscales, "concerns about maternal role achievement" and "concerns about negative body changes". Women attending antenatal courses showed higher mean values than women who had not attended such courses (103.12 vs. 75.06, p-value <0.05), (107.56 vs. 74.86, p-value <0.01) and (113.56 vs. 74.09, p-value <0.01) respectively (Table 3).

While comparing the mean values of women's scores, according their marital status, there was a statistically significant difference in the mean values between these groups of women in the Hung PSS scale and in the subscales "concerns about maternal role achievement", "concerns about lack of social support" and "concerns about negative body changes" of the Hung PSS scale, on the DASS-21 scale and the DASS-21 subscale (depression scale), DASS-21(anxiety scale) and DASS-21 (stress scale), as well as CES-D depression scale (p-value<0.01, p-value<0.05, p-value<0.01, p-value<0.05, p-value<0.01, p-value<0.01, p-value<0.01, p-value<0.01, respectively). No statistically

significant differences were found in the comparison of the mean scores of the remaining scales and sub-scales (Table 4).

In the linear correlation of the scores of all the scales, Hung PSS, DASS-21, CES-D and their subscales, with the non-parametric Spearman's rho correlation coefficient, a slight to strong positive correlation was found ( $r = 0.191$  to  $r = 0.921$ ). This increases the reliability of the measurement and the validity of the scales. More specifically, there is a strong positive correlation, between the psychometric tools, CES-D and DASS-21 ( $r = 0.871$ ,  $p < 0.01$ ), which confirms the validity (convergence validity), of these two scales, that measure depression. There is also a very strong positive correlation, between CES-D scale and the DASS-21 subscales, depression ( $r=0.921$ ,  $p<0.01$ ), DASS-21 anxiety ( $r=0.913$ ,  $p<0.01$ ) and DASS-21 stress ( $r=0.914$ ,  $p<0.01$ ).

Regarding Hung PSS subscale, "concerns about maternal role achievement", there is a moderate positive correlation ( $r=0.499$ ,  $p < 0.001$ ) with CES-D depression scale, DASS-21 scale ( $r=0.436$ ,  $p<0.01$ ), DASS-21 depression subscale ( $r= 0.326$ ,  $p<0.01$ ), DASS-21 anxiety subscale ( $r = 0.466$ ,  $p < 0.01$ ) and DASS-21 stress subscale ( $r = 0.412$ ,  $p < 0.01$ ).

There is also a moderate positive correlation, between Hung PSS scale and CES-D depression scale ( $r = 0.460$ ,  $p < 0.01$ ), DASS-21 scale ( $r = 0.502$ ,  $p < 0.01$ ) DASS-21 depression subscale ( $R = 0.465$ ,  $p < 0.01$ ), DASS-21 anxiety subscale ( $r = 0.436$ ,  $p < 0.01$ ) and the DASS-21 stress subscale ( $r = 0.491$ ,  $p < 0.01$ ).

As to Hung PSS subscale, "concerns about lack of social support", there is a moderate positive correlation with CES-D depression scale ( $r = 0.434$ ,  $p < 0.01$ ), DASS-21 scale ( $r = 0.420$ ,  $P < 0.01$ ), DASS-21 depression subscale ( $r = 0.481$ ,  $p < 0.01$ ), DASS-21 anxiety subscale ( $r = 0.466$ ,  $p < 0.01$ ) and DASS-21 stress subscale ( $r = 0.460$ ,  $p < 0.01$ ) (Table 5).

## Discussion

The current study suggested a wider taxonomy for postpartum *emotional disorders*, to incorporate instruments that measure depression, anxiety and stress as well. Some investigators have proposed that numerous postpartum women suffering from psychological disorders, are possibly ignored when the criteria only for depression are used (Fisher, Feekery & Rowe-Murray, 2002; Matthey et al., 2004). These authors consider that it is improper to assume about the wellbeing of postpartum women, as they do not match the norms for depression. This view is mainly important for the possible unfavorable effects of untreated emotional disorders in postpartum women.

Following a wider consideration of *postpartum psychological disorders* in the current study, 150 women (31.3 % of the total sample were detected to have severe or extremely severe depression), 246 women (51.3 % of the total sample were detected to have severe or extremely severe of anxiety) or 174 women (36.3 % of the total sample were detected to have severe or extremely severe of stress) on the DASS-21 (Lovibond & Lovibond, 1995). The CES-D detected 177 out of 297 women (59.6% of the total sample of women who completed this scale) as possibly depressed.

