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Ph.D. THESIS SUMMARY

PSYCHOLOGICAL FACTORS INVOLVED IN PREPARTUM AND POSTPARTUM DISTRESS. DEVELOPING AND TESTING THE EFFICIENCY OF AN EVIDENCE BASED PREVENTION PROGRAM

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CHAPTER I. THEORETICAL BACKGROUND

Pregnancy and childbirth are considered normal occurrences in a woman's' life, and are not seen as medical illnesses. Over centuries, throughout the history of the human race, the process of giving birth has not changed. Instead, we acquired greater understanding of it; in consequence, the experience of being pregnant is now richer than ever before. Hereby, pregnancy is more than a biological process; this phenomenon has the capacity to profoundly change a woman, not only from a physical point of view, but also from a psychological one. More than that, it deeply affects both the woman and her partner, and implicitly their relationship.

In time, mental health problems during pregnancy began to be extensively studied and are shown to have many adverse effects on both woman and her baby. Maternal depression is the primary cause of maternal morbidity (Glazener, Abdalla, Stroud, Templeton, Russel, & Naji, 1995). Other implications in case of mental health are: decreased appetite is one often encountered - in case of pregnant women this may be a factor that is associated with negative pregnancy outcome (Zuckerman, Amaro, Bauchner, & Cabral, 1989); smoking is a behavior that may be encountered in pregnant women with high levels of distress during pregnancy (Zuckerman et al., 1989); studies regarding the fetus and its development in case of a mother with high levels of distress (depression or anxiety) also show negative outcomes like lower Apgar scores for physical condition of the neonate lower birth weight, preterm birth, smaller head circumference, and (Crandon, 1979; Dayan, Creveuil, Helicoviez, Herbel, Baranger et al., 2002; Orr, James, Blackmore, & Prince, 2002; Orr & Miller 1995; Steer, Scholl, Hediger, & Fischer, 1992); anxiety during pregnancy has been associated with behavioral problems in case of the child (Davis, Glynn, Schetter, Hobel, Chicz-Demet, Sandman, 2007; Davis, Snidman, Wadhwa, Glynn, Schetter, & Sandman, 2004; O'Connor, Heron, Golding, & Glover, 2003).; patients with increased levels of anxiety or depression also have increased serum cortisol and catecholamine levels, which may affect placental function (Teixeira, Fisk, & Glover, 1999); women with prepartum depression, anxiety and/or stress have higher risk to deliver premature (Dayan, Creveuil, Marks, Conroy, Herlicoviez, Dreyfus et al., 2006), show high rates of spontaneous abortion (Hemels, Einarson, Koren, Lanctot, & Einarson, 2005), preeclampsia (Kurki, Hiilesmaa, Raitasalo, Mattila, & Ylikorkala, 2000) low birth weight / small gestational age in case of their children (Diego, Field, Hernandes-Reif, Schanberg, Khun, & Gonzalez-Quintero, 2009) and they may show growth retardation across their first year of life (Lundy, Jones, Field, Nearing, Davalos, Pietro et al., 1999). Thus, women need to search for interventions in case of these emotional disorders.

To summarize, when speaking about the onset, the continuation and the worsening factors of prepartum or postpartum distress studies show that biopsychological ones have a great implication in each sequence. Thus, any woman that is at risk of developing such disorders should be educated with the purpose of preventing the onset and should be offered appropriate support. The prepartum and postpartum education has to include information regarding the consequences of such emotional disorders during this period of a woman's life. This is of great importance for all the persons involved, both the person that has the disorder and the specialist that offers an assessment procedure and/or an intervention.

1. Psychological adaptation to pregnancy – the case of prepartum and postpartum emotional distress

Pregnancy is considered to be a period of emotional well being for a woman, but besides that there is a large risk to psychiatric illness (Ghodsian, Zajicek, & Wolkind, 1984). The most

prevalent disorders during this period of a women's life are mood and anxiety disorders (Kessler, 1997; Kessler, 2003). The biggest issue regarding the treatment of these emotional problems during pregnancy and afterwards is both the limited amount of information regarding the use of psychotropic medications and the side effects of using them (Petrillo, Nonacs, Viguera, & Cohen, 2005). Thus, many women are stringently advised to discontinue such medications prior to conceive and especially during pregnancy.

1.1. Course of prepartum emotional distress

Modern prepartum care has focused mainly on the detection of medical and obstetric problems, the social and psychological ones being left aside or oversighted. However, during the last two or three decades the detection and treatment of prepartum and postpartum psychological disorders became noteworthy. Furthermore, studies began to research the risk factors that precipitate the prepartum emotional distress and, more than that they suggest that prepartum care should start with a thorough assessment of these psychological problems and with developing a plan to fight the risk factors that have been identified (Culpepper & Jack, 1993).

Psychological disorders during pregnancy

- **Depressive symptomatology.** Diagnosis of prepartum depression is easily missed due to the fact that its symptoms overlap with the signs of pregnancy (e.g., sleep and appetite disturbance, diminished libido, low energy). However, there are several clinical features that draw attention and that differentiate prepartum depression: anhedonia, feelings of guilt and hopelessness, and suicidal thoughts – even if the risk of suicidal actions is low during pregnancy (Appleby, 1991). The World Health Organization has determined that depression affects approximately 50 million people worldwide (Murray & Lopez, 1996). In women, the prevalence of depression is about 20% compared to 10% in men (Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993). The initial episode of depression in women seems to often occur in the childbearing years (Burt & Stein, 2002), they being particularly prone to experiencing depressive symptomatology during the vulnerable periods of pregnancy, postpartum, pregnancy loss, and infertility (Josefsson, Angelsiöö, Berg, Ekström, Gunnervik, Nordin et. al., 2002).
- **Anxious symptomatology.** There are studies supporting that the rates of anxiety are higher during pregnancy than after delivery (Heron, O'Connor, Evans, Golding, & Glover, 2004), highlighting the importance the prepartum problems should receive. Regarding the prevalence of prepartum anxiety, the data are limited. The most frequent symptoms are those of panic disorder, 44% of women experiencing panic symptoms (Cohen, Ansara, Schei, Stuckless, & Stewart, 2004), many women having the onset of panic disorder during the puerperium (Wisner, Peindl, & Hanusa, 1996). In case of obsessive compulsive disorder (OCD) during pregnancy there are few systematic studies. (Williams & Koran, 1997; Maina, Albert, Bogetto, Vaschetto, & Ravizza, 1999; Neziroglu, Anemone, & Yaryura – Tobias, 1992; Williams & Koran, 1997; Sichel, Cohen, Rosenbaum, & Driscoll, 1993).
- **Eating disorders in pregnancy.** One of the most significant changes that are strongly related to being pregnant and which requires good coping methods for future mothers is that they have to face size increase, changes in body shape and weight, all resulting in potential significant changes of their body image. Pregnancy is a time when most women experience benign disturbances in their normal eating pattern (Dickens & Trethowan, 1971). In most cases these disturbances remit after delivery. But there is the possibility in some cases to change into more serious, chronic eating disorders, such as bulimia nervosa or anorexia nervosa, both may also occur during pregnancy (Weinfeld, Dubay, Burchell, Millerick, & Kennedy, 1977).

- **Other types of symptoms**. Bipolar disorder is also mentioned in several studies, even if it is not intensively researched and described in case of pregnant women (Cohen & Nonacs, 2005). The juxtaposition of pregnancy and psychotic symptoms puts the mother at high risk for poor fetal outcome, including stillbirth, preterm delivery, low birth weight, and infant death because of a low capacity of the mother in obtaining appropriate and even necessary prepartum care and also because of her possible inability to cooperate with caregivers during delivery (Miller, 1990; Spielvogel & Wile, 1992; Wrede, Mednick, Huttunen, & Nilsson, 1980).

1.2. Course of postpartum emotional distress

The first postpartum months, despite their positive aspects, may be very stressful. Thus, the mothers often feel vulnerable, sad, inadequate and even anxious of depressed. Henshaw (2003) asserts that up to 85% of women experience some type of mood disorder during the postpartum period. Initially, postpartum psychiatric illness was considered to be part of a group of disorders that were specifically related to childbirth. Consequently, these were diagnosed distinct from other types of psychiatric illnesses. However, further evidence suggest that the affective illnesses that emerge during the postpartum period don't have to be treated distinctly compared with other affective symptoms that occur at other times during a woman's life (O'Hara, Zekoski, Philipps, & Wright, 1990).

Psychological disorders during the postpartum period

There are three categories of postpartum disorders that are considered to be not distinct categories, but existing along a continuum. More specific: 1) postpartum "blues"; 2) postpartum depression and 3) puerperal psychosis, where the first one is the mildest and the last one the severest.

- **The "postpartum blues".** Baby blues or postpartum blues represent umbrella concepts defining a rapid fluctuating mood, anxiety symptoms, tearfulness, irritability, lability, short-fused or sensitive reactions to so-called constructive criticism and additional symptoms as fatigue, inability to sleep, and lack of appetite (Kennerly & Gath 1989; O'Hara, Schlechte, Lewis, & Wright, 1991).
- **Postpartum depression.** Postpartum depression is often minimized and seen as postpartum blues. However, statistics show that 10% to 15% of new mothers experience postpartum depression (Campbell & Cohn, 1991; Cox, Murray, & Chapman, 1993; O'Hara & Swain, 1996). Postpartum depression usually has its onset during the 1-3 postpartum months (Yonkers, Ramin, Rush, Navarrete, Carmody, March et. al., 2001; Stowe, Hostetter, & Newport, 2005), even if there are women that retrospectively report the onset of the symptoms during pregnancy (Josefsson, Goran, Conny, & Gunilla, 2001). A notable fact is that anxiety may be comorbid with postpartum depression. For example, Cohen & Nonacs (2005) found a 30% comorbidity of postpartum depression with anxiety disorders. Other studies regarding general anxiety and depressive symptomatology report ranges from 50%-60% to 90% overlap between symptoms (Kaufman & Charney, 2000).
- **Puerperal psychosis.** This disorder is the severest among postpartum psychological disturbances, affecting 1-2 per 1000 women (Kendell et. al., 1987). The onset of symptoms is at 48-72 hours after delivery and it may be dramatic (Heron, Robertson Blackmore, McGuinness, Craddock, & Jones, 2007).
- **Anxiety disorders in the postpartum period.** A new mother worrying is maybe one of the most common encounters, even in the most desired and planned pregnancies. However, worry may increase as the mother focused obsessively on her new responsibilities and alterations in roles. The

prevalence of anxiety disorder in the postpartum period ranges from 10% to 20% (Stuart, Couser, Schilder, O'Hara, & Gorman, 1998).

2. Perspectives on risk factors in developing prepartum or postpartum distress

2.1. **Risk factors for prepartum distress:** *history of mood and anxiety disorders* (Altshuler, Cohen, Moline, Kahn, Carpenter, & Docherty, 2001; Cohen et. al., 2004a; Cohen, Nonacs, Bailey, Viguera, Reminick, Altshuler et al., 2004b); *familial history of psychiatric illness* (Forty, Jones, Macgregor, Caesar, Cooper, Hough et. al., 2006; McGuffin, Marusic, & Farmer, 2001; O'Hara, 1986); *premenstrual mood changes* (Bloch, Rotenberg, Koren, & Klein, 2006; O'Hara, Schlechte, Lewis, & Varner, 1991); *marital support, the lack of a partner, social support, family support* (Beck, Steer, Ball, & Ranieri, 1996; Beck, 2001; Beck, Records, & Rice, 2006; Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993; Dennis & Ross, 2006; O'Hara, 1987); *physical, mental and sexual abuse* plays a significant role in the onset of perinatal depression (Stewart, 1994); *cultural background* (Small, Lumley, & Yelland, 2003; Zayas, Cunningham, McKee, & Jankowski, 2002); a*n unplanned pregnancy* (Robertson, Grace, Wallington, & Stewart, 2004)*; stressful life events* or *chronic stressors* (Beck et al., 1996; DeMier, Hynan, Harris, & Maniello, 1996; O'Hara, 1986; Robertson, et al., 2004); s*ocioeconomic status* (Beck et al., 1996, O'Hara, 1986; Robertson et.al., 2004; Seguin, Potvin, St-Denis, & Loiselle, 1999; Warner, Appleby, Whitton, & Faragher, 1996); *previous miscarriages or abortions* (Hughes, Turton, & Evans, 1999; Major, Cozzarelli, Cooper, Zubek, Richards, Wilhite et. al., 2000; Neugebauer, 2003); *pregnancy in adolescence* represents other risk factors (Omar, Martin, & McElderry, 2001); *hormonal changes* play a vital role in mood shifts during pregnancy (Steer, Scholl, Hediger, & Fisher, 2004); *nutrition, sensitivity to some prescription drugs, environmental toxin exposure, genetic influences,* and *maternal age* also have to be considered when speaking about risk factors for developing prepartum depression (Robertson et.al., 2004).

