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Experiencing loneliness in parenthood: A scoping review

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ABSTRACT

Aims: Chronic loneliness is experienced by around a third of parents, but there is no comprehensive review into how, why and which parents experience loneliness. This scoping review aimed to provide insight into what is already known about parental loneliness and give directions for further applied and methodological research.

Method: Searches for peer reviewed articles were undertaken in six databases: PsycINFO, Medline, CINAHL, Embase, Web of Science and Scopus, during May 2019 to February 2020. We searched for English studies which examined loneliness experienced during parenthood, including studies that involved parents with children under 16 years and living at home and excluding studies on pregnancy, childbirth or post-birth hospital care.

Results: From 2566 studies retrieved, 133 were included for analysis. Most studies (n=80) examined the experience of loneliness in specific groups of parents, e.g. teenage parents, parents of a disabled child. Other studies examined theoretical issues (n=6) or health and well-being impacts on parents (n=16) and their offspring (n=17). There were 14 intervention studies with parents that measured loneliness as an outcome. Insights indicate that parental loneliness may be different to loneliness experienced in other cohorts. There is evidence that parental loneliness has direct and intergenerational impacts on parent and child mental health. Some parents (e.g. with children with chronic illness or disability, immigrant or ethnic minority parents) also appear to be at increased risk of loneliness although evidence is not conclusive.

Conclusion: This work has identified key gaps with further international, comparative and conceptual research needed.

Key words: parental, mother, father, loneliness, parenthood, perceived social isolation

Introduction

Loneliness is now widely understood as a painful subjective experience when the social connections a person has do not meet their interpersonal needs in respect to quality of or quantity of friendship or social contact.¹ Loneliness can be experienced in the presence of others and is different from objective measures of social connection, such as social isolation (the absence of social relationships) and social network size (number of social connections).²

Much of the existing loneliness literature has been conducted with undergraduate and elderly populations and shows that loneliness has associations with poor mental and physical health,^{3,4} impacting on early mortality.⁵ This focus in the literature means that interventions for loneliness are based on knowledge about the experience of loneliness limited to these restricted populations. It is therefore not known whether and how the experience of loneliness differs in other populations.

One such population where there has been little examination of the experience of loneliness is parents. Surveys have shown that around a third of parents in the UK report experiencing loneliness often or always⁶ and research studies have shown similar prevalence, with 30% of parents experiencing high and persistent levels of loneliness over time.⁷ However, despite such high numbers of parents being affected, there is currently no comprehensive synthesis of existing knowledge on the impacts and experiences of loneliness in this population and no reviews in this area. Given the mental and physical health impacts of loneliness in other populations³⁻⁵, it is important to establish what is known about the health implications of loneliness in parenthood and whether there is evidence of intergenerational effects, impacting health and wellbeing of their offspring. Establishing what is known about the experiences of loneliness and which parents are at an increased risk of experiencing loneliness is important to underpin and direct appropriate strategies, support and future research.

The current study

We aimed to address the current knowledge gap by undertaking a scoping review to map existing research evidence on parental loneliness; to establish what is already known about experiences and impacts of loneliness in parenthood and which parents are at increased risk of

experiencing loneliness. As we aimed to examine evidence from disparate or heterogeneous sources, rather than seeking only the best evidence to answer a specific question, a scoping review methodology was considered appropriate.⁷ This methodology enables an examination and synthesis of the extent, range and nature of research on parental loneliness, to inform future systematic reviews, and to identify gaps in the literature.⁸ In the current scoping review we focussed specifically on loneliness, rather than other measures of social connection (i.e. social support, social isolation) in order to establish what is known about parental loneliness and what research has been conducted in this specific area.

Method

Search Strategy

We conducted some preliminary scoping searches during October 2018 to January 2019 which identified the diversity of study types and findings in this research area and informed our search strategy, review protocol and choice of review type. We used the scoping review stages outlined by Arksey and O'Malley⁸ and Levac, Colquhoun and O'Brien⁹ as a framework for the review. The following search terms were developed: (mother* or maternal or parent* or father* or paternal) AND (lonel* or "perceived social isolat*"). The search strategy was adapted to meet the truncation and Boolean operations of each database as appropriate (see Supplementary Information 1). Initial database searches were conducted in May 2019 and repeated in February 2020 in six bibliographic databases: PsycINFO, Medline, CINAHL, Embase, Web of Science and Scopus. Handsearching was also conducted, involving reference list searching of reviews and key papers and google scholar searches (first 200 hits for search terms).

Inclusion and exclusion criteria

Included studies were those that examined the following: 1) prevalence and/or experiences of loneliness for mothers and fathers, 2) impacts of parental loneliness on mothers' and fathers' health and well-being and relationships with their child/ren, and 3) the impacts of parental loneliness on the child, including intergenerational transmission of loneliness. Inclusion and exclusion criteria are

detailed in Table 1. We only included studies involving parents with children under 16 years old and living at home, thereby capturing insights with parents who had full parental accountabilities and responsibilities. All study types were included, but we excluded grey literature such as books and book chapters, dissertations, editorials, opinion pieces, commentaries, book or movie reviews, and erratum. There was no date restriction on searches, but only studies written in English were included. Systematic/literature reviews undertaken into parental loneliness were not included in our synthesis and mapping, but we reported on the numbers of relevant reviews identified in this area.

Screening

Papers identified from database searches were downloaded to Endnote and duplicates removed. Title and abstract screening were conducted in Rayyan.¹⁰ One reviewer independently screened titles and abstracts for eligibility, with a sample of 20% of the papers screened by the rest of the team to check for accuracy prior to independent screening. Papers selected for full text screening were then sourced and examined by one author independently, noting decision-making and reasons for exclusion. A sample of 50% of full text papers were screened by at least one other reviewer prior to independent screening. Percentage of agreement for title and abstract screening was 93.2% and 88.73% for full text screening. Agreement was made by consensus, with disagreements resolved through discussion. It is becoming widely accepted that double screening all papers in a systematic review is more appropriate to reduce articles missed due to human error.^{11,12} However, where reviews are conducted by experienced reviewers missing studies have been shown to have negligible or no impact on meta-analysis findings.¹³ Thus, double screening 20% of title and abstract (where there was higher agreement) and 50% of full text screening was deemed appropriate for this scoping review following reconciliation exercises¹¹ because it was an experienced review team.

Data extraction & synthesis

Data were extracted from all selected texts using a data extraction sheet developed by the authors, with at least 20% of data extracted charted by two authors independently.¹⁴ Once sufficient agreement (> 80%) was reached in the trial phase, the first author independently applied the tool to

the remaining studies. During data extraction review team meetings were held periodically to ensure accuracy of data extraction and to discuss any anomalies. Studies were assigned categories in discussion with the full review team. For each of these categories we collated the key information and summaries of findings and then conducted a narrative synthesis. We did not conduct a meta-analysis because the purposes of the scoping review were to map and synthesis literature on a wide topic, involving disparate methodologies and measures and due to the lack of homogeneity such an analysis was not deemed appropriate.

Results

A total of 133 studies were included. The PRISMA diagram outlines the results of the systematic searches and screening and Table 2 (see Supplementary Material) provides a description of the included studies. Only two review papers were identified, both narrative reviews focussing on loneliness within the family unit (i.e. in relation to marital or family conflict) and impacts on the child,^{15,16} rather than focussing specifically on loneliness experienced in parenthood.

