Psychological Distress and Loneliness among New Fathers During the Peripartum Period: The Roles of Perceived Stress and Social Support

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Abstract

Aim: The aim of this study was to explore fathers' mental health during the peripartum period, how stress contributed to psychological distress and loneliness and the ways in which social support moderated these outcomes. **Method:** This research used a convergent mixed methods design. Both quantitative and qualitative data were collected. In the quantitative strand, The Cohen Perceived Stress Scale, The Edinburgh Postnatal Depression Scale, The DeJong Gierveld Loneliness Scale and The Multidimensional Scale of Perceived Social Support were administered during the third trimester of the prepartum period and again at 3 and 6 months postpartum. Data was collected across 3 waves from February 2021 until October 2021. A total of 91 fathers participated at wave 1, 50 fathers participated at wave 2, and 24 fathers participated at wave 3. In the qualitative strand, one-to-one semi structured interviews were conducted to explore fathers' experiences with postpartum social support and loneliness. Data was collected from 12 fathers from April 2021 until July 2022. **Results:** The quantitative strand of this study found 1) social support did not significantly moderate the relationship between perceived stress and psychological distress and 2) social support did not significantly moderate the relationship between perceived stress and loneliness during the third trimester of the prepartum period. However, at three months postpartum, social support did significantly moderate the relationship between perceived stress and loneliness. Upon analysing interview transcripts, three key themes were drawn from the data (i) Being the breadwinner (ii) Seeking postpartum social support and (iii) Feeling lonely when lacking postpartum support. **Conclusions:** Both strands of this research highlight the potential buffering role of social support on the relationship between postpartum stress and loneliness. It is important to target low partner support, low support from family, friends and from other fathers as potentially modifiable factors for peripartum loneliness interventions.

Chapter 1

Introduction

Psychological Distress and Loneliness among new fathers during the peripartum period: the roles of perceived stress and social support

The peripartum period, defined as the period from pregnancy (prepartum) to one year post birth (postpartum), is a joyful time for many parents (Salonen et al., 2010). It is also a time of transition and change. It is consistently recognised to be a period of psychological adjustment and is associated with risk of distress in mothers (Emmanuel & St John, 2010). While the majority of research and clinical oversight focuses on new mothers (O'Brien et al., 2017), fathers are also at risk of psychological distress during the peripartum period. 1/5 women report experiencing depression during the peripartum period (Halal et al., 2021). 1/10 men report experiencing peripartum depression, with as many as 1/4 experiencing depression at 3 to 6 months postpartum (Paulson & Bazemore, 2010; Philpott et al., 2018). During the peripartum period, fathers face many changes to their lives, which, while expected and likely welcomed, can also be challenging and stressful (Philpott et al., 2017).

During the peripartum period, fathers experience mild to moderate stress levels which increase from the prepartum period to the time of birth and decrease from the time of birth to the later postpartum period (Ngai & Ngu, 2014; Ngai & Ngu, 2015; Philpott et al., 2017; Vismara et al., 2016). Stressors which are unique to fathers in the peripartum period include having negative perceptions about pregnancy, childbirth and the first few weeks with the new-born baby (Hildingsson & Thomas, 2014). Work and financial stresses (Seah & Morawska, 2016; Yu et al., 2011), decreased social support and increased social isolation (Gao et al., 2009; Hildingsson et al., 2014) are examples of causal factors of additional paternal peripartum stress.

It is important to measure and consider paternal peripartum stress not just because it is undesirable in its own right, but also because of the consequences of stress. Paternal peripartum stress may negatively impact social relationships as couples spend less time

together and receive less emotional support from one another (Darwin et al., 2017). Paternal peripartum stress has also been associated with psychological distress (Skari et al., 2002), anxiety (Wee et al., 2015) and depression (Gao et al., 2009; Mao et al., 2011; Wee et al., 2015). These findings are in line with evidence obtained from research within the general population, wherein stress is consistently identified as a risk factor for the development of mental health problems (Schönfeld et al., 2016).

Paternal peripartum depression

Among mothers, peripartum depression is recognised as a subtype of major depressive disorder in the DSM-5, with the onset of symptoms occurring during pregnancy or in the four weeks following delivery (APA, 2018). Symptoms of depressive disorders include depressed mood, loss of energy and/or interest in activities, sleep problems or appetite/weight changes, poor concentration, feelings of worthlessness, guilt and/or hopelessness, and suicidal thoughts (APA, 2018). Fathers experiencing depression with peripartum onset may have symptoms which overlap with major depressive disorder, such as depressed mood, loss of interest in activities and sleep problems (Baldoni & Giannotti, 2020). Health professionals regularly underestimate these symptoms in fathers, considering them as normative experiences during the peripartum period (Baldoni & Giannotti, 2020).

Timing is the factor that distinguishes peripartum major depressive episodes from depression occurring at other times (Habib, 2012; Massoudi, 2013). Depressive episodes that occur beyond 4-weeks following delivery, are considered as a depressive disorder without the peripartum specifier (APA, 2018). However, paternal peripartum depression tends to develop more gradually, decreasing shortly following childbirth and increasing throughout the first year (Kim & Swain, 2007; Paulson & Bazemore, 2010). A meta- analysis of 43 studies indicated that 10% of fathers experience peripartum depression with this rate increasing to 25.6% at 3- to 6 months postpartum (Paulson & Bazemore, 2010).

Part of the reason paternal peripartum depression has been under-researched is because of the assumption that maternal peripartum depression was related to fluctuating hormone levels. However, fathers too experience hormonal changes which may be associated with peripartum depression. Lower levels of testosterone, (Fleming et al., 2002), are associated with both maternal and paternal peripartum depression (Saxbe et al., 2017). Dysregulated oestrogen has also been identified as a risk factor for paternal depressed mood (Bruno et al., 2020).

Peripartum depression is also correlated with psychosocial risk factors (See appendix A). Having a previous or existing psychiatric disorder has been identified as a risk factor for paternal peripartum depression (Philpott et al., 2018). Demographic factors associated with paternal peripartum depression include having a lower level of education (Boyce et al., 2007; Mahmoodi et al., 2017; Philpott et al., 2016; Zhang et al., 2016) and unemployment (Zhang et al., 2016). Relationship factors associated with paternal peripartum depression include having a partner who is experiencing depression (Gao et al., 2009; Matthey et al., 2003; Morse et al., 2000; Zhang et al., 2016), marital dissatisfaction (Koh et al., 2014; Morse et al., 2000; Zhang et al., 2016) and lower levels of perceived social support (Gao et al., 2009; Kamalifard et al., 2014; Mao et al., 2011). Experiences related to fatherhood correlated with paternal peripartum depression include an unplanned pregnancy (Gao et al., 2009; Koh et al., 2014), infant sleep problems (Philpott et al., 2018) and work-family conflict (Koh et al., 2014). Social perceptions about the fatherhood role e.g. (work / financial stress associated with being the ‘breadwinner’) can also result in depressed mood (Chhabra et al., 2022; Morse et al., 2000).

Paternal peripartum anxiety

Anxiety has been described as a feeling of fear or worry which is centred around future threat, characterised by physiological symptoms such as palpitations, and trembling

(APA, 2018). Anxiety is adaptive in many situations when it facilitates the avoidance of danger or threat - it is considered to be maladaptive when it interrupts daily life, is occurring often, or is severe (Beesdo et al., 2009). There appears to be a lack of agreement on whether peripartum anxiety differs to anxiety occurring at other stages.

Anxiety is more common than depression within the general population (Bandelow & Michaelis, 2015) and also during the peripartum period (Matthey et al., 2003; Wynter et al., 2013). The prevalence of anxiety disorders within the general population is 14%, compared to a prevalence of 6.9% for depressive disorders (Bandelow & Michaelis, 2015). Wynter et al. (2013) highlighted paternal anxiety was more common than depression during the first six months postpartum, with the prevalence of anxiety being 17.4%, compared to 4.1% for depression. Unlike depressive symptoms, anxiety increases following birth and decreases over time during the peripartum period (Keeton et al., 2008).

Research has identified a number of psychosocial risk factors for elevated levels of anxiety during the peripartum period (See appendix A). Having a previous or existing mental health issue is associated with paternal peripartum anxiety including stress, symptoms of anxiety (Philpott et al., 2019) and depression (Matthey et al., 2003; Parfitt & Ayers, 2014). Demographic factors associated with paternal peripartum anxiety include having a lower education level (Mahmoodi et al., 2017); lower income level (Mahmoodi et al., 2017) and becoming a father at a younger age (Koh et al., 2015). Relationship factors, such as having lower levels of social support (Koh et al., 2015), marital distress (Koh et al., 2015) and having a partner who is experiencing depression are correlated with paternal peripartum anxiety (Koh et al., 2015; Matthey et al., 2003). Experiences related to fatherhood associated with peripartum anxiety include becoming a father at an older age (Fisher et al., 2012), having an unplanned pregnancy (Fisher et al., 2012), having twins (Vilska et al., 2009), anxiety surrounding the birth (Kannenberg et al., 2016), exposure to stress during birth

(Zerach & Magal, 2017), work-family conflict (Koh et al., 2015), and gender role stress (Chhabra et al., 2022).

Paternal peripartum loneliness

Due to the biological and psychosocial risk factors in the peripartum period, fathers are more susceptible to psychological distress (anxiety & depressive symptoms) during this time (Chhabra et al., 2022). Fathers are also susceptible to loneliness during this time. Situational loneliness is experienced by individuals who once had satisfying relationships but are now faced with a specific life transition, such as childbirth, that disrupts these relationships (Heinrich & Gullone, 2006). As fathers experience relationship disruptions and changes during the peripartum period (Darwin et al., 2017; Keizer et al., 2010; Parfitt & Ayers, 2014), they may be susceptible to situational loneliness during this time.

Risk factors for peripartum loneliness include demographic factors, mental health issues and relationship factors. Mothers increasing age correlates with loneliness during pregnancy (Geller, 2004). Having reduced social contact and having relationships which lack empathy have been identified as risk factors for maternal loneliness (Lee et al., 2019). Lower levels of marital satisfaction (Junttila et al., 2015) have been associated with maternal and paternal loneliness. Recently married fathers become lonelier during the peripartum period due to isolation from family and friends as increased focus is placed on the family unit (Keizer et al., 2010). Mental health issues may affect the couple relationship, resulting in feelings of loneliness (Johansson et al., 2020). Mental health issues correlated with peripartum loneliness include stress (Kent-Marvick et al., 2021), depressive symptoms and social phobia (Johnsson et al., 2020; Junittila et al., 2015).

A small body of research has explored peripartum loneliness, however very few studies have included fathers as participants. Paternal peripartum loneliness is under-researched, no study has focused exclusively on fathers' experiences of peripartum

loneliness. Further research is required to explore fathers' loneliness during the peripartum period.

Paternal peripartum stress & impact on wellbeing

As previously discussed, peripartum stress is linked to the development of psychological distress (depression and anxiety) and loneliness. Gao et al., (2009) conducted a cross-sectional study to examine the prevalence of maternal and paternal peripartum depression and its associated factors. Higher levels of perceived stress were correlated with higher levels of depressive symptoms, in mothers and fathers at 6-8 weeks postpartum. Similarly, Mao et al. (2011) conducted a cross-sectional study to identify differences in the prevalence of depression and related factors between mothers and fathers during the postpartum period. Higher levels of perceived stress predicted depressive symptoms in mothers and fathers at 6-8 weeks postpartum. Anding et al. (2016) conducted a cross-sectional study which examined the correlates of depressive symptoms in the postpartum period. Perceived stress was the strongest predictor of depressive symptoms in mothers and fathers at 2 weeks postpartum. Kamalifard et al. (2014) conducted a cross-sectional study which examined fathers' depression and its relationship with perceived stress (at 6 to 12 weeks postpartum). Higher levels of perceived stress were found to predict paternal peripartum depressive symptoms.

Wee et al. (2015) conducted a longitudinal prepartum study to examine whether fathers' depressive symptoms predict anxiety and stress or whether anxiety and stress predict depressive symptoms. Higher levels of stress at 25 weeks gestation were associated with depressive and anxiety symptoms at 33 weeks gestation. This finding suggests fathers' prepartum stress may play a key role in the development of depressive and anxiety symptoms later in the prepartum period. Zerach & Magal (2017) conducted a short-term longitudinal study which examined anxiety symptoms among fathers attending the birth of their first child.

Subjective exposure to stress at birth contributed to anxiety symptoms at 1 month postpartum. Vismara et al. (2016) conducted a longitudinal postpartum study to explore how parenting stress and anxiety contributed to depressive symptoms. Parenting stress influenced maternal postpartum depression starting at 3 months postpartum, whereas it influenced paternal postpartum depression at 6 months postpartum (Vismara et al., 2016). Vismara et al. (2016) suggested this result may reflect how fathers become more involved with their infants over time, compared with mothers.

The relationship between stress and loneliness has been explained in several models. According to the differential-exposure model, lonely individuals are exposed to stressful events more than non-lonely individuals (Cacioppo et al., 2003). According to the life event model, a single life event can lead to adjustment issues such as loneliness and the chronic stress model states maladjustment i.e. (loneliness) is worsened as stressful events persist (Ireland & Qualter, 2008). Stress is associated with loneliness within the general population (Hawkley et al., 2008; Mahon et al., 2006). Stress is also correlated with loneliness in postpartum populations. Kent-marvick et al. (2021) conducted a scoping review of loneliness in pregnant and postpartum people and found loneliness is common in this population, and it increases, particularly when stress increases.

It is critical to identify factors involved in the relationship between paternal peripartum stress and negative mental health outcomes. A better understanding of modifiable risk and protective factors may aid in the development of preventative interventions and identify fathers at risk for the development of mental health problems.

Social support in the peripartum period

Social support is a modifiable factor which plays a protective role in relation to the negative effects of stress on mental health. According to the main effect model (Cohen & Wills, 1985) of social support, social support has a beneficial effect on psychological

wellbeing regardless of whether or not an individual is experiencing stress. According to The Stress Buffering Model (Cohen & Wills, 1985) of social support, social support protects individuals from the adverse effects of stress, therefore, improving psychological health outcome (Cohen & Wills, 1985). This model states stress will have harmful effects on the wellbeing of individuals with little or no social support, while these effects will be lessened for individuals with higher levels of social support (Cohen & Wills, 1985). For fathers in the peripartum period, social support functions as a protective factor, reducing the effect of peripartum stress on psychological wellbeing in the model. Therefore, it is possible to hypothesise stress may have a differential impact on fathers' wellbeing depending on their perceived levels of social support during the peripartum period.

In line with the stress buffering hypothesis, social support reduces psychological distress, during times of stress in the general population (Kim et al., 2008). On the other hand, a lack of social support during stressful life events, especially for those in need of protection, can be very distressing (Kim et al., 2008). Research indicates social support may be an important point of intervention in reducing maternal (Heh, 2003) and paternal peripartum distress (Gao et al., 2009). Creating friendships with other mothers who share a similar experience is protective against maternal loneliness (Lee et al., 2019). Similarly, fatherhood support groups facilitate social connection and reduce fathers' feelings of loneliness (Wells et al., 2021).

Although social support may play a protective role in relation to fathers' mental health, fathers may be socially isolated during the peripartum period. Social isolation and exclusion have many causes in the peripartum period; for instance, fathers feel excluded by health professionals (Gervais et al., 2016; Fletcher et al., 2006; Steen et al., 2012; Smyth et al., 2015; Entsieh & Hallström, 2016). Men generally have more limited support networks than women and often turn to their partners for support (Dykstra & de Jong Gierveld., 2004).

This reliance can become problematic during the peripartum period, when mothers are heavily focused on their new-born infant and cannot offer the same level of support to their partner (Fletcher et al., 2015). Fathers also doubt their entitlement to support and feel that services 'should' be centred around mothers' experiences (Darwin et al., 2017). Rominov et al. (2018) found fathers who were experiencing help seeking stigma, were less likely to engage with peripartum services. Traditional masculine gender norms e.g. (appearing to be strong & non-emotional) are linked to reduced help-seeking behaviour in men. The violation of these norms may lead to negative evaluations from others. A lack of engagement with peripartum services could be a way for fathers to prevent such stigma (Rominov et al., 2018).

Covid-19 social distancing – impact on fathers' relationships & loneliness

Restrictions introduced to reduce the spread of Covid-19 and to protect vulnerable groups, further limited fathers' access to support. Practicing social distancing during Covid-19 has been of particular importance for pregnant women, considered a vulnerable group. In many Irish maternity hospitals, partners were prohibited from attending peripartum appointments e.g. (check-ups & scans) alongside their partner and policies of restricted visitation in hospital wards and neonatal intensive care units e.g. (only one selected person permitted to visit) were introduced (Renfrew et al., 2020; Smith et al., 2021). Parent education classes, which connect parents socially, were also postponed and offered online (Sheil &McAuliffe, 2021). Many women were alone during the early stages of labour, while fathers waited in hospital car parks (Panda et al., 2021).

Although the pandemic resulted in a number of restrictions across the population, these experiences may have been particularly difficult for parents, given the heightened needs for social support during the peripartum period. Moltrecht et al. (2022) qualitatively explored young parents experiences of pregnancy and parenting during The Covid-19 pandemic. Parents described feeling alone and highlighted the absence of support as a major area of

concern (Moltrecht et al., 2022). Fathers felt excluded from maternity care and lacked information about their partners pregnancy (Moltrecht et al., 2022).

