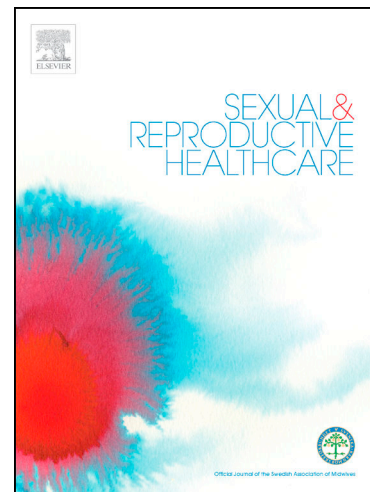


Journal Pre-proofs

On cloud nine? Maternal emotional wellbeing six weeks up to one year postpartum – A cross-sectional study

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PII: S1877-5756(23)00046-0
DOI: <https://doi.org/10.1016/j.srhc.2023.100856>
Reference: SRHC 100856



To appear in: *Sexual & Reproductive Healthcare*

Received Date: 27 September 2022
Revised Date: 31 March 2023
Accepted Date: 2 May 2023

Please cite this article as: L. Van den Branden, N. Van de Craen, L. Van Leugenhaege, R. Bleijenbergh, E. Mestdagh, O. Timmermans, B. Van Rompaey, Y.J. Kuipers, On cloud nine? Maternal emotional wellbeing six weeks up to one year postpartum – A cross-sectional study, *Sexual & Reproductive Healthcare* (2023), doi: <https://doi.org/10.1016/j.srhc.2023.100856>

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On cloud nine? Maternal emotional wellbeing six weeks up to one year postpartum – A cross-sectional study

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Declarations of interest: none

Acknowledgments and disclosures

This study is part of the “MEtoWE” practice orientated scientific research project and was funded by the Department of Economy, Science & Innovation of the Flemish Government under Grant PWO-3100Q1003.

On cloud nine? Maternal emotional wellbeing six weeks up to one year postpartum – A cross-sectional study

ABSTRACT

BACKGROUND – Little is known about the full scope of emotional wellbeing of mothers up to one year postpartum, to adequately support women during transition to motherhood. Reduced emotional wellbeing (REW) affects women's adaption to the changes and challenges in becoming a mother. We aimed to increase the knowledge and understanding of mothers' emotional wellbeing and the influencing factors.

METHODS – This cross-sectional study includes 385 Flemish mothers up to one year postpartum. Online data were collected with the General Health Questionnaire-12, Postpartum Bonding Questionnaire, Personal Well-Being Index-Adult, The Basic Psychological Needs Scale, Sense of Coherence-13 and Coping Operations Preference Enquiry.

RESULTS – A total of 63.9% of the participants reported REW. Mothers with REW more often had (a history of) psychological problems compared to mothers with healthy emotional wellbeing ($p=0.007$). Multiple linear regression analysis showed negative associations between emotional wellbeing and satisfaction ($p=0.002$; $p<0.001$), comprehensibility ($p=0.013$) and positive associations between emotional wellbeing and bonding ($p<0.001$), manageability ($p=0.033$), problem solving ($p=0.030$) and avoidance ($p=0,011$) – with an explained variance of 55.5%.

LIMITATIONS – Some limitations of our study are the GHQ-12 cut-off value, the nature and implication of (a history of) psychological problems and the self-selected population.

CONCLUSION – It would be of worth for midwives to discuss with mothers (to be) what to expect. This - to support mothers in making sense of their life as a mother and how various factors might influence their emotional wellbeing. The high prevalence of REW is worrying, but needs to be interpreted with caution.

Keywords: postpartum period; motherhood; mental health; emotional wellbeing; personal satisfaction; bonding

On cloud nine? Maternal emotional wellbeing six weeks up to one year postpartum – A cross-sectional study

INTRODUCTION

The transition to motherhood, during pregnancy up to 12 months postpartum, is recognised as a major event in a woman's life (Delmore-Ko et al., 2000; George, 2011; Mercer, 2004; Prinds et al., 2014). During this process women experience a variety of phases and emotions (Adams et al., 1976). Rubin (1967) and Mercer (2004), the founders of transition models to motherhood, explained that becoming a mother, involves attaining the maternal identity and role. In achieving this, a woman goes through the stages of commitment, attachment and preparation, requiring practical and emotional processes (Mercer, 2004). Feelings of insecurity, stress, anxiety, fear and worries are reported when becoming and being a mother (Meleis, 2010). Transition to motherhood is an event that takes place at every birth, and not only for first time mothers (Prinds et al., 2014). Emotional wellbeing can be described as a good or satisfactory sense of welfare, health and happiness (Ridner, 2004). The emotional wellbeing of women, experiences, satisfaction, and the level of coping with transition to motherhood can impact the mother's overall life balance. Feeling good or being emotionally balanced is important to function in daily life, but also to adapt to changes and challenges in life such as becoming and being a mother (Fontein-Kuipers, 2016a). A maternal imbalance has a subsequent impact on the woman's child(ren), family, daily life functioning including work, relationships and societal functioning, and is associated with reduced physical and emotional wellbeing and impaired mothering (Emmanuel et al., 2011; Fontein-Kuipers, 2016c; Nelson, 2003; Perez-Botella et al., 2015; Van de Velde et al., 2011). A balanced transition to motherhood contributes to the wellbeing of a mother, her partner and their family, a satisfying couple relationship and positive parenting experiences (Milgrom et al., 2011; Paley et al., 2005; Simpson et al., 2003). Sense of wellbeing, maternal perceived bonding, and interaction with the child(ren), values of motherhood and adaptation and coping abilities all influence maternal life balance. A maternal imbalance is associated with reduced emotional wellbeing (Craig and Sawrikar, 2009; Eli et al., 2016; Emmanuel et al., 2011; Hayes et al., 2004; Kaitz, 2007; Mendes, 2013; Mercer, 2004, 2006; Moore, 2002; Staneva et al., 2016).