Most of the included studies were conducted in America (n = 46; 34.59%) and Canada (n = 13; 9.77%), with others conducted in Australia (n = 9; 6.77%), Finland (n = 8; 6.02%), Sweden (n = 7; 5.26%), Netherlands (n = 7; 5.26%), Israel (n = 7; 5.26%) and England (n = 7; 5.26%). The included studies had publication dates from 1974 to 2020, with around half (n = 66; 49.62%) published in the last 10 years and 30.83% (n = 41) in the last 5 years. All bar one of the included studies were published as peer reviewed journal articles; with the remaining study published as a short report.¹⁷ Most studies used a quantitative design (n = 81; 60.90%), with the rest using either a qualitative (n = 48; 36.09%) or mixed methods (n = 4; 3.01%) design. Most studies examined loneliness in mothers only (n = 90; 67.67%), with others exploring relationships in both parents (n = 39; 29.32%). Only three studies examined loneliness in fathers only, with one exploring the experience of living with a partner with postnatal depression rather than fathers' loneliness during parenthood.¹⁸ One study examined loneliness in transgender men¹⁹ and the other in gender variant parents.²⁰ Most studies were cross-sectional (n = 102; 76.69%), with only 31 (23.31%) using a

longitudinal design. More than half of the studies that used a quantitative or mixed design (n=78, 91.76%) used a loneliness scale, such as the UCLA loneliness measure²¹ (n = 40; 47.06%), but with varying versions (i.e. number of items; see Table 2). Eleven (12.94%) of the quantitative studies used single item measures of loneliness, but the questions and response items varied. In quantitative or mixed design studies where a loneliness scale was not used (n=6, 4.51%) parents were asked to detail any problems they were experiencing via open text answers or pre-selected responses including loneliness (i.e. frequency counts typically reported).

Data analysis

The categories of the included studies are outlined in Figure 2 and described below.

- *Theoretical aspects of loneliness in parenthood* (n = 6)

Only six studies examined theoretical issues relating to loneliness in parenthood. Three of these studies examined changes in loneliness associated with becoming a parent. One used a longitudinal design and found loneliness to be stable across pregnancy, infant and toddler years in mothers and fathers.²² Another study found no changes in women's well-being, but men who became fathers became lonelier, and this effect was strongest in married parents, indicating that issues in the marriage are most likely to be the cause of increased loneliness rather than the arrival of a child.²³ However, in contrast, a further study involving data from 17 nations found lower loneliness was associated with marital status.²⁴ This study found that loneliness related to parenting status in men, but not in women; being married and having children was protective of male loneliness but not female loneliness. But in most nations, however, having children had no impact on adult loneliness, indicating that there may be cultural differences in the prevalence of parental loneliness.

Another three studies examined conceptual aspects of loneliness and whether the experience differs in motherhood. These studies used a methodology whereby participants were given a loneliness questionnaire (designed by the authors) and differences in responses across sub-scales were examined between mothers and women who were not parents. One study by Rokach²⁵ found that pregnant women and new mothers had lower levels of emotional distress, social inadequacy and

alienation, interpersonal isolation, and self-alienation in relation to loneliness when compared to women in the general population. Another study by the same author²⁶ found that pregnant women and new mothers were less likely to report experiencing loneliness that they felt was a result of their own personal inadequacies, such as mistrust or low self-esteem or social marginalisation (i.e. isolation and alienation) than women who were not parents. A further study also by Rokach²⁷ examining coping with loneliness found that women who were not parents scored higher on reflection and acceptance, distancing and denial of loneliness than new parents and pregnant women. These studies indicate that causes of loneliness and strategies for coping may be different in parents than in other cohorts.

- *Parents at increased risk of loneliness (n = 80)*

Most of the included studies examined loneliness in specific cohorts of parents, demonstrating that some parents may be at an increased risk of experiencing loneliness. However, few of these studies had comparison or control groups which makes it difficult to draw conclusions about whether these parents have higher loneliness or are at increased risk of loneliness.

The largest number of studies in this category related to loneliness in parents with a child with a chronic health condition or disability (n=25). Many of these studies (n = 10) used a qualitative design and loneliness in this group of parents was experienced due to a sense of helplessness, lack of psychosocial resources, feeling burdened by the child's needs, lack of support from others or support available not meeting their needs, and changes in relationships with their partner.²⁸⁻³¹ There were only three studies that compared loneliness in parents with a child with a chronic illness or disability to a control group that did not have a child with an illness or disability. In two of three studies loneliness was higher in the parents with a child with a chronic illness or disability than the control group,^{32,33} but in one there was no difference between the groups.³⁴ A further six studies used frequency counting or content analysis and the percentage of parents with children with chronic illness or disability reporting loneliness ranged from 19.1-70%.³⁵⁻⁴⁰

Another group of parents identified as experiencing loneliness were immigrant or ethnic minority parents (n=11). All of these studies involved mothers only, there were no comparison studies, and most used a qualitative design. Loneliness was experienced in these mothers due to an absence of support from their mother or mother-in-law. These mothers expressed a sense that the culture in the country they were in was different to their home country in the availability of support from kin and community with caring for their baby which made them feel isolated, particularly in the post-partum period.⁴¹⁻⁴⁴ Loneliness was particularly intensified when there were problems with their baby.⁴¹ Discrimination and language barriers further isolated them.^{45,46}

There were several studies (n = 11) that examined loneliness in adolescent mothers, but evidence was less homogenous and revealed conflicting findings. Two comparison studies found loneliness was higher in adolescent mothers than mothers in other age groups,^{47,48} but another found loneliness to be higher in non-parent adolescents than adolescents who were parents.⁴⁹ In another study adolescent mothers were no more likely to be lonely than mothers of other ages.⁵⁰ Qualitative studies revealed that loneliness in adolescent mothers was linked to losing friendships; adolescents' mothers did not experience loneliness if they were able to maintain existing friendships or make new ones.^{51,52}

Single parents (n =8) were also identified as experiencing loneliness, with studies showing between 8-21% of single parents reporting feeling lonely.⁵³⁻⁵⁵ Loneliness was experienced by single parents because of the absence of a partner and a lack of companionship (particularly someone to share experiences with).⁵⁶ For some, the transition to single parenthood brought loneliness, but for others it brought a sense of selfhood, freedom and liberation.⁵⁷

There were some studies (n=7) examining loneliness in first time parents. Loneliness in this population was linked to finding parenthood unexpectedly difficult, feeling vulnerable as a parent, having fewer social interactions after becoming a parent and when first time parents felt that the support received from their partner was superficial and/or that parenting responsibility rested with them.⁵⁸

There were some studies that examined loneliness in low income parents (n=4) and mothers with poor health (n = 3) but were not sufficient in number to synthesis. Further studies explored loneliness in parents in relation to housing (e.g. living in a flat or sheltered accommodation; n = 2), partner violence/abuse (n = 2), returning to work after parental leave (n = 2), substance abuse (n = 2), being a gender variant parent (n = 2) or military wife (n = 1).