2.2. **Risk factors for postpartum distress**

All the risk factors mentioned above hold true for postpartum distress and mood disorders *after* giving birth. Besides these above mentioned, studies report additional risk factors that seem to be the most important for the onset of postpartum distress: *Prepartum depression* and *postpartum blues* (Evans et al., 2001; Henshaw, 2003; Josefsson et al., 2001; Kitamura, Yoshida, Okano, Kinoshita, Hayashi, Toyoda et. al., 2006); *discontinuation of medication* (Cohen et. al., 2006); *medical problems in mother or infant* (Johnstone, Boyce, Hickey, Morris-Yates, & Harris, 2001); *chronic pain after giving birth* (Hiltunen, Raudaskoski, Ebeling, & Moilanen, 2004); *breast infections* (Stein, Cooper, Campbell, Day, & Altham, 1989); *abrupt weaning* (Shakespeare, Blake, & Garcia, 2004).

3. Assessment and diagnosis of prepartum and postpartum distress

Taking into account the large body of research conducted on prepartum and postpartum distress and the fact that the perinatal period is one during which women are very in contact with health services, the next step has been to assert the need for a routinely "screening" for emotional distress (Locicero, Weiss, & Issokson, 1997), both prepartum (Josefsson et. al., 2001) and postpartum (Lee, Yip, Chiu, Leung, & Chung, 2001). Therefore, the importance of early detection and follow-up is stringent.In the literature we can find many screening tools. The following may be a brief selection of them:

3.1. *General assessment tools*: Hamilton Depression Rating Scale (Ancill, Hilton, Carr, Tooley, & McKenzie, 1986); The Beck Depression Inventory (BDI, BDI-II) was created by Aaron T. Beck.

(Beck et. al., 1996); The State Trait Anxiety Inventory (STAIx1 – state and STAIx2 - trait), created by Spielberger, Gorusch, & Lushene (1983).

3.2. *Specific assessment tools*: The ALPHA form (Reid, Biringer, Carroll, Midmer, Wilson, Chalmers et al., 1998); Prepartum Risk Questionnaire – ANRQ (Austin, 2004); Pregnancy Risk Questionnaire – PRQ (Austin, Hadzi-Pavlovic, Saint, & Parker, 2005); developed a scale for diagnosing prepartum and postpartum depression – Edinburgh Postpartum Depression Scale (EPDS) (Cox, Chapman, Murray, & Jones, 1996).

4. Psychological and pharmacological interventions in prepartum and postpartum distress

Unfortunately, prepartum or postpartum distress is not always what it looks like. Why is that? Because in case of pregnancy associated disorders, even women who are severely affected by them can present well and more than that can easily cover their symptoms – the thought that the fetus or the baby is making them sick is not an acceptable one for them. Hereby, if clinicians do not pay attention, they can easily miss a disorder that can have negative consequences both for the mother and the baby. If so, clinicians face some challenges when making recommendations regarding the medicamentary treatment of psychiatric disorders.Taking all this into account how we, then, decide what treatment is needed. In case of women with major depression who are receiving maintenance treatment and who plan to conceive the recommended procedure is to decide, with the clinician, if the treatment has to be prolonged or not. Consequently, in case of medication discontinuation the women have to receive all the information regarding the possibility of relapse (Post, 1992). On the other side, in case of moderate or minor depressive symptomatology, the best decision may be the discontinuation of pharmacologic treatment during pregnancy. Instead, there are studies that support the efficacy of some non-pharmacologic interventions, such as interperasonal therapy (IPT) or cognitive behavioral therapy (CBT) (Cohen & Nonacs, 2005). In a review, Misri and Kendrick (2007) outlined the most used psychotherapeutical interventions in the case of mood disorders and anxiety disorders during pregnancy. As they outlined, the most researched forms of therapy are Cognitive Behavioral Therapy (CBT) and Interpersonal Therapy (IPT). Appleby, Warner, Whitton, and Farangher (1997) found that medication and psychotherapy are equally efficient in reducing postpartum depression symptoms.

4.1. *Cognitive Behavioral Therapy* is one of the most extensively used and researched forms of psychotherapy. CBT constantly adapted for an increasingly wider range of disorders, thus the increase was due to the extension of CBT use (Beck, 1997; Salkovskis, 1997). In case of prepartum and postpartum depression, CBT is used in many clinical trials in combination with other forms of psychotherapy. For example, the National Institute of Mental Health Treatment of Depression Collaborative Research Program (Elkin, Shea, Watkins, Imber, Sotsky, Collins et al., 1989) found IPT, CBT and medication being equally effective in reducing depressive symptoms. Furthermore, since 1989 studies on the effectiveness of different forms of psychosocial interventions started to develop. Hereby, researchers tested different forms of interventions in different combinations having as purpose stress reduction before or after giving birth: non-directive counseling, CBT and psychodynamic psychotherapy (Holden, Sagovski, & Cox, 1989) – all three of them were found to be more effective than standard care. One problem of these studies is that there are few studies that investigate specific mechanisms in case of postpartum depression. Thus, maybe many RCTs strat from erronated or unstudied assumptions. The aim of this dissertation is, first of all, to clarify some of the aspects regarding the mechanisms of change in

case of this specific population and, second of all, to apply the results of these researches in a RCT that compares CBT/REBT with a control group (community care).

4.2. *Interpersonal Therapy* is a time limited form of psychotherapy that has as main focus the improvement of interpersonal relationships or changing one's expectations about relationships (Guthrie, Moorey, Margison, Barker, Palmer, et al., 1999). The difference between this form of therapy and the psychoanalytic one is the focus that it has on present rather than past relationships, it is shorter than psychoanalysis (Field, Deeds, Diego, Hernandez-Reif, & Gauler, 2009). The most important issue regarding investigating the efficiency of IPT is the lack of RCTs – the state of art in studing the efficiency of a psychotherapeutic approach.

4.3. *Other types of interventions* are used for reducing prepartum or postpartum disorders/distress. For example, light therapy – studies show that it has a beneficial effect in treating depression in pregnant women (Epperson, Terman, Terman, Hanusa, Oren et al., 2004; Oren, Wisner, Spinelli, Epperson, Peindl, Terman et al., 2002); other adjunctive therapies such as several types of exercises, massage, herbal treatments, acupuncture (Costa, Rippen, Dritsa, & Ring, 2003); nurse home visiting (Armstrong, Fraser, Dadds, & Morris, 1999); postpartum check-ups (Gunn, Lumley, Chondros, & Young, 1998); interventions led by midwives (Lavender & Walkinshaw, 1998); interventions led by support workers (Morrell, 2000); debriefing (Small, 2000); educational programmes (Svensson, Barclay, & Cooke, 2009; Tam, Lee, Chiu, Ma, Lee, & Chung, 2003).

5. The need for a change in the psychotherapeutical approach regarding prepartum and postpartum distress

Prepartum and postpartum emotional problems have been extensively studied in the last years. What we consider a problem is the lack of integration of all the researches in the field of prepartum and/or postpartum distress. Taking into account the fact that preventive interventions and even some treatments of psychological disorders prior or after giving birth have limited effects, a plausible cause may be the fact that these interventions do not address to essential mechanisms of these problems, or do not address all the existing mechanisms. We believe more research is needed to identify relevant etiological agents for emotional distress during this period of a woman's life. Furthermore, many studies test CBT in combination with other techniques or interventions but there are no studies that research the mechanisms of CBT in case of emotional distress during this period of time (for example, specific irrational patterns or expectancies regarding giving birth). Thus, future research needs to focus both in uncovering other possible mechanisms of change and developing appropriate therapies.

CHAPTER II. RESEARCH AIMS AND OVERALL METHODOLOGY

This research project has two main goals: (1) investigate some less researched factors that have an etiopathogenetic role in the development and treatment of prepartum and postpartum psychological distress (Study 2 and Study 3) and (2) develop a new psychological treatment of prepartum and postpartum psychological distress (Study 4).

Addressing these two goals we created five studies as follows: a. *Study 1* investigated the preventive interventions in postpartum depression using a metaanalitical study; b. *Study 2* investigated response expectancy and response hope in predicting emotional distress and pain when giving birth. Basically, the purpose of this study was to investigate in a prospective design the interrelations among response expectancies and response hopes in predicting emotional distress

and pain in pregnant women facing the moment of giving birth. To research the above mentioned hypothesis the study uses correlation and linear regression; c. *Study 3* focuses on investigating body image and weight gain during pregnancy and their implication in generating emotional distress. The study has two main aims. The first aim is to comparatively examine the pregnant women population with the non pregnant women population with regards to dysfunctional eating beliefs and behaviors. The second aim is to determine if body self esteem and dysfunctional nutritional beliefs and behaviors are mechanism for high levels of depression in pregnant women. The study is a correlational one; d. *Study 4* testes a new preventive intervention of prepartum and postpartum emotional distress. This intervention incorporates techniques and strategies aiming to modify the psychological factors that were found to be relevant in previous studies (for a brief revision see 1.2) and in our studies (Study 2 and Study 3) that test the etiopathogenetic mechanisms. This program was tested in a randomized clinical trial in order to (1) investigate its efficiency and (2) investigate the mechanisms of change. The new treatment was tested against a community care group and patients were randomly assigned to one of the two groups; e. *Study 5* is an application of all the information extracted from our previous studies. More specific, we created a rational and irrational beliefs scale specific to this period. The scale can offer information about the mechanism of distress, helping experts to have an insight for the development of targeted interventions to reduce emotional problems during this specific period of a woman's life. The used methods were correlation and the calculation of Alpha Chronbach.

To summarize, the research project has three major objectives: (1) investigate some of the less unstudied psychological factors that have an etiopathogenetic role in the development and treatment of prepartum and postpartum distress, (2) develop a new preventive intervention that would target these etiopathogenetic factors and that would have long term effects - compared to existing preventive interventions and (3) develop instruments that would ease the work of specialists in the area of obstetrics and gynecology and that would bring better results in case of women with negative emotionality during this period of time.

CHAPTER III. ORIGINAL RESEARCH

Study 1. Preventive Psychosocial Interventions in Postpartum Depression; A Meta - analysis[1]

Introduction

Postpartum depression is an important health issue for many women (O'Hara et al., 1990), this being a widespread - about 10 % - 15 % prevalence (Halbreich & Karkun, 2005; Hobfoll, Ritter, Lavin, & Cameron, 1995; O'Hara et al., 1984; O'Hara & Swain, 1996) and disruptive depressive disorder affecting the lives of new mothers and also of their family members. Postpartum depression often goes undetected due to lack of proper screening or because many women hide their feelings from their social environment (Murray & Cooper, 1999). That is why the early recognition is one of the most difficult challenges regarding this mood disorder. The interventions offered in this case vary depending on severity of the disorder and on mothers' preferences: antidepressants, psychotherapy, support or a combination of these (Leahy-Warren & McCarthy, 2007). The results show that psychosocial interventions are usually preferred by

[1] Article submitted to "Review of Research and Social Intervention", indexed by SCOPUS, Index Copernicus and Central and Eastern European Online Library (CEEOL)

mothers as opposed to antidepressants treatment especially due to safety issues with regard to breastfeeding (Appleby et al., 1997). Considering this, the aim of this study is to estimate the effectiveness of psychosocial preventive interventions in dealing with postpartum depression symptoms.