Reduced emotional wellbeing during transition to motherhood is mainly expressed in depression and anxiety, but also by atypical and/or subclinical symptoms (e.g. feeling low, stressed, reduced sense of coherence...), having an impact on short- and long-term life and health, for both mother and child (Fontein-Kuipers, 2016a; Huizink et al., 2004; Schuurmans

and Kurrasch, 2013). The overall prevalence of women who experience postnatal depression during the first three months postpartum is 19.2% Gavin et al. (2005), while Flemish figures show that of women giving birth in Flanders, 15% to 21.5% develop postnatal depression and anxiety (Bayingana et al., 2000; (Saeys et al., 2015). Prevalence rates of postpartum mental health, however, vary because of the different measures and definitions that are used during the postpartum period (Van Damme et al.). Postpartum anxiety and depression are overall being measured with screening and diagnostic instruments (Bogaerts et al., 2013). However, atypical and/or subclinical symptoms are difficult to measure with instruments that use a pathological lens. Additionally, mothers may not show elevated anxiety and/or depression but may instead report a reduced sense of coherence or coping during or with transition to motherhood or they may experience an impaired life balance. The prevalence of mothers who are "not feeling well" or "emotionally imbalanced" - because of either feeling low, depressed, worried, a lack of confidence or concentration, feeling anxious, panicked, or stressed, or a combination of some or all these factors - could hypothetically be higher, as women with atypical/subclinical symptoms remain under the radar when using diagnostic instruments for specific constructs of reduced emotional wellbeing. Perinatal emotional wellbeing is multidimensional and is influenced by various aspects in a women's life (Wadephul et al., 2020). Therefore, focussing on only depression or anxiety is a rather limited approach and doesn't benefit women in terms of adequately addressing their postpartum emotional wellbeing needs. Important is to have more insight into this multi-dimensional process and to focus on the influences of the bonding and interaction with the child, level of life satisfaction, maternal coping behaviour and sense of coherence regarding emotional wellbeing as a mother.

Women experience insufficient healthcare support that attunes with their needs in transition to motherhood (Deave et al., 2008). The transition to motherhood is known as a powerful, emotionally challenging, and vulnerable experience – requiring emotional support. However, within maternity services, there is strong focus on the biomedical aspects and less on the transcendent emotional changes during transition to motherhood up to one year postpartum (Mercer, 2004). The focus on postpartum emotional health within maternity is mainly on depression during the first weeks, while transition lasts longer to complete, as well as emotional wellbeing includes more than depression alone (Fontein-Kuipers, 2016c). To support women in their emotional needs during the first year postpartum, we need to gain a better understanding about their emotional wellbeing up to one year postpartum. To understand and support women's needs, to provide adequate support and to prevent or improve reduced emotional wellbeing, we need to know what factors influence postpartum women's emotional wellbeing. In this study, we therefore aimed to increase the knowledge and

understanding of reduced emotional wellbeing and the influencing factors during the first year postpartum, through answering the following questions:

- What is the prevalence of reduced emotional wellbeing among Flemish mothers, up to one year postpartum?
- What are the differences in emotional wellbeing of Flemish mothers, looking at socio-demographic details, maternal affection, level of satisfaction and adaptation?
- What are the influencing factors of emotional wellbeing of Flemish mothers?

METHODS

Design and data collection

We conducted a cross-sectional study using an online survey among mothers in Flanders (the Dutch-speaking part of Belgium). Dutch-speaking women who had at least one biological child between six weeks and one year old, were eligible. We excluded women who were younger than 18 years of age. Women with at least one adopted or foster child or a child with illnesses or life-threatening conditions requiring intensive medical support were excluded. Maternal transition processes of these mothers involve unique emotions and concerns, deviating from emotional processes of biologic mothers and mothers with healthy children (Fontenot, 2007; Olsson et al., 2008). To ensure the authenticity of the participants we included a few questions in the beginning of the survey about the inclusion criteria. If they didn't match the right criteria, they survey automatically excluded them.