- *Impacts of loneliness on health and well-being (n = 33)*
 - *Impacts on parent health and well-being (n = 14)*

Studies that have examined the impacts of loneliness on parent health and well-being have only measured stress/distress and depression outcomes only. Five studies examined relationships between parenting stress/distress and loneliness. Two of these studies used a correlational design and show cross-sectional associations between loneliness and parenting stress and distress.^{59,60} In a further cross-sectional study, mothers of different age children were surveyed and loneliness was found to be highest in preschool and middle school years and although not the study did not examine an association with stress directly, stress followed a similar pattern of change across time as loneliness.⁶¹ In another qualitative study, parents who were experiencing burnout were recruited to explore their lived accounts of loneliness.⁶² That study found loneliness was associated with burnout through a sense of feeling strange and disconnected due to feelings of exhaustion. A further study⁶³ examined the reasons for referral to parenting support services (i.e. demonstrating parental distress) and found that loneliness and low emotional well-being were the most common reasons for referral (38%). Findings here are limited because all the studies are cross-sectional so the direction of effect is not clear, it could be that parenting stress leads to loneliness or feeling lonely as a parent increases a parent's stress/distress.

A further nine studies examined relationships between loneliness and depression in parents. Two qualitative studies with parents with postnatal depression found loneliness to be reported,^{64,65} with loneliness being due to discomfort with others and not feeling understood.⁶⁵ In two cross-sectional studies comparing groups of mothers with depression symptoms or postnatal depression

with those who were not depressed found that loneliness was more frequent or higher in mothers with depression.^{66,67} In one longitudinal study loneliness predicted postnatal depression⁶⁸ and in another loneliness was predictive of chronic depression in mothers.⁶⁹ In a further longitudinal study depression was higher in both mothers and fathers experiencing prolonged loneliness.⁷⁰ However, in another study that included both mothers and fathers, loneliness was associated with depression, but marital dissatisfaction was a stronger predictor of depression than loneliness in mothers.⁷¹ A further study with fathers of children whose mothers have postnatal depression found that fathers developed loneliness as a result of a sense of not knowing whether their supportive efforts were working.⁷²

- *Impacts on child's health and well-being (n = 9)*

Studies examining the impact of parental loneliness on child's health and well-being are displayed in Table 3. Five of those studies used a cross-sectional design (i.e. measuring psychosocial variables in parent and child at the same time point), and the rest (n = 4) used a longitudinal design (typically measuring parent's loneliness at one time point and child's at another time point or series of timepoints). All nine studies used a loneliness measure, but these varied greatly. In four studies, impacts of fathers and mothers' loneliness on their offspring were examined, but in five only the impact of the mothers' loneliness was examined. Findings across the studies show that loneliness in parents impacts child's outcomes, but there are gender-specific effects. Mothers' loneliness was associated with her child's poorer problem-solving skills,⁷³ internalising problems,^{74,75} social competence, hostility and fear of negative evaluation⁷⁶ and social anxiety (but in girls only).⁷⁷ Mothers and fathers' loneliness impacted on peer evaluated cooperating skills in girls.⁷⁸ Mothers' loneliness was associated with child's loneliness, but not fathers' loneliness in one cross-sectional study⁷⁹, whereas in another study, father's loneliness was predictive of son's persisting loneliness and mother's loneliness was predictive of daughters.⁸⁰ Only one study examined potential mediators of the relationship between parent's and child's loneliness finding an association between high parental loneliness and low parenting self-efficacy which was associated with children's loneliness.⁸¹

- *Loneliness and breastfeeding (n = 2)*

There were two studies involving interviews with mothers which demonstrated that loneliness influences a women's decision to stop breastfeeding. One qualitative study found that postpartum loneliness and sadness was due to mothers feeling that no-one understood their difficulties with breastfeeding and that they had no one to support them.⁸² The other study used a lifeworld hermeneutical approach and found that women sought social connections as a means to mitigate loneliness aligned with their needs to either continue or to stop breastfeeding.⁸³ For women who wanted to or who had stopped breastfeeding, loneliness led to social withdrawal because of a fear of being detected as underperforming, useless and different; these women sought out others who had stopped breastfeeding to reinforce their choice. For others, to escape loneliness they sought out others who could provide support to continue breastfeeding and their loneliness reduced as a result of these social connections and a sense of belonging.

- *Child abuse/neglect* (n = 8)

There were also some studies that examined relationships between loneliness and child abuse/neglect but these were quite dated, with publication dates ranging from 1980 to 2011 and all but one study conducted more than 10 years ago. In addition, all studies in this category were conducted in America thus lacking a cross cultural comparison. All but one study examined loneliness in mothers who were in families identified as neglectful or at risk of child abuse, with the others examining mothers and fathers where parents are identified as abusers. All the studies in this category used a quantitative design and measured loneliness using a loneliness scale. Five used versions of the UCLA scale,²¹ two used the Loneliness subscale of the Child Abuse Potential Inventory CAPI⁸⁴ and one used Emotional Social Loneliness and Isolation Scale.⁸⁵

The relationship between loneliness and child abuse/neglect has been examined in these studies in two ways: 1) whether there is an association between loneliness and child abuse/neglect and/or whether loneliness predicts child abuse/neglect (n = 3) and 2) whether mothers in families identified as neglectful have higher loneliness (n = 5). The studies in this category were all cross-sectional, so although they do use regression models to look at predictors of abuse/neglect, the studies

can only show an influence/association. In two out of the three association studies, loneliness was not associated with parental use of punishment⁸⁶ and did not predict child neglect.⁸⁷ Whereas in the other study loneliness predicted child abuse potential in mothers with disabled children.⁸⁸ Where level of loneliness was compared to a control group loneliness was higher in neglectful parents,⁸⁹ abusing parents⁹⁰ and mothers in families identified as neglectful.^{91,92} In families that were identified as at risk of child abuse loneliness was higher in mothers where fathers were not involved than mothers with a resident father.⁹³

- *Intervention studies* (n = 14)

The review identified 14 intervention studies with parents that measured loneliness as an outcome (see Table 4). Most of these intervention studies were conducted with new parents, with some specifically conducted with mothers who had post-natal depression or who were at risk of child abuse/neglect. None of the interventions were specifically designed to reduce loneliness, but one was designed to target social isolation in parents with children with cerebral palsy⁹⁴ and another to increase social support in parents at risk of child maltreatment.⁹⁵ Most studies used a quantitative design, with one study using a mixed design and another a qualitative design. All but one intervention study measured loneliness using UCLA,²¹ but the version used varied across the studies. Only three of the studies were noted as randomised trials.⁹⁶⁻⁹⁸ In relation to effectiveness, only 6 out of the 14 intervention studies showed reductions in loneliness. Interventions that reduced or showed promise of reducing loneliness involved home visiting peer support, tele-health involving e-meeting forum with HCP and peers, universally provided child development parenting programme, interpersonal skills training and short-term cognitive therapy.

Discussion

The aim of this scoping review was to map existing literature to establish what is already known about parental loneliness. Although there is a scarcity of studies that have specifically focussed on understanding loneliness in parenthood, there are a large number of studies that have included loneliness as an outcome or have examined the lived experience of parents in specific populations (e.g. adolescent parents) where loneliness has been identified.