Fathers may be more susceptible to loneliness when faced with Covid-19 social distancing restrictions. Although, it remains unclear whether loneliness has increased during the Covid-19 pandemic. Some studies have found increases in loneliness during the Covid-19 pandemic (Killgore et al., 2020), while others have not found changes in loneliness (Luchetti et al., 2020) or have found decreases in loneliness (Bartrés-Faz et al., 2021). Very little research has examined the trajectory of loneliness during the Covid-19 pandemic in peripartum populations. Research which has examined peripartum loneliness found the prevalence of maternal loneliness increased during the Covid-19 pandemic, with rates ranging between 40% and 59% (Dib et al., 2020; Farewell et al., 2020; Kent-Marvick et al., 2021), compared with rates ranging between 32% and 42% pre-pandemic (Kent-Marvick et al., 2021). No research has explored fathers' loneliness during the Covid-19 pandemic. Further research is required to explore fathers' loneliness, particularly in the context of the COVID-19 pandemic and its impact upon social relationships.

The current study

Fathers and mothers experience mental health difficulties during the peripartum period. Despite this, there is little research which has explored fathers' mental health during this time. Social support is a modifiable factor, which may be particularly beneficial for fathers during the peripartum period. The Stress Buffering Model of social support suggests social support may function as a protective factor, reducing the effect of stress on psychological distress and loneliness. However, research has not yet examined whether social support 'buffers' the adverse effects of paternal peripartum stress on psychological distress and loneliness. This mixed methods research aims to examine how stress contributes to psychological distress (depression & anxiety) and loneliness in fathers during the peripartum

period. This research will examine how social support moderates these outcomes. These aims produce the following research questions and hypotheses:

Research question 1: To what extent does perceived stress predict Paternal Peripartum Psychological Distress (Depression & Anxiety)? Hypothesis for research question 1: Perceived stress will be positively associated with Paternal Peripartum Psychological Distress. Research question 2: To what extent does perceived stress predict Paternal Peripartum Loneliness? Hypothesis for research question 2: Perceived stress will be positively associated with Paternal Peripartum Loneliness. Research question 3: Does social support buffer the association between Perceived Stress and Paternal Peripartum Psychological Distress? Hypothesis for research question 3: Social support will buffer the association between Perceived Stress and Paternal Peripartum Psychological Distress. Research question 4: Does social support buffer the association between Perceived Stress and Paternal Peripartum Loneliness? Hypothesis for research question 4: Social support will buffer the association between Perceived Stress and Paternal Peripartum Loneliness.

Chapter 2

Methods

Method

Research design

The current study used a triangulated mixed methods design, also known as a convergent parallel mixed methods design. Quantitative and qualitative data were collected simultaneously, and each strand was given equal priority in addressing the overarching study aim (Creswell et al., 2011).

Quantitative research design

The quantitative strand of this study used a longitudinal research design. Three waves of data were collected: participants completed a questionnaire during the third trimester of their partner's pregnancy; at 3 months postpartum and 6 months postpartum. Data was collected from February 2021 until October 2021. The quantitative strand included measurements of stress, psychological distress, loneliness, and social support. Moderation analyses using a regression framework was used to test quantitative hypotheses.

Qualitative research design

This strand of the study used a cross-sectional, qualitative research design and consisted of one-to-one semi-structured interviews. Data was collected from April 2021 until July 2022. Interview data was analysed according to constructivist ground theory guidelines outlined by Charmaz (2006).

Quantitative study methodology

Participants

For the quantitative strand, participants were recruited via convenience sampling. Posts outlining the nature of the study were shared on the researcher's social media accounts (Facebook, Twitter, Instagram), on the study website www.expectantdad.net and with online fatherhood discussion groups (Reddit). Information about the study was shared via email (Appendix B) with antenatal clinics, antenatal education centres, advocacy organisations,

fatherhood support groups and maternity hospitals. Inclusion criteria were men over the age of 18, whose partner was in their third trimester of pregnancy. Exclusion criteria were individuals with diminished ability to provide informed consent and fathers who were under the age of 18. A total of 91 fathers participated at wave 1. A total of 50 fathers participated at wave 2 and 24 fathers participated at wave 3.

Procedure

For the quantitative study, data was collected using a self-report questionnaire, created using Qualtrics survey software. Participants completed this questionnaire at three time points, each taking 10-15 minutes to complete: during the third trimester of their partners' pregnancy; at 3 months postpartum and 6 months postpartum. The first section of the questionnaire consisted of demographic questions (Appendix C). Participants were asked their country of residence, age, education level, work status, how many children they already had, their living situation, marital status, whether the pregnancy was planned/unplanned, whether they were present at birth, whether they had a previous/existing diagnosis of depressive or anxiety disorder and whether there was presence of diagnosed maternal anxiety or depression. Measures used in this strand of the study are discussed below.

Measures

Stress. The Cohen Perceived Stress Scale – shortened version (PSS-4) (Cohen,1988) was used to measure perceived stress (Appendix D). The original version of PSS includes 14 items (Cohen et al., 1983), while the short form (PSS-4) is a 4-item questionnaire, suitable for situations requiring a short scale or telephone interviews (Cohen, 1988). Each item is scored on a 5- point Likert scale ranging from 0 'never' to 4 'very often'. In a review of the psychometric properties of the Perceived Stress Scale, the reliability of the PSS-4 ranged from .60 to .82 (Lee., 2012). In the current study, Cronbach's alpha across the 4 items was .83 at wave 1 of data collection, .52 at wave 2 and .64 at wave 3.

Psychological distress. The Edinburgh Postnatal Depression Scale (Cox et al., 1987) was used to measure psychological distress (mixed paternal postpartum anxiety and depressive symptoms) (Appendix E). This is a 10-item scale with four response options each rated 0–3. Scores range from 0-30, with higher scores indicating more depressive/anxiety symptoms. The scale was originally designed to measure maternal postpartum depression, but it has also been used among fathers e.g. (Philpott & Corcoran, 2018). The standard cut-off point for measuring maternal depression is 12/13. A lower cut-off point (9/10) is recommended for measuring paternal postpartum depression (Matthey et al., 2001). Lower cut-off points (5/6) are recommended to detect mixed anxiety and depressive symptoms in fathers (Matthey et al., 2001). The reliability for EPDS was .81 according to reported Cronbach's alpha in the validation of EPDS for fathers by Matthey et al. (2001) and by Massoudi et al. (2013). The scale had good reliability within the current study at wave 2 (α = .79) and wave 3 (α =.84) of data collection.

Loneliness. The DeJong Gierveld Loneliness Scale – shortened version (Gierveld & Tilburg, 2006) was used to measure loneliness (Appendix F). This is a 6-item scale, 3 items are indicators of emotional loneliness and 3 are indicators of social loneliness. The scale has 3 response options: 'no', 'more or less' and 'yes' and total scores range from 0 'not lonely' to 6 'extremely lonely'. The scale has been found to have good reliability, the original reliability of the scale varied between .70 and .76 (Gierveld & Tilburg, 2006). In the current study, Cronbach's alpha across the 6 items was .61 at wave 1 of data collection, .60 at wave 2 and .60 at wave 3. The scale has been validated for a broad age range of adults (18-99) (Gierveld & Tilburg, 2006).

Perceived social support. The Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) was used to measure perceived social support (Appendix G). The scale measures the amount of social support an individual receives from three sources: friends,

family and significant other. This is a 12-item scale, with items scored on a 7-point Likert scale ranging from 1 ‘very strongly disagree’ to 7 ‘very strongly agree’. Total scores range from 12-84. Scores from 12–48 indicate low social support, scores from 49–68 indicate moderate social support, and scores from 69–84 indicate high social support. The measure has been found to have good reliability, the original reliability of the scale is .88 (Zimet et al., 1988). The scale demonstrated excellent reliability within the current study at wave 1 (α =.90), wave 2 (α= .92) and wave 3 (α = .96) of data collection.

Qualitative study methodology

Participants

Convenience and snowball sampling were used for the qualitative study. Firstly, participants were asked whether they would like to engage in a one-to-one interview with the researcher, with the option to select ‘yes’ or ‘no’ at the end of the questionnaire. Participants were informed that the researcher would contact them by email if they wanted to participate in the interview. Information about the qualitative strand of this study was shared on the researcher’s social media accounts, on the study website and with online fatherhood discussion groups (Reddit). Information was shared with antenatal clinics, advocacy organisations and support groups via email (Appendix B). Posters outlining the nature of the study were placed within the mental health outpatient department at the Rotunda hospital (See Appendix H for ethical approval granted by the Rotunda Hospital). Inclusion criteria were men over the age of 18, who had become a father in the last 6 months. Exclusion criteria were individuals with diminished ability to provide informed consent, fathers who were under the age of 18 and fathers living outside of the Republic of Ireland.

Malterud’s informational power approach to sample size estimation in qualitative research was used to guide recruitment (Malerud et al., 2016). Per the criteria for adequate

sample size, this study aimed to recruit 10-15 participants. Twelve fathers participated in the current study.

Interviews

One-to-one semi-structured interviews were conducted to assess fathers' experiences with social support and loneliness during the peripartum period. Interviews were conducted between April 2021 and June 2022. An interview schedule was used to guide the researcher during the interview process (Appendix I). The schedule was used with flexibility and questions were not limited to those listed in the schedule. During each interview, participants were asked open-ended questions. Participants were asked to speak about their experiences with postpartum stressors/challenges e.g. 'What new challenges emerged for you during the postpartum period?', 'What have you felt that you need support with during this time?' Participants were also asked to speak about their experiences with postpartum social support e.g. 'Who did you receive support from to help you with new challenges during the postpartum period?' Lastly, participants were asked to speak about their experiences with postpartum loneliness e.g. 'What do you think may have contributed to your increased feeling of loneliness during this time?'

As this study used a grounded theory approach, data collection and analysis occurred concurrently. In line with the constant comparative method (Glaser, 1965), data was compared and categorized consecutively. Further data collection was shaped by what had been previously analyzed. Probing questions were also used to encourage participants to expand their answers.

Interviews were conducted by phone call and were recorded using a dictaphone. Audio recordings were transcribed, and transcripts were pseudonymised using Microsoft word. Interviews ranged in duration from 15 to 56 minutes.

Ethical considerations

Ethical approval to conduct this research was granted by Maynooth University Research Ethics committee (See appendix H). Ethical approval was also granted by The Rotunda Hospital Research Ethics committee, to recruit participants for the qualitative strand of this study via the mental health outpatient's department (See appendix H for ethical approval granted by the Rotunda Hospital). For the quantitative strand of this research, participants completed a questionnaire, in a virtual format. The information sheet and consent form were built into the Qualtrics survey (Appendix J). Participants were asked to provide consent at each timepoint. Participants were required to agree with the information that was presented in both forms and did so by selecting the 'I agree' section of both forms. Participants were also provided with a debriefing form following completion of the questionnaire, at each time point (Appendix K). Both the Samaritans & Aware gave permission for their contact details to be provided to participants (Appendix L). As participants were asked to provide an email address during the questionnaire, the questionnaire was not anonymous however, data collected was stored separately to the email addresses, email addresses were deleted when they were no longer required, and data remained confidential. Participants also had the option to remain anonymous if they decided not to provide an email address.

After fathers' expressed interest in participation in the one-to-one interviews, they were forwarded an information sheet via email prior to interview (Appendix M). Participants were also provided with information about the interview verbally (on the day of interview) and provided verbal consent prior to participation (Appendix M). Participants were provided with a debriefing form following engagement in the one-to-one interview (Appendix N). As participants were made aware of the nature of the interview ahead of time, they could choose to opt out if they were facing unexpected experiences or difficulties during pregnancies or

following birth, such as being in a situation involving stillbirth, disability, or illness of an infant.

Quantitative data analysis

A logistic regression analysis was conducted to predict survey completion or attrition from wave 1 to wave 3 amongst participants. Survey completion at all three waves (coded as 0 for completion or 1 for dropout) was the criterion variable. Participants were coded as complete if they participated in all three waves of data collection and as dropouts if they had one or two missing waves of data. The predictor variables were living status (i.e., living with the expectant mother or living elsewhere), planned/unplanned nature of the pregnancy, participants' previous or existing diagnosis of anxiety disorder, participants' previous or existing diagnosis of depressive disorder, partner previous or existing diagnosis of anxiety disorder, partner previous or existing diagnosis of depressive disorder, level of loneliness, stress, and social support at wave 1 of data collection. Following analysis of attrition, descriptive statistics were performed to describe the sample characteristics.

Changes in participants' mean scores in stress, social support, and loneliness across the three waves were assessed within a structural equation modelling (SEM) framework using Mplus software. This involved two steps. Firstly, a null model was specified in which means were restricted to be equal, and the variances and covariances were freely estimated. Next, an alternative model was specified in which the equality restriction on the means was relaxed. The models differ by one degree of freedom and improvement in model fit can be tested using a loglikelihood ratio test (LRT). Information criteria statistics are also produced, and the model with the lowest Bayesian Information Criteria (BIC) value is statistically superior. These analyses were estimated using robust maximum likelihood which allows missing data to be managed most efficiently. All data available at wave 1 is used to impute missingness at future waves.

A moderated multiple regression analysis was conducted using the 'Process' macro for SPSS (Hayes, 2013) to examine whether the association between stress and loneliness was moderated by social support, all measured at wave 1. The predictor variable (X) was perceived stress, and the criterion variable (Y) was loneliness. The moderator variable (W) was perceived social support. A second moderated multiple regression analysis was conducted to examine whether the association between stress and loneliness was moderated by social support, all measured at wave 2. A third moderated multiple regression analysis was conducted to examine whether the association between stress and psychological distress was moderated by social support, all measured at wave 2. The predictor variable (X) was perceived stress, and the criterion variable (Y) was psychological distress. The moderator variable (W) was perceived social support. Age, planned/unplanned nature of the pregnancy, participants' previous or existing diagnosis of anxiety or depressive disorder, and partner previous or existing diagnosis of anxiety or depressive disorder were all included as covariates for each moderated multiple regression analysis.

Qualitative data analysis

Interviews were coded by the lead researcher (Sarah Murray Cunningham) and by another member of the research team to ensure intercoder reliability. As previously mentioned, data collection and analysis occurred concurrently. Interview data was analyzed according to constructivist ground theory guidelines outlined by Charmaz (2006). Firstly, initial codes were generated. This involved coding line-by-line segments of data (See appendix O for an example of codes applied to short segments of data). Next, focused coding was conducted. This involved evaluating and using the most significant / frequent codes which provided the most accurate categorization of the data. Next, axial coding was conducted which involved comparing codes to one another and reassembling codes to develop categories. Lastly, categories were finalized to arrive at a grounded theory of

‘support for the supporter’. A thematic map was created to provide a visual overview of themes (Appendix P).

Chapter 3

Quantitative Study Results

Quantitative study results

A logistic regression analysis was conducted to predict survey completion at all three waves of data collection. 14 out of 107 participants completed all three waves of data collection. 34 participants completed both wave 1 and wave 2 of data collection. No statistically significant association was found between survey completion at all three waves of data collection and any of the predictor variables - (living status i.e., living with the expectant mother or living elsewhere, planned/unplanned nature of the pregnancy, participant's previous or existing diagnosis or anxiety disorder, participant's previous or existing diagnosis of depressive disorder, partner previous or existing diagnosis of anxiety disorder, partner previous or existing diagnosis of depressive disorder, level of loneliness, stress, and social support at wave 1 of data collection; see table 2).

Table 2

Logistic Regression Model Predicting Survey Completion at all Three Waves

Variable	OR	p	CIs
Living with expectant mother	0.895	0.918	(0.109, 7.358)
Planned/unplanned pregnancy	1.193	0.840	(0.216, 6.592)
Participant previous or existing diagnosis of anxiety disorder	0.630	0.715	(0.053. 7.538)
Participant previous or existing diagnosis of depressive disorder	4.118	0.209	(0.452, 37.491)
Partner previous or existing diagnosis of anxiety disorder	0.433	0.467	(0.045, 4.137)
Partner previous or existing diagnosis of depressive disorder	0.202	0.271	(0.012, 3.483)
Total loneliness	1.137	0.675	(0.624, 2.071)
Total stress	1.173	0.270	(0.884, 1.556)
Total social support	0.979	0.557	(0.910, 1.052)

Note: OR = odds ratio; 95% CIs = 95% confidence intervals; p =statistical significance

Descriptive statistics wave 1

Demographic variables (N=91) at wave 1 are presented in Table 3. 82.4% of the sample were living in the Republic of Ireland and 17.6% of the sample were living outside of the Republic of Ireland. The majority of the sample were between 25 and 34 years of age (48.4%), were employed (87.9%) and had a third level education (67%). The majority of the sample had no previous children (58.2%), i.e. this was their first child, and were married (62.6%), and living with the expectant mother (89%). Most pregnancies were planned (69.2%) and most fathers planned also to be present at their child's birth (98.9%; note that there was very little variance in this variable - the reported variance was .011). 9.9 % of the sample had a previous/ existing diagnosis of anxiety disorder and 11% had a previous/existing diagnosis of depressive disorder. 22% of the sample had a partner with a previous/ existing diagnosis of anxiety disorder and 17.6% had a partner with a previous/ existing diagnosis of depressive disorder. Hyland et al. (2021) found the prevalence of major depression was 22.8% amongst a nationally representative sample of Irish adults (N=1041) during the Covid-19 pandemic (March – April 2020), while the prevalence of anxiety was 20.0%.