We employed convenience sampling using varying strategies. Women, meeting the inclusion criteria, were recruited through the obstetric outpatient clinics and inpatient wards of various hospitals in Flanders, the Flemish professional association of midwives, primary schools, and midwives' community practices. After obtaining permissions, flyers and posters were distributed by these organisations to notify potential participants about the study. The information included details about participation and a QR-code to the online survey. Participants were also recruited through social media. Via public posts on Facebook® and Instagram®, a digital flyer was distributed which included the direct link to the survey. The online posts allowed for people to share our message/ post, utilizing snowball sampling. Additionally, mothers were approached at indoor-playgrounds and handed out tablets to complete the survey impromptu. Our sample size calculation showed that a minimum of 382 participants ($p < .05$; CI 95%) was needed to provide reliable results. Data were collected between December 2017 and September 2020, using the Limesurvey® software.

Measures

The online survey included socio-demographic details and six self-reported questionnaires to measure the following concepts: (1) *Emotional wellbeing* with the General Health Questionnaire (GHQ-12); (2) *Maternal affection* with the Postpartum Bonding Questionnaire (PBQ); (3) *Level of current life satisfaction* with The Personal Well-Being Index-Adult (PWI-A) and The Basic Psychological Needs Scale (BPNS); (4) *Adaptation* with the Sense of Coherence (SOC 13) and the Coping Operations Preference Enquiry (Brief-COPE).

General Health Questionnaire (GHQ-12)

The GHQ-12 is a 12-item questionnaire measuring emotional wellbeing in the general population. Each item is scored on a Likert scale from 0 ("Not at all") to 3 ("Much more than usual"). A score $\geq 12/36$ indicates reduced emotional wellbeing (Lundin et al., 2016). The GHQ-12 has been validated in a pregnant, postpartum population and among non-pregnant women, showing acceptable internal consistency scores during pregnancy (α 0.85), at six weeks (α 0.92) and three months postpartum (α 0.95) (Spiteri et al., 2013). A validity study among pregnant women emphasized the emotional wellbeing multi-dimensionality of the GHQ-12 (Kuipers et al., 2019b).

Postpartum Bonding Questionnaire (PBQ)

The PBQ is a 25-item questionnaire for mothers to self-report on their experience of the bond with the child by use of a 6-point Likert scale. A higher score indicating a negative relationship or sense of bonding with the infant or child (Brockington et al., 2001). The Dutch translation of the PBQ has shown sufficient internal consistency on two occasions: 8-12 weeks postpartum (α 0.87) and 20-25 weeks postpartum (α 0.78) (Van Bussel et al., 2010). Bonding is defined as the experienced emotions and feelings by a mother towards her child (Tichelman et al., 2019).

Personal Well-Being Index-Adult (PWI-A)

The PWI-A is a 9-item questionnaire for self-reporting the level of satisfaction on several items in life (e.g., relationships, standard of living). The PWI-A uses a 11-point Likert scale, with a higher score indicating higher levels of satisfaction (InternationalWellbeingGroup, 2013). The Dutch translation of the PWI-A has shown internal consistency (α 0.86) (Van Beuningen and de Jonge, 2011).

Basic Psychological Needs Scale (BPNS)

The BNPS is a 24-item questionnaire to self-report the satisfaction on level of autonomy, competence, and relatedness. This scale is scored on a 5-point Likert scale, with a higher score indicating higher levels of satisfaction (Deci and Ryan, 2000). The BNPS has shown satisfactory internal consistency for the subscales: autonomy, relatedness and competence (α 0.69; α 0.077; α 0.81) for use in a Flemish population (Chen et al., 2015).

Sense of Coherence (SOC-13)

The SOC-13 is a 13-item questionnaire that indicates a person's view on comprehensibility, meaningfulness and manageability of life or life events. The items of the questionnaire are scored using a 7-point Likert scale, with a higher score indicating a stronger sense of coherence (Antonovsky, 1993; Eriksson and Lindström, 2005). The SOC sub scales have shown internal consistency in a population of working mothers; comprehensibility (α 0.82), meaningfulness (α 0.78) and manageability (α 0.77) (Herbst et al., 2007). The Dutch SOC-13-version was validated in a Flemish population and the three components showed an adequate model-fit (Luyckx et al., 2012).

Coping Operations Preference Enquiry (Brief-COPE)

The Brief-COPE is a 21-item questionnaire measuring coping styles and strategies with events and stressors. Four main coping styles are included in the measure: problem solving, avoidant coping, positive thinking and seeking social support (Carver, 1997). The Brief-COPE uses a 4-point Likert scale, with higher scores indicating the use of the respective coping style. The Dutch Brief-COPE has shown fair to good internal consistency in a pregnant population (α 0.66 to 0.85) (Fontein-Kuipers et al., 2015) and among mothers (α 0.71 to 0.93) (Herbst et al., 2007).