Studies show that loneliness during parenthood is stable and may be different to loneliness experienced in other cohorts.^{22,25-7} However, there was a lack of conceptual studies to identify the key underlying mechanisms associated with parental loneliness, and no prospective studies that commenced in the preconception period to help understand whether and how loneliness changes over parenthood. It is plausible to assume that while parenthood may help to mitigate loneliness as there is a dependent infant to care for, there is evidence to suggest that loneliness may be exacerbated by becoming a parent. Other transitory phases in life, where changes are made in social connections and friendships, are also associated with increased loneliness, such as the transition to university⁹⁹ or retirement.¹⁰⁰

Wider research indicates, and is reflected in some of the included studies in the scoping review^{74,61,63}, that loneliness is associated with increased risks of depression, anxiety and increased stress.^{3,101} Our findings also support those from other cohorts in terms of reciprocal relationships between loneliness and depression¹⁰², with loneliness in parents found to be predictive of depression⁷⁴, and depression predictive of loneliness.⁷⁰ However, the direction of this effect has not yet been examined in this population, and further research (i.e. using cross-lagged designs where reciprocal relationships between loneliness and depression over time can be examined enabling direction of effect to be explored) is needed. While loneliness has been associated with poor physical health in other cohorts⁴, we found no studies that examined the association between loneliness in parents and physical health outcomes; thereby identifying a further gap where more research is needed.

Parental loneliness, similar to other evidence of the negative impacts of poor parental mental health,¹⁰³ was associated with adverse repercussions on child's health and wellbeing, in relation to breastfeeding cessation, mental health and social competence. The findings from the scoping review also indicate the potential for some gender specific effects of intergenerational transmission of loneliness and social competence from parent to child. This is similar to other research where gender-specific effects have been found for the intergenerational transmission of internalising behaviours (depression and irritability)¹⁰⁴ and depression,¹⁰⁵ but because there are few studies, this warrants further investigation.

The findings that parental loneliness was also associated with child abuse and neglect, need to be treated with caution as the evidence base only includes cross-sectional studies and other factors had not been accounted for (e.g. social isolation, being in an abusive relationship, or poor mental health). Furthermore, while it is perhaps not surprising that parents who face additional challenges (e.g. who have children with chronic illness or disability, immigrant or ethnic minority parent, single parents) are at increased risk of loneliness, the evidence is not conclusive due to a lack of comparison studies and further research is needed. It may also prove beneficial to consider factors that can help to mitigate adversities, rather than assumptions that all outcomes associated with loneliness will be negative, and to identify more resilience-based factors that can help to combat loneliness, such as personal or community assets.^{106,107} Further research is also needed with fathers and wider partners to assess differences between the parents, and international studies to explore cross-national and cross-cultural differences.

While interventions included in this scoping review have not generally been designed to reduce loneliness, this work has identified some key mechanisms of effectiveness to consider within future intervention designs. These include developing communication skills and forming social connections via engaging women in peer support. This aligns with wider literature that reveals that peer support provides feelings of validation, normalisation and reassurance¹⁰⁸, and helps to reduce

negative emotional impacts (such as social isolation) through building social connections and networks.¹⁰⁹

Whilst it will be important to conduct further systematic reviews and meta-syntheses in this area, particularly in relation to conceptual aspects and potential mechanisms of parental loneliness, this scope of the literature highlights some potential common factors of experiencing loneliness in parenthood. The evidence appears to point to parents being at increased risk of loneliness if they have few or no peers in a similar situation with whom they can share their particular circumstances, have negative thoughts towards themselves or have reduced social support or ability to seek extra support. These findings overlap with those in the wider literature with other cohorts where loneliness has been associated with a lack of belonging, internalising attributional style, low self-worth and lacking emotional support.^{110,111} Although, there is also evidence that there may be some differences in the causes and experiences of loneliness in parents²⁵⁻²⁷ that warrants further investigation to ensure we have a nuanced understanding of those who are at risk of experiencing loneliness and how they experience loneliness overtime, and to help inform appropriate and relevant interventions.

Strengths and limitations of the review

The strengths of this review are its broad and comprehensive approach that meant that a wide range of relevant studies were included. We also only focused on studies that measured loneliness rather than include other related social connection measures such as social network size and social support. Further reviews could examine specific aspects of parental loneliness and social connection more generally to help understand the underpinning mechanisms that explain loneliness in parenthood and to inform future interventions. The end date of the review period was restricted to February 2020, to prevent COVID related studies being included. While loneliness is undoubtedly a key feature of the current pandemic, our aim was to elicit insights into parental loneliness per se, rather than loneliness created via enforced isolation, and restricted social connections. As this is a scoping review, we did not assess for quality, which means that studies of low quality may have been included. As we intended to map and synthesis extant literature on a wide topic area using disparate methods a

meta-analysis was not deemed appropriate, which means that the review involves a narrative synthesis of the findings focussed on general themes and patterns in the data. The review does however provide the first, comprehensive understanding of the work undertaken in this area and offers insights to direct future research, highlighting gaps in the existing literature.

Conclusion

This scoping review aimed to address a knowledge gap to elicit what is known about parental loneliness. One hundred and thirty-one studies were included which examined conceptual issues, loneliness in families with different sociodemographic profiles, health and well-being impacts on parents and their offspring and intervention studies that included loneliness as an outcome, rather than as a direct focus. Findings highlight that parental loneliness has direct and indirect impacts on parent and child health, that parents who face more complex issues, such as having a child with a chronic illness or disability appear more likely to be negatively affected by loneliness, and types of support that seem to be effective in alleviating loneliness include communication training and peer support. Overall, this work has highlighted wide heterogeneity and key evidence gaps, with further international, comparative and conceptual research needed. As loneliness is a pervasive and negative psychosocial condition with wide, and intergenerational impacts, targeted efforts to understand its key mechanisms and to inform suitable support strategies is essential.