Method

Selection of studies. Studies included in the present sample were identified from and a computer search of the Medline, PsycINFO, Embase, CINAHL, Cochrane databases by entering the search terms "postpartum depression", "postpartum depression", "prevention", "prepartum", "pregnancy", "prepartum", "prepartum", "prepartum", "birth", "childbirth", "clinical trial", "distress". We also examined the references of earlier reviews in psychosocial prevention of postpartum depression (Dennis, 2005) and we reviewed the reference list of retrieved articles. Initial search yielded 349 articles. Of all these only 15 met our inclusion criteria.

Coding of variables. For each article we coded: **(**1) intervention type (psychotherapy vs. psychosocial); (2) Intervention form (individual vs. group); (3) Sample (risk vs. general population); (4) Specialist (psychologist vs. medical staff); (5) Intervention moment (prepartum vs. postpartum); (6) Length of intervention (short: 1 to 6 sessions vs. long: 7 or more than 7 sessions); (7) Intervention intensity (0,5 – 1 hour vs. 2 hours – more than 2 hours).

Derivation of effect sizes. Effect sizes were calculated according to published procedures (Hunter, Schmidt, 1990). In the calculation of effect sizes we used only instruments that explicitly measure depression, such as Edinburgh Postpartum Depression Scale (Cox, Holden, & Sagovsky, 1987), Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) or Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). If more than one depression measure was used, the mean of the effect sizes was calculated so that each study had only one effect size for this indicator. Briefly, the differences as regards the mean between prevention groups and control groups were calculated for each study and then divided by the SD. To estimate the overall effect of prevention treatments for postpartum depression, the 95% confidence interval (CI) for the difference between prevention control groups was calculated and then compared to zero. Next, an identical statistical procedure was used to find if there are differences concerning the efficacy of some categories that we found, in the literature, to be important regarding psychosocial interventions. To determine if effect sizes differed based on selected coding variables (intervention form (individual vs. group), sample (risk vs. general population), specialist (psychologist vs. medical staff), etc.) a one-way ANOVA was performed to assess whether there were any significant differences.

Results

Description of Studies. In the 15 included studies, there were 7848 participants: 4232 in the psychosocial treatment conditions and 3579 in the control conditions. In 10 studies participants were risk population and in 5 they were general population. Concerning the intervention, in 5 studies this was a psychotherapeutic one and in 10 it was psychosocial; in 6 of the studies it was a group intervention and in 10 studies it was an individual intervention (we found one study with two types of intervention: one in group format and one individual); the specialist that offered the interventions was a psychologist in 3 studies and in 12 studies the intervention was delivered by the medical staff; the intervention was held before birth in 5 studies and after birth in 10 studies. As for duration of the intervention, the shortest intervention had one meeting and the longest had 12 meetings. Taking this into account we considered the length of the intervention to be short if it

had 1 to 6 sessions and long if it had 7 to 12 sessions. Five studies had a long form and 10 studies a short form.

Overall effects at Posttest. Regarding the first hypothesis, analysis revealed no significant benefit of psychosocial interventions in postpartum depression (D = 0.16, SD of D = .36). Ninety-five percent CIs indicated that this effect size do not differ from zero ([-1.92–2.24], $p < 0.05$) this meaning that the effect size is not significant. We reran the analysis correcting for study sample size based on published procedures (13) because bias can be introduced into effect size calculations through variations in individual study sample sizes (e.g. studies that used 1503 (17) subjects and studies that used 37 subjects (18). Both the mean difference and the variation of difference were adjusted for variation in study sample sizes (D and Var$D$). Results revealed a smaller weighted effect size (D = 0.13; Var$D$ = 0.07) (18) and, again the 95% CI indicated that D did not differ from zero ([-0.02–0.28], $p < 0.05$). In other words, these results indicated that psychosocial preventive interventions conditions demonstrated no better outcomes than control conditions.

Because the overall effect of psychosocial interventions in postpartum depression was not a significant one, it was interesting to examine other outcome categories (mentioned above in the "coding of variables" section) to see if we could find differences among them, differences that could help creating a better psychosocial intervention. None of these analysis shows a significant effects size but we found some differences between some categories that might offer us some explanations for the small overall effects size, or might help us in calibrating further interventions. Concisely, results support that a preventive intervention has better effects on a. general population (D=.21) compared to risk population (D=.03), b. when the intervention is ran by a psychologist (D=.31) compared to medical staff (D=.13), c. when it is conducted prepartum (D.=22) compared to postpartum (D=.13), d. when it is driven for a longer period of time – more than 6 session (D=.34), e. when the intervention is intense – more than 1 hour (D=.25). However, ANOVA analysis did not reveal any significant effect, namely there are no differences between chosen categories.

Discussion

The present meta-analysis revealed, first of all, that there is no significant effect size regarding the effectiveness of psychosocial interventions that are used for the prevention of postpartum depression. This suggests that, in a general sense, none of these preventive interventions are a powerful tool for addressing signs and symptoms of postpartum depression - psychosocial preventive interventions did not help the majority of women reduce their symptoms. Thus, the added studies from 2005 until this present study did not help in growing the effect size of psychosocial preventing interventions in case of postpartum depression. However, even if we have no significant effect size for any outcome category there are a few categories on which we believe would be important to focus further. This positive trend might suggest that we can modify our intervention – taking all these information into account, with the purpose of obtaining a larger effect size of psychosocial preventive interventions in post-partum depression. Therefore, our intervention tested in Study 4 respected all these results.

Study 2. Response expectancy versus response hope in predicting birth-related emotional distress and pain[2]

Introduction

According to the scientific literature (Kirsch, 1990, 1999), expectancies are strongly involved in both volitional (see Rotter, 1954) and non-volitional behavioral outcomes (see Montgomery et al., 2003; David, Montgomery, Stan, DiLorenzo, & Erblich, 2004; Montgomery, David, DiLorenzo, & Schnur, 2007; Montgomery, Schnur, Erblich, Diefenbach, & Bovbjerg, 2010). Regarding the individuals' hopes studies (see Montgomery et al., 2003) show that they are important determinants of psychotherapy outcome, personal achievement, problem-solving abilities and health-related concerns (Frank, 1973; Snyder, Sympson, Michael, & Cheavens, 2001). Indeed, a new, programmatic research line has differentiated between people's response expectancies and their response hopes regarding non-volitional outcomes (see David et al., 2006; David et al., 2004; Montgomery et al., 2003). Response expectancies and response hopes concerning birth have not yet been studied in pregnant women, even though studies show that up to one third of women report labor as having been traumatic and having feared that they or their baby could die or be seriously injured (Creedy, Shochet, & Horsfall, 2000; Soet, Brack, & Dilorio, 2003).

We investigate response expectancies and discrepancy between response expectancies and response hopes in predicting (1) emotional distress and (2) self-reported pain, in the context of giving birth. We exploratory introduced self-reported labor hours as a secondary outcome, as previous research has shown that when experiencing emotional distress, a person is under the impression that time passes more slowly (Sucală, Ștefan, Szentagotai-Tătar, & David, 2010).

Method

Participants. A total of 54 Romanian pregnant women volunteered to participate in the study (mean age=29.33, SD=4.770).

Instruments

Predictor Variables. Participants' response hopes and response expectancies were assessed with face valid visual analogue scales (VAS) for each of the three non-volitional outcomes: (1) relaxed, (2) distressed and (3) pain. For computing the discrepancy between response hopes and response expectancies we subtracted the score of response expectancies from the score of response hopes; we called this score a discrepancy score (see also David et al., 2006).

Outcome Variables. 1. Emotional distress related to giving birth. This outcome (evaluated pre-birth) was measured using The Profile of Mood States-Short Version – POMS-SV (Shacham, 1983) that measures transient levels of distress; 2. Pain related to giving birth was measured using the McGill Pain Questionnaire - MPQ (Melzack, 1975); 3. Self-reported number of labor hours.

Procedure. Participants completed two assessments: 1. Time one (pre-birth): two to five days before giving birth; 2. Time Two (post-birth): at the most two weeks after giving birth

[2] This study was accepted for publication

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The authors have contributed to the manuscript as follows:

Anton, R. - data collection and analysis, manuscript writing

David, D. - design, data interpretation, manuscript structure

participants had to fill in retrospective outcome measures for pain (MPQ) and also to report the estimative number of labor hours.

Results

Response hopes were not related to any outcome. In case of response expectancies, we found the following results: (1) In the case of the pain response expectancy predictor variable, the regression model is significant only for one criterion: self-reported pain (β=.368, $F(1, 46)=.7.226$, $p=.010$). The coefficient of determination (strength of association) is $R^2=.136$, which means that 13 % of the variance of self-reported pain is explained by the expectancy for pain; (2) None of the regression models having relaxation response expectancy as predictor are significant; (3) None of the regression models having emotional distress response expectancy as a predictor are significant.

The relationship between (1) discrepancy score with its three alternatives: (a) pain, (b) relaxation, and (c) emotional distress and (2) the criterion/outcome variables: (a) emotional distress (measured before birth), (b) self-reported pain (measured retrospectively, after birth), and (c) self-reported labor hours (measured retrospectively, after birth) is presented as follows:

(1) In the case of the regression model that took into account the discrepancy score for pain, results are significant for all three criterion variables: (a) discrepancy score for pain and emotional distress measured before birth is significant ($\beta=-.449$, $F(1, 46)=11.583$, $p=.004$), with a coefficient of determination of $R^2=.201$. Thus, 20 % of the variance of emotional distress is explained by the discrepancy score for pain; (b) discrepancy score for pain and self-reported pain is significant ($\beta=-.420$, $F(1, 46)=9.841$, $p=.003$), with a coefficient of determination of $R^2=.176$. Thus, 17 % of the variance in self-reported pain is explained by the discrepancy score for pain; (c) pain and self-reported labor hours the model is also significant ($\beta=-.464$, $F(1, 46)=12.628$, $p=.001$), with a coefficient of determination of $R^2=.215$. Thus, 21 % of the variance of self-reported labor hours is explained by the discrepancy score for pain.

(2) In the case of the discrepancy score for relaxation, there are two significant regression models: (a) the one between the discrepancy score for relaxation and emotional distress ($\beta=.410$, $F(1, 46)=9.322$, $p=.004$), with a coefficient of determination of $R^2=.169$, which means that 16 % of the variance of emotional distress is explained by the discrepancy score for relaxation, and (b) the regression model between the discrepancy score for relaxation and self-reported labor hours ($\beta=.416$, $F(1, 46)=9.604$, $p=.003$), with a coefficient of determination of $R^2=.173$, which means that 17% of the variance of self-reported labor hours is explained by the discrepancy score for relaxation.

(3) In the case of the discrepancy score for emotional distress there is only one significant regression model, the one regarding self-reported labor hours ($\beta=-.435$, $F(1, 46)=10.719$, $p=.002$), with a coefficient of determination of $R^2=.189$, which means that 18% of the variance of self-reported labor hours is explained by the discrepancy score for emotional distress.

Posthoc analyses and results

These results were not predicted in our hypotheses, but reflect interesting aspects that deserve careful consideration. Thus, we found a significant regression model for emotional distress and self-reported labor hours ($\beta=.330$, $F(1, 46)=6.344$, $p=.015$), with a coefficient of determination of $R^2=.109$, which means that 10 % of the variance of self-reported labor hours is explained by the emotional distress perceived before birth.

Discussion

The present study supports the contribution of response expectancies and of the discrepancy between response hopes and response expectancies to (1) women's emotional distress levels prior to giving birth, (2) self-reported pain levels evaluated after birth, and (3) self-reported labor hours (evaluated after birth). These results confirm prior investigations in the area (David et al., 2006) while focusing on a different population (i.e., pregnant women prior to giving birth), and on additional outcomes (i.e., pain).