Descriptive statistics wave 2

Demographic variables (N= 50) at wave 2 are presented in Table 3. 35 of these participants also completed wave 1 of data collection. 15 of these participants were new entrants to the survey. 90 % of the sample were living in the Republic of Ireland and 10% of the sample were living outside of the Republic of Ireland. The majority of the sample were between 35 and 44 years of age (42.9%), were employed (86%) and had a third level education (65.3%). The majority of the sample had no children other than their new baby (48%), were married (59.2%) and were living with the mother of their child (85.7%). Most pregnancies were planned (65.3%) and most fathers were present at their child's birth

(89.8%). 10.2% of the sample had a previous/ existing diagnosis of anxiety disorder and 12.2% had a previous/existing diagnosis of depressive disorder. 10% of the sample had a partner with a previous/ existing diagnosis of anxiety disorder and 10.2% had a partner with a previous/ existing diagnosis of depressive disorder.

Descriptive statistics wave 3

Demographic variables (N= 24) at wave 3 are presented in Table 3. 14 of these participants also completed both wave 1 and 2 of data collection. 4 of these participants had completed wave 1 of data collection only and 5 participants completed wave 2 of data collection only. There was 1 new entrant to the survey. 91.7% of the sample were living in the Republic of Ireland and 8.3% of the sample were living outside of the Republic of Ireland. The majority of the sample were between 35 and 44 years of age (50%), employed (87.5%) and had a third level education (70.8%). The majority of the sample had no children other than their new baby (33.3%) or had one other child (41.7%). Most fathers were married (70.8%) and were living with the mother of their child (83.3%). Most pregnancies were planned (75%) and most fathers were present at their child's birth (87.5%). 12.5% of the sample had a previous/ existing diagnosis of anxiety disorder and 16.7% had a previous/existing diagnosis of depressive disorder. 8.3% of the sample had a partner with a previous/ existing diagnosis of anxiety disorder and 8.3% had a partner with a previous/ existing diagnosis of depressive disorder.

Table 3

Frequencies for participants

	Wave 1		Wave 2		Wave 3	
Variable	Frequency	Valid %	Frequency	Valid %	Frequency	Valid %
Living in the Republic of Ireland						
Yes	75	82.4	45	90.0	22	91.7
No	16	17.6	5	10.0	2	8.3
Country						
United States of America	10	11.0	1	2.0	2	8.3
Canada	3	3.3	2	4.1		
Columbia	1	1.1				
Australia	1	1.1				
England	1	1.1				
Slovenia			1	2.0		
Age						
18-24	6	6.6	4	8.2	1	4.2
25-34	44	48.4	18	36.7	10	41.7
35-44	34	37.4	21	42.9	12	50.0
45-54	6	6.6	6	12.2	1	4.2
55-64	1	1.1				
Employment status						
Employed	80	87.9	43	86.0	21	87.5
Unemployed	7	7.7	4	8.0	2	8.3
Unemployed as a result of Covid-19	2	2.2	1	2.0	1	4.2
Other	2	2.2	2	4.0		
Level of education						
Primary	3	3.3	1	2.0		

	Wave 1		Wave 2		Wave 3	
Variable	Frequency	Valid %	Frequency	Valid %	Frequency	Valid %
Secondary	27	29.7	16	32.7	7	29.2
Third level/ above	61	67.0	32	65.3	17	70.8
Number of other children						
0	53	58.2	24	48.0	8	33.3
1	24	26.4	14	28.0	10	41.7
2	10	11.0	10	20.0	3	12.5
3	3	3.3	2	4.0	3	12.5
4	1	1.1				
Marital status						
Living with partner but not married	25	27.5	15	30.6	7	29.2
Married	57	62.6	29	59.2	17	70.8
Single	8	8.8	5	10.2		
Divorced	1	1.1				
Living with mother						
Yes	81	89.0	42	85.7	20	83.3
No	10	11.0	7	14.3	4	16.7
Planned/ unplanned pregnancy						
Planned	63	69.2	32	65.3	18	75.0
Unplanned	28	30.8	17	34.7	6	25.0
Present at birth						
Yes	90	98.9	44	89.8	21	87.5
No	1	1.1	5	10.2	3	12.5

	Wave 1		Wave 2		Wave 3	
Variable	Frequency	Valid %	Frequency	Valid %	Frequency	Valid %
Father previous/ existing diagnosis of anxiety disorder						
Yes	9	9.9	5	10.2	3	12.5
No	82	90.1	44	89.8	21	87.5
Father previous/ existing diagnosis of depressive disorder						
Yes	10	11.0	6	12.2	4	16.7
No	81	89.0	43	87.8	20	83.3
Partner previous/ existing diagnosis of anxiety disorder						
Yes	20	22.0	5	10.0	2	8.3
No	71	78.0	45	90.0	22	91.7
Partner previous/ existing diagnosis of depressive disorder						
Yes	16	17.6	5	10.2	2	8.3
No	75	82.4	44	89.8	22	91.7

Table 4 outlines descriptive statistics e.g., stress, psychological distress, loneliness, and social support. Preliminary analysis indicated that all variables followed the assumptions of normality. Histograms indicated the data was normally distributed at each time-point. Histograms for all continuous variables were also obtained and are presented in Appendix Q.

Table 4

Descriptive statistics for All Continuous Variables

	Mean (95% Confidence Intervals)	Median	SD	Range
Stress wave 1	6.87 (6.17 – 7.57)	7.00	3.24	16
Stress wave 2	7.30 (6.71 – 7.89)	8.00	2.07	10
Stress wave 3	6.83 (5.77– 7.89)	6.00	2.51	9
Loneliness wave 1	3.18 (2.84 – 3.52)	3.00	1.57	6
Loneliness wave 2	3.04 (2.61– 3.47)	3.00	1.49	6
Loneliness wave 3	2.96 (2.32 – 3.60)	3.00	1.52	6
Social support wave 1	63.09 (60.51 – 65.67)	65.00	11.59	56
Social support wave 2	63.74 (60.49 – 66.99)	66.00	11.43	51
Social support wave 3	60.00 (52.92 – 67.08)	63.50	16.76	72
Psychological distress wave 2	5.26 (4.05 – 6.47)	4.00	4.25	20
Psychological distress wave 3	6.08 (4.11 - 8.06)	4.50	4.68	17

As presented in Table 5, the BIC results supported the null models for stress, social support and loneliness indicating that there were no statistically significant changes in the mean scores for these outcomes across each wave of data collection.

Table 5

Tests of Mean Scores for Loneliness, Stress and Social support from Wave 1 to Wave 3

	Wave 1	Wave 2	Wave 3	Null model	Alternative model
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	BIC	BIC
Loneliness	3.18 (2.84, 3.50)	2.97 (2.42, 3.46)	3.06 (2.09, 3.78)	521.08	527.57
Stress	6.87 (6.16, 7.52)	7.64 (6.36, 7.51)	7.28 (5.63, 7.43)	657.74	666.06
Social support	63.09 (60.01, 65.24)	62.94 (61.85, 68.65)	60.00 (61.92, 69.90)	1013.29	1015.47

Note: 95% CIs = 95% confidence intervals; BIC = Bayesian Information Criteria

Inferential statistics

In alignment with Hayes (2009) coefficients were not standardised into beta estimates but rather the values were standardised prior to analysis, to obtain an understanding of the effects relative to each other in the final model. As such the B values reported below are analogous to beta values. A moderated multiple regression analysis was used to determine if the effect of stress on loneliness was moderated by social support, all measured at wave 1. The model explained 40.08% of variance in loneliness scores ($F(7, 72) = 6.87$, $p = < .001$). The direct effect of stress on loneliness was not significant ($B = .184$, $p = .095$), while the direct effect of social support on loneliness was statistically significant ($B = -.575$, $p = .000$). There was a statistically non-significant interaction effect between stress and social support ($B = .153$, $p = .175$). The effect of age on loneliness was not statistically significant ($B= -.076$, $p = .527$) and the effect of pregnancy (planned or unplanned) on loneliness was not statistically significant either ($B = .266$, $p = .228$). The effect of father previous or existing diagnosis of anxiety or depressive disorder on loneliness was not statistically significant ($B = .221$, $p = .094$). The effect of partner previous or existing diagnosis of anxiety or depressive disorder on loneliness was not statistically significant either ($B = -.081$, $p = .486$). See table 6 below.

Table 6

Results of Stress Buffering Test of Social Support on Loneliness at Wave 1

Effect	Estimate	*SE*	95% CI		*p*
			LL	*UL*	
Intercept	.153	.111	-.069	.375	.175
Perceived stress	.184	.109	-.033	.403	.095
Social support	-.575	.125	.824	-.325	.000
Planned / unplanned pregnancy	.266	.219	-.171	.704	.228
Age	-.076	.121	-.318	.164	.527
Participant previous/ existing diagnosis of anxiety / depressive disorder	.221	.130	-.038	.481	.094
Partner previous/ existing diagnosis of anxiety / depressive disorder	-.081	.116	-.314	.151	.486

Note: 95% CIs = 95% confidence intervals; *LL*=lower limit*; UL*= upper limit

A second moderated multiple regression analysis was used to determine if the effect of stress on loneliness was moderated by social support, all measured at wave 2. The model explained 42.6% of variance in loneliness scores (F(7, 28) = 2.98, p = .018). The direct effect of stress on loneliness was statistically significant (B = .551, p = .005) such that as stress increased, loneliness increased and the direct effect of social support on loneliness was not statistically significant (B = -.007, p = .960). There was a statistically significant interaction effect between stress and social support (B = -.558, p = .007) on loneliness as an outcome. The effect of age on loneliness was not significant (B = .162, p = .364) and the effect of

pregnancy (planned or unplanned) on loneliness was not significant (B = .015, p = .961). The effect of participants' previous or existing diagnosis of anxiety or depressive disorder on loneliness was significant (B = .464, p = .024). The effect of partner previous or existing diagnosis of anxiety or depressive disorder on loneliness was not significant (B = .039, p = .819). Based on figure 1 below, it appears that for individuals with lower and moderate levels of support, loneliness increased as stress increased. However, individuals with moderate levels of support had lower levels of stress and loneliness than those with lower levels of support. For individuals with higher levels of social support, stress and loneliness remained relatively stable, stress did not seem to effect loneliness. See table 7 below.

Table 7

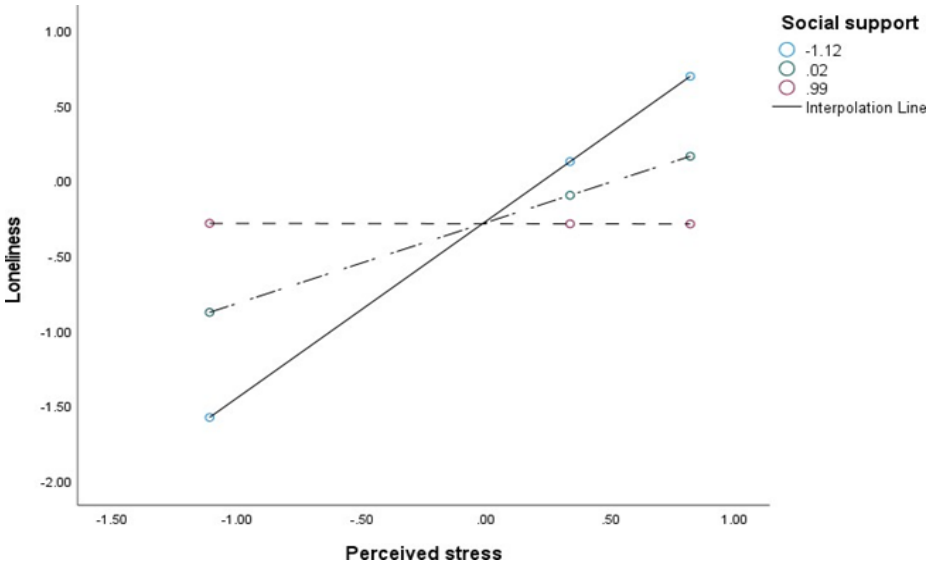
Results of Stress Buffering Test of Social Support on Loneliness at Wave 2

Effect	Estimate	*SE*	95% CI		*p*
			LL	*UL*	
Intercept	-.558	.192	-.953	-.163	.007
Perceived stress	.551	.183	.176	.927	.005
Social support	-.007	.154	-.325	-.308	.960
Planned / unplanned pregnancy	.015	.307	-.615	.645	.961
Age	.162	.176	-.198	.524	.364
Participant previous/ existing diagnosis of anxiety / depressive disorder	.464	.195	.063	.864	.024
Partner previous/ existing diagnosis of anxiety / depressive disorder	.039	.170	-.310	.389	.819

Note: 95% CIs = 95% confidence intervals; *LL*=lower limit*; UL*= upper limit

Figure 1

Graph of the Effect of Stress on Loneliness, Moderated by Social Support at wave 2



A third, moderated multiple regression analysis was used to determine if the effect of stress on psychological distress was moderated by social support at wave 2. The model explained 50.0% of variance in psychological distress scores (F(7, 28) = 3.99, p = .003). The direct effect of stress on psychological distress was not statistically significant (B = .242, p = .091) and the direct effect of social support on psychological distress was statistically significant (B = -.365, p = .004). There was a statistically non-significant interaction effect between stress and social support (B = -.180, p = .226). The effect of age on psychological distress was not statistically significant (B = -.006, p = .964) and the effect of pregnancy (planned or unplanned) on psychological distress was not statistically significant (B = -.035, p = .881). The effect of father previous or existing diagnosis of anxiety or depressive disorder on psychological distress was not statistically significant (B = .268, p = .081). The effect of partner previous or existing diagnosis of anxiety or depressive disorder on psychological distress was not statistically significant either (B = .037 p = .775). See table 8.

Table 8

Results of Stress Buffering Test of Social Support on Psychological Distress wave 2

Effect	Estimate	*SE*	95% CI		*p*
			LL	*UL*	
Intercept	-.180	.145	-.479	.118	.226
Perceived stress	.242	.138	-.041	.527	.091
Social support	-.365	.116	-.604	-.126	.004
Planned / unplanned pregnancy	-.035	.233	-.512	.442	.881
Age	-.006	.133	-.279	.267	.964
Participant previous/ existing diagnosis of anxiety / depressive disorder	.268	.148	-.035	.571	.081
Partner previous/ existing diagnosis of anxiety / depressive disorder	.037	.129	-.227	.301	.775

Note: 95% CIs = 95% confidence intervals; *LL*=lower limit*; UL*= upper limit

Discussion of quantitative findings

This study examined how stress contributed to psychological distress (depression & anxiety) and loneliness and how social support moderated these outcomes. The quantitative strand found 1) social support did not significantly moderate the relationship between perceived stress and psychological distress and 2) social support did not significantly moderate the relationship between perceived stress and loneliness during the third trimester of the prepartum period. However, at three months postpartum, social support did significantly moderate the relationship between perceived stress and loneliness. Stress had a

differential impact on loneliness depending on fathers' level of social support. For fathers with lower levels of postpartum social support, as stress increased, loneliness increased. Whereas, for fathers with higher levels of postpartum social support, stress and loneliness remained relatively stable and stress did not seem to effect loneliness. This finding provides support to the Stress Buffering Model of Social Support (Cohen & Wills, 1985). It is also consistent with research suggesting that creating friendships (Lee et al., 2019) and attending fatherhood support groups (Wells et al., 2021) are preventative of postpartum loneliness.

Chapter 4

Qualitative Study Results

Qualitative study results

Descriptive statistics for qualitative sample

Demographic variables for the qualitative sample (N=12) are presented (Table 6). The majority of participants were between 35-44 years old (58.3%) and had 1 child (66.7%). All participants were living in The Republic of Ireland at the time of the interview. All participants were living with the mother of their child at the time of interview.

Table 9

Frequencies for participants

Variable	Frequency	Valid %
Age		
18-24	1	8.3
25-34	4	33.3
35-44	7	58.3
Living with mother	12	100
Living in Ireland	12	100
Number of children		
1	8	66.7
2	2	16.7
3	2	16.7

A grounded theory is presented entitled ‘support for the supporter’ During the analysis of the interview transcripts, three key themes emerged from the data: (i) Being the breadwinner (ii) Seeking postpartum social support (iii) Feeling lonely when lacking postpartum support (See table 7 for themes and subthemes).