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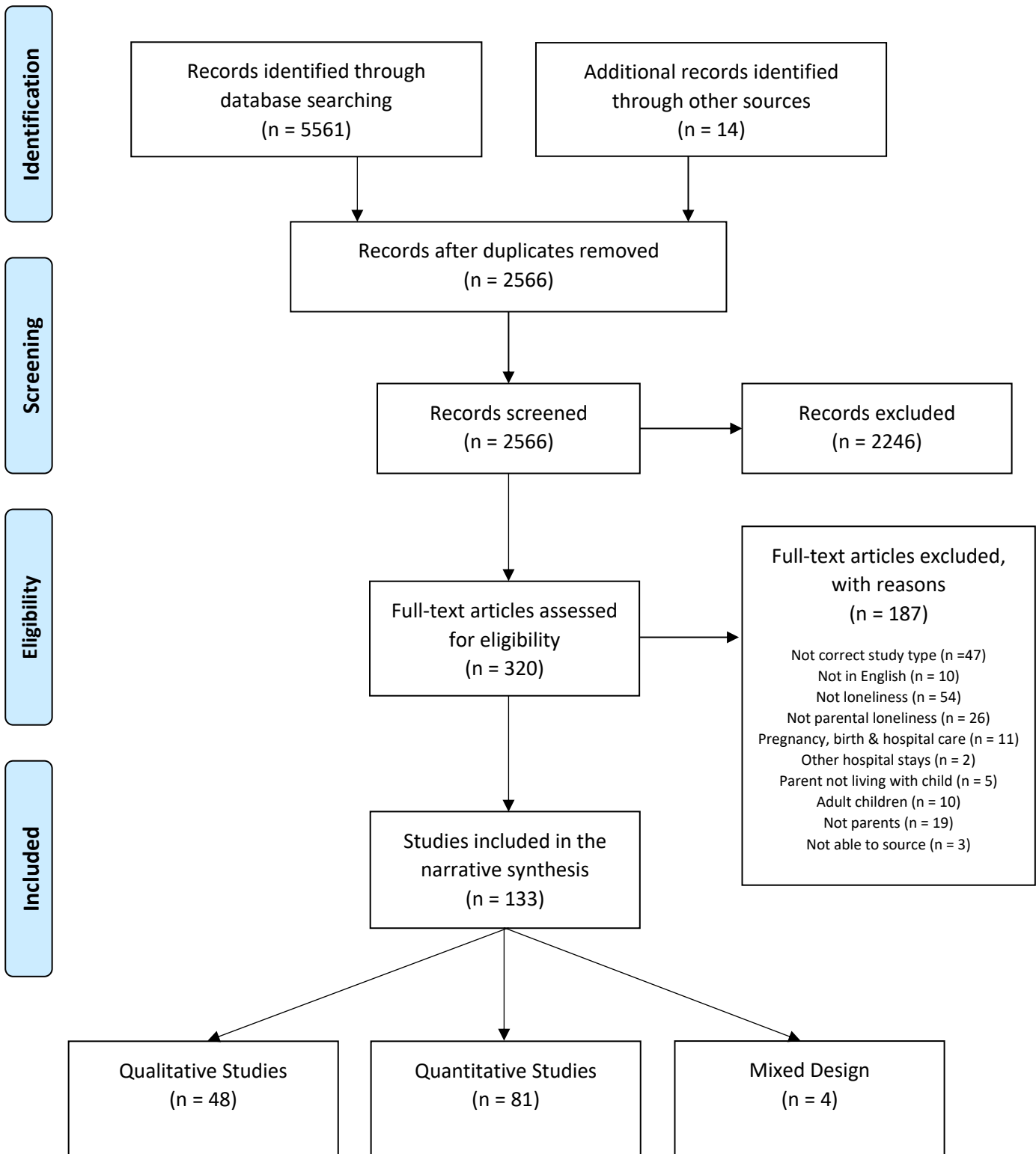
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Table 1. Inclusion and Exclusion Criteria

	Inclusion	Exclusion	Search terms
Population	Mothers, fathers, (biological or step parents), children 16 years and under and living in the family home	Non-parental caregivers (e.g. grandparents), pregnant women, adoptive/foster parents Mothers, fathers (biological or step parents with children over the age of 16 and/or not living in the family home	mother* or maternal or parent* or father* or paternal
Exposure	Loneliness, perceived social isolation	Other mental health issues (e.g. depression) but do not explicitly refer to loneliness	Lonel*or “perceived social isolat*”
Outcome	Experiences, attitudes and opinions of loneliness, prevalence of loneliness, impacts of parental loneliness on parent or child’s health and well-being	Studies that examine loneliness in child only, pregnancy, birth experiences	
Study types	All research study design	Books and book chapters, editorials, erratum, opinion pieces, conference abstracts, reviews, dissertations, protocols	
Language	English only	Non-English	

Figure 1. PRISMA Flow Diagram



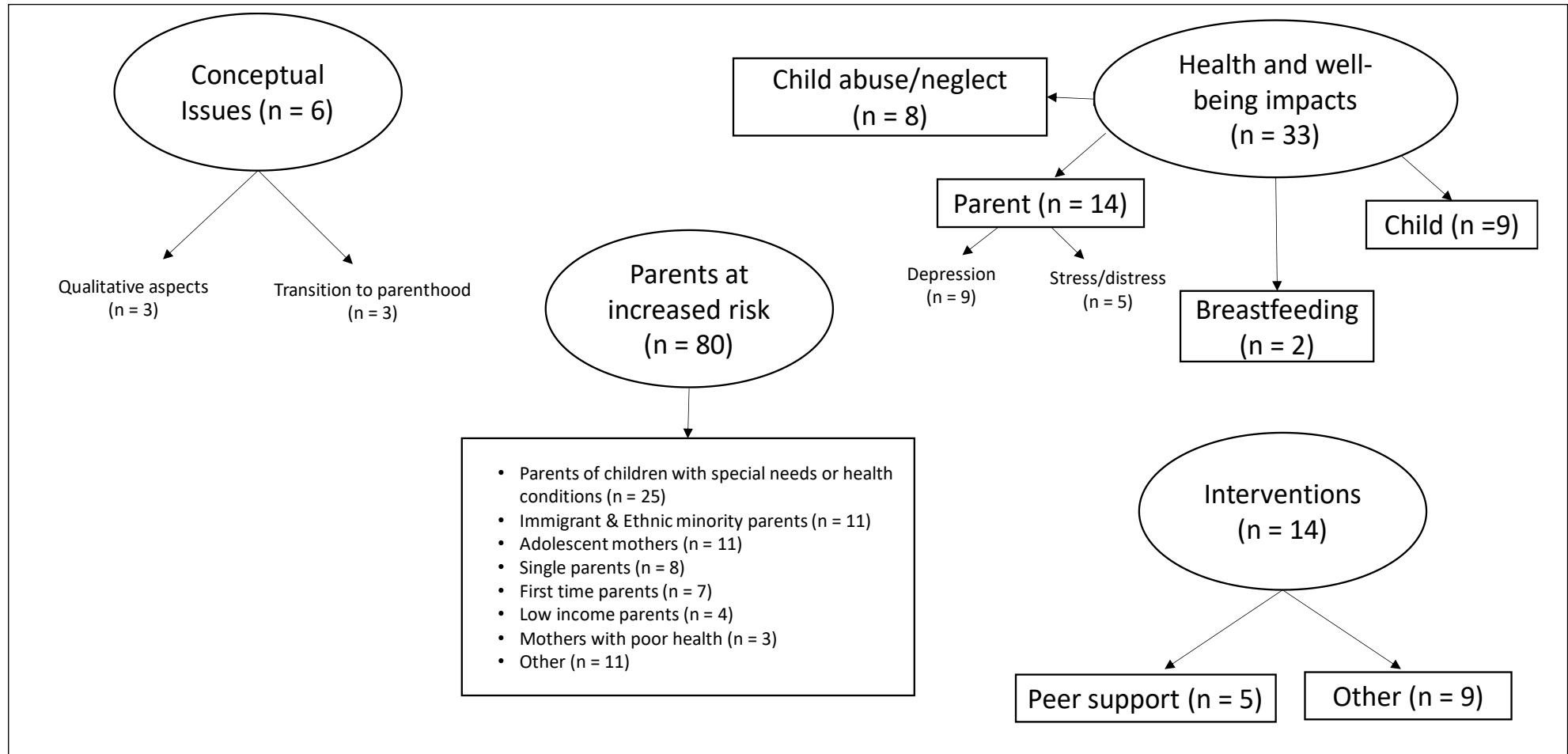


Figure 2. Category mapping of studies on parental loneliness

Note: *other category includes sub-categories where there are two or less studies, which includes housing (n = 2), partner violence/abuse (n = 2), military wives (n = 1), specific work patterns (n = 2), parents with substance abuse (n = 2) and gender variant parents (n = 2)

Table 3. Studies examining impacts of parental loneliness on child's mental health and social competence