In the case of the first set of predictors - response expectancies for pain, emotional distress, and relaxation - our results show pain expectancy predicts perceived pain. Regarding the second set of predictors, the discrepancy score, results confirm prior investigations in the area (David et al., 2006). Our results indicate that a high discrepancy between response hope and response expectancy regarding relaxation leads to an elevated level of emotional distress in child birth, while also influencing the perceived length of labor. Also, results indicate that a high discrepancy between response hope and response expectancy regarding pain decreases (1) emotional distress, (2) self-reported pain, and (3) self-reported number of labor hours, thus confirming our predictions. And finally, the discrepancy between response expectancies and response hopes in the case of emotional distress results in a smaller number of perceived labor hours.

From another perspective, the study draws attention to some new, understudied aspects which could have important clinical implications, such as the impact of emotional distress on self-reported labor duration.

To summarize, the present study supports the contribution of response expectancies and of the discrepancy between response hopes and response expectancies to mothers' emotional distress (prior to giving birth), pain, and perceived labor hours. We believe that the results have both theoretical and practical implications and the topic deserves future investigations.

Study 3. Body image and weight gain during pregnancy; Implications for emotional distress

Introduction

World Health Organization (WHO) asserts that in 2005, approximately 1.6 billion adults (age over 15 years) were overweight, of which, at least 400 million were obese. One of the most significant changes that are strongly related to being pregnant and which requires good coping methods for future mothers is that they have to face size increase, changes in body shape and weight, all resulting in potential significant changes of their body image. A question often encountered in the case of mothers-to-be is "How much weight should I gain while I am pregnant?" (Rasmussen & Yaktine, 2009). But, the real question is if women are aware that being obese during pregnancy can put them and their child at risk for severe pregnancy and health-related complications (Andreasen, Andersen, & Shantz, 2004). Furthermore, studies show that overweight and obesity are related to some emotional problems, like depression and anxiety (Goodman & Whitaker, 2002; Jorm et al., 2003; Strine et al., 2008; Stunkard et al., 2003).

Taking into account the studies on weight gain, pregnancy and emotional problems, we have decided to research the link between weight – pregnancy – emotional problems during pregnancy. In summary, the study has two main aims. The first aim is to comparatively examine the pregnant women population with the non pregnant women population with regards to dysfunctional eating beliefs and behaviors. Thus, we expect these two populations to differ from

each other considering the variables mentioned before. The second aim is to determine if body self esteem and dysfunctional nutritional beliefs and behaviors are mechanism for high levels of depression in pregnant women. Thus, we expect that pregnant women with low body self esteem and dysfunctional eating beliefs and behaviors have higher depression levels.

Method

Participants. 218 pregnant women and 180 non pregnant women volunteered to participate in the study.

Measures: 1. Beck Depression Inventory II (BDI-II) (Beck et. al., 1996); 2. Profile of Emotional Distress (PED) (Opriș & Macavei, 2007), 3. Three Factors Eating Questionnaire Revised 21 (TFEQ-R21) (Cappeleri, Bushmakin, Gerber, Leidy, Sexton, Lowe et al, 2009); 4. Irrational Food Beliefs Scale (IFBS) (Osberg, Poland, Aguayo, & MacDougall, 2008); 5. Body self esteem scale (BSES) (Franzoi & Shields, 1984); 5. Body mass index.

Results

The first part of our results provides information about cognitive mechanisms, behaviors and self esteem comparisons and correlations between pregnant and non-pregnant women– hypothesis 1.

1. Irrational food beliefs and dysfunctional behaviors

First of all, we analyzed the correlations between irrational food beliefs and dysfunctional eating behaviors for pregnant and non-pregnant women. Table 1 summarizes the results:

Table 1.

Correlational analyses between irrational food beliefs and dysfunctional behaviors in pregnant women and in non-pregnant women.

Population	Pregnant women	Non-pregnant women
	IFBS	
Behavior		
UE	.284, *p*=.000	.554, *p*=.000
EE	.291, *p*=.000	.594, *p*=.000
CR	.078, *p*=.251	-.088, *p*=.237

Note: UE – unconditional eating; EE – emotional eating; CR – cognitive restraint; IFBS – Irrational Food Beliefs Scale.

Results show that, when we speak about non-pregnant women we see a positive correlation between irrational food beliefs (IFBS) and two dysfunctional eating behaviors that were measured with TFEQ-R21: unconditional eating and emotional eating. We have similar, but smaller correlations, for pregnant women.

2. Weight and dysfunctional eating behaviors

As regards the correlations between weight and dysfunctional eating behavior we see some differences between the two groups. These differences are shown in Table 2.

Table 2.
Correlational analyses between weight and dysfunctional eating behaviors in pregnant women and in non-pregnant women.

Population	Pregnant women	Non-pregnant women
		BMI
Behavior		
UE	.039, *p*=.618	.285, *p*=.000
EE	.092, *p*=.240	.239, *p*=.001
CR	.344, *p*=.001	-.040, *p*=.517

Note: CR – cognitive restraint; UE – unconditional eating; EE – emotional eating; BMI – Body Mass Index.

3. Body self esteem and pregnancy

When speaking about body self esteem we found pregnant women to have a lower body self esteem compared to their non-pregnant counterparts [*t*(395)=- 7.214, *p*=.000] and, moreover, overweight pregnant women have a lower self esteem than overweight non-pregnant women [*t*(173)=-3.758, *p*=.000]. We found similar results when we compared normal weight pregnant women with normal weight non-pregnant women – the pregnant population has lower self esteem [*t*(100)=-4.800, *p*=.000] (see Figure 1).

4. Eating behaviors and pregnancy

a. When we compared the two groups regarding the three types of eating behavior we found differences for (1) cognitive restraint [*t*(100)=- 2.536, *p*=.013] and (2) uncontrolled eating [*t*(100)=2.366, *p*=.020]. The result for emotional eating [*t*(100)=.096, *p*=.924] was not significant. Thus, pregnant women with normal weight have lower levels of CR and UE than non-pregnant normal weight women do (see Figure 2).

b. After this result we investigated in-group differences between pregnant, normal weight women and pregnant, overweight women regarding the three types of eating behavior. The results show that pregnant women with a normal weight have lower scores regarding CR compared to pregnant women that are overweight [*t*(215)=-4.507, *p*=.000]. There are no differences regarding the other two categories of eating behaviors: emotional eating [*t*(215)=-.133, *p*=.894] and uncontrolled eating [*t*(215)=.284, *p*=.776].

Discussion

In summary, the present study supports the idea that eating behavior and beliefs are very important elements to be introduced in prepartum psychological programs to reduce emotional distress in pregnant women. Hence, nutrition counseling for pregnancy that is narrowly focused on weight gain and dietary recommendations is unlikely to be successful unless the broader context of a woman's psychological well-being is considered.

3.1. General conclusions to the theoretical implications of the research project

The aim of this section was investigating the efficiency of preventive interventions in postpartum depression and testing some unresearched sections regarding pregnancy and prepartum and postpartum emotional distress. Thus, our main results show that:

(1) Psychosocial interventions that are offered at this moment for preventing postpartum depression do not have effective results. Our study shows that an intervention has better results if: (a) it targets general population not population that is at risk of developing pre or postpartum emotional disorders; (b) it is lead by a psychologist not by medical staff; (c) it is lead prepartum;

(d) it has a long form (more than 6 sessions); (e) it is lead intensively (more than two hours per session).

(2) The second study in this chapter investigated response expectancy and response hope in predicting emotional distress and pain when giving birth – two new concepts that were not yet been studied on this population. The results of this study support the contribution of response expectancies and of the discrepancy between response hopes and response expectancies to (a) women's emotional distress levels prior to giving birth, (b) self-reported pain levels evaluated after birth, and (c) self-reported labor hours (evaluated after birth) – these being essential concepts in developing a new preventive program.

(3) The third study in the theoretical section of this research project aimed to (a) comparatively examine the pregnant population with the non pregnant women population with regards to dysfunctional eating beliefs and behaviors and, (b) to determine if body self esteem and dysfunctional nutritional beliefs and behaviors are mechanisms of high level of depression in pregnant women. The results show that eating behaviors and beliefs are essential elements that have to be introduced in prepartum programs that target to reduce the emotional distress in pregnant women.

In summary, all previous tested concepts are important to be introduced in future preventive psychological programs with regards to prepartum and postpartum emotional distress.

3.2. Practical implications of the research project

3.2.1. Designing an etiopathogenetic preventive psychological program for prepartum and postpartum emotional distress

Prepartum and postpartum disorders are associated with the presence of numerous, serious consequences both for the mother and the baby; the severest ones being maternal suicide or infanticide (Chandra, Venkatasubramanian, & Thomas, 2002; Lindahl, Pearson, & Colpe, 2005; Spinelli, 2004). Motivated by such serious consequences many organizations and research departments studied the effectiveness of many types of intervention programs regarding pregnancy associated mental health issues. Some of them have beneficial results, but some of them do not (see the effect sizes from Study 1). Many studies tried to identify psychosocial and psychological factors that are relevant to women with pregnancy associated emotional problems; for example: the woman's history of mood and anxiety disorders (Altshuler et al., 2001; Cohen et. al., 2004a, 2004b); familial history of psychiatric illness (Forty et. al., 2006; McGuffin et al., 2001; O'Hara, 1986); marital support, the lack of a partner, social support, family support (Beck, 1996; Beck, 2001; Beck, 2006; Dennis & Ross, 2006; O'Hara, 1987; Collins et al., 1993), etc. Thus, because this period of time represents a major life event that affects not only the mother but also her partner, baby, extended family and social environment, specialists should focus on creating the best intervention program for preventing emotional distress during this period of a woman's life.

There is no specific treatment for negative emotionality in case of pregnancy or giving birth. CBT is the most researched and empirically validated therapeutical intervention in case of most emotional disorders; hereby our preventive programs will have as basis REBT principles (Ellis, 1958). Briefly, the core of REBT refers to the interpretation that people are not affected directly by adverse events, but by the way they interpret those events, in relation to their beliefs about themselves, others, life and world in general (Ellis, 2001). The central tenet of REBT is the ABC model.

For enhancing our preventive intervention we have conducted a series of studies that tried to identify specific psychological factors – others than the ones extensively studied in the

literature, which we consider relevant to such preventive psychological program (see the above mentioned studies).Having clarified what we want to change (outcome variables) and the mechanisms through which we want to obtain that change (hypothesized mediators), we moved on to designing how to obtain the change. More specific we developed the strategies and the techniques that we could use in a preventive psychological intervention regarding prepartum and postpartum emotional distress.

3.2.2. Designing a new rational emotive and behavioral preventive intervention of prepartum and postpartum emotional distress

After examining the characteristics of the interventions developed until our studies we kept some of them into our new preventive intervention, but we also added new components that we considered to be important.

Treatment duration and format. We chose a 9 weeks duration for our program and a mainly group format. We also included an initial individual session, as we consider it would provide a better setting for assessment and conceptualization session.

Innovative components. The innovative components throughout this program are the fact that, in a structured manner, all the important activators in a pregnant woman's life are disputed using REBT techniques. More than that, women are offered a detailed analysis of all their negative emotions and patterns of thinking. With these two components - detailed assessment and structured intervention, we think that we will have more beneficial effects compared to other interventions that were tested in randomized clinical trials.

First of all, participants will learn in detail the two main REBT models: cognitive ABC and behavioral ABC. Afterwards, the intervention program will focus on pregnancy and the emotional problems that may appear. From a REBT perspective, they will discuss about fetal movements, more specific the lack of fetal movements, an introduction to physical aspect and the changes that may appear in the first months of pregnancy, etc. The next main topic is on delivery and the immediate period after giving birth. Topics like bleeding, postpartum pain, urination difficulties, excessive exudation, fever, lactation and if the baby doesn't eat as they wish or think he should. These are only few examples that will be approached trough REBT techniques. More specific they will be discussed in terms of catastrofizing, low frustration tolerance, self downing and "musts".