Our findings are not consistent with Miller, Pallant & Negri (2006) who stated that 29% of the total sample was identified to have at least one category of depression, anxiety or stress in the *mild, moderate, severe* or *extremely severe* classifications on the DASS-21 and with Johnson et al. (1992) who found that 30% of postpartum women were psychologically suffering. This

overestimation in our study can be probably explained by the fact that in the above-mentioned studies, participants were between 6 weeks and 6 months postnatally, while our sample included postpartum women between 3 and 4 days after childbirth. This means that in our findings may include the emotional disorder, called "postpartum blues" that usually is present during the first days after labour. According to Henshaw et al. (2004) a mild form of this emotional disturbance can be manifested in 50–80% of newly childbearing mothers in their first few postnatal days. This emotional disturbance usually lasts 3 to 7 days and is commonly self-limiting, however, is considered to be a major risk factor for depression and/or anxiety disturbances later (Reck et al., 2009; Sylven et al., 2011).

More concisely, from the findings of the current study, on the depression subscale of the DASS-21 scale, it was found that women who received treatment to achieve pregnancy, had lower levels of depression than women who did not. This can be attributed to the pleasant result (great desire to achieve pregnancy and eventually achieve that goal).

It is also noted that women who have undergone fertility treatment to get pregnant, had higher concerns about maternal role attainment, in the subscale of the Hung PSS scale, in relation to women who had not received fertility drugs. This can be attributed to the confirmation of the achievement of pregnancy. On the other hand, women who did not receive treatment to achieve pregnancy, showed greater concern about the lack of social support, than women who used fertility drugs, probably because women undergoing fertility treatment, had greater support from their close family environment, especially in Greece, where the family structure is usually broad and extended and therefore family functions are wider.

It has also been found, that women who had been treated with fertility drugs, sought social support to a greater extent, which is expected, given that, especially in Greece, the issue of motherhood is very important, not only for the woman herself, but also for her family and her broader social environment.

When comparing the scores of women who had attended antenatal classes and those who had not, it was found that women who had attended childbirth preparation courses, expressed more

concerns about maternal role attainment in the subscale of the Hung PSS scale and concerns about negative body changes, in the subscale of the Hung PSS scale, than women who had not attended childbirth training courses, probably because they were more aware of the changes resulting from maternity, both in terms of their own body as well as the maternal responsibilities. Regarding the ways of dealing with it, it was found that women who had attended antenatal education used more often escape and distance problem techniques than the women who had not attended antenatal classes.

As far as the comparisons are concerned, according to the marital status of women, it was found that unmarried women had more concerns about achieving their maternal role, losing their social support, and concerns about negative body changes in the subscale of the Hung PSS scale, higher levels of stress and depression than married women and those living with their child's father. This result can be explained by the fact that the presence of the spouse or partner may provide more security and confidence to a woman.

The results of the present study indicate the need to detect women at high risk of stress, in order to make the necessary interventions to prevent more serious psychological disorders, such as postpartum depression. Such groups of high-risk women, according to the present study, are unmarried women, who need interventions for social support as they have higher levels of stress, anxiety and depression than married or women living with their partner/spouse. Women who have undergone fertility treatment, need better preparation for their parental role in order to increase their self-esteem.

In the current study, the sample consisted of low-risk postpartum women, having a single, healthy, and full-term baby, and not having any major postpartum medical disorders. Further research is needed, using sample of high-risk postpartum women, facing medical problems and having infants with complications during the perinatal period.

### Conclusion

The present study focuses attention on the demand for a wider evaluation of postpartum psychological disorders and in the light of prevention and acute intervention. Undetectable maternal stress which has not been treated on

time, may have a considerable consequence on the welfare of both, the mother and her child. The DASS-21 scale, gives the impression to be a convenient instrument for widening the criteria for assessment postpartum emotional disorders that include depression, anxiety and stress. The DASS-21 scale can be considered as a helpful tool for health care professionals to evaluate postpartum women for depression, anxiety and stress and take appropriate care for them. This inventory can be administered concurrently with the Hung Postpartum Stress Scale for the detection of any disturbance experiencing by the postpartum women, regarding their maternal role attainment, the lack of social support and their negative body changes

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