First Author	Year	country	Child's age	Design	Loneliness measure	Findings
Alvik ⁷³	2014	Norway	6 mths	Long	Single item measure	Mothers' loneliness at 30 weeks in pregnancy predicted child's low scores on problem solving aspect of Ages and Stages Questionnaire at 6 months
Al-Yagon ⁷⁵	2007	Israel	9-10 yrs	CS	ESL (mothers), LSDQ (child)	Mother's loneliness associated with child's internalising behaviours (not child's loneliness), but when maternal resources included in analysis mothers' loneliness did not predict any child measures
Henwood ⁷⁹	1994	USA	6-7 yrs	CS	ABLS (parents), LSDQ (child)	Association between mothers and child's loneliness, but not between fathers and their child's loneliness.
Junttila ⁷⁸	2009	Finland	10-11 yrs	Long	UCLA (parents), PNDLS (child)	Mother's and father's loneliness predicted peer evaluated cooperating skills of girls (but not boys), which predicted their social and emotional loneliness.
Junttila ⁸¹	2007	Finland	10-11 yrs	CS	UCLA (parents) PNDLS (child)	Association between high parental loneliness and low parenting self-efficacy. Parenting self-efficacy was related to children's loneliness.
Luoma ⁶⁸	2019	Finland	16-17 yrs	Long	Single item, 'Do you feel lonely?'	Mother's prenatal loneliness predicted the child's internalizing problems in adolescence
Salo ⁸⁰	2020	Turkey	10-11 yrs	Long	UCLA (parents), PNDLS (child)	Long-term loneliness of sons was predicted by their father's loneliness and daughters by mothers
Stednitz ⁷⁷	2006	USA	9-12 yrs	CS	SELSA	Mothers' loneliness predicted girls' self-reported social anxiety
Zafar ⁷⁶	2015	India	13-17 yrs	CS	UCLA	Mothers high loneliness predicted adolescent's lower social competence, hostility and fear of negative evaluation

Note:

UCLA = UCLA²¹, SELSA = Social and Emotional Scale for Adults¹¹², SELSA-S = Social and Emotional Loneliness Scale for Adults,¹¹³ PNDLS = Peer Network and Dyadic Loneliness Scale,¹¹⁴ ABLS = Abbreviated Loneliness Scale,¹¹⁵ ESL = Emotional and social loneliness,¹¹⁶ LSDQ = Loneliness and Social Dissatisfaction Questionnaire,¹¹⁷

Table 3 Intervention Studies measuring loneliness as an outcome

First Author	Year	Sample	Intervention	Country	Data collection waves	Findings
<i>Studies showing reductions in loneliness</i>						
Chan	2005	new mothers (locality with high incidence of child abuse)	Home visiting peer support	China	before receiving service and one year later	Loneliness reduced in the intervention group but not in the control group
Nystrom	2006	new mothers	Telehealth, involving e-meeting forum with HCP	Sweden		Mothers reported having good social networks but spent most of the day alone with their children; meeting others in a similar situation made them feel less alone and friends were made in the group
Richey ⁹⁵	1991	mothers at risk for child maltreatment	Interpersonal skills training	USA	pre and post training sessions	Slight decrease in loneliness was reported pre- and post- training (no statistical analysis conducted – only 6 mothers)
Skar	2015	new mothers	Child development parenting programme	Norway	immediately after, 6–12 months after	Greater reduction in loneliness in the intervention group than the control group
Sorenson	2003	new mothers (traumatic childbirth provider interactions)	Short term cognitive group therapy	USA	pre- and post-intervention	Loneliness was reduced pre- to post intervention.
Zare ⁹⁴	2017	mothers with children with CP	Self-management empowerment intervention	Iran	pre and post intervention	Intervention shows promise of reducing loneliness (independent t-test used rather than ANOVA so difficult to be conclusive)
<i>Studies not showing reductions in loneliness</i>						
Dennis ⁹⁷	2009	new mothers (high postnatal depression)	Telephone peer support	Canada	baseline, 12 weeks and 24 weeks	No difference in loneliness between intervention group and control group
Dennis ⁹⁶	2003	new mothers (high depression)	Peer support by lay volunteers	Canada	baseline and 8 weeks later	No difference in loneliness between the control and intervention group
Hudson	2012	new mothers	Online discussion forum with HCP	USA	1 week, 6 weeks, 3 months, and 6 months following birth	No differences across the intervention period in loneliness or differences between the intervention and control group
Razani ⁹⁸	2018	low income parents	Park prescription	USA	baseline, 1 month and 3 months later	Reduction in loneliness in both groups from baseline and 3 months later, but no differences between the groups
Shorey	2019	new mothers at risk of PND	Technology-based peer-support	Singapore	1 month and 3 months postpartum	No differences in loneliness scores and no difference in change in loneliness scores

Tuominen	2016	new mothers	Relational continuity of care	Finland		Relational continuity of care associated with higher levels of mothers' emotional loneliness
White	1987	single parents	Peer support group	Australia		The old peer support and never had peer support groups were very similar on loneliness and new group reported higher levels of loneliness
Yarnoz	2008	divorced parents	Attachment-based intervention	Spain	pre and post intervention	No differences in loneliness pre and post intervention

Supplementary information 1

Search Strategy & Results:

EMBASE

1. ((mother* or maternal or parent* or paternal or father*) and (lonel* or "perceived social isolat*")).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word] = 1151
2. limit 1 to (human and english language) = **970**

Medline

1. ((mother* or maternal or parent* or paternal or father*) and (lonel* or "perceived social isolat*")).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word] Limiters: human and english language = **621**

PSYCHINFO

AB (mother* OR maternal OR parent* OR paternal OR father*) AND AB lonel* limiters: English; Population Group: Human, peer reviewed, English language, exclude dissertations = **1140**

Note: the search would not run with “perceived social isolat*” so this was removed – PSYCHINFO won’t run if any of the searches result in zero.

CINHAL

(mother* or maternal or parent* or paternal or father*) AND (lonel* or "perceived social isolat*") Limiters – English language; Peer Reviewed; Exclude MEDLINE records; Human = **210**

Web of Science

(TS=(mother* or maternal or parent* or paternal or father*) AND TS=(lonel*)) AND **LANGUAGE:** (English) AND **DOCUMENT TYPES:** (Article)
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years = **965**

SCOPUS

TITLE-ABS-KEY (mother* OR maternal OR parent* or paternal OR father* AND lonel*) = **165**