After each session, each participant will receive a guide with the most important topics and their REBT approach. More than that, each session will be followed by homework tasks.

Study 4 - A randomized clinical trial of a new preventive rational emotive and behavioral therapeutical program of prepartum and postpartum emotional distress

Introduction

Many emotional experiences that parents and especially women have during pregnancy and after giving birth can gain momentum and become emotional problems that are difficult to deal with. The question of managing psychiatric illness in pregnancy often was not *how* to treat, but *if* to treat it at all. Why is that? Because the question that arises is: how to treat illness in the mother without causing harm to the fetus (Birndorf & Sacks, 2008). Thus, when managing psychiatric illness in pregnancy, specialists must have three main goals: 1. minimize fetal exposure, 2. limit risk of maternal psychiatric illness, and 3. reduce risk of relapse. In a literature review, Misri & Kendrick (2007) outline all the important interventions that are offered for treating mood disorders and anxiety disorders during this period of time. They report that the interventions with the best efficiency are: cognitive behavioral therapy (Chabrol, Teissedre, Saint – Jean, Teisseyre, Roge, &

Mullet, 2002) and interpersonal therapy (Spinelli, 2004; Spinelli & Endicott, 2003; O'Hara et al., 2000). Regarding the prevention of postpartum depression, clinical trials failed to reveal a positive effect (Dennis, 2005). Taking all these into consideration, we have chosen to create and test in a clinical trial a rational emotive and behavioral preventive intervention program for emotional prepartum and postpartum emotional distress.

General objectives:

Our main objectives for this randomized controlled trial were:

I. To test the effectiveness of a preventive psychological program of prepartum and postpartum emotional distress which we expect to lead to better results than current prevention programs that target specific pre or postpartum disorders (i.e. postpartum depression) against community care as control group.

II. To explore the mechanisms of change responsible for our results. This is a fundamental part of our research.

Taking into account our first objective, we conducted an outcome study analysis. We investigated the emotional distress, conceptualized in four outcomes: negative emotionality, depression, anxiety and perceived physical health. Thus, we designed our treatment aiming to modify these outcomes. We introduced in our preventive program both specific strategies (see previous chapters) and previously studied strategies that were found to be significant; we expect these strategies to have an important role in reducing the outcomes in the experimental treatment condition compared to control condition – in our case community care.

Our general expectantions related to outcomes are:

A. Primary outcomes:

1. Participants in the experimental group will have lower levels of emotional distress compared to participants in the control condition, at the end of intervention (prepartum) and postpartum (three months after giving birth).

2. Participants in the experimental group will have lower levels of depression compared to participants in the control condition, at the end of intervention (prepartum) and postpartum (three months after giving birth).

3. Participants in the experimental group will have lower levels of anxiety compared to participants in the control condition, at the end of intervention (prepartum) and postpartum (three months after giving birth).

B. Secondary outcome:

4. Participants in the experimental group will have better perceived health compared to participants in the control condition, at the end of intervention (prepartum) and postpartum (three months after giving birth).

The second step was a theory of change study. Identifying factors that lead to or facilitate change is extremely important for the development of etiopathogenetic treatments. Based on the extensive literature in the area of depression, anxiety and perceived physical health as regards to mediators in REBT and based on our previous studies (see Study 2 and Study 3), we considered the same predictors for all our outcomes: irrational beliefs, dysfunctional attitudes, marital relationship, body self esteem, automatic thoughts and unconditional self acceptance. We expect changes in our outcomes (depression, anxiety, negative emotionality) to be related to changes in general irrational beliefs, body self esteem, automatic thoughts, dysfunctional attitudes, marital relationship and unconditional self acceptance. Previous studies we have conducted (see chapter 2 and chapter 3) showed significant relationships between body self esteem and depression and between expectancies and negative emotionality.

We expect changes in all the outcomes taken into account to be related to changes in irrational general beliefs, automatic thoughts, dysfunctional attitudes, body self esteem, unconditional self acceptance and marital relationship.

Therefore, our hypotheses are:

A. Primary mechanisms of change outcome:

1. For participants in the experimental treatment group, the significant changes in depression, anxiety, negative emotionality as compared to control, will be related to significant changes in irrational general beliefs.

2. For participants in the experimental treatment group, the significant changes in depression, anxiety, negative emotionality as compared to control, will be related to significant changes in automatic thoughts.

3. For participants in the experimental treatment group, the significant changes in depression, anxiety, negative emotionality as compared to control, will be related to significant changes in dysfunctional attitudes.

4. For participants in the experimental treatment group, the significant changes in depression, anxiety, negative emotionality as compared to control, will be related to significant changes in unconditional self acceptance.

B. Secondary mechanism of change outcome:

5. For participants in the experimental treatment group, the significant changes in depression, anxiety, negative emotionality as compared to control, will be related to significant changes in body self esteem.

6. For participants in the experimental treatment group, the significant changes in depression, anxiety, negative emotionality as compared to control, will be related to significant changes in marital relationship.

Method

Participants. A total of 48 patients participated in this randomized clinical trial (25 in the control group and 23 in the experimental group). Patients were from the Cluj district, Romania. An initial sample of 48 participants entered in the study (23 in the experimental treatment group and 25 in the control). We had 4 dropout patients in the experimental group and 4 dropouts in the control group (see figure 1 below). Drop out patients were defined as having participated in at least one session and less than five weeks (middle of treatment). The enrollment in the experimental group was made voluntarily. Our exclusion criteria were: prior diagnosis of any mental disorder and prior attending to psychotherapy. These exclusion criteria were selected for a better internal validity of the study.

Therapists and evaluators. Four therapists with a formal training in Rational Emotive and Behavioral Therapy provided the intervention. Manuals describing detailed guidelines for the treatment condition were available for each therapist. Sessions were taped and listened to - at least one session for each therapist to assess protocol adherence. In addition, monthly meetings were held to discuss protocol adherence and possible difficulties encountered by therapists in their weekly sessions. In addition to the therapists, assessments were carried out by five psychologists. These therapists were independent from the study and blinded to treatment assignment.

Procedure. Participants were recruited via Internet announcements and referred by their gynecologists or by their coaches from their prepartum classes to take part in some scientific studies that have as main purpose the development of a preventive psychological program regarding prepartum de postpartum emotional distress. After the initial assessment, participants in

the control group were informed that they will receive periodical evaluations of their emotional state without receiving a specific psychological intervention. However, they were told that they can participate to any intervention they wish (community care). Participants that remained in the control group were interested in receiving those periodical evaluations and volunteered to complete them. Participants in the preventive intervention group were called to participate to the second session.

Trial conditions. Participants who met the inclusions criteria were included in a 9 weeks intervention program.

1. *Control group – community care*, received no intervention but they could participate to every class they wanted to participate for their participation. They participated voluntarily to this study by completing the questionnaires at three moments in time.

2. Experimental group - Participants that met the inclusion criteria were included in a 9 weeks REBT based intervention program. The intervention was delivered mainly in a group format with only one individual session at the beginning of the intervention. Each session lasted 90 minutes (see Table 3).

Table 3.
Experimental group structure

WEEK	SESSION THEME	FORMAT
1	Initial evaluation	Individual
2	Presenting the two main models of REBT: cognitive ABC and behavioral ABC (exercises)	Group
3	Presenting the two main models of REBT: cognitive ABC and behavioral ABC; exercises; role play	Group
4	Pregnancy, the negative thoughts about what could happen during pregnancy	Group
5	Giving birth	Group
6	The relationship	Group
7	The immediate postpartum period (guide with common worries six weeks after giving birth)	Group
8	The physical aspect; body self esteem	Group
9	Booster session - role play for hypothetical future problems	Group

Measures. Masking was maintained for the measures by means of independent evaluators. Except for the assessment phase, independent evaluators did not take part in any other phase of the study and had no other contact with the patient outside of this assessment session. Specific instructions were provided to the patients, therapists, and the independent evaluators not to disclose treatment assignment.

1. *Outcome measures:* a. The Profile of Mood States-Short Version – POMS-SV (Shacham, 1984); b. Beck Depression Inventory II (BDI-II) (Beck, 1983); c. The State Trait Anxiety Inventory (STAIx1 – state and STAIx2 - trait) (Spielberg et al., 1995); d. Health Status Inventory Short Form (SF-36) (Hays et al., 1998).

2. *Mechanisms of change measures:* a. General Attitudes and Beliefs Scale – short version (GABSs) (Lindner, Kirkby, Wertheim, & Birchm, 1999); b. Unconditional Self Acceptance Questionnaire (USAQ) (Chamberlain & Haaga, 2007); c. Automatic Thoughts Questionnaire

(ATQ) (Hollon & Kendall, 1980); d. The Dysfunctional Attitude Scale (DAS) (Weissman & Beck, 1978); e. Body self esteem scale (BSES) (Franzoi & Shields, 1984); f. Bids for Connection: The Building Blocks of Emotional Connection (Gottman & Declaire, 2001).
Participants completed these measures at four points in time: (a) baseline; (b) middle of treatment; (c) end of treatment; (d) three months postpartum (for outcome measures).

Results

1. Outcome study

All analyses were conducted using the intent-to-treat principle. Our outcomes were depression, negative emotionality, anxiety and perceived physical health. We have chosen these four main outcomes because they are the most important emotional problems a woman might have in the prepartum and postpartum period, as mentioned in the literature (Cohen & Nonacs, 2005; Hendrick, 2006; Stone & Menken, 2008). Through its specific components and innovations, the program we have designed aims to address all these outcomes through specific etiopathogenetic mechanisms. Thus, we expect the experimental treatment to be superior to control condition in the way it impacts on these outcomes.

Baseline. Pretreatment group differences were assessed and we found no significant pretreatment differences among conditions for depression ($t(46)=1.469$, $p=.149$), negative emotionality *(*$t(46)=1.088$, $p=.282$), anxiety ($t(46)=-.918$, $p=.363$) and perceived physical health ($t(46)=-1.666$, $p=.103$).

Middle treatment (outcome at 5 weeks). Data analysis at 5 weeks showed no significant difference for depression ($t(46)= .912$, $p=.367$), negative emotionality ($t(46)=.220$, $p=.827$), anxiety ($t(46)=-1.517$, $p=.137$) and perceived physical health ($t(46)=-3.102$, $p=.004$, $d=-.84$).

Post treatment (outcome at 9 weeks). Data analysis at 9 weeks showed significant differences for depression ($t(46)=-.378$, $p=.022$, $d=.16$), negative emotionality ($t(46)=-2.439$, $p=.019$, $d=.93$), anxiety ($t(46)=-2.622$, $p=.012$, $d=.95$) and perceived physical health ($t(46)=-1.548$, $p=.130$).

We also wanted to see how the outcomes change in our experimental group, so we performed repeated measures ANOVAs for differences at the three points in time (baseline to middle to end of treatment) for each group. Thus, we found significant differences between pre, middle and post-treatment for all our variables: depression ($F(2,20)=40.062$, $p=.001$), negative emotionality ($F(2,20)=378.101$, $p=.001$), anxiety (F $(2,20)=96.865$, $p=.001$) and perceived physical health ($F(2,20)=17.094$, $p=.000$).

We checked for differences in time for the control group also but there were no such differences for any of our measured variables: depression ($F(2,22)=1.434$, $p=.248$), negative emotionality ($F(2,22)=2.953$, $p=.104$), anxiety ($F(2,22)=3.089$, $p=.097$) and perceived physical health ($F(2,22)=.957$, $p=.394$).

The next analysis allowed us to establish at which point in time the change appeared, for the experimental group. Because we could not find a longitudinal change for the control group there is no need for a similar analysis. We computed paired samples t test, with a Bonferroni correction.