Table 10

Presentation of Themes, Sub-themes, and Sample Text from Twelve Interviews

Theme and sub-theme	Sample text
Being the breadwinner	
Experiencing increased financial pressure	I suppose other stuff that I wouldn’t have thought about in the past that were always kind of there became more prominent in my mind. Things like paying for the mortgage and planning for his future, financial stability and all that kind of stuff, it probably became more important in my mind to worry about and make sure everything is okay, prior to his arrival. (p4)
Having difficulty balancing work with family time	In maybe mid-March through to the end of May, I was very busy with work and that was causing stress as well. I wasn’t as available as I would liked to have been at that stage but em … I suppose that probably put a bit of strain on us at that stage that I was working harder or working more hours than I intended to be. At that stage, that left my wife with a lot of the responsibilities for herself. (p2)

Theme and sub-theme	Sample text
Seeking postpartum social support	
Seeking out the advice and expertise of other fathers	So, while we were still pregnant I ended up looking for kind of discussion groups or you know groups of new or expecting dads. Specifically, I found a good em, part of reddit. I don't know if you are familiar with interesting sub reddits of basically expectant fathers sharing their experiences and frustrations and talking to one another, which has been quite interesting. It helps to see that you're not the only one struggling with things a bit or thinking about things in a certain way, it's completely normal. (p1)
Being hesitant to speak with others	Em for me personally I think it's probably the old Irish thing of em… males not being able to speak about feelings. I've definitely felt like that at times, so I'm trying to think of an example to give a context.. but yeah Irish males don't typically talk about feelings and if you do it's kind of in a gloss it over kind of way or you know they don't talk about it directly. (p8)

Theme and sub-theme	Sample text
Feeling lonely when lacking postpartum support	We were both at home most of the time so…I'd say a couple of weeks in, we were both spending more time together alright, but it was lonely for us as well because we didn't want to be going out too much with Covid, so we weren't seeing as much of our family or going out with friends. (p5)

Theme 1 : Being the breadwinner

Participants discussed experiencing increased financial pressure during the postpartum period. Many participants spoke about their perceived responsibility to provide for their families during this time and how this was the most challenging aspect of the postpartum period:

> 'And of course, when you have a baby, you have to make ends meet, and look after everyone at home. So, for me, that has been the main responsibility or the challenging part of it.' (p6)

One participant felt that their partner did not have the same financial concerns as they did during the postpartum period. This participant felt hesitant to share their financial concerns with their partner:

> 'The financial pressure, I need to talk with my partner about… not to control spending but to talk about that as a couple and say you know look we need to hold back a bit here. The concerns that I have, maybe she doesn't see as much.' (p8).

Participants spoke about having difficulty balancing work with family time during the postpartum period. Participants expressed how it was challenging to fulfil the role of 'the breadwinner' and father:

> 'Yeah that's the one that comes to mind I'd say at the moment, especially with my wife. She's off work at the moment and that's probably the biggest one at the moment, being the breadwinner... and, being a father at the same time, you know?' (p8)

Some participants felt that balancing work with childcare was 'tiring' and 'tough'. Participants found it difficult to allocate enough time to both work and childcare:

> 'It can be hard to give time, so I feel like sometimes it can be hard to give time to everything equally or where you want it and then personally, I suppose I just feel stressed a little bit.' (p8)

Participants wanted to be more available at home to spend time bonding with their infant and also wanted to be more available to support their partner with childcare. Participants valued having flexibility with work so they could spend more time with their infant. One participant discussed using holidays to extend their paternity leave:

> 'I've had to use some of my own holidays to take time off, to be there for my children and their mother you know. Even though there's a good allowance for time off, it's still not as much as I would like.' (p9)

Theme 2 : Receiving and seeking social support

Many participants discussed seeking out the advice and expertise of other fathers during the postpartum period. Participants described how other fathers reached out to them and offered support during this time. Some participants actively searched for and used online or text-based fatherhood discussion groups or connected with others by phone during periods of Covid-19 isolation.

Participants discussed how they shared advice, exchanged stories, photographs, and shared their frustrations with other fathers both online and in-person. Participants valued speaking with individuals in a similar situation and discussed the normalising effect that this form of support had for them:

> 'It helps to see that you're not the only one struggling with things a bit or thinking about things in a certain way, it's completely normal.' (p1)

Although many participants sought the advice of other fathers, some participants discussed feeling hesitant to speak with others about their feelings with others, particularly with other men. This seemed to emerge from perceptions surrounding the masculine norm of males not discussing feelings with one another. Participants described speaking indirectly about their feelings. One participant discussed how they tried to 'soldier on' and 'keep things going' rather than discuss their feelings during this time:

> 'I suppose the typical Irish male thing you soldier on until past the point where you should have done...there were certainly some days in the early weeks where I was running on fumes if you know what I mean, trying to do too much, trying to keep things going until eventually my partner said, basically said go upstairs and go into the spare room and turn the lock in the door and sleep until you wake up but look again that was more or less trying to burn the candle at both ends.' (p12)

Theme 3: Feeling lonely when lacking support

Participants discussed feeling lonely during the postpartum period, in the absence of or when lacking social support. Many participants were isolated from family and friends during Covid-19 restrictions and for some participants this resulted in feelings of loneliness.

A lack of partner support also contributed to feelings of loneliness during the postpartum period. One father discussed how they experienced a decline in partner support, closeness and intimacy during this time and how this contributed to loneliness:

> ‘There’s not the same level of closeness or anything…I do probably feel the most sort of lonely or kind of out on my own that I have in years, you know what I mean?...your relationship with your partner changes, and her focus is on something else. So what used to be a very reliable source of support that you had, not that it’s not reliable anymore.’ (p9)

Participants also discussed the role that social support played in relation to reducing or preventing feelings of loneliness during the postpartum period. Those who stayed in touch with friends and family throughout Covid-19 restrictions felt less lonely. Having a good support structure in place, meeting with family and friends and engaging with social outlets was preventative of postpartum loneliness:

> ‘…. No to be honest, because we’ve had, we knew had this great support structure in place with our families, our friends, and our neighbours who we love by the way, so we have a really good relationship with them.’ (p1).

Partner support and communication seemed to play an important role in reducing/ preventing participant’s feelings of loneliness. Despite being isolated from family and friends, participants did not feel lonely as they received support from their partner:

> ‘I’m very lucky that my wife and I have lived together for years…we’re a newly married couple and we still have things that we like to talk about you know, we enjoy each other’s company hahaha. So, loneliness is not something that I have ever struggled with because we’re quite good communicators.’ (p10)

Discussion of qualitative themes

Being the breadwinner

The qualitative theme ‘Being the breadwinner’ provides an insight into the sources of stress or challenges that fathers experienced during the peripartum period – ‘Experiencing increased financial pressure’ and ‘Having difficulty balancing work with family time’. The

subtheme ‘Experiencing increased financial pressure’ is consistent with research suggesting financial pressure is a common source of paternal peripartum stress (Seah & Morawska, 2016; Yu et al., 2011). In the current study, fathers perceived themselves as ‘breadwinners’ or aligned themselves with this role. In a review of 30 studies Valiquette-Tessier et al., (2019) found, fathers were stereotyped as financial providers or primary breadwinners for the family across all racial and ethnic groups. If a father’s perception of a ‘good father’ is to be a provider, peripartum stress may be worsened (Darwin et al., 2017), and fathers may experience depressed mood (Chhabra et al., 2022; Morse et al., 2000).

The subtheme ‘Having difficulty balancing work with family time’ highlights the challenge of balancing the role of ‘breadwinner’ with the role of fatherhood. Participants felt balancing work with childcare was ‘tiring’ and ‘tough’. Participants wanted to be more available at home to spend time with their infant and help with childcare. Modern fathers are encouraged to engage with childcare; however inflexible workplace policies may make it difficult for fathers to be involved at home. As fathers have responsibilities to fulfil both within the home and within the workplace, work-family conflict may arise due to the incompatibility of the roles (Huffman et al., 2014). Although mothers and fathers report having similar levels of work-family conflict (Young & Schieman, 2018), much of the research to date has focused on work-family conflict amongst mothers. There is a need for increased research focusing on fathers’ experiences with work-family conflict. Fathers in the current study valued having flexibility with work so they could spend more time with their infant, which highlights the importance of flexibility within the workplace for fathers during the peripartum period. Furthermore, work-family conflict has been associated with paternal peripartum anxiety and depression (Koh et al., 2014; Koh et al., 2015).

The theme ‘Being the breadwinner’ may be explained by parenting schemas. Parenting schemas refer to beliefs about the parenting role, how to behave in that role, beliefs

about children in general e.g. (how children should develop) and beliefs about one's own child (Azar et al., 2005). Fathers may hold rigid or inflexible schemas about how they should behave within the family unit or fatherhood role, for example holding a 'breadwinner' schema, believing that a father should be a provider. Schemas can change, when an individual is faced with new information or variations to their core beliefs (Azar et al., 2005). It is therefore essential that fathers are provided with enough information and support surrounding fatherhood in order to promote the development of new fatherhood schemas, which are more flexible and adaptive.

Seeking postpartum social support

The theme 'Seeking postpartum social support' provides information about the support that participants sought during the postpartum period. The subtheme 'Seeking the advice and expertise of other fathers' describes how participants sought and valued the support of other experienced fathers. Some participants actively sought support and searched for fatherhood discussion groups, while others received offers of support from other fathers. Participants described how they exchanged advice, stories and shared their frustrations with other fathers. Some participants connected with others by phone or online during periods of isolation. This offered a way for fathers to connect and communicate during Covid-19. Participants discussed the normalising effect this support had for them. The benefits of speaking with other fathers has been reported in previous research. In Carlson et al. (2014) and Shorey et al.'s (2017) studies, fathers recommended groups with other fathers in order to learn from and support one another as they were going through the same experiences. In Wells et al.'s (2021) study, fathers felt fatherhood support groups positively benefited their relationship with their family, enhanced their self-confidence, improved their family equality and decreased loneliness. The benefits of using online fatherhood forums has also been noted in previous research (White et al., 2018).

Despite seeking the support of other experienced men or fathers, some participants felt hesitant to speak with others about their feelings, particularly with other men. This hesitation appeared to emerge from perceptions surrounding the masculine norm of males being non-emotional or not discussing feelings with one another. Previous research suggests fathers are reluctant to speak about their mental health and are influenced by 'perceived expectations of masculinity' (Darwin et al., 2017) or 'traditional masculine gender norms' (Rominov et al., 2018). The violation of these 'expectations' or 'norms' may lead to negative appraisal from others, making fathers reluctant to speak about their feelings or seek help (Rominov et al., 2018). Further research into seeking support and adherence to masculine norms is necessary to reduce the stigma surrounding male mental health, particularly within an Irish context as participants felt this was common amongst Irish men. A potential way to reduce hesitancy to seek support, may be offering fatherhood support groups in relaxed or informal settings. Nash, (2018a) and Nash, (2018b), found fathers were less favourable toward male based group discussions in health settings and toward groups which focused on sharing feelings. Fathers were hesitant to engage in activities that suggested femininity/ weakness, feeling more comfortable in relaxed, environments such as pubs or using peer support phone lines (Nash, 2018a; Nash, 2018b). Fathers also felt more comfortable when groups focused on 'facts' related to pregnancy / birth (Dolan et al., 2011; Nash, 2018b).

Feeling lonely when lacking postpartum support

The theme 'Feeling lonely when lacking postpartum support' provides an insight into the sources of support that prevented or alleviated paternal loneliness. This is the first study to suggest that a lack of partner support, a lack of support from friends and from family may contribute to paternal postpartum loneliness. Participants felt lonely as they were isolated from friends and family during Covid-19. However, having a good support structure in place, phoning/ meeting with family and friends and engaging with social outlets was preventative

of paternal postpartum loneliness. Similarly, previous research found reduced social contact is associated with postpartum loneliness in mothers (Lee et al., 2019). Partner support and communication seemed to prevent postpartum loneliness. Despite being isolated from family and friends, many participants did not feel lonely as they received support and communicated well with their partner. In line with previous research (Junttila et al., 2015), a decline in relationship satisfaction and intimacy also seemed to result in feelings of loneliness. One father felt lonely as their relationship with their partner had changed. This father experienced a loss of previous support along with a loss of perceived closeness and intimacy with their partner. Similarly, previous research found fathers experience relationship changes during the postpartum period including feelings of distance, a loss of closeness (Darwin et al., 2017) and changes in the sexual relationship (Parfitt, & Ayers, 2014).

Chapter 5

Discussion

Discussion

This mixed methods research examined how stress contributed to psychological distress (depression & anxiety) and loneliness in fathers during the peripartum period. It also examined how social support moderated these outcomes.

Social support significantly (cross sectionally) moderated the relationship between perceived stress and loneliness during the postpartum period. This finding provides support to the Stress buffering model of social support (Cohen & Wills, 1985). This model states stress will have harmful effects on the wellbeing of individuals with little or no social support, while these effects will be lessened for individuals with higher levels of social support (Cohen & Wills, 1985). In line with this model, stress had a differential impact on loneliness depending on fathers' level of perceived social support, at three months postpartum.

Contrary to the stress buffering hypothesis, social support did not buffer the relationship between stress and loneliness during the prepartum period. The effect of social support differed during the postpartum period as it is a time of increased stress for fathers. Fathers' levels of stress were slightly elevated during this time. Previous research also indicates fathers experience elevated stress symptoms during this time (Ngai & Ngu 2014; Ngai & Ngu, 2015; Philpott et al., 2017). Social support may not have buffered the relationship between stress and loneliness during the prepartum period, as fathers may have been experiencing lower levels of stress and therefore the effect of support differed during this time. Based on these findings, it appears that the postpartum period is a key timepoint in relation to social support buffering the adverse effect of stress on loneliness. Interventions to reduce the effect of stress on loneliness may be particularly effective when introduced during this time.

Qualitative findings highlight the importance of partner support and communication in alleviating / preventing postpartum loneliness. Interventions to target low partner support

during the postpartum period may be helpful in reducing paternal postpartum loneliness. Support from family and friends also prevented / alleviated postpartum loneliness. Fathers who were isolated from their broader social networks (family / friends) felt lonelier during the postpartum period, however those who stayed in contact with family/ friends felt less lonely. Lastly, findings suggest fathers would benefit from opportunities to engage with and receive support from other fathers. Developing postpartum social support interventions, designed specifically for fathers may improve wellbeing and feelings of loneliness. However, some fathers were hesitant to seek support from others, particularly from other fathers. Previous research found a potential way to reduce this hesitancy is to offer fatherhood support groups in relaxed environments, with a focus on facts related to pregnancy / birth rather than on sharing feelings / emotions (Nash, 2018a; Nash, 2018b).

Overall, findings in the current study suggest that loneliness interventions may be particularly beneficial when introduced during the early postpartum period, when fathers experience elevated levels of stress. It is important to target low partner support, low support from family, friends and from other fathers in postpartum loneliness interventions. Considering these factors may also help identify fathers at risk for increased loneliness.

Strengths and limitations

One key strength of the current study was the population that was examined, as research has generally focused on mothers' experiences and mental health during the peripartum period. Fathers are currently underdiagnosed and undertreated for peripartum mental health issues. This study contributes to a growing body of research suggesting paternal peripartum wellbeing is an important issue and gives a voice to fathers. The use of a triangulated mixed methods/ convergent parallel mixed methods design with data collected from different sources, using different methods, worked collectively as a useful design. The use of both quantitative and qualitative methodologies allowed for complimentary data to be

obtained on the same research topic. The quantitative data and analysis provide a general understanding of the research topic, examining whether social support buffered the relationship between stress and psychological distress / loneliness. The qualitative data and analysis provide further information and detail about peripartum stress, social support, and loneliness. The design provided a more comprehensive understanding of the research topic. Using a mixed methods approach also addressed the weaknesses of the quantitative methodology (trends, generalisable) with the strengths of the qualitative methodology (smaller sample size, detailed analysis).

Despite its strengths, some limitations are noted. First, participants self-reported on their own mental health and results were not based on a clinical diagnosis. Second, reliability of the PSS-4 (Cohen,1988) was poor at wave 2 and wave 3 of data collection. Reliability of the The DeJong Gierveld Loneliness Scale – shortened version (Gierveld & Tilburg, 2006) was also poor within the current study. Third, there was a high level of attrition in the sample across three waves of data collection. Attrition appeared to be non-systematic. The study experienced attrition to an extent which likely impacted the power of the analysis at wave 2. There was not enough data collected at wave 3 to include in analyses. Fourth, the quantitative sample consisted of mainly of fathers who were married, employed, and who had received a third level education. This may limit the generalisation of findings to more diverse groups. Fifth, although data was collected across three waves, quantitative findings obtained within the current study were based on a cross sectional analyses and therefore no causal relationships can be inferred. Future research would benefit from using a longitudinal study to better infer causation. Lastly, this study did not examine how different sources of support moderate the relationship between stress and psychological distress / loneliness i.e., (Friends, family and significant other). Future research may benefit from examining how different

sources of support moderate the relationship between stress and psychological distress / loneliness.

Implications for future research

Findings in the current study have important theoretical implications. In line with previous research, findings suggest fathers can be influenced by stereotypes or hold rigid schemas about the fatherhood role and about gender roles/ masculinity. Fathers perceived themselves as providers, had difficultly balancing their role as the 'breadwinner' with fatherhood and felt hesitant to speak about their feelings. Future research could explore how to change schemas related to the fatherhood role, for example how providing information and support to fathers might promote the development of more adaptive schemas about fatherhood.

Loneliness is overlooked in the peripartum mental health literature. The small number of studies which have examined loneliness during this time, have mainly focused on maternal loneliness. As loneliness is a prevalent condition with negative impacts, further research to understand it's development during the peripartum period is essential to inform suitable support interventions. The current study was the first to explore how paternal postpartum social support relates to loneliness and provides a good foundation for future research. However, at present, there remain many unanswered questions about fathers' peripartum loneliness. For example, how does loneliness differ between fathers from different sociodemographic groups? What are the risk factors associated with paternal loneliness? What are the psychosocial consequences of loneliness for fathers, the infant and the family? Further quantitative and qualitative research is required to answer these questions. More research is also required to examine the experiences of fathers regarding their postpartum social support needs, the ideal timing of postpartum support, barriers to receiving support and how support / support interventions might reduce postpartum loneliness.