Supplementary Information 2

Table 2. Description of included articles

First Author	Year	Country	Parents	Design	Main focus
Aching ¹¹⁸	2016	Brazil	mothers	qual	Parenthood experiences of mothers living in a shelter
Alaee ²⁸	2015	Iran	both	qual	Experiences of parenting a child with cerebral palsy
Alvik ⁷³	2014	Norway	mothers	quant	Predictors of low developmental scores in child
Al-Yagon ⁷⁴	2007	Israel	mothers	quant	Predictors of child's socio-emotional and behavioural adjustment
Atkins ⁵³	2018	USA	mothers	qual	Expressions and feelings associated with depression in black single mothers
Au ⁵⁹	2008	China	both	quant	Factors influencing parenting stress, parenting distress and parent-child dysfunction
Ayers ¹¹⁹	2019	UK	mothers	qual	Key stressors during the perinatal period
Badaru ⁶⁶	2013	Nigeria	mothers	quant	Factors associated with mothers depression
Barth ⁴⁹	1983	USA	mothers	quant	Psychological impacts of adolescent pregnancy and motherhood
Beck ⁶⁴⁴	1992	USA	mothers	qual	Experiences of mothers with postpartum depression
Berry ⁶⁰	1995	USA	both	quant	Scale measurement (parenting stress)
Björk ¹²⁰	2005	Sweden	both	qual	Experiences of families with a child with diagnosis of cancer
Bloom ¹²¹	2012	USA	mothers	qual	Stresses for low income mothers
Boman ³⁴	2003	Sweden	both	quant	Psychological predictors of disease-related distress in parents of children with a cancer diagnosis
Bonman ¹²²	2004	Sweden	both	quant	Distress in parents with children with cancer or diabetes
Boxill ¹²³	1987	USA	mothers	qual	Experiences of black adolescents
Burnes ³⁰	2008	USA	mothers	qual	Experiences of African and African Caribbean mothers with children with sickle cell disease
Cameron ¹²⁴	2002	Canada	mothers	qual	Motivations for parents on welfare state to join parent mutual aid organisations
Cannon-Bonventre ¹⁷	1979	USA	both	qual	Experiences of adolescent parents
Chan ¹²⁵	2005	China	mothers	quant	Evaluation of home visiting programme to prevent child abuse
Charter ¹⁹	2018	Australia	fathers	qual	Experiences of parenthood for transgender men
Chesser ⁴⁷	1981	USA	mothers	quant	Loneliness in adolescent mothers
Childs ³⁵	Fal	USA	mothers	quant	Feelings of mothers after the birth of a retarded child
Cronin ¹²⁶	2002	Ireland	mothers	qual	Experiences of first-time mothers
Cutrona ¹²⁷	1986	USA	mothers	quant	Social network size as a predictor of loneliness and social provisions in new mothers
Dennis ⁹⁶	2009	Canada	mothers	quant	Evaluation of peer support intervention for mothers with high postnatal depression scores
Dennis ⁹⁷	2003	Canada	mothers	quant	Effectiveness of a peer support intervention to reduce depression in new mothers
Dykstra ¹²⁸	2009	Netherlands	fathers	quant	Well-being influences of parenthood in men
Ekas ¹²⁹	2016	USA	mothers	quant	Influences on depression in mothers with autistic children
Ellis ²⁰	2015	USA		qual	Experience of gender variant gestation parents
Ellis-Sloan ⁵¹	2019	UK	mothers	qual	Experience of teenage mothers

Eni ¹³⁰	2014	Canada	mothers	qual	Determinants of breastfeeding in First Nations women
Ergun ¹³¹	2012	Turkey	mothers	quant	Difficulties experienced by mothers who have children with intellectual disabilities
Essex ¹³²	2007	USA	mothers	quant	Predictors of loneliness in substance abusing, court-involved mothers
Fabian ¹³³	2006	Sweden	mothers	quant	Predictors of non-attending parental education classes for first time mothers
Farzizadeh ¹³⁴	2018	Iran	mothers	qual	Impacts of living with a drug addicted father
Florian ³²	1991	Israel	mothers	quant	Loneliness and social support in mothers with chronically ill children
Forinder ¹³⁵	2010	Sweden	mothers	qual	Experiences of parents with children surviving a brain tumour
Gaudin ⁸⁹	1993	USA	mothers	quant	Loneliness, depression and stress in neglectful families
Gladow ¹³⁶	1986	USA	mothers	quant	Impact of informal support systems in low income single parents
Gosztyla ¹³⁷	2017	Poland	both	quant	Determinants of loneliness in parents of children with autism
Gosztyła ¹³⁸	2019	Poland	both	quant	Role of actual and perceived social support in the relationship between extraversion and loneliness in parents of children with ASD and with ID
Gove ¹³⁹	1977	USA	both	quant	Effects of employment, number of children and age of youngest child on the feeling lonely
Graffigna ¹⁴⁰	2013	Italy	both	qual	Experience of families with children with tuberous sclerosis complex
Grootenhuis ¹⁴¹	1997	Netherlands	both	quant	Influence of control strategies used by parents of children with cancer on emotional adjustment
Gulhati ¹⁴²	1998	UK	mothers	quant	Emotions of mothers with children with pain symptoms without obvious pathology
Halford ¹⁴³	2013	Australia	both	quant	Influences on psychological distress after partner separation
Halsa ¹⁴⁴	2018	Norway	mothers	qual	Experiences of mothers with mental health conditions
Hamama-Raz ¹⁴⁵	2015	Israel	both	quant	Factors influencing quality of life in parents with children with epilepsy
Hattar-Pollara ⁴⁵	1995	USA	mothers	qual	Experiences of immigrant mothers
Henwood ⁷⁹	1994	USA	both	quant	Intergenerational transmission of loneliness
Hoban ⁴¹	2013	Australia	mothers	qual	Experiences of immigrant mothers
Hubert ⁶²	2018	Belgium	mothers	qual	Experiences of mothers with parental burnout
Hudson ¹⁴⁶	2012	USA	mothers	quant	Effectiveness of social media intervention new mothers
Hudson ¹⁴⁷	2000	USA	mothers	quant	Depression, self-esteem, loneliness and social support in adolescent mothers
Hudson ¹⁴⁸	2016	USA	mothers	quant	Social support, self-esteem and loneliness in low income African American single mothers
Igarashi ¹⁴⁹	2013	Japan	mothers	quant	Immigrants' experiences of maternity care
Junttila ²²	2013	Finland	both	quant	Stability of parents' social and emotional loneliness in pregnancy, infancy, to toddler years
Junttila ⁸¹	2007	Finland	both	quant	Parents loneliness and parenting self-efficacy and child's social and academic behaviour
Junttila ⁷⁸	2009	Finland	both	quant	Impact of parents' loneliness on child's cooperation skills and social and emotional loneliness