Depression outcome. We found significant differences from baseline to middle of treatment ($t(22)=4.880$, $p=.000$) with a small effect size ($d=.34$). Differences were also significant from middle of treatment to end of treatment ($t(22)=5.431$, $p=.000$), with a large effect size ($d=.72$). Overall, there are differences from baseline to end of treatment (t (22) $=5.400$, $p=.000$) with a large

effect size as indicated by Cohen's *d*=.86 and its benchmarks for the significance of effect size (Cohen, 1992).

Negative emotionality outcome. In the case of negative emotionality symptoms show differences between all three times of measurement: baseline to middle of treatment ($t(22)=8.622$, $p=.001$) with a small effect size ($d=.30$), middle to end of treatment ($t(22)=17.045$, $p=.001$) with a very large effect size ($d=1.29$) and overall, we found differences from baseline to end of our intervention ($t(22)=9.058$, $p=.001$) also with a large effect size ($d=.69$).

Anxiety symptoms outcome. For anxiety symptoms, results are similar – we found differences for all phases: baseline to middle of treatment ($t(22)=11.752$, $p=.001$) with a medium effect size ($d=.52$), middle to end of treatment ($t(22)=5.020$, $p=.001$) with a medium effect size ($d=.43$) and overall, we found differences from baseline to the end of our intervention ($t(22)=7.108$, $p=.001$), this time with a large effect size ($d=.84$).

Perceived physical health outcome. In case of perceived physical health, results are different from previous outcomes: from baseline to middle treatment ($t(22)=3.272$, $p=.002$) we have a positive medium effect size ($d=.59$), but from middle to end of treatment the effect is inverse ($t(22)=-7.101$, $p=.000$), with participants perceiving a lower physical health, and this effect is a large one ($d=-.88$). Overall we found significant differences from baseline to end of treatment ($t(22)=-2.295$, $p=.016$) but the effect size is virtually negligible ($d=-.11$).

Discussion

As a conclusion so far we can assert that the outcome analyses of this study suggest that REBT is more efficient at post-treatment than community care as regards the depression symptoms, negative emotionality and anxiety. However, at 3 months postpartum; the effects are maintained only for negative emotionality and anxiety, not for depression. In case of perceived physical health the results are somehow confusing: at the end of treatment there are no results regarding this outcome, although at the middle treatment assessment phase the results were significant (the effect obtained in the first half of the program is lost to its end). However, at three months postpartum the results become significant for both the experimental and control group.

2. Theory of change study

Having analyzed the outcomes of the clinical trial our next step is to focus on exploring the mechanisms of change that account for the results we have obtained. This is a vital step in the development of new, clinical strategies that aim to improve the results obtained in the intervention in case of a particular problem. We expect changes in our outcomes (depression, anxiety, negative emotionality) to be related to changes in general irrational beliefs, body self esteem, automatic thoughts, dysfunctional attitudes, marital relationship and unconditional self acceptance.

Depression Outcome

Step 1: The Efficacy Test. As we have seen in the outcome study there were significant within group and between group differences for depression. Thus, we can proceed to the next steps.

Step 2. Intervention test. In this second step we assess the relationship between treatment and change in the candidate mediators. We compared pretreatment and posttreatment scores on these measures on the total sample, for each condition experimental and control, using paired sample *t* tests. In case of control condition none of these variables show significant results on any of the variables taken into account. Whereas in case of the experimental condition all variables considered to be mediators have a significant result.

Table 4.

Paired samples t tests and effect sizes for pretreatment-posttreatmet values on hypothesized variables, for treatment condition.

	t	*Sig.*	*Cohen's d*
Irrational beliefs	6.853	$p < .001$	.79
Body self esteem	-2.434	$p = .024$	-.14
Automatic thoughts	5.757	$p < .001$	.73
Dysfunctional attitudes	5.337	$p < .001$	-.19
Unconditional acceptance	-3.499	$p = .002$	.53
Relationship	4.590	$p < .001$	1.31

Then we checked for between group differences on posttreatment scores on each variable, with pretreatment score on depression serving as covariate. Results show significant group differences for: irrational beliefs ($F(1,38)=4.047$, $p=.024$), body self esteem ($F(1,38)=3.453$, $p=.040$), dysfunctional attitudes ($F(1,38)=7.884$, p = .001) and for marital relationship ($F(1,38)=3.741$, $p=.031$). For automatic thoughts ($F(1,38)=1.665$, $p=.201$) and unconditional self acceptance ($F(1,38)=2.707$, $p=.078$) there were no significant between group differences. What these results show, so far, is that the experimental treatment lead to a more significant change irrational beliefs, body self esteem, dysfunctional attitudes and marital relationship, as compared to the control condition.

Step 3. *Psychopathology Test.* Residual change scores from pretreatment to posttreatment for depression were correlated with those for each hypothesized mediator. Results show that changes in depression scores are related to changes in irrational beliefs, dysfunctional attitudes and marital relationship.

Table 5.

Correlations between change score (pre to post) between depression outcome and hypothesized variables, for each treatment group.

Mediator variables	BDI	
	r	Sig.
Irrational beliefs	.619	$p=.002$
Body self esteem	.086	$p=.697$
Automatic thoughts	.703	$p=.001$
Dysfunctional attitudes	.318	$p=.140$
Unconditional acceptance	-.133	$p=.546$
Marital relationship	.445	$p=.038$

Note: BDI – Beck Depression Inventory.

Step 4: Mediation Test. Results so far showed significant differences between the two treatments, and also significant differences between the two treatments in irrational beliefs, automatic thoughts and marital relationship (three of the six mediators hypothesized). For these relationships we ran a full mediation analysis for each mediator. Thus, regression analysis showed that when controlling for irrational beliefs, the relationship between the independent variable (treatment condition) and the outcome variable (depression) is no longer significant ($B=-.422$, $p=.058$). Hereby, the treatment condition is no longer significant even when we control for

irrational beliefs. We ran a Sobel test for confirmation of this result (*Z*=.279, *p*=.779) but the Sobel coefficient is not significant.

Taking into account the second mediator – automatic thoughts, that was found significant at step 3, we ran a full mediation analysis. Thus, regression analysis showed that when controlling for automatic thoughts, the relationship between the independent variable (treatment condition) and the outcome variable (depression) remains significant (*B*=-.327, *p*=.046). Hereby, the treatment condition is still significant even if we control for automatic thoughts. This result might sustain the idea that there are other mediators that influence our results.

Taking into account the third mediator – marital relationship, that was found significant at step 3, we ran a full mediation analysis. Thus, regression analysis showed that when controlling for marital relationship, the relationship between the independent variable (treatment condition) and the outcome variable (depression) is no longer significant (*B*=-256, *p*=.166). Hereby, the treatment condition is no longer significant when we control for marital relationship. We ran a Sobel test for confirmation of this result (*Z*=1.813, *p*=.069) but the Sobel coefficient is not significant. Thus, our mediator variable – marital relationship does not significantly carry the influence of an independent variable to a dependent one.

Anxiety outcome

Step 1: The Efficacy Test. As we have seen in the outcome study there were significant within group and between group differences for anxiety. Thus, we can proceed to the next steps.

Step 2. Intervention test. In this second step we look to see if treatment affects the mechanism of action supposed to produce intervention effects (irrational beliefs, marital relation, unconditional self acceptance, automatic thoughts, dysfunctional attitudes and body self esteem). We compared pretreatment and posttreatment scores on these measures, for each treatment condition, using paired sample *t* tests. In case of control condition none of this variables show significant results on any of variables taken into account. Whereas in case of experimental condition all variables considered to be mediators have a significant result.

Table 6.

Paired samples t tests and effect sizes for pretreatment -posttreatmet values on hypothesized variables, for treatment condition.

	t	*Sig.*	*Cohen's d*
Irrational beliefs	6.853	*p*=.001	.79
Body self esteem	-2.434	*p*=.024	-.14
Automatic thoughts	5.757	*p*=.001	.73
Dysfunctional attitudes	5.337	*p*=.001	-.19
Unconditional acceptance	-3.499	*p*=.002	.53
Relationship	4.590	*p*=.001	1.31

Then we checked for between group differences on posttreatment scores on each variable, with pretreatment score on anxiety serving as covariate. Results show significant group differences for body self esteem (*F*(1,38)=3.819, *p*=.030) and dysfunctional attitudes (*F*(1,38)=7.897, *p*=.001) and no significant between differences for irrational beliefs (*F*(1,38)=2.311, *p*=.111), marital relationship (*F*(1,38)=2.096, *p*=.135), automatic thoughts (*F*(1,38)=.736, *p*=.485) and unconditional self acceptance (*F*(1,38)=2.482, *p*=.095)

Step 3. *Psychopathology Test.* Residual change scores from pretreatment to posttreatment for depression were correlated with those for each hypothesized mediator. Results show that changes in anxiety scores are related to changes only in automatic thoughts.

Table 7.

Correlations between change score (pre to post) between anxiety outcome and hypothesized variables, for experimental group.

Mediator variables	Anxiety	
	r	Sig.
Irrational beliefs	.354	*p*=.097
Body self esteem	-.005	*p*=.982
Automatic thoughts	.425	*p*=.043
Dysfunctional attitudes	.354	*p*=.097
Unconditional acceptance	-.241	*p*=.269
Marital relationship	.371	*p*=.089

Step 4. Mediation Analysis.

Taking into account that the single significant correlation is with automatic thoughts we ran a full mediation analysis. Hereby, regression analysis show that when controlling for automatic thoughts, the relationship between the independent variable (treatment condition) and the outcome variable (anxiety) remains significant (*B*=-.339, *p*=.019). Therefore, the treatment condition is still significant even if we control for automatic thoughts mediator. This result might sustain the idea that there are other mediators that influence our results.

Negative emotionality outcome

Step 1: The Efficacy Test. As we have seen in the outcome study there were significant within group and between group differences for negative emotionality. Thus, we can proceed to the next steps.

Step 2. Intervention test. In this second step we look to see if treatment affects the mechanism of action supposed to produce intervention effects (irrational beliefs, marital relation, unconditional self acceptance, automatic thoughts, dysfunctional attitudes and body self esteem). We compared pretreatment and posttreatment scores on these measures on the total sample, for each condition experimental and control, using paired sample *t* tests. In case of control condition none of this variables show significant results on any of variables taken into account. Whereas, in case of experimental condition all variables considered to be mediators have a significant result.

Table 8.

Paired samples t tests and effect sizes for pretreatment-posttreatmet values on hypothesized variables, for treatment condition.

	t	*Sig.*	*Cohen's d*
Irrational beliefs	6.853	*p*=.001	.79
Body self esteem	-2.434	*p*=.024	-.14
Automatic thoughts	5.757	*p*=.001	.73
Dysfunctional attitudes	5.337	*p*=.001	-.19
Unconditional acceptance	-3.499	*p*=.002	.53
Relationship	4.590	*p*=.001	1.31

Then we checked for between group differences on posttreatment scores on each variable, with pretreatment score on negative emotionality serving as covariate. Results show significant

group differences for: body self esteem ($F(1,38)=7.897$, $p=.001$), dysfunctional attitudes ($F(1,38)=7.897$, $p=.001$). For automatic thoughts ($F(1,38)=.736$, $p=.485$), unconditional self acceptance ($F(1,38)=2.482$, $p=.095$), irrational beliefs ($F(1,38)=2.311$, $p=.111$) and for marital relationship ($F(1,38)=2.096$, $p=.135$) there were no significant between group differences.

Step 3. *Psychopathology Test.* Residual change scores from pretreatment to posttreatment for negative emotionality were correlated with those for each hypothesized mediator. Results show that changes in negative emotionality scores are related to changes in irrational beliefs.

Table 9.

Correlations between change score (pre to post) between negative emotionality outcome and hypothesized variables, for experimental group.