Analysis

Crude data were used for descriptive analysis. We reversed the scores of the negative formulated items of the self-reported questionnaires and calculated a sum score per (sub)scale. Normality of distribution was assessed using the Shapiro-Wilk test. We calculated Cronbach's α to measure internal consistency of the scales and the subscales, considering a value of >0.70 as reliable (Dancey et al., 2012). Descriptive statistics were performed to calculate the socio-demographic details and the frequency of mothers with reduced and with healthy emotional wellbeing. Differences based on the socio-demographic details between mothers with reduced emotional wellbeing (REW) and mothers with healthy emotional wellbeing (HEW) were performed using the Mann-Whitney U test and the Chi-square test. Multiple linear regression analysis was performed to examine the relationship between the dependent variable (emotional wellbeing) and the multiple independent variables (socio-

demographic details, maternal affection/ bonding, levels of satisfaction and adaptation). The socio-demographic details which were included in the linear regression dependent on the significant differences in emotional wellbeing. Statistical significance was set at $p < 0.05$ (CI 95%). If more than 10% of the values per case was missing, the participant was excluded for analysis. When $< 10\%$ missing values, we imputed data with the mean value. Data analysis was performed using the Statistical Package for the Social Sciences® (SPSS) version 27.0.

Ethics

The Ethics Committee Social and Human Sciences Antwerp reviewed and approved the study protocol (EA SHW_17_40_03). Participation was voluntary and informed consent for participation and dissemination of the study results was obtained (via box ticking) before the questionnaire could be completed. Privacy and confidentiality of the data of the women were protected.

RESULTS

Participants

385 participants of the 567 participating women were included for analysis; 182 women didn't complete the survey ($> 10\%$ missing cases and values per case) and were excluded. The 385 included participants had a mean age of 29.94 (SD 3.93) years and most of them were in a relationship (93.5%). Table 1 presents the socio-demographic details of the participants. The overall mean sum score of the GHQ-12 was 14.41 (SD 6.08) and 63.9% showed reduced emotional wellbeing (REW) based on the GHQ-12 cut-off value. Internal consistency of all measures were acceptable (Table 2) (Dancey et al., 2012). The subscales meaningfulness and manageability of the SOC-13 and the subscales problem solving, avoidant coping, positive thinking of the Brief-COPE had a Cronbach's $\alpha < 0.70$. We accepted the low Cronbach's α of these five subscales, because these subscales contained only eight items or less (Field, 2013).

Please insert Table 1 here

Differences in emotional wellbeing based on socio-demographic details

The socio-demographic details in Table 1 are presented separately for the two groups of mothers with HEW and mothers with REW. Mothers with REW had significantly ($p = 0.007$)

more often (a history of) psychological problems (10.60%) than mothers with HEW (2.90%). Mothers self-reported if they experienced psychological problems by answering following question: “Have you ever had psychological problems (in the past)?”.

We supplementary analysed to see if there was a difference in emotional wellbeing between primipara (59.20%) and multipara (40.80%). There was no significant difference between HEW and REW in primi- and multipara women ($p=0.220$).

Differences in emotional wellbeing based on maternal affection, level of satisfaction and adaptation

We analysed the differences in levels of satisfaction (PWI-A, BNPS), maternal affection (PBQ) and adaptation (SOC-13, Brief-COPE) between mothers with HEW and mothers with REW (Table 2). Mothers with HEW had significantly higher levels of satisfaction compared to mothers with REW (PWI-A $p<0.001$; BPNS $p<0.001$). Maternal experiences of having a relationship with their child (bonding), was higher among mothers with HEW than among mothers with REW (PBQ $p<0.001$). Mothers with REW had a lower sense of coherence regarding all subscales ‘comprehensibility’, ‘meaningfulness’ and ‘manageability’ compared with mothers with HEW (SOC-13 $p<0.001$). The coping style ‘avoidant coping’ was significantly more often reported by mothers with REW than by mothers with HEW (Brief-COPE $p<0.001$). Mothers with HEW reported significant more often the coping style ‘positive thinking’ than mothers with REW (Brief-COPE $p=0.030$).

Please insert [Table 2](#) here

Multiple linear regression analysis

No multicollinearity was observed between the independent variables; thus, all variables could be entered in the analysis. Our multiple linear regression analysis showed that sense of coherence (subscale comprehensibility) and satisfaction, measured with the PWI-A and BPNS, had a significant negative relationship with mothers’ emotional wellbeing up to one-year postpartum. Bonding and sense of coherence (subscale manageability), problem solving, and avoidant coping had a significant positive relationship with maternal postpartum emotional wellbeing (Table 3). The total explained variance of the model was 55.5%.