Junttila ⁷⁰	2015	Finland	both	quant	Parents' social and emotional loneliness during pregnancy, infancy, and early childhood
Katz ⁵⁴	1991	Israel	mothers	quant	Well-being of divorced and widowed mothers since husband's death or divorce
Keizer ²³	2010	Netherlands	both	quant	Impact of partner status and work hours on well-being of parents who are transitioning into parenthood
Khan ¹⁵⁰	2018	Canada	mothers	quant	Psychosocial experiences and needs of women with HIV during pregnancy and early postpartum.
Kim ¹⁵¹	2011	Korea	mothers	qual	Survival experiences of mothers of children who had reported their partner as having abused them
Kirkham ⁸⁸	1986	USA	mothers	quant	Factors influencing child abuse potential in mothers with disabled children
Klajmon-Lech ¹⁵²	2016	Poland	both	qual	Parents experiences of early support and intervention when child has a diagnosis of a rare genetic condition
Kruse ⁷⁴	2014	USA	mothers	quant	Predictors of postpartum depression
Kulkarni ¹⁵³	2009	USA	mothers	qual	Influence of interpartner violence on relationships in adolescent mothers
Layton ¹⁵⁴	2007	UK	mothers	qual	Experiences of immigrant mothers
LeDrew ¹⁵⁵	2018	Canada	mothers	qual	Experiences of new mothers whose partner works away from home
Lee ⁵⁸	2017	UK	mothers	qual	First time mothers' experiences of loneliness and expected and actual experiences motherhood
Leyser ³⁷	1988	Israel	both	qual	Experiences of families with a disabled child living in a kibbutz
Luoma ⁶⁸	2019	Finland	mothers	quant	Loneliness in first-time mothers
Luoma ⁶⁹	2015	Finland	mothers	quant	Antenatal factors associated with chronic maternal depressive symptoms
Luthar ⁶¹	2016	USA	mothers	quant	Challenges for mothers in the infancy and middle school years
Lutz ⁷¹	2002	USA	both	quant	Factors influencing depression in first time parents
Mandai ⁴⁸	2018	Japan	mothers	quant	Predictors of loneliness among mothers raising children
Manor-Binyamini ³¹	2018	Israel	mothers	qual	Immigrant mothers' experiences of parenting a children with autism
Maurice-Stam ¹⁵⁶	2008	Netherlands	both	quant	Parents adjustment and coping following child's treatment for cancer
Mayers ¹⁵⁷	2005	USA	mothers	qual	Existential issues and coping in low-income mothers with HIV
Medora ⁸⁶	2001	USA	mothers	quant	Attitudes of low-income mothers toward parenting, the potential for child abuse, and parental satisfaction
Milner ⁹⁰	1980	USA	both	quant	Differences in abusing and non-abusing parents
Nahas ¹⁵⁸	1999	Australia	mothers	qual	Meanings and expressions of postpartum depression among immigrant mothers
Nahas ⁴²	1999	Australia	mothers	qual	Experience of postpartum depression in immigrant mothers
Nystrom ¹⁵⁹	2006	Sweden	mothers	qual	New mothers' experiences of an intervention using telehealth for parenting support
Oakley ⁶³	1998	UK	mothers	quant	Characteristics of mothers referred to Home Start and Newpin and referral reasons

Omer-Salim ¹⁶⁰	2014	India	mothers	qual	Manifestations of agency in combining breastfeeding and employment amongst health workers
Ornelas ⁴⁶	2009	USA	mothers	qual	Factors influencing depressive symptoms among immigrant mothers
Palmér ⁸³	2015	Sweden	mothers	qual	Women's decisions to continue or cease breastfeeding
Paris ¹⁶¹	2005	USA	mothers	qual	Experiences of new mothers and their perceptions of the home-visitor relationship
Pelentsov ³⁸	2016	Australia, New Zealand	both	quant	Supportive care needs of parents caring for a child with a rare disease
Polansky ⁹¹	1985	USA	mothers	quant	Loneliness in parents who are neglectful
Polansky ⁹²	1985	USA	mothers	quant	Loneliness in parents who are neglectful
Razani ⁹⁸	2018	USA	both	quant	Evaluation of park prescriptions for parents at a low-income clinic
Richey ⁹⁵	1991	USA	mothers	quant	Feasibility of using Interpersonal Skill Training in mothers at risk of child maltreatment
Richman ¹⁶²	1974	UK	mothers	quant	Effect of living in high-rise flats, compared to living in other types of housing
Ritchie ⁵⁵	1980	New Zealand	mothers	quant	Social characteristics of a group of single mothers
Rokach ²⁵	2004	Canada	mothers	quant	Qualitative aspects of loneliness in pregnant women and new mothers
Rokach ²⁶	2007	Canada	mothers	quant	Perceived causes of loneliness in pregnant women and new mothers
Rokach ²⁷	2005	Canada	mothers	quant	Differences in loneliness coping strategies in pregnant women and new mothers
Rolls ¹⁶³	2001	Australia	both	qual	Experiences of mothers having a child with a sleep problem
Rozenzweig ¹⁶⁴	1981	Israel	mothers	qual	Experiences of military wives attending a Family and Child Centre
Russo ⁴³	2015	Australia	mothers	qual	Experiences of immigrant mothers
Salo ⁸⁰	2020	Finland	both	quant	Intergenerational transmission of loneliness
Schlesinger ⁵⁶	1991	Canada	mothers	qual	Experiences of immigrant mothers
Shahar ⁸⁷	2001	USA	mothers	quant	Personality, loneliness and depression as Predictors of Child Neglect
Shapiro ⁹³	2011	USA	mothers	quant	Fathers and father-related family dynamics in families identified at risk for child abuse
Shorey ¹⁶⁵	2019	Singapore	mothers	quant	Effectiveness of a technology-based peer-support program in new mothers at risk of developing PND
Silverstein ¹⁶⁶	2010	USA	mothers	qual	Low-income urban mothers' explanations of feelings of sadness, stress or demoralization
Skar ¹⁶⁷	2015	Norway	both	quant	Impact of International Child Development Programme
Sorenson ¹⁶⁸	2003	USA	mothers	quant	Effectiveness of cognitive group therapy in mothers who experienced childbirth trauma
Stack ²⁴	1998	various	both	quant	Influence of marital and parenting status on loneliness
Stam ³³	2006	Netherlands	both	quant	Well-being of parents following child's successful cancer treatment
Stednitz ⁷⁷	2006	USA	mothers	quant	Influence of mothers' social functioning on child's social anxiety
Stewart ¹⁶⁹	2015	Canada	both	mixed	Challenges faced by refugee new parents

Stewart ¹⁷⁰	2015	Canada	both	mixed	Evaluation of a social support intervention for new parents who are refugee
Tcheng-Laroche ⁵⁷	1979	Canada	mothers	qual	Lifestyle, health and stress in middle income divorced mothers
Tirgari ¹⁷¹	2019	Iran	mothers	quant	Experiences of Iranian Teen Mothers with parenting Stress
Tuominen ¹⁷²	2016	Finland	both	quant	Effects of continuity of care on parents' parenting self-efficacy
Ugarriza ⁶⁵	2002	USA	mothers	qual	Postpartum depressed women's explanations for their depression
Valdez ⁷²	2019	USA	fathers	qual	Fathers' experiences with maternal depression in an immigrant sample
Van Dongenmelman ³⁹	1995	Netherlands	both	quant	Late psychosocial consequences for parents of children who survived cancer
Van Oers ⁴⁰	2019	Netherlands	both	quant	Well-being of parents of children on home parenteral nutrition
Vicary ⁵⁰	2001	USA	mothers	quant	Psychosocial functioning of adolescent mothers transitioning to parenthood
Volk ⁴⁴	2009	USA	mothers	qual	Experiences of immigrant mothers
White ¹⁷³	1987	Australia	both	mixed	Evaluation of parents without partners programme
Yako ⁵²	2007	South Africa	mothers	mixed	Adolescent mothers' reasons for becoming pregnant and experiences of pregnancy and parenting
Yarnoz ¹⁷⁴	2008	Spain	both	quant	Effectiveness of an attachment-based intervention to reduce loneliness, fear and grief in divorced parents
Zafar ⁷⁶	2015	India	mothers	quant	Differences in psychosocial factors in divorced and married mothers
Zaidi ⁶⁷	2017	India	mothers	quant	Risk factors for postpartum depression
Zare ⁹⁴	2017	Iran	mothers	quant	Intervention for aggression and loneliness in mothers with children with CP
Zekeri ¹⁷⁵	2007	USA	mothers	quant	Prevalence of loneliness in low income, single parent mothers

Full reference list for studies is available in supplementary materials

Supplementary Information 3

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