Future quantitative research would benefit from using a longitudinal design to better infer causation, as findings in the current study were based on a cross sectional analysis therefore no casual relationships can be inferred. Future quantitative research would also benefit from using a more socioeconomically diverse sample as the current study consisted mainly of fathers who were married, employed, and who had received a third level education.

Practical implications

Findings have important practical implications. In the current study, many fathers experienced increased financial pressure following the arrival of their infant. Fathers also experienced difficulty balancing work with childcare. This highlights the need for fathers to have a role not only within the workplace but also within the home and with childcare. Government or workplace policies may facilitate involvement with childcare and lessen financial burden during this time. For example, longer paternity leave would provide Irish fathers with increased time to adjust to the arrival of their infant. Higher paternity payments might also encourage fathers to use their leave, as fathers may not take paternity leave due to the sacrifices in income. In Ireland paternity leave is two weeks with minimal payment (Paternity Leave and Benefit Act, 2016). However, in Norway, parental leave is paid proportionally by income, and is either 49 weeks at 100% salary or 59 weeks at 80% salary that must be divided between both parents (NAV, 2023). Some countries offer additional support for new parents, for example in Finland, parents are provided with a baby box or maternity package containing various essential items for the infant (Kela, 2023). Similarly, the Irish government will provide care packages to new parents in a pilot scheme launching in February 2023. The scheme will be implemented in both The Rotunda and University Hospital Waterford. Schemes such as this are essential to support to parents during the peripartum period and could potentially ease some of the financial pressure experienced by fathers during this time.

Findings emphasize the importance of social support in alleviating / preventing paternal loneliness and suggest that like mothers, fathers should be supported during the postpartum period. Findings can inform healthcare practitioners of modifiable factors which may prevent or alleviate loneliness during the postpartum period.

Loneliness interventions based on group or in person activities may not be feasible for many fathers. Although communicating online cannot always replace face-to-face contact, it is clearly beneficial in times of isolation or crisis and can act as a temporary substitute for face-to-face support. Some fathers may also prefer seeking support online. For example (Ammari, & Schoenebeck, 2015) suggest fathers may prefer seeking support in anonymous online settings as they can do so without the judgement and stigma that is often experienced in offline contexts. Many fathers in the current study reached out to others online or by phone. If parents are isolated or cannot be physically present to engage with others, connecting via technology e.g. (web-based platforms, apps offering peripartum classes online) may offer a way for fathers to form connections and reduce postpartum loneliness. This may also apply to contexts outside of Covid-19 if parents are isolated for another reason. However, research found elevated loneliness amongst those no longer socially isolating, suggesting loneliness may persist for some time following Covid-19 (Killgore at al., 2020). This may because the 'new normal' is not normal, with social interactions changing as people distance themselves, avoid group interactions, handshakes, hugs and so on. This 'new normal' may contribute to feelings of loneliness for some time (Killgore et al., 2020). Therefore, it is important to find ways to alleviate postpartum loneliness throughout the pandemic and afterwards.

Conclusion

Both strands of this research highlight the potential buffering role of social support on the relationship between postpartum stress and loneliness. Findings suggest it is important to

target low partner support, low support from family, friends and from other fathers as potentially modifiable factors for postpartum loneliness interventions. Connecting with others and receiving support via technology (web-based platforms, apps offering peripartum classes online) may prevent or alleviate paternal loneliness during Covid-19 or in times of isolation. The current study was the first to explore how paternal postpartum social support relates to loneliness and is a good foundation for future research. Further research is required to understand paternal postpartum loneliness and how social support relates to paternal postpartum loneliness. To reduce financial pressure and work-family conflict, there is a need for increased support for fathers in relation to policy and within the workplace following the arrival of their infant.

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Appendix A

Table 1

Risk Factors for Peripartum Depression, Anxiety and Loneliness

Risk factor	Depression	Anxiety	Loneliness
Hormonal fluctuation	Saxbe et al., 2017		
Lower education level	Boyce et al., 2007 Mahmoodi et al., 2017 Philpott et al., 2016 Zhang et al., 2016	Mahmoodi et al., 2017	
Lower income level / unemployment	Zhang et al., 2016	Mahmoodi et al., 2017	
Being recently married			Keizer et al., 2010
Becoming a father at a younger age		Koh et al., 2015	
Becoming a father at an older age	Fisher et al., 2012		
Marital dissatisfaction / distress	Koh et al., 2014 Morse et al., 2000 Zhang et al., 2016	Koh et al., 2015	Junttila et al., 2015
Work-family conflict	Koh et al., 2014	Koh et al., 2015	
Unplanned pregnancy	Gao et al., 2009 Koh et al., 2014	Fisher et al., 2012	
Having twins		Vilska et al., 2009	
Maternal / partner depression	Gao et al., 2009 Matthey et al., 2003 Morse et al., 2000 Zhang et al., 2016	Koh et al., 2015 Matthey et al., 2003	

Risk factor	Depression	Anxiety	Loneliness
Previous/ existing mental health problem	Philpott et al., 2018	Philpott et al., 2019	Johnasson et al., 2020 Junttila et al., 2015
Stress	Anding et al., 2016 Gao et al., 2009 Kamalifard et al., 2014 Mao et al., 2011 Wee et al., 2015 Vismara et al., 2016	Wee et al., 2015	
Exposure to stress during birth		Zerach and Magal, 2017	
Anxiety surrounding birth		Kannenberg et al., 2016	
Gender role pressure / stress	Morse et al., 2000 ‘ Chhabra et al., 2022	Chhabra et al., 2022	
Infant sleep problems	Philpott et al., 2018		
Lower levels of social support	Gao et al., 2009 Kamalifard et al., 2014 Mao et al., 2011	Koh et al., 2015	
Reduced social contact			Lee et al., 2019 – maternal loneliness

Appendix B

Service/person emailed - Survey
Doula Ireland
Blue Skies initiative
EPT clinic
Sean O'Connell, psychologist in private practice
The Coombe Hospital Perinatal MH Team
Parent education at The Coombe Hospital
The Rotunda Hospital Perinatal MH Team
The National Maternity Hospital Perinatal MH Team
CYPSC
Perinatal and Infant SIG PSI
From Lads to Dads
Pavi.ie
Promoting Equality for Travellers in Ireland (itmtrav.ie)
LGBTQ Parents Leinster Ireland
LGBT Ireland
Young Knocknaheeny
Young Ballymun
PSI
PSI clinical division
Lust for life
IAIMH – Irish association for infant mental health
Bumpbabyandme.ie

Yogamamas.ie
Minding a Baby's Mind Online Prenatal Programme
Antenatalireland.ie
Babyacademy.ie
Men's sheds

Service/person emailed- Interview
Doula Ireland
The Coombe Hospital Perinatal MH Team
The Rotunda Hospital Perinatal MH Team
Parent education at The Coombe Hospital
The National Maternity Hospital Perinatal MH Team
Perinatal and Infant SIG
From Lads to Dads
Blue Skies initiative
Sean O'Connell, psychologist in private practice
CYPSC
PSI
PSI clinical division

Appendix C

Demographic Questions – Survey

What age are you?

What is your current employment status?

What is the highest level of education that you have received to date?

How many children do you already have?

What is your marital status?

Do you live with the expectant mother?

Do you live with the mother of your baby? (Wave 2 & 3)

Was this pregnancy planned or unplanned?

Do you plan to be present at the birth of your infant?

Were you present at the birth of your infant? (Wave 2 & 3)

Do you have a previous or existing diagnosis of anxiety disorder?

Do you have a previous or existing diagnosis of depressive disorder?

Does your partner have a previous or existing diagnosis of anxiety disorder?

Does your partner have a previous or existing diagnosis of depressive disorder?

Appendix D

PERCEIVED STRESS SCALE

The questions in this scale ask you about your feelings and thoughts during the last month. **In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.**

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you felt that you were unable to control the important things in your life? 0 1 2 3 4

2. In the last month, how often have you felt confident about your ability to handle your personal problems? 0 1 2 3 4

3. In the last month, how often have you felt that things were going your way? 0 1 2 3 4

4. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0 1 2 3 4

Scoring for the Perceived Stress Scale 4:

Questions 1 and 4:	Questions 2 and 3:
0= Never	4=Never
1=Almost Never	3= Almost never
2=Sometimes	2=Sometimes
3=Fairly often	1= Fairly often
4=Very often	0= Very often

Appendix E

EDINBURGH POSTNATAL DEPRESSION SCALE (EPDS)
J. L. Cox, J. M. Holden, R. Sagovsky
Department of Psychiatry, University of Edinburgh

As you have recently had a baby, we would like to know how you are feeling. Please select the answ er which comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

In the past 7 days:

1. I have been able to laugh and see the funny side of things
   As much as I always could 0
   Not quite so much now 1
   Definitely not so much now 2
   Not at all 3
2. I have looked forward with enjoyment to things
   As much as I ever did 0
   Rather less than I used to 1
   Definitely less than I used to 2
   Hardly at all 3

*3. I have blamed myself unnecessarily when things went wrong
   Yes, most of the time 3
   Yes, some of the time 2
   Not very often 1
   No, never 0

4. I have been anxious or worried for no good reason
   No, not at all 0
   Hardly ever 1
   Yes, sometimes 2
   Yes, very often 3

*5. I have felt scared or panicky for no very good reason
   Yes, quite a lot 3
   Yes, sometimes 2
   No, not much 1
   No, not at all 0

*6. Things have been getting on top of me
   Yes, most of the time I haven't been able to cope at all 3
   Yes, sometimes I haven't been coping as well as usual 2
   No, most of the time I have coped quite well 1
   No, I have been coping as well as ever 0

* 7. I have been so unhappy that I have had difficulty sleeping
   Yes, most of the time 3
   Yes, sometimes 2
   Not very often 1
   No, not at all 0

* 8. I have felt sad or miserable
   Yes, most of the time 3
   Yes, quite often 2
   Not very often 1
   No, not at all 0

* 9. I have been so unhappy that I have been crying

Yes, most of the time 3
Yes, quite often 2
Only occasionally 1
No, never 0

*10. The thought of harming myself has occurred to me
Yes, quite often 3
Sometimes 2
Hardly ever 1
Never 0

Response categories are scored 0. 1, 2, and 3 according to increased severity of the symptom. Items marked with an asterisk are reverse scored (i.e., 3, 2, 1 and 0). The total score is calculated by adding together the scores for each of the ten items. Users may reproduce the scale without further permission providing they respect copyright (which remains with the British Journal of Psychiatry) by quoting the names of the authors, the title and the source of the paper in all reproduced copies.

Appendix F

DeJong Gierveld Loneliness Scale (Gierveld & Tilburg 2006)

In this 6-item scale, three statements are made about 'emotional loneliness' and three about 'social loneliness'. Social loneliness (SL) occurs when someone is missing a wider social network and emotional loneliness (EL) is caused when you miss an "intimate relationship".

1. I experience a general sense of emptiness [EL]
Yes
More or less
No
2. I miss having people around me [EL]
Yes
More or less
No
3. I often feel rejected [EL]
Yes
More or less
No
4. There are plenty of people I can rely on when I have problems [SL]
Yes
More or less
No
5. There are many people I can trust completely [SL]
Yes
More or less
No
6. There are enough people I feel close to [SL]
Yes
More or less
No

To score responses and interpret the results: There are negatively (1-3) and positively (4-6) worded items. On the negatively worded items, the neutral and positive answers are scored as "1". Therefore, on questions 1-3 score Yes=1, More or less=1, and No=0. On the positively worded items, the neutral and negative answers are scored as "1". Therefore, on questions 4-6, score Yes=0, More or less=1, and No=1.

This gives a possible range of scores from 0 to 6, which can be read as follows:
(Least lonely) 0 - 6 (Most lonely)

Appendix G

Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet & Farley, 1988)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the "1" if you Very Strongly Disagree
Circle the "2" if you Strongly Disagree
Circle the "3" if you Mildly Disagree
Circle the "4" if you are Neutral
Circle the "5" if you Mildly Agree
Circle the "6" if you Strongly Agree
Circle the "7" if you Very Strongly Agree

1. There is a special person who is around when I am in need. 1 2 3 4 5 6 7	SO
2. There is a special person with whom I can share joys and sorrows. 1 2 3 4 5 6 7	SO
3. My family really tries to help me. 1 2 3 4 5 6 7	Fam
4. I get the emotional help & support I need from my family. 1 2 3 4 5 6 7	Fam
5. I have a special person who is a real source of comfort to me. 1 2 3 4 5 6 7	SO
6. My friends really try to help me. 1 2 3 4 5 6 7	Fri
7. I can count on my friends when things go wrong. 1 2 3 4 5 6 7	Fri
8. I can talk about my problems with my family. 1 2 3 4 5 6 7	Fam
9. I have friends with whom I can share my joys and sorrows. 1 2 3 4 5 6 7	Fri
10. There is a special person in my life who cares about my feelings. 1 2 3 4 5 6 7	SO
11. My family is willing to help me make decisions. 1 2 3 4 5 6 7	Fam
12. I can talk about my problems with my friends. 1 2 3 4 5 6 7	Fri

The items tended to divide into factor groups relating to the source of the social support, namely family (Fam), friends (Fri) or significant other (SO).

Appendix H

Ethical Approval

THE ROTUNDA HOSPITAL DUBLIN

9th July, 2021.

Ospidéal an Rotunda
Cearnóg Parnell, Baile Átha Cliath 1, Éire.
The Rotunda Hospital
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www.rotunda.ie

Ms. Sarah Murray Cunningham
Bog Road,
Ribbontail Lane,
Longwood,
Co. Meath.

Our ref: **REC-2020-016** *(please quote this reference on all correspondence)*
Re: **Paternal Perinatal stress, loneliness, and social support – a mixed method study**

Dear Sarah,

Many thanks for the amended documentation received in relation to the above research. I am pleased to advise that the requirements set out by the Committee in respect of your study have now been met. This being the case, ethical approval for the research is granted and it may now commence.
You are requested to submit a progress report to the Committee in twelve months, and annually thereafter as applicable.
Please advise us by email to research@rotunda.ie when you have completed your research. We would also like to know when and where you publish or present your results. Please be aware of your responsibilities with respect to the Rotunda Hospital's good research practice policies and guidelines, copies of which are available on the Q-Pulse system.

Kind regards.

Yours sincerely,

Professor David Corcoran,
Chairman,
Research Ethics Committee.

CARING FOR GENERATIONS
SINCE 1745

Ethics Approval

VALERIE BARTLEY | 15-DEC-20

Dear SARAH ELIZABETH MURRAY CUNNINGHAM,

Your Ethics Review has been now been approved:

- Ethics Review ID: 2424266
- PI: Sarah Elizabeth Murray Cunningham
- Title: Paternal Perinatal stress, social support, and impact on wellbeing – a mixed method study

Please login to RIS in order to view the application and review it.

Ethics Approval

VALERIE BARTLEY | 13-APR-21

Dear SARAH ELIZABETH MURRAY CUNNINGHAM,

Your Ethics Review has been now been approved:

- Ethics Review ID: 2436580
- PI: Sarah Elizabeth Murray Cunningham
- Title: Ethics amendment

Please login to RIS in order to view the application and review it.

Appendix I

Interview Schedule

First, I would like to ask you a few background questions.

What age are you?

How many children do you have?

Are you living with the mother of your youngest child?

Who else is in the home?

What new challenges emerged for you during the postpartum period? - how have these challenges affected you as a man, your relationship with yourself & with your partner?

Were the challenges which emerged during this time expected or were you surprised by the new challenges which emerged during the postpartum period?

What have you felt that you need support with during this time?

Social support

Who did you receive support from to help you with new challenges during the postpartum period?

In what way did they support you with new challenges during this time?

Who did you rely on most for support during this time?

Was there anything that you felt you needed more support with during the postpartum period? If so, what was it?

Was there anybody that you would have liked to provide you with more support during this time? If so who?

How did you seek support from people?

Was there anything that prevented you or made you hesitant about seeking support? If so,

what was it?

How do you think COVID-19 restrictions have impacted your ability to receive support during the postpartum period?

Loneliness

Next, I would like to ask you about loneliness. Everyone has a sense of what loneliness is – what does it mean to you? How would you define it?

Do you think that you have felt lonelier during the postpartum period than you felt before this time?

What do you think may have contributed to your increased feeling of loneliness during this time?

How have your feelings of loneliness changed throughout this time/ how have your feelings of loneliness changed or fluctuated since the pregnancy of your partner and following the birth of the baby?

Has there been anything that has helped you to feel less lonely?

Have your feelings of loneliness impacted your life in any way? - How have your feelings impacted your role as a father, on your relationship to self, to your partner and to your baby?

Appendix J

Information Sheet – Questionnaire

Purpose of the Study I am Sarah Murray Cunningham, a postgraduate research student, in the Department of Psychology, Maynooth University. Maynooth University is located in the Republic of Ireland.

As part of the requirements for my postgraduate in Psychology, I am undertaking a research study` under the supervision of Dr Joanna McHugh Power and Dr Anne-Marie Casey.

This study is concerned with fathers' mental health during the perinatal period – this is the time during pregnancy and following the birth of their baby. The study will be exploring levels of stress, psychological distress (anxiety & depression) and loneliness that fathers may experience during this time. The study is concerned with the role that social support plays in relation to these mental health outcomes.