Please insert [Table 3](#) here

DISCUSSION

This study offers knowledge about and understanding of the emotional wellbeing of Flemish mothers up to one year postpartum and its influencing factors. In contrast to an earlier Flemish studies, reporting a 15 to 21.5% prevalence of depression and anxiety (Bayingana et al., 2000), this study shows 63.9% of mothers with REW. A history of psychological problems seems to enhance REW. This has also been observed in other studies with pregnant samples (Fontein-Kuipers et al., 2015). We measured emotional wellbeing with the GHQ-12. This questionnaire measures different dimensions of emotional wellbeing like, depression, anxiety, stress and functioning (Doi and Minowa, 2003; Ip and Martin, 2006). The different dimensions of emotional wellbeing – not only measuring depression and/or anxiety - might explain the high prevalence of REW in Flanders. This because the GHQ-12 isn't a psychometric instrument with a pathologic character, but a questionnaire focusing on emotional wellbeing in a general population – primary care setting (Böhnke and Croudace, 2016; Martin and Jomeen, 2003). Our results indicate 63.9% of the mothers are not feeling well and/or are not functioning well/struggling with this new situation. Another explanation of the high prevalence of REW during the first year postpartum might be the pressure nowadays to idealise motherhood (Thompson, 2006). The social norms and high expectations influence mothers' affect, cognition and behaviour (Loyal et al., 2021). Feelings of being pressured to be a perfect mother are related to increased feelings of guilt, lower self-efficacy beliefs, higher stress levels and higher parental burnout (Borelli et al., 2017; Henderson et al., 2016; Meeussen and Van Laar, 2018; Rotkirch and Janhunen, 2009). Our sample includes a high number of women with a high level of education, in a relationship and with a Flemish ethnic background. Interestingly to note is that this sample – on face value, mothers in a stable and comfortable position in life - report a high prevalence of REW. These findings highlight the importance to be aware of emotional wellbeing of all mothers (i.e. universal prevention), in contrast to a focus on mothers in more vulnerable positions in life (i.e. selective prevention) (Fontein-Kuipers, 2015, 2016b). Women in this assumed 'established and trouble free' group are vulnerable to develop emotional distress (MBRRACE-UK, 2018), even more highlighted by the women with (a history of) psychological problems. We found no differences in emotional wellbeing between primi- and multipara. Our findings align with the idea transition to motherhood is an event that takes place at every birth, and not only for first time mothers (Prinds et al., 2014). Thus, irrespectively the sociodemographic factors of a women, all mothers can be vulnerable during their own experience of motherhood, and in particular those with (a history of) psychological problems (Lotz, 2017).

Our regression analysis showed that the mother's level of satisfaction in life (e.g., relationships, standard of living) and on their level of autonomy, competence, and relatedness, have a significant negative relationship with emotional wellbeing. Higher levels of satisfaction are associated with lower scores on the GHQ-12 – thus HEW. When parents are more satisfied with their lives, they are less likely to experience emotional problems (Qi and Wu, 2020). Additionally, in this study, bonding with the child is also an important factor to influence the mother's emotional wellbeing. When there is a negative relationship or sense of bonding with the infant or child, a mother is more likely to experience reduced emotional wellbeing. Our results are similar to the findings of a systematic review, which concluded that depressive symptoms are negatively associated with postnatal mother-to-infant bonding quality. Bonding in the postpartum period is positively associated with the quality of bonding at later time points, and is considered to be important for the socio-emotional development of the child (Tichelman et al., 2019). Another influencing factor of emotional wellbeing is the sense of coherence. A strong maternal sense of coherence, the feeling of confidence that the life as a mother is foreseeable and that things will work out as well as can reasonably be expected, is associated with a better emotional wellbeing and is generally associated with reduced anxiety and depression (Hildingsson, 2017; Lindstöröm and Erikson, 2010; Widarsson et al., 2014). In this study the mothers with REW scored indeed significantly lower on the different subscales of sense of coherence than mothers with HEW. Although, in our regression analysis only 'comprehensibility' showed a significant negative relationship with emotional wellbeing, while 'manageability' has a significant positive relationship with emotional wellbeing. There can be suggested that having (a history of) psychological problems may influence manageability. Previous research shows that pregnant women with a pre-pregnancy history of psychological problems were more likely to be found among women with a low sense of coherence (Voogand et al., 2020). Another important factor influencing emotional wellbeing is the mother's coping style. Mothers with HEW scored significantly higher on the coping style 'positive thinking' and significantly lower on the coping style 'avoidant coping' than mothers with REW. In the regression analysis the coping style 'problem solving' has a significant positive relationship with the GHQ-12. Again, it can be suggested that the factor having (a history of) psychological problems may influence this coping mechanism. Pinar et al. (2018) showed when psychological resilience increase, problem-solving skills increase as well. Our regression model has an explained variance of 55.5%, suggesting that not all elements provide insight in the bigger picture – albeit that the explained variance was good. A previous Flemish study among women with older children showed maternal age, level of shared parenting with the other parent, level of education, other ethnic background and income level significantly influences the overall life balance (Kuipers et al., 2019a). Hypothetically, other factors such as

mode of delivery or major life events may influence mother's emotional wellbeing postpartum. Further research about the influencing factors of emotional wellbeing is recommended.