Mediator variables	Negative Emotionality	
	R	Sig.
Irrational beliefs	.754	*p*=.000
Body self esteem	-.250	*p*=.250
Automatic thoughts	.403	*p*=.057
Dysfunctional attitudes	.355	*p*=.096
Unconditional acceptance	-.274	*p*=.207
Marital relationship	.356	*p*=.104

Step 4. Mediation Analysis.

We ran a full mediation analysis for irrational beliefs mediator. Thus, regression analysis showed that when controlling for irrational beliefs, the relationship between the independent variable (treatment condition) and the outcome variable (depression) is no longer significant ($B=.109$, $p=.610$). Hereby, the treatment condition is no longer significant even when we control for irrational beliefs. We ran a Sobel test for confirmation of this result ($Z=.068$, $p=.945$) but the Sobel coefficient is not significant. Thus, our mediator variable – irrational beliefs, does not significantly carry the influence of an independent variable to a dependent one. More specific, the indirect effect of the independent variable (treatment condition) on the dependent variable (negative emotionality) through this mediator variable (irrational beliefs) is not significant.

Discussion

First, we have to reiterate the aim of using the same mechanisms of change for all outcomes: as we can see from the literature, there are few studies that support the involvement of some mechanisms of change as regards emotional distress during pregnancy. Thus, one of our main aims of this research paper was to find the causes of emotional distress during pregnancy (see Study 2, Study 3 and Study 4 – mechanisms of change section). Hereby, we tested the most frequently found factors in the literature for each involved and statistical significant (see Study 4 – outcome study section) outcome measure (depression, anxiety and emotional distress in general). As regards Study 4 the results show that, in general, we failed to identify specific mechanisms of change for each involved outcome. Furthermore, we discuss results separately for each outcome.

Depression outcome. The first analyzed mechanism of changes in depression was irrational beliefs. The results of our mechanism of change section support that irrational beliefs do not represent a significant mechanism of change in the case of pregnant women, when speaking about a preventive intervention regarding prepartum and postpartum emotional distress. The results are

similar for automatic thoughts. These results are consistent with Ellis' theory that automatic thoughts are derivatives of irrational beliefs (Szentagotai, David, Lupu, & Cosman, 2008). However, another interpretation may be that the change in irrational beliefs reduced depressed mood, which in turn reduced automatic thoughts, intermediate and core beliefs, seen in this case as non causal correlates of depressed mood (see also Haaga, Dyck, & Ernst, 1991).

Besides these two cognitive factors, it seems that our REBT intervention had an impact on marital relationship and this may influence depressive symptoms. We found a mediation relation but it was not significant (see Sobel test results). A possible explanation may be that for disputing marital relationship problems we used only one meeting. There are many studies supporting the importance of marital relationship during pregnancy and that firmly support the need of a specific intervention (Watson, Elliott, Rugg, & Brough, 1984; Paykel et al., 1980).

Anxiety outcome. Similar to depression, in case of anxiety we can say that, in general, we have failed to identify specific mechanisms of change for the experimental intervention. Although the REBT intervention is hypothesized in the literature and designed to change only irrational beliefs it seems that, in our study, in case of anxiety irrational beliefs are not mechanisms of change. Instead, the only mechanism of change that was supported by our mediation analysis but not by Sobel test too is automatic thoughts (Hollon & Kendall, 1980). The possible explanation for the lack of mediation for this mechanism may be the fact that automatic thoughts questionnaire was constructed specific for depressive symptomatology and not for anxiety (Burgess & Haaga, 1994).

Negative emotionality. Regarding negative emotionality, we identified irrational beliefs as possible mediators but the result was not sustained by Sobel test as in case of anxiety. Thus, there might be other possible factors that influence the changes in negative emotionality. We have to take into consideration the fact that we had a small number of subjects and this small number might influence our results. It is possible that with a larger sample our hypothesis could be supported.

General discussion and conclusions of the randomized clinical trial

Our clinical study showed that the designed experimental treatment is superior to community care with regard to the outcomes for depression, negative emotionality and anxiety. Postpartum results indicate that it might be superior in the results obtained at 3 months after treatment. Further postpartum assessments, at longer intervals will establish more clearly this potential effect. If these outcomes are confirmed we will also be able to run a theory of change analysis and see what might be the specific mechanisms of change for these postpartum differences.

In what depressive outcomes are concerned, our intervention program shows significant results at post treatment assessment but failed to maintain the results at postpartum evaluation. The explanation for this result might be the fact that the levels of depression prior to our intervention were small and that is why we could not see a difference in time. Another possible explanation could be social desirability that is shown to have a great impact on the assessment of depressive symptoms related to giving birth and the postpartum period.

In what anxiety is concerned, results are significant to post treatment and they also maintain 3 months after birth. Despite the fact that the control group also has significant results on reducing anxiety at the postpartum period the participants from our program have superior results. This sustains the impact of our intervention on anxiety symptoms. The results are superior at post intervention and also postpartum for negative emotionality too**.** These two main results are of

major importance – the participants from our group not only have better result post treatment but the results maintain over time which means that through our program we had an impact on emotional distress also prior to giving birth – in the prepartum period, but also postpartum. Thus, partially our main objectives were accomplished.

Albeit these significant results and those for the mediators we had considered to be important (and used in our intervention), we have failed to support the relation between our results and any of the mentioned mediators. Our mediators had an impact on the outcomes but none of them could be supported to the final mediation analysis process. This suggests that further researched should be conducted to find more information about what kind of mediators should be included in such interventions and how one can make their effect better. Moreover, as mentioned before, a potential limitation of this research project is the small sample size which could have prevented us to be able to show medium or small effects of the variables which we hypothesized as mediators of change.

The last step of this thesis has practical implications. After our randomized clinical trial and its evaluation sequences we considered necessary to develop an evaluation tool regarding rational and irrational beliefs of pregnant women. Because the content of beliefs is very different compared to general population, we want to find the specific irrational beliefs to work on. Thus, future preventive interventions will have a specific tool (Prepartum Beliefs Scale) to evaluate and monitor the participants.

Study 5. Prepartum Rational and Irrational Beliefs Scale[3]

Introduction

Assessing the mechanisms that lay behind emotional problems has a significant impact on both clinical practice and research. Thus, creating specific scales that measure these mechanisms may be beneficial in psychological practice. The focus of this study is creating a specific scale that measures the mechanisms of prepartum emotional distress taken from a cognitive behavioral perspective.

Taking into account REBT theory and the important role of rational beliefs regarding mental health and irrational beliefs regarding mental distress, the construction of this scale could have both theoretical and practical implications. First, from a theoretical point of view, the results may add to prior studies the importance of rational and irrational beliefs in emotional distress, but on a specific population – pregnant women. Second, speaking from a practical point of view, the study may provide relevant results considering the importance of using instruments that offer a lot of information in a short period of time and with little effort.

General Presentation of the Scale

The Prepartum Beliefs Scale (PBS) is a self – report instrument that measures rational and irrational beliefs specific to prepartum and postpartum period. The construction of the scale was based on the Parental Rational and Irrational Beliefs Scale (Gaviţa, DiGiuseppe, David, & DelVecchio, unpublished) and other rational and irrational beliefs scales. Regarding the content, the scale has three general categories of items: items concerning the pregnancy period, the birth

[3] This study was published:
Anton, R. (2011). Prenatal Beliefs Scale, *Erdelyi Pszichologiai Szemle*, Vol. 2

and the immediate period after giving birth. The scale allows for the calculation of a general score, but also separate scores for "rationality" and "irrationality". More than that, the scale allows calculating separate scores for each cognitive process (DEM, AWF, LFT, SD).

PBS has 28 items displayed in a 4x3x2 matrix:

(1) the first factor is "cognitive processes" and has four levels that represent four rational and four irrational cognitive patterns:

Irrational beliefs	Rational beliefs
Demandingness (DEM)	Preference
Awfulizing (AWF)	It is bad, but not awful
Low frustration tolerance (LFT)	High frustration tolerance
Self downing (SD)	Nonglobal evaluation of self

(2) the second factor is "content areas" and has three levels: pregnancy, giving birth and child,

(3) the third factor is "phrasing type" (rationality / irrationality) and has two levels that represent the way the items are phrased: rational or irrational.

Each item is structured taking into account the three factors mentioned above. For example: I can't stand some events that occur during pregnancy (e.g. the fact that I'm gaining weight, that my back hurts, that I have) – the item is phrased irrationally, the content refers to the pregnancy, and the cognitive process involved here is "low frustration tolerance".

The subjects have five possible responses:

Table 10.

Possible responses.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

The scoring is direct for 15 items and indirect for 13 items.

Method

Participants. A total of 291 pregnant women volunteered to participate in the study developed to assess the psychometric properties of a new specific irrational and rational beliefs inventory. The subjects were selected from Public Gynecology Clinics. All of them were properly informed about test procedure, use of data and confidentiality by receiving an informed consent.

Instruments. 1. The State Trait Anxiety Inventory (STAIx1 – state and STAIx2 - trait), (Spielberg et al., 1995); 2. Beck Depression Inventory II (BDI-II) (Beck, 1983); 3. Profile of Emotional Distress (PED) (Opriș & Macavei, 2007); 4. General Attitudes and Beliefs Scale – short version (GABSs) (Lindner et al., 1999).

Results

Reliability analysis. The reliability of PBS second form was estimated by computing Cronbach's Alpha internal consistency coefficient (see Table 3).

Table 11.

Internal consistency Alpha values for PBS scales.

PBS	*α Cronbach*
Total	.75
Irrationality	.69
Rationality	.69
DEM	.43
AWF	.43
SD	.37
LFT	.60

Note: PBS – Prepartum Beliefs Scale; DEM – demandigness; AWF – awfullizing; SD – self-downing; LFT – low frustration tolerance.

Validity analysis.

*Content validity***.** The starting point of the construction of this scale was a Parental Rational and Irrational Beliefs Scale (Gaviţa, DiGiuseppe, David, & DelVecchio, unpublished). More than that, we used the literature in the domain to find the most important problems that women have in this period. Briefly, the main areas of concern are: (1) postpartum depression (Sutter-Dallay, Giaconne-Marcesche, Glatigny-Dallay, & Verdoux, 2004), (2) postpartum anxiety (Austin et. al, 2005), (3) unconfirmed expectancies concerning the pregnancy, the birth and the child (Harwood, McLean, & Durkin, 2007), (4) body image concerns (Anderson, 2005), (5) marital relationship (Lee, 2002). To classify them as representing rational or irrational beliefs and, more than that, to classify them as referring to the content area, the items were rated by three experts in rational emotive and cognitive behavioral psychotherapy from the Romanian Association of Cognitive and Behavioral Psychotherapies. If there were items which needed revision, the expert evaluators discussed upon them and reach a consensus. Taking all the above into account, the PBS was developed based on REBT theory and the structure of the test is similar to other tests that have already proven their utility.

Construct validity. To test the construct validity for PBS we used General Attitudes and Beliefs Scale (DiGiuseppe, Leaf, Exner, & Robin, 1988). Results outline the positive relation between our scale and GABS (r=.455, p=.000). The explanation for this result is that PBS, like GABS, measure rational and irrational beliefs constructs – the test measures the construct that it supposed to measure.

Criterion validity. The following results support the idea that, even if with low correlations, the PBS significantly correlates with depression, global score on PED, negative dysfunctional emotions, negative functional emotions and positive emotions (subscales of PDE). Briefly, a high score of irrational beliefs can predict a high score of depression and negative dysfunctional emotions.

Table 12.
Criterion validity.

Scale	PBS
BDI	.248 (p=.000)
STAI	.109 (p=.068)
PED global	.353 (p=.000)
PED negative dysfunctional emotions	.247 (p=.000)
PED negative functional emotions.	.172 (p=.003)
PED positive emotions	-.337 (p=.000)

Note: PBS – Prepartum Beliefs Scale; BDI – Beck Depression Inventory; STAI – Stait Trait Anxiety Inventory; PED – Profile of Emotional Distress.