What will the study involve? The study will involve taking part in an online questionnaire that should take you about 10-15 minutes to complete. You may complete this in your own time. We ask that you complete this questionnaire at 3 timepoints (During the third trimester of your partners pregnancy and at 3 and 6 months following the birth of your baby). You will be asked to provide an email address during this questionnaire so that you may be reminded to complete this survey at 3 and 6 months following the birth of your baby. This questionnaire will contain 5 sections. The first section will contain a few questions about you e.g., your age and level of education. The second section will ask you some questions about your levels of stress. The third section will ask you some questions about your feelings or levels of depression and anxiety during the postpartum period. The fourth section will contain some questions about your loneliness levels and the final section will ask you some questions about social support.

Who has approved this study? This study has been reviewed and received ethical approval from

Maynooth University Research Ethics committee. You may have a copy of this approval if you request it.

Why have you been asked to take part? As you are about to become a father (either for the first time or not), and because you are aged 18 or over, you are suitable to provide data for this study. Only fathers whose partners are in the third trimester of their pregnancy are suitable to provide data for this study. If you are under the age of 18, or if your partner is not in their third trimester of pregnancy, you are not suitable to provide data for this study.

Do you have to take part? No, you are under no obligation whatsoever to take part in this research. However, we hope that you will agree to take part and give us some of your time to complete a short questionnaire. It is entirely up to you to decide whether or not you would like to take part. If you decide to do so, you will be asked to read an information sheet which will include information about everything that is involved in participation in this research. You will also be asked to provide informed consent to participate. If you decide to take part, you are still free to withdraw your information up until such time as your data is anonymised. You are also free to decide that you would not like to participate in this research before you have completed the questionnaire at 3 and 6 months following the birth of your baby. A decision to withdraw, or a decision not to take part, will not affect your relationships with Maynooth University.

What information will be collected? You will be asked to provide an email address, so that you may be reminded to complete this questionnaire at 3 months postpartum and again at 6 months postpartum. If you wish to have your email address deleted before the period of 6 months, you can contact Sarah Cunningham SARAH.CUNNINGHAM.2021@MUMAIL.IE to have this be done.

Demographic information will be collected for example what age you are, your marital status, living situation, whether or not you have a previous/ current diagnosis anxiety/depressive disorder

and so on. Information relating to your levels of stress, psychological distress (anxiety and depression), loneliness and social support will also be collected.

Will your participation in the study be kept confidential? Yes, all information that is collected about you from this questionnaire will be kept confidential. No names will be identified at any time. All hard copy information will be held in a locked cabinet at the researchers' place of work, electronic information will be encrypted and held securely on MU PC or servers and will be accessed only by myself (Sarah Murray Cunningham) and my research supervisors Dr Joanna McHugh Power and Dr Anne-Maire Casey.

No information will be distributed to any other unauthorised individual or third party. If you so wish, the data that you provide can also be made available to you at your own discretion.

'It must be recognised that, in some circumstances, confidentiality of research data and records may be overridden by courts in the event of litigation or in the course of investigation by lawful authority. In such circumstances the University will take all reasonable steps within law to ensure that confidentiality is maintained to the greatest possible extent.'

What will happen to the information which you give? All the information you provide will be kept at Maynooth University in such a way that it will not be possible to identify you. On completion of the research, the data will be retained on the MU server. Your data will be encrypted, and stored in a password protected file, available only to the researcher, Sarah Murray Cunningham and supervisors of this research, Dr Joanna McHugh Power and Dr Anne-Marie Casey. After ten years, all data will be destroyed (by the PI). Manual data will be shredded confidentially, and electronic data will be reformatted or overwritten by the PI in Maynooth University.

What are the possible disadvantages of taking part? It is possible that thinking about your experiences during or following participation in this questionnaire may cause some distress.

What if there is a problem? If you experience any distress following the questionnaire you may contact The Samaritans Freephone: 116 123 Or Aware Freephone 1800 80 48 48. You may also visit The Psychological Society of Ireland website www.psychologicalsociety.ie, The British Psychological Society website www.bps.org.uk/public or The American Psychological association website www.apa.org/helpcentre for information and resources on finding support. You may contact my supervisor Dr Joanna McHugh Power or Dr Anne-Marie Casey if you feel the research has not been carried out as described above.

Any further queries? If you need any further information, you can contact me: Sarah Murray Cunningham email: SARAH.CUNNINGHAM.2021@MUMAIL.IE phone: 086 0888389. Alternatively, you can contact my supervisor Dr Joanna McHugh Power at Joanna.McHughPower@mu.ie or Dr Anne-Marie Casey at Annemarie.casey@olchc.ie.

Thank you for taking the time to read this!

I have read this information and would like to continue □

Consent form – questionnaire

The purpose and nature of the study has been explained to me in writing. I have the opportunity to ask questions (via email or phone).

I understand that this research involves completing a questionnaire at 3 separate timepoints (During the third trimester of my partners pregnancy and at 3 and 6 months following the birth of my baby).

I am participating voluntarily.

I understand that I can withdraw from the study, without repercussions, at any time, whether that is before it starts or while I am participating.

It has been explained to me how my data will be managed, and I understand that because my data will be submitted anonymously, I will not be able to withdraw once I complete the questionnaire.

I understand the limits of confidentiality as described in the information sheet.

I understand that my data, in an anonymous format, may be used in further research projects and any subsequent publications if I give permission for this.

Appendix K

Study Debriefing – Questionnaire

This study is concerned with father's mental health during the perinatal period – this is the time during pregnancy and following the birth of their baby. The study will be exploring levels of stress, anxiety, depression, and loneliness that fathers may experience during this time. The study is concerned with the role that social support plays in relation these mental health outcomes.

How was this tested?

You were asked to complete a questionnaire consisting of five sections. The first section contained questions about you e.g. your age and level of education. The second section asked you some questions about your levels of stress. The third section asked you questions about your levels of depression and anxiety during the perinatal period. The fourth section contained questions about your loneliness levels and the final section asked you questions about social support.

What did this research expect to find?

The research expected to find that stress during the perinatal period would be related to psychological distress (anxiety and depression) and loneliness. Social support was expected to play a role in this relationship. Social support was expected to "buffer" the negative effects of stress during the perinatal period.

Confidentiality

Your data will remain confidential. No names will be identified at any time. All hard copy information will be held in a locked cabinet at the researchers' place of work, electronic information will be encrypted and held securely on MU PC or servers and will be accessed only by Sarah Murray Cunningham and the supervisors of this research Dr Joanna McHugh Power and Dr Anne-Maire Casey.

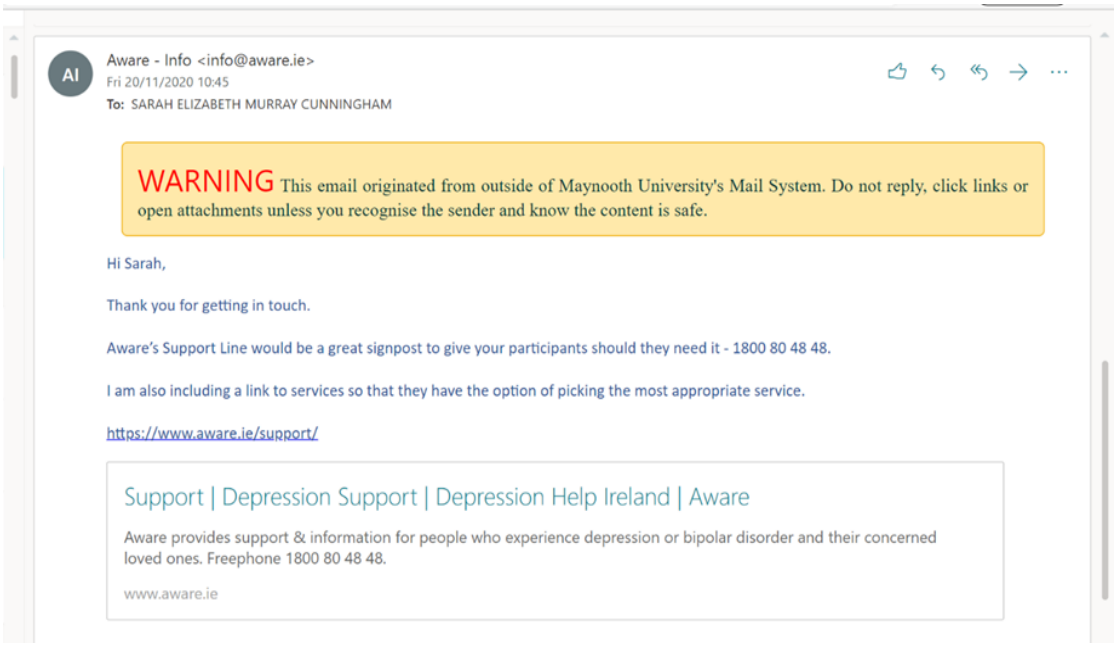
If you are experiencing distress as a result of participation

If you have concerns following your participation in this research, please contact Sarah Murray

Cunningham email: Sarah.cunningham.2021@mumail.ie / phone: 086 0888389. Alternatively, you can contact my supervisor Dr Joanna McHugh Power at Joanna.McHughPower@mu.ie, or Dr Anne-Marie Casey at annemarie.casey@olchc.ie. If you are experiencing distress following your participation in this research, it is advised that you contact The Samaritans Freephone 116 123, email jo@samaritans.org or contact Aware Freephone 1800 80 48 48. These services provide support for individuals experiencing any form of distress. You may also visit The Psychological Society of Ireland website www.psychologicalsociety.ie, The British Psychological Society website www.bps.org.uk/public or The American Psychological association website www.apa.org/helpcentre for information and resources on finding support. Thank you for your participation.

Appendix L

Approval to Include Helpline Contact Information



AI

Aware - Info <info@aware.ie>
Fri 20/11/2020 10:45
To: SARAH ELIZABETH MURRAY CUNNINGHAM

WARNING This email originated from outside of Maynooth University's Mail System. Do not reply, click links or open attachments unless you recognise the sender and know the content is safe.

Hi Sarah,

Thank you for getting in touch.

Aware's Support Line would be a great signpost to give your participants should they need it - 1800 80 48 48.

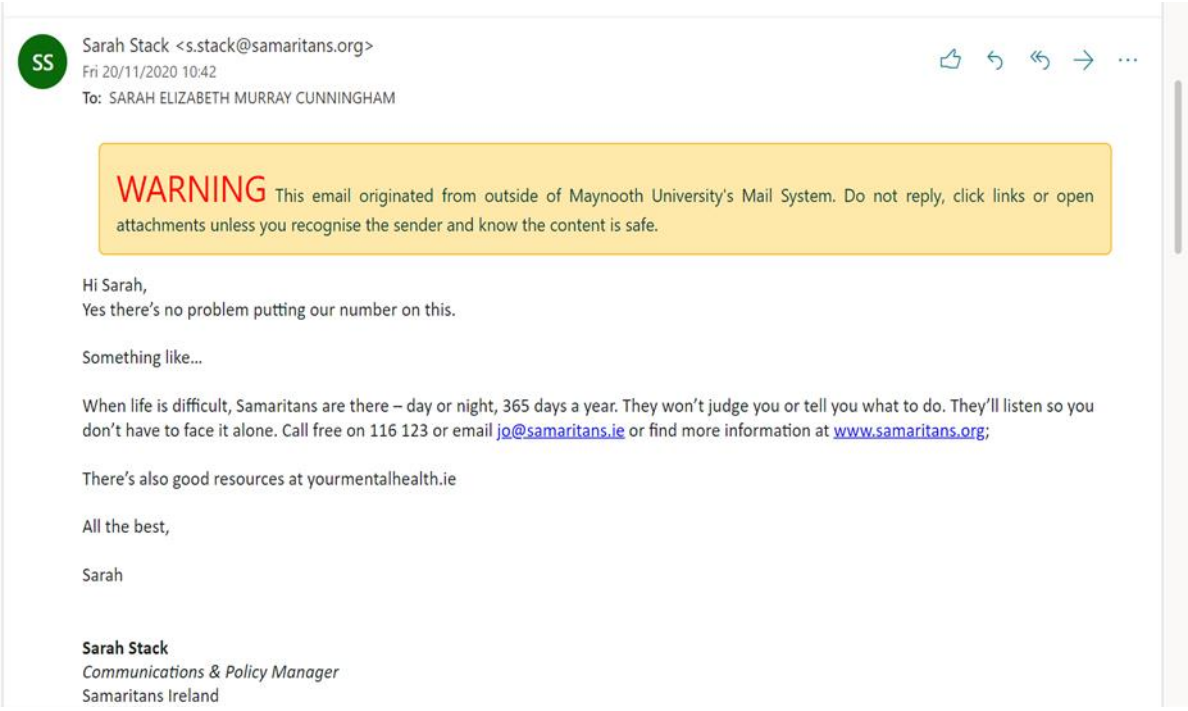
I am also including a link to services so that they have the option of picking the most appropriate service.

https://www.aware.ie/support/

Support | Depression Support | Depression Help Ireland | Aware

Aware provides support & information for people who experience depression or bipolar disorder and their concerned loved ones. Freephone 1800 80 48 48.

www.aware.ie



SS

Sarah Stack <s.stack@samaritans.org>
Fri 20/11/2020 10:42
To: SARAH ELIZABETH MURRAY CUNNINGHAM

WARNING This email originated from outside of Maynooth University's Mail System. Do not reply, click links or open attachments unless you recognise the sender and know the content is safe.

Hi Sarah,
Yes there's no problem putting our number on this.

Something like...

When life is difficult, Samaritans are there – day or night, 365 days a year. They won't judge you or tell you what to do. They'll listen so you don't have to face it alone. Call free on 116 123 or email jo@samaritans.ie or find more information at www.samaritans.org;

There's also good resources at yourmentalhealth.ie

All the best,

Sarah

Sarah Stack
Communications & Policy Manager
Samaritans Ireland

Appendix M

Information Sheet – Interview

I am Sarah Murray Cunningham, a postgraduate research student, in the Department of Psychology, Maynooth University. Maynooth University is located in the Republic of Ireland. As part of the requirements for my postgraduate degree in Psychology, I am undertaking a research study under the supervision of Dr Joanna McHugh Power and Dr Anne-Marie Casey.

Purpose of the study: This study is concerned with father's mental health during the perinatal period – this is the time during pregnancy and following the birth of their baby. The study will be exploring levels of stress, psychological distress (anxiety & depression) and loneliness that fathers may experience during this time. The study is concerned with the role that social support plays in relation to these mental health outcomes.

What will the study involve? This study involves your engagement in a one-to-one interview with the researcher. You will be asked to speak about your experiences during the postpartum period including your experiences with social support and loneliness. This interview will be audio recorded and may take 30-45 minutes to complete. The interview will be carried out using MS Teams videoconferencing or over the phone.

Who has approved this study? This study has been reviewed and received ethical approval from Maynooth University Research Ethics committee. You may have a copy of this approval if you request it.

Why have you been asked to take part? As you have recently become a father (either for the first time or not), and because you are aged 18 or over, you are suitable to provide data for this study.

Do you have to take part? No, you are under no obligation to take part in this research. However, we hope that you will agree to take part and give us some of your time to participate in a one-to-one interview with a researcher. It is entirely up to you to decide whether or not you would like to take part. If you decide to do so, you will be given a copy and the information sheet for your own records and will be asked to provide verbal consent on the day of the interview. If you have decided to take part, you are free to withdraw before engaging in this interview. If you participate in the interview you are still free to withdraw your information up until such time as the research findings are anonymised. You may withdraw your data by contacting the researcher & stating that you would like to withdraw your data. You may contact Sarah Murray Cunningham by email SARAH.CUNNINGHAM.2021@MUMAIL.IE or by Phone: 086 0888389. A decision to withdraw, or a decision not to take part, will not affect your relationships with Maynooth University.

What information will be collected? You will be asked about your experiences with social support during the postpartum period. You will be asked to speak about the people in your life who supported you during this time. You may also be asked to speak about areas that you felt you needed more support with during this time and anything that made you hesitant about seeking support. You will also be asked to speak about your experience with loneliness during the postpartum period. You may be asked to speak about how lonely you felt during this time, how your feelings have changed throughout this time and how your feelings have impacted on your life. If for whatever reason you feel that you may become distressed as a result of participating in this interview, you are free to decline participation. An audio recording of this interview will be collected.

Will your participation in the study be kept confidential? Yes, all information that is collected about you during the course of the research will be kept confidential. No names will be identified at any time. All hard copy information will be held in a locked cabinet at the researchers' place of work, electronic information will be encrypted and held securely on MU PC or servers and will be accessed only by Sarah Murray Cunningham and the supervisors of this research Dr Joanna McHugh Power and Dr Anne-Marie Casey.

No information will be distributed to any other unauthorised individual or third party. If you so wish, the data that you provide can also be made available to you at your own discretion. It must be recognised that, in some circumstances, confidentiality of research data and records may be overridden by courts in the event of litigation or in the course of investigation by lawful authority. In such circumstances the University will take all reasonable steps within law to ensure that confidentiality is maintained to the greatest possible extent.