When we compare our results with other studies with the GHQ-12 in the postpartum population, the prevalence in Flanders is quite high compared to prevalence's of 9% and 11% of the mothers in France and Italy and 38.4% of Brazilian mothers (Rondo et al., 2013). A possible explanation for the lower prevalence's, can be the moment of scoring (at different moments postpartum) as well as the GHQ-12 cut-off value. Spiteri et al. (2013) validated the GHQ-12 in a postpartum population – up to 13 weeks postpartum, showing a good internal consistency. The GHQ-12 is not validated until one year postpartum, only during the early postpartum period. Although, the GHQ-12 is validated in the early postpartum period, there are suggestions to use a higher cut-off score during the postpartum period (Navarro et al., 2007). During pregnancy a cut-off value of $\geq 17/36$ showed to enable a more effective identification of reduced emotional wellbeing (Kuipers et al., 2019b). This suggests considering validating and possibly adapting the cut-off value of the GHQ-12 for Flemish mothers up to one year postpartum. In addition, different scoring methods are being used with the GHQ-12 in the postpartum period (Romito et al., 1999; Rondo et al., 2013), making it difficult to compare our results with studies using other methods. Further research, in particular about the cut-off value in the postpartum population is recommended.

This study draws attention to aspects of supporting women in their emotional wellbeing during the first year postpartum and the results are important for all healthcare practitioners that are involved of the support of mothers during this period. Discussing with women what to expect when becoming and being a mother, including talking about difficulties and adaptation, seems of merit to support mothers in understanding and managing motherhood and to reflect on the meaning of motherhood. Also, discussing and reflecting on women's coping mechanisms and resources when being a mother seem to be important elements for women to make sense of their life as a mother and to achieve or maintain emotional health (Lindström et al., 2017; Mercer, 2004, 2006). Pregnant women expressed the need for informative support to positively progress through the process of transition to motherhood, in particular, what it means to take care of a child and the impact and meaning of being responsible for a dependent human being (Gilmer et al., 2016; Halford et al., 2010; Milgrom et al., 2011; Seefat-van Teeffelen et al., 2011). Women appoint midwives as experts to provide this care, having the necessary knowledge and skills in supporting them in the transition to motherhood, at the right moment in time (Ahdén et al., 2012; Borelli, 2014). The role of the midwife includes family and community health counselling and preparation for motherhood, as well as supporting the woman during the postpartum period in her (new) parenting role and assessing her mood and

feelings about motherhood (FRV, 2016; ICM, 2018; KCE, 2014). Midwifery care and support in Flanders can legally be provided up to one year postpartum, and thus midwives are involved throughout the period of transition to motherhood for a substantial period of time (VBOV, 2020). To identify more in-depth insights regarding the specific supportive needs of postpartum women during transition to motherhood and to better understand mothers' experiences and perspectives of their emotional wellbeing, qualitative research among mothers is recommended.

Limitations

A limitation of this study might be the way our population of interest was approached and our method of collecting the data. Most of the participants have a high level of education, are in a relationship and have a Flemish background, affecting generalizability of the findings to women with other backgrounds or characteristics. However, comparing our sample with the general population of Flemish mothers, our sample shows a good representation of the target population (SPE, 2018; StatisticsBelgium, 2018). In addition, self-selection, via social media platforms, might have led to sampling bias, although Facebook® can be a useful tool to recruit a specific target population (Whitaker et al., 2017). The highly self-selected population is a limitation of this study. Given the number of missing cases, we might have attracted women interested in the topic and/or having reduced emotional wellbeing. We are unaware whether online questioning affected the answers given by the participants (Fontein-Kuipers and Jomeen, 2019). The design of this study can be seen as a weakness. In a cross sectional study, it is difficult to make a causal inference and identified associations might be difficult to interpret (Xiaofeng and Zhenshun, 2020). Important to keep in mind is some of the Brief-COPE subscales did not have an acceptable Cronbach's α . We accepted the low Cronbach's α of these five subscales, because these subscales contained eight items or less (Field, 2013), although this can be regarded as a limitation of our study. Another important aspect to keep in mind is the data collection took partially place during the COVID-19 pandemic. Data was collected between December 2017 and September 2020 - Belgium introduced the lockdown period on 13 March 2020, possibly affecting our findings. Hypothetically, stress and functioning of mothers might be influenced during the lockdown period. Additionally, social support was less 'available' during the lockdown period. Social support is recognized to contribute to a better life balance and is important during the transition to motherhood (Kuipers et al., 2019a). Reduced available social support might contribute to explain the high prevalence of the REW in our sample. Although, a study in Belgium showed the COVID-19 pandemic seems to have a positive effect on postpartum women during the first year postpartum, in particular for women with (a history of) perinatal psychological problems and for those women who experienced

emotional support. The findings suggest that less external stimuli caused by lockdown restrictions might have a positive effect on postpartum women's emotional wellbeing (Kuipers et al., 2022). Another limitation of this study can be the length of the postpartum period we covered in our study – six weeks to one year postpartum. Hypothetically, emotional wellbeing can be different at seven weeks postpartum compared to one year postpartum. Previous research showed differences in the prevalence of depressive symptoms at three, six, 12 and 18 months postpartum (Brown et al., 2021). Additional research focusing on various postpartum periods can therefore be suggested. In this study we focused on one year postpartum because the transition process to motherhood predominantly takes place from the early stages of pregnancy up to four to 12 months postpartum (Delmore-Ko et al., 2000; George, 2011; Mercer, 2004).