Factor analysis. In this section we studied the factorial structure of PBS second form. The PCA yields two main factors: rationality and irrationality, accordingly with REBT theory. More specific, the factor "cognitive processes" was not sustained by factor analysis, the factor "content areas" explain 37.11 % of data variance and the factor "phrasing" explains 29.76 % of data variance, the rest of 70.24 % being explained by specific factors or measurement errors.

Discussion

Prepartum Beliefs Scale is an instrument designed to subjectively assess rational and irrational beliefs, specific to prepartum and postpartum period. The instrument was developed based on the need for more specific and evidence based interventions for pregnant women, knowing that a series of somatic and emotional problems can be associated with pregnancy and birth. The scale has good reliability properties. We found high Cronbach's Alpha values for the total scores and also for the main scales: rationality and irrationality. We showed that Prepartum Beliefs Scale has medium construct validity. The criterion validity was also calculated and the results show that even if there are no large correlations in this first phase of our test, it still correlates with depression, anxiety and the subscale „dysfunctional negative emotions" from Profile of Emotional Distress. To conclude, data obtained until now suggest that the PBS has medium psychometric properties and can be used to evaluate cognitive patterns in pregnant women.

CHAPTER IV. GENERAL CONCLUSIONS AND DISCUSSION

This research project aimed to develop an etiopathogenetic prevention program for prepartum and postpartum emotional distress. The last two decades have brought growing interest in women's mental health. More than that, the growing interest leads to an extended number of researches and reports addressing issues in reproductive psychiatry. Although the postpartum period has been identified as a time of increased vulnerability to psychiatric illness, there are studies that often consider pregnancy as a time of emotional well-being for women (Zajicek, 1981). However, many studies suggest that relapse of an existing psychiatric condition or, even more, the possibility of an emergent new disorder is often seen during pregnancy (Evans et al. 2001; Northcott & Stein, 1994). More than that, growing evidence suggests that active maternal psychiatric illness during pregnancy and the postpartum period can negatively affect child development and can cause significant morbidity for the mother (Warner et. al., 1996).

The problem heightens when speaking about the use of psychopharmacologic treatment for these disorders, as many negative side-effects are well researched. Typically, the specialists use such treatment in the case of a significant interference of the disorder with the maternal and fetal well being. Otherwise, they prefer not to use them and search for psychotherapeutic interventions that do not have or have less negative side effects.

Some current preventive interventions for prepartum and postpartum emotional distress yield good results, however many do not. More specifically, regarding postpartum depression, metaanalytic studies (see study 1 and Dennis, 2005) show that psychosocial interventions have no significant effect. Thus, the effectiveness of currently used programs is limited. More than that, we have to take into consideration the concept of social desirability. Motherhood is a public experience - being a "mother" is a prescribed social role and, most of all, an identity that a woman must assume. Due to this entire social load many women are misdiagnosed because they do not report their negative emotions or problems. Thus, the use of proper interventions is conditioned by

the woman's recognition and acceptance of those emotions. The tenet of present psychological interventions is the idea that women mainly need social support in caring for their baby, not an intervention focusing on their fears of or on building confidence for becoming a mother.

The most used interventions regarding the prevention of emotional distress mainly use interpersonal therapy. Few studies used CBT prevention treatments and the results show that they do not have more beneficial effects compared to control (Austin et al., 2008). More than that, few prepartum interventions have substantial theoretical and practical ads and overall, they have no effectiveness (see Study 1 and Dennis, 2005).

Thus, taking all these information into account: 1. the lack of information as regards medication, 2. the risks of maternal prepartum and postpartum emotional distress - not only for the woman but also for the child and for their family, 3. the lack of analyzed mechanism of change with regards to psychological basis of these problems, 4. many psychoeducational interventions and few interventions focused on mechanisms of change, gave us the opportunity to create this large researched project that had two main aims: 1. to analyze some potential mechanisms of change regarding prepartum emotional distress and 2. to create a preventive intervention program for prepartum and postpartum emotional distress.

The dissertation tries to answer to questions that rise from three points of view: theoretical, methodological and practical. Thus, the research project has theoretical, methodological and practical contributions.

Theoretical contributions. Our first research (Study 1) refers to identifying the effects of prepartum interventions as regards to preventing postpartum depression. Following the research of Dennis (2005) we analyzed the same studies and few more, but more specific we analyzed specific categories of the interventions used in clinical trial. More specific, the aim of this study was to estimate the effectiveness of psychosocial preventive interventions in dealing with postpartum depression symptoms. This goal was addressed on two levels using meta-analytic techniques. Specifically, the study provides: (1) a quantitative estimate of the overall effect size of psychosocial interventions and (2) a comparison of the effect sizes of different outcome categories. First of all, in a general sense, none of these preventive interventions were found to be a powerful tool for addressing signs and symptoms of postpartum depression - psychosocial preventive interventions did not help the majority of women reduce their symptoms. More than that, even if we speak here about a trend regarding positive effects, we can draw some lines for our preventive intervention considering some important aspects of psychological interventions: they should be offered by trained personnel (clinical psychologist, psychotherapist), they should be offered in an organized environment with more than 1 or 2 sessions – longer interventions seem to be better than shorter ones, and they should be offered for the general population not only for those assessed as being at risk. Thus, when we developed our clinical trial, we took into consideration all the above mentioned aspects.

Methodological contributions. The next studies in our research project (Study 2 and 3) are focused on finding specific psychological mechanisms that ought to be changed during a preventive intervention. First of all, we took into consideration two interesting concepts that we thought would be important for our preventive program: response expectancy and response hope and their impact with regard to three non volitional outcomes concerning giving birth: pain, relaxation and anxiety. The study supports the contribution of response expectancy and of the discrepancy between response hope and response expectancy to (1) women's emotional distress levels prior to giving birth, and to (2) self-reported pain levels evaluated after birth. These results confirm prior investigations in the area (David et al., 2006) while focusing on a different

population (i.e., pregnant women prior to giving birth) and on additional outcomes (i.e., pain). From another perspective, the study draws attention to some new, understudied aspects which could have important clinical implications, such as the impact of response expectancies on self-reported labor duration. The perceived duration of labor is an extremely important factor for emotional distress. Decreasing the perceived duration of labor could have a positive impact on the whole emotional burden of this experience. Thus, we used all these aspects in developing our preventive intervention program.

Going further, we secondly focused on gathering information about one of the mechanisms that is broadly mentioned in the literature as one that leads to depressive symptoms – body self esteem. What we wanted to add to prior researches is a better understanding of the body self esteem concept specific addressed to pregnant women – as they have to adapt to increased body changes. More than that, a specific focus was analyzing the cognitive patterns with regards to their nutrition. The main results show that women who have less knowledge about healthy eating also have subjective feelings of eating without control and, moreover, the subjective feeling that they eat a lot when they have negative emotional states. Another interesting result is the one that supports the idea "I'm pregnant, I can finally eat all that I want because the baby needs it". More specifically, the results show that normal weight pregnant women have low levels of cognitive restraint compared to our sample of general population. As regards body self esteem, the results show that pregnant women have a lower body self esteem than the general population, even if we speak about normal weight or overweight pregnant women. Concerning the link between some eating variables, cognitive or behavioral and depression, the results show that the relevant mechanisms, with regards to nutrition, for prepartum emotional distress are: body self esteem, uncontrolled eating and, also, specific irrational beliefs measured with PBS. In summary, Study 2 supports the idea that eating behavior and beliefs are very important elements to be introduced in prepartum psychological programs to reduce emotional distress in pregnant women.

With regard to other hypothesized mechanisms of change, we did not considered necessary to conduct further studies of our own, as there is a large body of literature (that refers, for example, to marital relationship and its impact on prepartum and postpartum emotional distress or the involvement of irrational beliefs in emotional distress) which offers sufficient information for the development of a preventive program targeting such factors.

Practical contributions.

1. Developing and testing an intervention protocol. Thus, based on prior studies and on the results of our own studies we developed a preventive intervention program that was tested in a randomized clinical trial. The testing procedure of the program involved two phases: 1. testing the efficiency of the program as regards the considered outcomes: depression, anxiety, negative emotionality and perceived mental health and 2. a theory of change study that investigated the impact of the supposed mediators (irrational beliefs, automatic thoughts, dysfunctional attitudes, marital relationship, body self esteem and unconditional self acceptance) on the outcomes. Hereby, our clinical study showed that the experimental treatment we have designed has superior outcomes to community care for depression, negative emotionality and anxiety. Postpartum results indicate that it might be superior in results obtained at 3 months after treatment. Albeit these significant results, we could not establish if these are explained by our hypothesized mediators. Our mediators seemed to have an impact on the outcomes but none of them could be supported to the final mediation analysis process. The theory of change analysis revealed some important mediators that have to be taken into consideration in calibrating further interventions. As regards depression, although the REBT intervention was hypothesized and designed to change irrational beliefs, it

seems that in our case, irrational beliefs were not a mechanism of change. Moreover, it seems that our REBT intervention has an impact on marital relationship that might influence depressive symptoms. We found a mediation relation but it was not significant.

As regards anxiety and negative emotionality we found the same two important factors involved in the change at post intervention: body self esteem and dysfunctional attitudes. Body satisfaction seems to be an important factor for anxiety. The second mediator for anxiety and negative emotionality was shown to be dysfunctional attitudes. Hereby, we could find a mediation relation for dysfunctional attitudes on anxiety, but it was not a significant one; as for negative emotionality this mediator could not be supported.

2. Developing and testing a specific scale. We encountered a practical need – the necessity for a tool to evaluate specific beliefs during this period. Thus, we developed The Prepartum Beliefs Scale (PBS); PBS is a self report scale that measures rational and irrational beliefs associated with pregnancy, giving birth and the postpartum period and it is based on Ellis's Rational Emotive and Behavioral Therapy theoretical background. Data obtained in our study suggest that the PBS has medium psychometric properties and can be used to evaluate cognitive patterns in pregnant women. However, the data presented in this study have to be considered a rough guide for offering further investigations and have to be seen as a strain point for future studies of specific rational and irrational beliefs that can be activated in this period of a women's life. The scale can be used in hospital settings for the evaluation of pregnant women that go to periodical consults. Using it might support the work of experts in finding information about the mental and emotional states of pregnant women (e.g. worries, negative emotions). More than that, given alongside with a emotional distress questionnaire, PBS can offer information about the mechanism of emotional distress, giving experts a useful insight for the development of targeted interventions to reduce emotional problems during this specific period of a woman's life.

Limitations and future directions. In conclusion, our research project represents a first step in developing a more effective preventive intervention for prepartum and postpartum emotional distress – operationalized as mentioned in our introductory chapter. However, important questions remain. First, the role of irrational beliefs - they were related to changes in depression, negative emotionality and anxiety but did not appear to be relevant mediators for the change in the considered outcomes. Thus, this could be a future line of research: testing the specific role of irrational beliefs and the possibility of being explained as mediators for automatic thoughts for example, and automatic thoughts being mediators for changes in depression (Szentagotai et al, 2008). Secondly, a screening for prepartum and postpartum emotional distress and also for cognitive factors that could be associated with emotional distress would be necessary. Doing this could help us develop a more efficient preventive intervention program. Thirdly, the question arises: would a more extensive program be more efficient considering this population? It might be that offering this kind of intervention associated with classical prepartum classes would help mothers to better face the emotional problems they encounter during this period of their life. Finally, perhaps an information campaign could help mothers be more conscious of the emotional risks a pregnancy can bring and the negative consequences of emotional problems and reduce the shame or stigma of admitting such difficulties.

Thus, future research should take into account both the theoretical questions regarding the impact of rational and irrational beliefs and also the practical problems that were previously raised.

Research in all areas related to emotional distress associated with pregnancy needs to focus on finding more effective, etiopathogenetic treatments. This research project has brought some significant findings related to prepartum and postpartum emotional distress and has suggested

some psychological factors that are potential etiological mechanisms. Further research is needed to confirm this role and the validity of the etiopathogenetic treatment that rests upon them.

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