What will happen to the information which you give? All the information you provide will be kept at Maynooth University in such a way that it will not be possible to identify you. On completion of the research, the data will be retained on the MU server. After ten years, all data will be destroyed (by the PI). Manual data will be shredded confidentially, and electronic data will be reformatted or overwritten by the PI in Maynooth University.

What will happen to the results? The research will be written up and presented as a thesis as part of the requirements for my master's degree in Psychology. This research may be discussed at internal group meetings and may be published in scientific journals. Your data in an anonymised format may also be discussed at group meetings and published in scientific journals. A copy of the research findings will be made available to you upon request.

What are the possible disadvantages of taking part? It is possible that thinking about your experiences during or following participation in this questionnaire may cause some distress.

What if there is a problem? If you experience any distress following the questionnaire you may contact The Samaritans Freephone: 116 123 Or Aware Freephone 1800 80 48 48. When life is difficult the Samaritans and Aware are there – day or night. They will not judge you or tell you what to do. They will listen so you don't have to face it alone. You may also visit The Psychological Society of Ireland website www.psychologicalsociety.ie, The British Psychological Society website www.bps.org.uk/public or The American Psychological association website www.apa.org/helpcentre for information and resources on finding support.

Any further queries? If you need any further information, you can contact me: Sarah Murray Cunningham email: SARAH.CUNNINGHAM.2021@MUMAIL.IE .Alternatively, you can contact my supervisor Dr Joanna McHugh Power at Joanna.McHughPower@mu.ie or Dr Anne-Marie Casey at Annemarie.casey@olchc.ie.

Information sheet – verbal script

I am Sarah Murray Cunningham, a postgraduate research student, in the Department of Psychology, Maynooth University. Maynooth University is located in the Republic of Ireland. As part of the requirements for my postgraduate degree in Psychology, I am undertaking a research study under the supervision of Dr Joanna McHugh Power and Dr Anne-Marie Casey.

This study is concerned with father's mental health during the perinatal period – this is the time during pregnancy and following the birth of their baby. The study will be exploring levels of stress, psychological distress (anxiety & depression) and loneliness that fathers may experience during this

time. The study is concerned with the role that social support plays in relation to these mental health outcomes.

This study involves your engagement in an interview with the researcher. You will be asked to speak about your experiences during the postpartum period including your experiences with social support and loneliness. This interview will be audio recorded and may take 30-45 minutes to complete.

This study has been reviewed and received ethical approval from Maynooth University Research Ethics committee. You may have a copy of this approval if you request it.

As you have recently become a father (either for the first time or not), and because you are aged 18 or over, you are suitable to provide data for this study.

You are under no obligation to take part in this research. However, I hope that you will agree to take part and give me some of your time to participate in this interview. It is up to you to decide whether or not you would like to take part. You are still free to withdraw before we begin this interview. If you participate in the interview you are still free to withdraw your information up until such time as the research findings are anonymised. You can withdraw your data by contacting me by email SARAH.CUNNINGHAM.2021@MUMAIL.IE. A decision to withdraw, or not to take part, will not affect your relationships with Maynooth University.

You will be asked about your experiences with social support during the postpartum period. You will be asked to speak about the people in your life who supported you during this time. You may also be asked to speak about areas that you felt you needed more support with during this time and anything

that made you hesitant about seeking support. You will also be asked to speak about your experience with loneliness during the postpartum period. You may be asked to speak about how lonely you felt during this time, how your feelings have changed throughout this time and how your feelings have impacted on your life.

Information that is collected about you during the course of the research will be kept confidential. No names will be identified at any time. All hard copy information will be held in a locked cabinet at the researchers' place of work, electronic information will be encrypted and held securely on MU PC or servers and will be accessed only by myself, Sarah Murray Cunningham and the supervisors of this research Dr Joanna McHugh Power and Dr Anne-Marie Casey.

No information will be distributed to any other unauthorised individual or third party. If you so wish, the data that you provide can also be made available to you at your own discretion.

'It must be recognised that, in some circumstances, confidentiality of research data and records may be overridden by courts in the event of litigation or in the course of investigation by lawful authority. In such circumstances the University will take all reasonable steps within law to ensure that confidentiality is maintained to the greatest possible extent.'

All the information you provide will be kept at Maynooth University in such a way that it will not be possible to identify you. On completion of the research, the data will be retained on the MU server. After ten years, all data will be destroyed (by the PI). Manual data will be shredded confidentially, and electronic data will be reformatted or overwritten by the PI in Maynooth University.

The research will be written up and presented as a thesis as part of the requirements for my master's degree in Psychology. This research may be discussed at internal group meetings and may be

published in scientific journals. Your data in an anonymised format may also be discussed at group meetings and published in scientific journals. A copy of the research findings will be made available to you upon request.

It is possible that thinking about your experiences during or following participation in this questionnaire may cause some distress. If you experience any distress following the questionnaire you may contact The Samaritans Freephone: 116 123 Or Aware Freephone 1800 80 48 48. You may also visit The Psychological Society of Ireland website www.psychologicalsociety.ie, The British Psychological Society website www.bps.org.uk/public or The American Psychological association website www.apa.org/helpcentre for information and resources on finding support.

If you need any further information, you can contact me: Sarah Murray Cunningham email: SARAH.CUNNINGHAM.2021@MUMAIL.IE. Alternatively, you can contact my supervisor Dr Joanna McHugh Power at Joanna.McHughPower@mu.ie or Dr Anne-Marie Casey at Annemarie.casey@olchc.ie.

Consent form – verbal consent script

Do you agree that the purpose and nature of this study have been explained to you verbally & in writing? That you have been able to ask questions, which were answered satisfactorily?

That you are participating voluntarily?

Do you give permission for your interview with Sarah Murray Cunningham to be audio recorded?

Do you consider yourself to be capable of providing informed consent?

Do you understand that you can withdraw from the study, without repercussions, at any time, whether that is before it starts or while you are participating?

Do you understand that you can withdraw permission to use the data right up to anonymization?

Has it been explained to you how your data will be managed and that you may access it on request?

Do you understand the limits of confidentiality as described in the information sheet?

Do you understand that your data, in an anonymous format, may be used in for subsequent publications if you give permission for this?

Do you agree to the quotation or publication of extracts from your interview?

Appendix N

Study Debriefing – one-to-one interview

This study is concerned with father's experiences with social support and loneliness during the postpartum period.

How was this explored?

You participated in a one-to-one interview with the researcher (Sarah Murray Cunningham). This interview was audio recorded using a Dictaphone. You were asked to discuss your own experiences with social support and loneliness during the postpartum period.

Confidentiality

Your data will remain confidential. No names will be identified at any time. All hard copy information will be held in a locked cabinet at the researchers' place of work, electronic information will be encrypted and held securely on MU PC or servers and will be accessed only by Sarah Murray Cunningham and the supervisors of this research Dr Joanna McHugh Power and Dr Anne-Maire Casey.

If you are experiencing distress as a result of participation

If you have concerns following your participation in this research, please contact Sarah Murray Cunningham email: Sarah.cunningham.2021@mumail.ie / phone: 086 0888389. Alternatively, you can contact my supervisor Dr Joanna McHugh Power at Joanna.McHughPower@mu.ie, or Dr Anne-Marie Casey at annemarie.casey@olchc.ie. If you are experiencing distress following your participation in this research, it is advised that you contact The Samaritans Freephone 116 123, email jo@samaritans.org or contact Aware Freephone 1800 80 48 48. These services provide support for individuals experiencing any form of distress. You may also visit The Psychological Society of Ireland website www.psychologicalsociety.ie. The British Psychological Society website www.bps.org.uk/public or The American Psychological association website www.apa.org/helpcentre for information and resources on finding support.

Thank you for your participation.

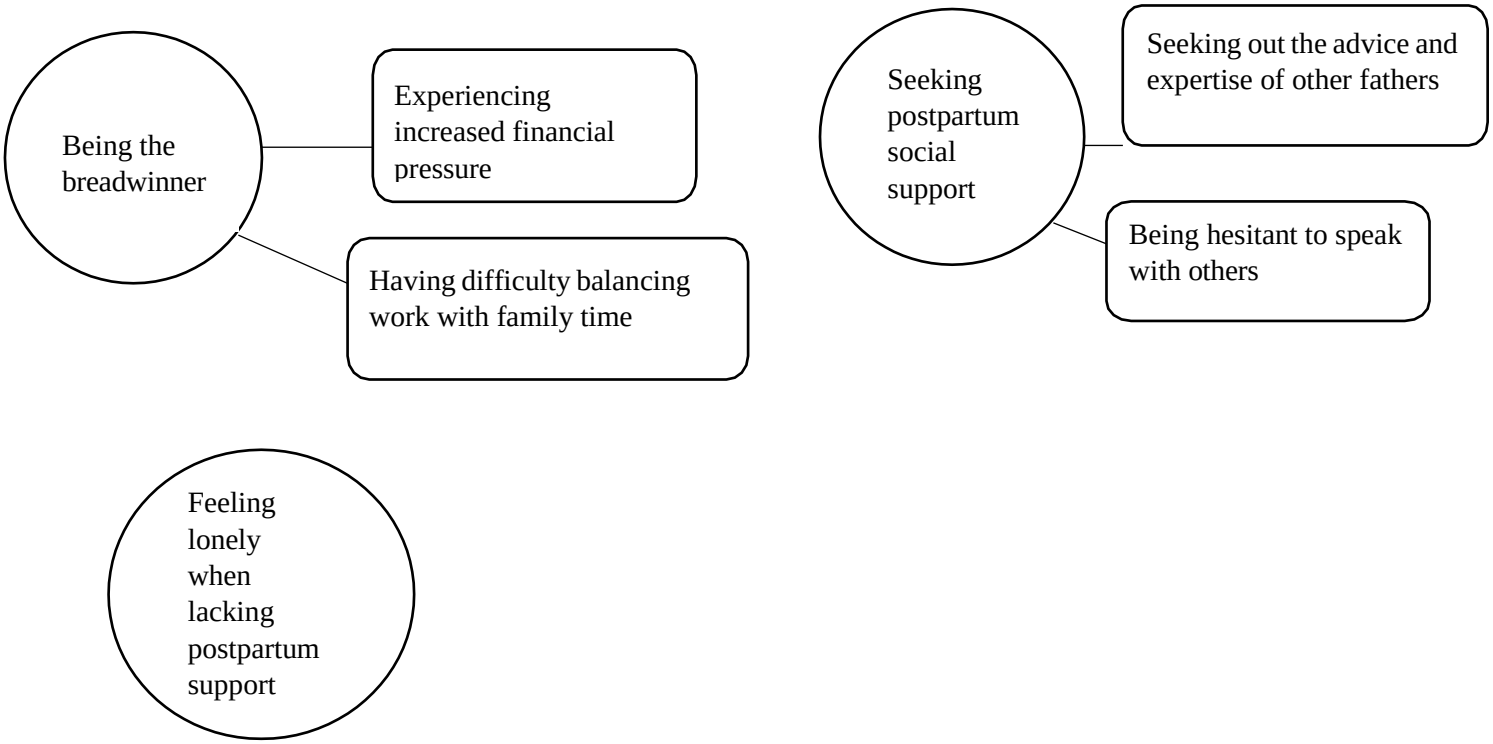
Appendix O

Coded Interview Segments

Data extract	Coded for
Em, primarily my fiancé actually. So, we talked about this a lot because we both found it surprising and funny. A little bit funny in that sense. I would break down crying for no reason a few times a day or you know the smallest thing with the baby would just set me off. So, it was a little bit amusing at some point too. (P1)	1. Getting support from partner 2. Finding laughter
Like I said, your relationship with your partner changes, and her focus is on something else. So what used to be a very reliable source of support that you had, not that it's not reliable anymore but her focus is just elsewhere. (P9)	1. Experiencing relationship changes 2. Feeling partner support is unreliable
That was a big challenge trying to balance the work, to keep the work going as well as trying to deal with a new-born if you know what I mean, which is a full time job on it's own so it was challenging. (P12)	1. Finding it challenging to balance work with caring for new-born
Em for me personally I think it's probably the old Irish thing of em… males not being able to speak about feelings. I've definitely felt like that at times, so I'm trying to think of an example to give a conext.. but yeah Irish males don't typically talk about feelings and if you do it's kind of in a gloss it over kind of way or you know they don't talk about it directly. (P8)	1. Feeling unable to speak about feelings as an Irish male 2. Glossing over feelings / not speaking directly about feelings

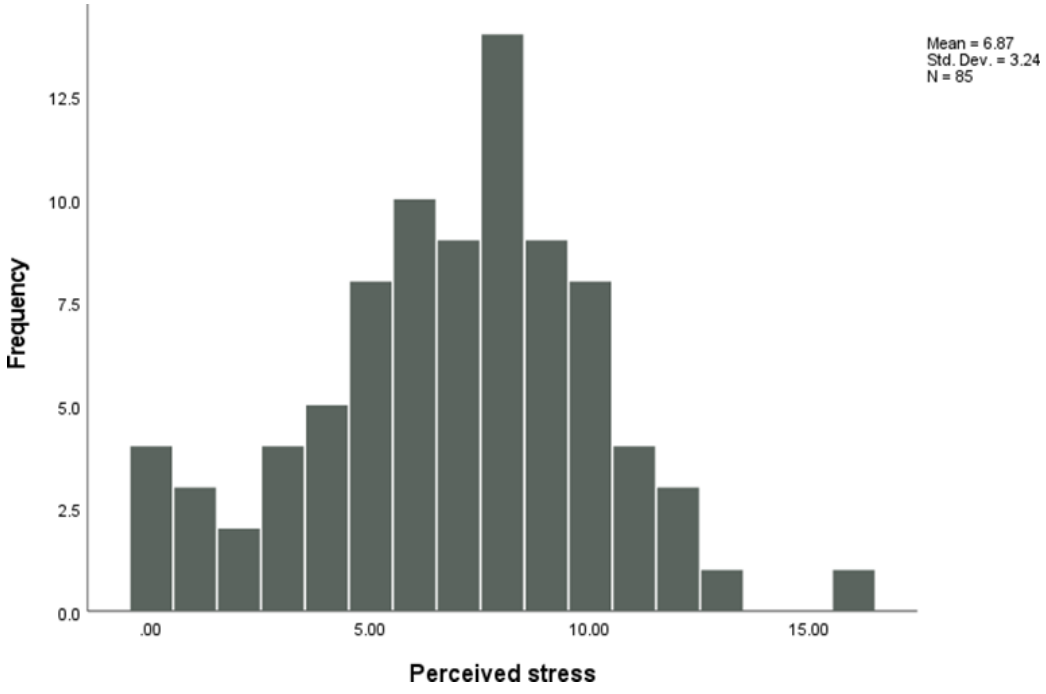
Appendix P

Thematic Map

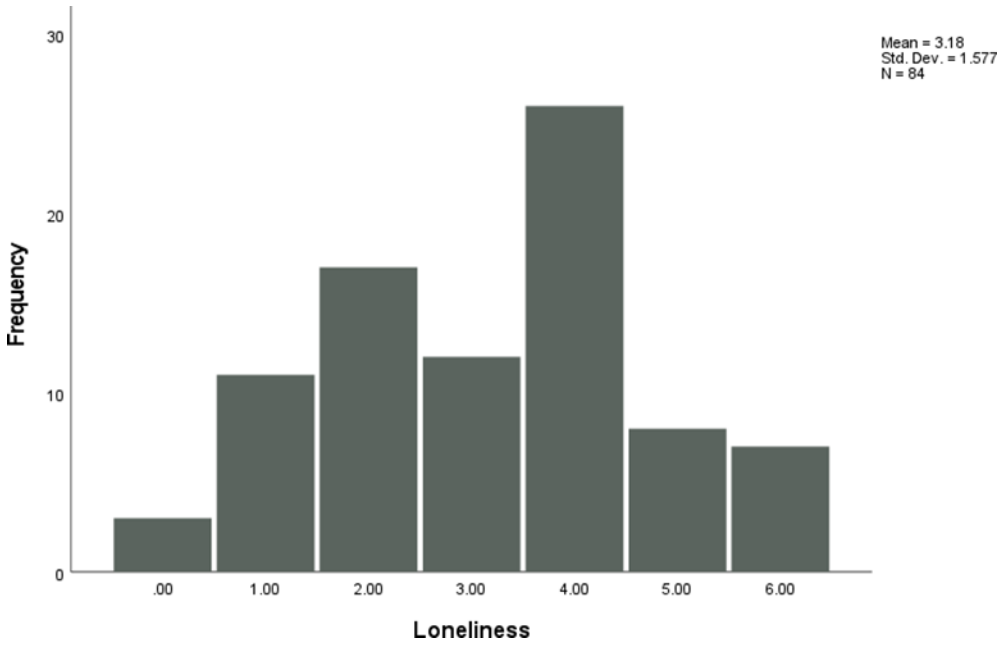


Appendix Q

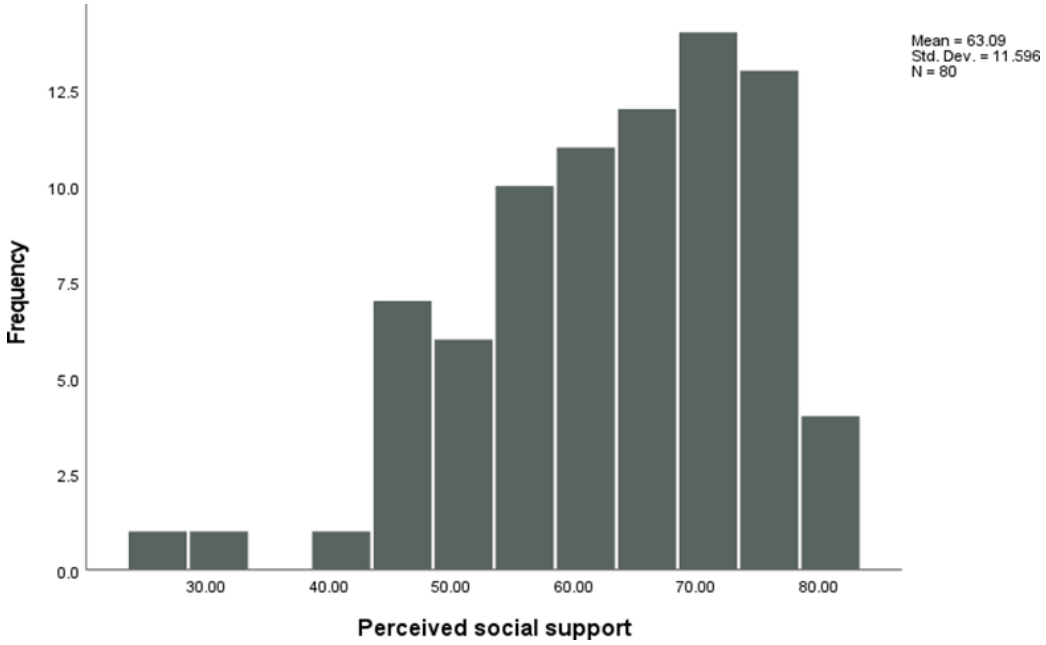
Histogram for Perceived Stress at Wave 1