CONCLUSION

The mothers in this Flemish study show a high prevalence of REW during the first year postpartum. Mothers with REW more often had a history of psychological problems compared to mothers with HEW. Multiple factors show to be associated with the emotional wellbeing of mothers during the first year postpartum: satisfaction, comprehensibility, bonding, manageability, problem solving and avoidance. Advisable is to incorporate these factors in the support of women in their emotional wellbeing during the transition process to motherhood. Talking about what to expect when becoming and being a mother, to support mothers in their sense of coherence, and reflecting with women on their coping resources when being a mother can play a role to improve mothers' emotional wellbeing. We need to take the limitations of the study into account when interpreting the findings, in particular the GHQ-12 cut-off value, the nature and implication of (a history of) psychological problems and the composition of the sample. Further research on the GHQ-12 and on more influencing factors of emotional wellbeing postpartum is recommended.

TABLES

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Table 1: Socio-demographic details and differences between healthy and reduced emotional wellbeing (GHQ-12).

		Total (n = 385)	Healthy emotional wellbeing (HEW) 36.10% (n = 139)	Reduced emotional wellbeing (REW) 63.90% (n = 246)	p-value
Maternal age in years	mean (SD; min-max)	29.94 (3.93; 21-43)	29.80 (4.17; 21-43)	30.02 (3.79; 21-39)	0.332 ¹
Relationship	% (n)				0.383 ²
• Single		6.50 (25)	5.00 (7)	7.30 (18)	
• In relationship		93.50 (360)	95.00 (132)	92.70 (228)	
Religious	% (n)	60.80 (234)	60.40 (84)	61.00 (150)	0.916 ²
Flemish ethnic background	% (n)	96.40 (371)	94.20 (131)	97.60 (240)	0.095 ²
Number of biological children	mean (SD; min-max)	1.55 (0.75; 1-4)	1.50 (0.75; 1-4)	1.57 (0.76; 1-4)	0.311 ¹
Living environment	% (n)				0.927 ²
• Rural		57.10 (220)	56.80 (79)	57.30 (141)	
• Urban		42.9 (165)	43.20 (60)	42.70 (105)	
Highest level of education	% (n)				0.556 ²
• Elementary, pre-vocational, secondary education		4.20 (16)	5.00 (7)	3.70 (9)	
• Secondary education preparing for higher education		22.90 (88)	23.00 (32)	22.80 (56)	
• Bachelor (University College) or equivalent		46.80 (180)	50.00 (69)	45.10 (111)	
• Master and University level		26.20 (101)	22.00 (31)	28.40 (70)	
Working status *	% (n)				
• Employed		81.60 (314)	86.30 (120)	78.90 (194)	0.070 ²
• Self-employed		7.80 (30)	5.00 (7)	9.30 (23)	0.129 ²
• Self-employed secondary occupation		4.90 (19)	7.20 (10)	3.70 (9)	0.124 ²
• Helper/cooperating family member		1.30 (5)	2.20 (3)	0.80 (2)	0.263 ²
• Student		2.60 (10)	3.60 (5)	2.00 (5)	0.354 ²
• Unemployed		5.50 (21)	3.60 (5)	6.50 (16)	0.228 ²
• Incapacitated for work		0.80 (3)	1.40 (2)	0.40 (1)	0.269 ²
• Housewife		5.50 (21)	3.60 (5)	6.50 (16)	0.228 ²
Smoking	% (n)	7.80 (30)	7.20 (10)	8.10 (20)	0.742 ²
Drug use	% (n)	0.80 (3)	0.70 (1)	0.80 (2)	0.920 ²
Alcohol use	% (n)	49.60 (191)	45.30 (63)	52.00 (128)	0.206 ²
Physical problems/inability/handicap	% (n)	19.50 (75)	15.10 (21)	22.00 (54)	0.103 ²
(History of) psychological problems	% (n)	7.80 (30)	2.90 (4)	10.60 (26)	0.007 ²

SD = standard deviation. p-value CI 95%

¹ Mann-Whitney U test (distribution of normality: Shapiro-Wilk test)

² Chi-square test

* More answers possible

Table 2: Mean scores PWI-A, BPNS, PBQ, SOC, Brief-COPE and differences between healthy and reduced emotional wellbeing (GHQ-12).