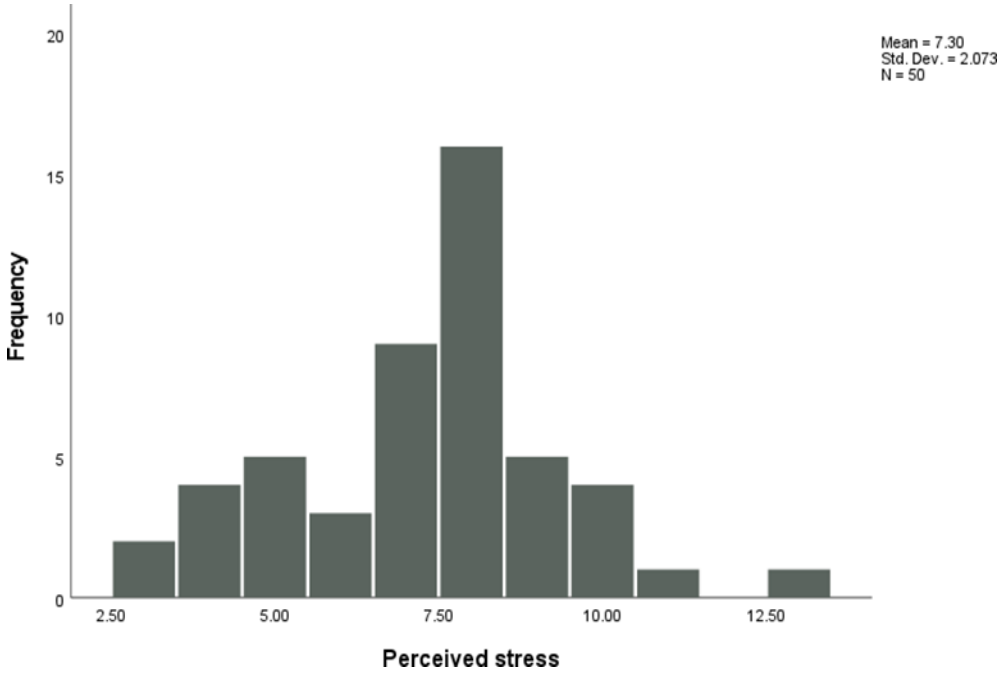
Histogram for Loneliness at Wave 1



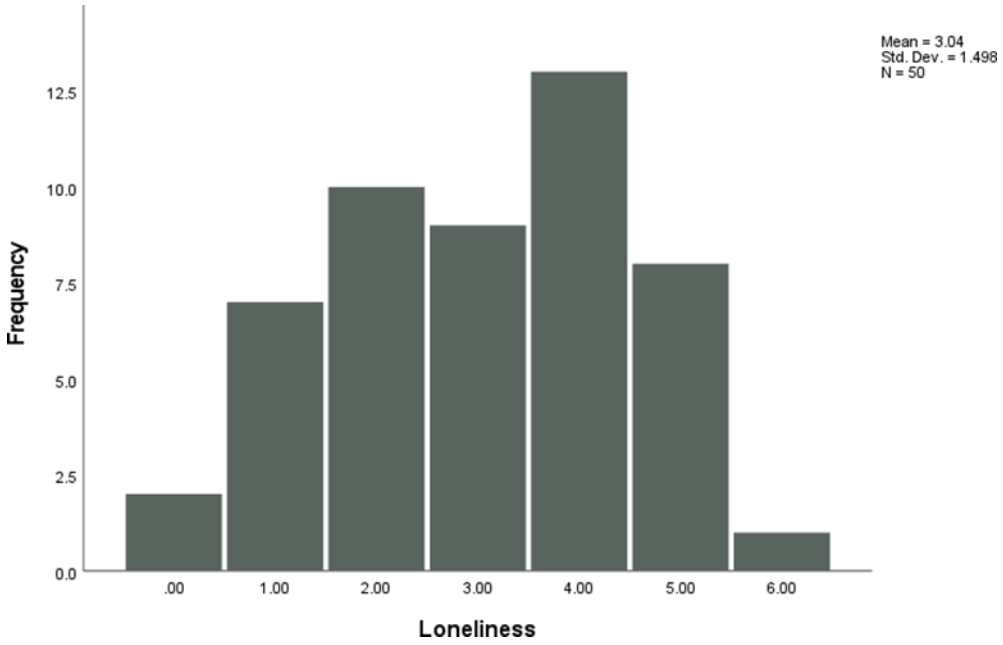
Histogram for Perceived Social Support at Wave 1



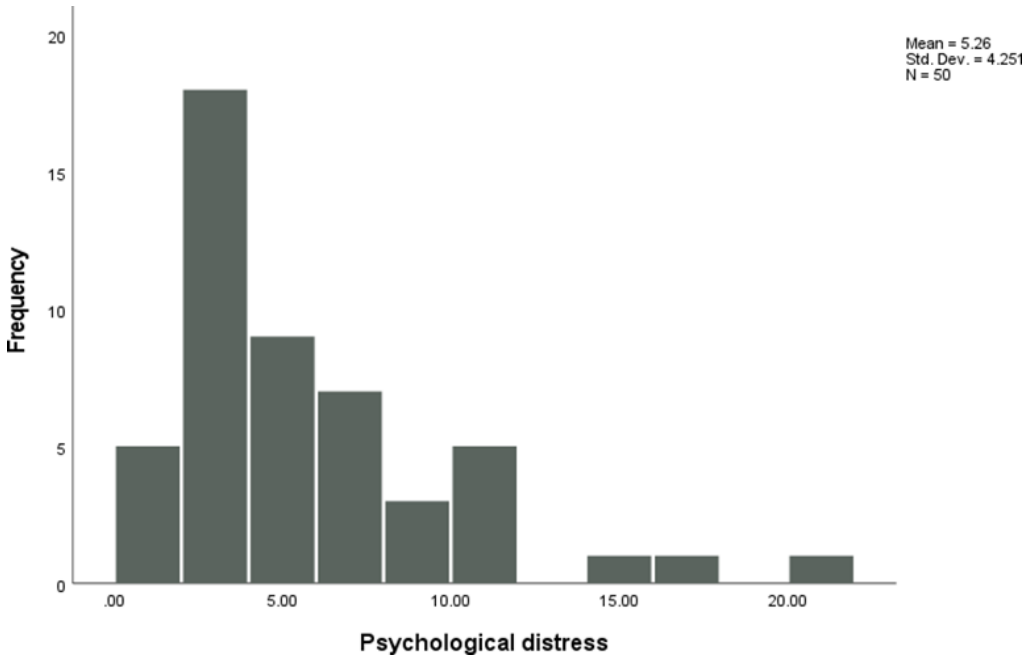
Histogram for Perceived Stress at Wave 2



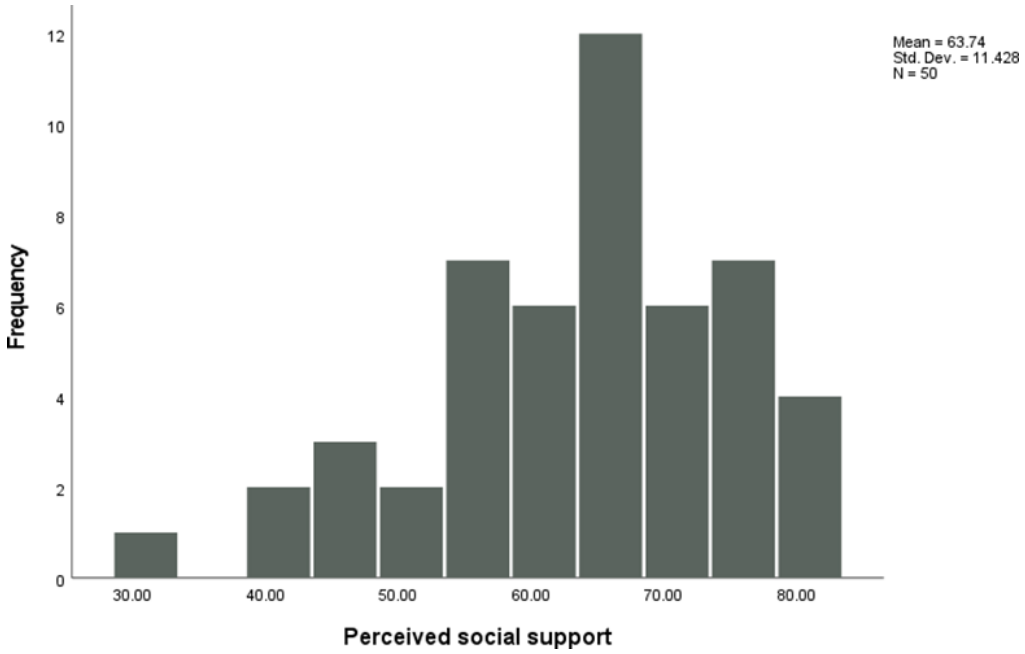
Histogram for Loneliness at Wave 2



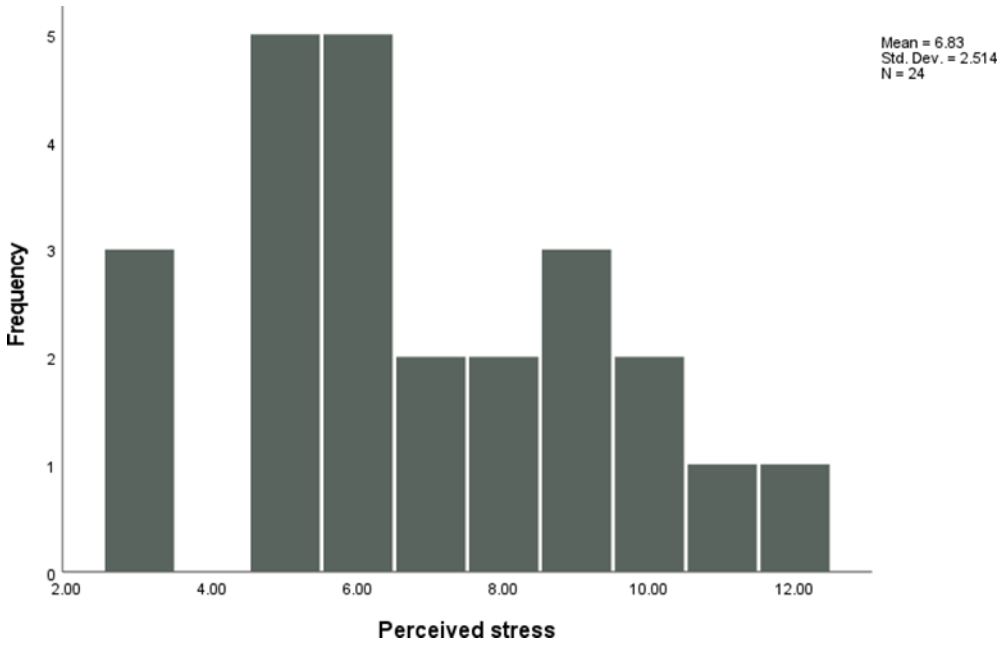
Histogram for Psychological Distress at Wave 2



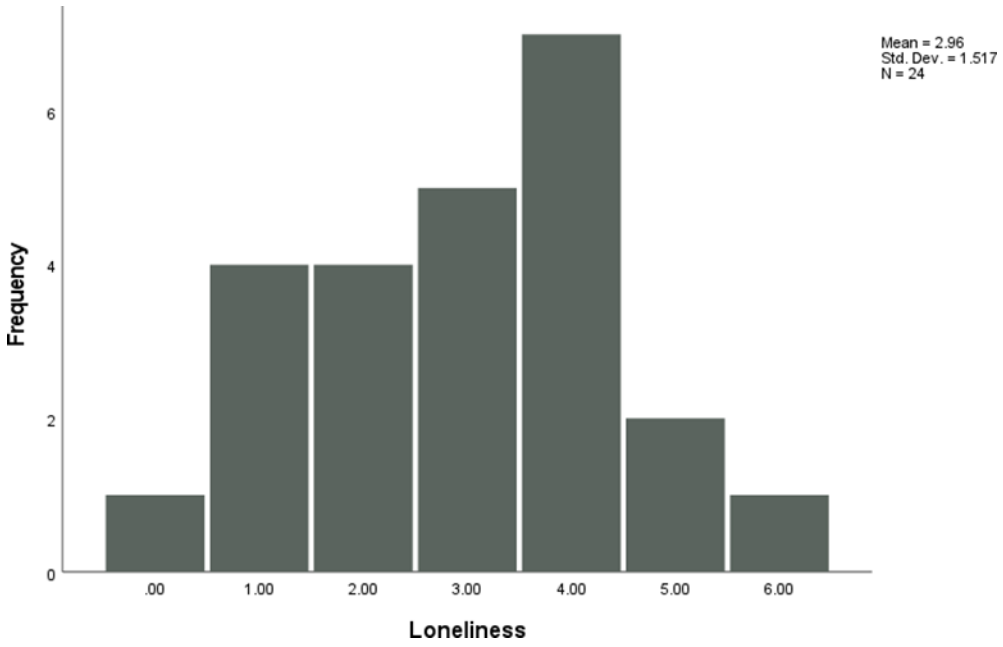
Histogram for Perceived Social Support at Wave 2



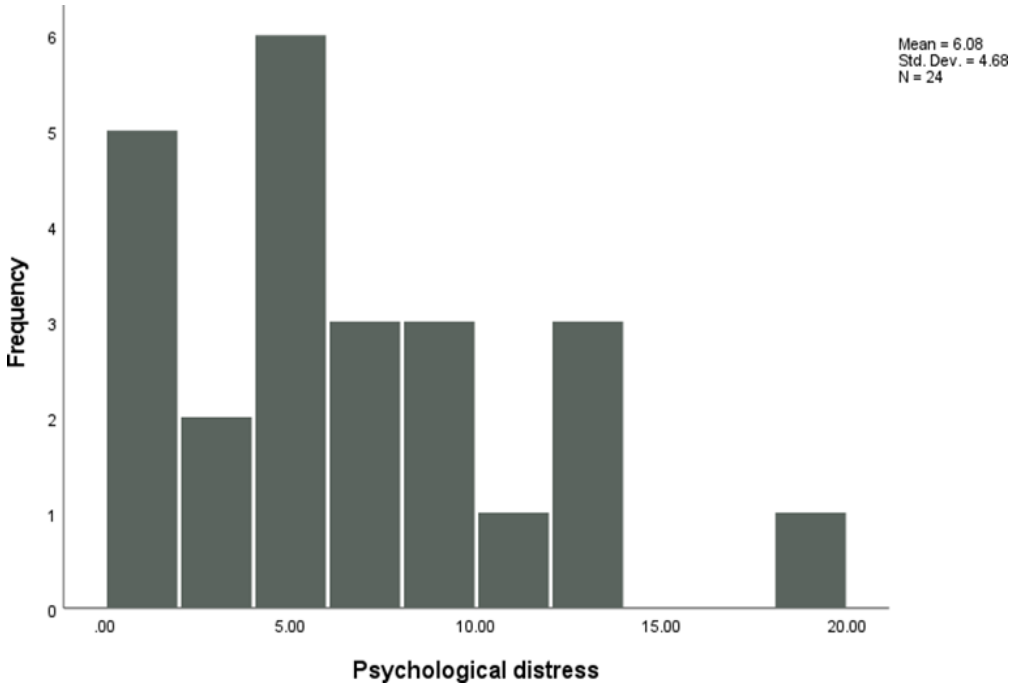
Histogram for Perceived Stress at Wave 3



Histogram for Loneliness at Wave 3



Histogram for Psychological Distress at Wave 3



Histogram for Perceived Social Support at Wave 3