	Total (n = 385)	Cronbach's α	Healthy emotional wellbeing (HEW) 36.10% (n = 139)	Reduced emotional wellbeing (REW) 63.90% (n = 246)	p-value
	<i>mean ± SD (min-max)</i>		<i>mean ± SD (min-max)</i>	<i>mean ± SD (min-max)</i>	
General Health Questionnaire-12 (scores 0-3)	1.20 ± 0.51 (0-3)	0.873	0.72 ± 0.17 (0-0.92)	1.47 ± 0.42 (1-3)	< 0.001 ¹
• Sum score GHQ-12	14.41 ± 6.08 (0-36)		8.59 ± 2.04 (0-11)	17.70 ± 5.05 (12-36)	< 0.001 ¹
Personal Well-Being Index-Adult (scores 0-10)	7.17 ± 1.20 (1.78-10)	0.839	7.71 ± 0.93 (4.80-10)	6.86 ± 1.23 (1.78-9.67)	< 0.001 ¹
Basic Psychological Needs Scale (scores 1-5)	3.68 ± 0.58 (1-4.83)	0.923	4.04 ± 0.40 (2.92-4.83)	3.48 ± 0.56 (1-4.71)	< 0.001 ¹
Postpartum Bonding Questionnaire (scores 0-5)	0.50 ± 0.36 (0-2.40)	0.891	0.34 ± 0.20 (0-1)	0.59 ± 0.40 (0-2.40)	< 0.001 ¹
Sense of Coherence (scores 1-7)		0.835			
• Subscale manageability	4.07 ± 1.08 (1.25-7)	0.637	4.49 ± 1.07 (2-7)	3.83 ± 1.00 (1.25-6.50)	< 0.001 ¹
• Subscale meaningfulness	4.82 ± 0.98 (2-7)	0.631	5.28 ± 0.82 (3.25-7)	4.56 ± 0.96 (2-7)	< 0.001 ¹
• Subscale comprehensibility	4.20 ± 1.08 (1-7)	0.702	4.71 ± 1.02 (2-7)	3.92 ± 1.01 (1-6.60)	< 0.001 ²
Coping Operations Preference Enquiry (scores 1-4)		0.701			
• Subscale problem solving	2.79 ± 0.61 (1-4)	0.669	2.84 ± 0.59 (1-4)	2.75 ± 0.61 (1.33-4)	0.147 ¹
• Subscale avoidant coping	1.78 ± 0.36 (1-3.38)	0.607	1.68 ± 0.30 (1.13-2.50)	1.83 ± 0.38 (1-3.38)	< 0.001 ¹
• Subscale positive thinking	2.42 ± 0.51 (1-3.80)	0.544	2.50 ± 0.50 (1.20-3.60)	2.38 ± 0.50 (1-3.80)	0.030 ¹
• Subscale seeking social support	2.62 ± 0.66 (1-4)	0.838	2.63 ± 0.61 (1.20-4)	2.62 ± 0.69 (1-4)	0.965 ¹

SD = standard deviation. p-value CI 95%

Normality: Shapiro-Wilk test

¹ Mann-Whitney U test

² Independent t-test

Table 3: Multiple linear regression (GHQ-12 dependent variable).

Factor	B	(Standard errors)	Beta	t	p-value	95% CI for B	
						Lower bound	Upper bound
(Constant)	30.757	(2.712)		11.343	< 0.001	25.425	36.089
(History of) psychological problems	0.303	(0.880)	0.013	0.345	0.731	-1.425	2.033
Personal Well-Being Index-Adult	-0.088	(0.028)	-0.156	-3.155	0.002	-0.142	-0.033
Basic Psychological Needs Scale	-0.187	(0.027)	-0.426	-7.051	< 0.001	-0.239	-0.135
Postpartum Bonding Questionnaire	0.133	(0.028)	0.197	4.818	< 0.001	0.079	0.188
Sense of coherence: manageability	0.162	(0.075)	0.115	2.153	0.032	0.014	0.310
Sense of coherence: meaningfulness	0.001	(0.077)	0.000	0.008	0.994	-0.150	0.151
Sense of coherence: comprehensibility	-0.164	(0.065)	-0.146	-2.511	0.012	-0.293	-0.036
Coping: problem solving	0.293	(0.135)	0.088	2.173	0.030	0.028	0.557
Coping: avoidant	0.230	(0.089)	0.109	2.588	0.010	0.055	0.405
Coping: positive thinking	-0.075	(0.095)	-0.031	-0.785	0.433	-0.262	0.113
Coping: social support	0.010	(0.069)	0.006	0.148	0.883	-0.125	0.145

R = 0.745

R square = 0.555

Adjusted R square = 0.542

ANOVA sig < 0.001

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HIGHLIGHTS

- This study shows 63.9% of mothers having reduced emotional wellbeing
- (A history of) psychological problems seems to enhance reduced emotional wellbeing
- We measured different dimensions of emotional wellbeing via the GHQ-12
- Multiple factors show to be associated with the emotional wellbeing of mothers
- It is important to support mothers in obtaining and maintaining emotional wellbeing

Journal Pre-proofs