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# **Types, evidence, and resources of interventions focused on improving the psychosocial wellbeing of parents of premature/sick infants: A scoping review**

## **Abstract**

*Background:* Parents of infants born premature and/or sick and who require neonatal care are at risk of poor mental health. Currently there is no comprehensive knowledge about interventions (i.e. types, evidence, resources) that have been exclusively designed to improve the psychosocial wellbeing of this population group.

*Purpose:* To undertake a systematic scoping review of interventions focused on improving the psychosocial wellbeing of parents of sick/premature infants who required neonatal care to identify the: a) types of interventions, b) evidence of the interventions; and c) level of resources required to deliver the interventions.

*Search strategy:* Following an initial pilot search, we searched seven databases (Medline, CINAHL, PsychInfo, Cochrane, Embase, Web of Science and Global Index), reviewed references and followed up key authors.

*Results:* From 10516 hits, 38 papers met the inclusion criteria (36 different studies/interventions). Studies were categorised into creative oriented (11), group or peer support (4), relaxation or mindfulness (3), spiritual/religious (4), psychotherapeutic-based (11), and ‘other’ (3) (e.g. sleep, acupuncture). Most interventions had been undertaken in high-income settings with mothers and required varying levels of resources both within and between the different intervention types. While some interventions were effective, there was high heterogeneity with similar interventions using different designs, protocols and outcomes. Most intervention types included studies that highlighted what parents valued, e.g. self-care, relaxation, social opportunities.

*Implications for research:* Evidence highlights a wide range of potential interventions for

nursing and other specialist staff to consider and offers insights into potential mechanisms of effectiveness to underpin future intervention design.

**Keywords:** premature, psychosocial, interventions, parents, scoping review, NICU, neonatal, mental health

## Background

Each year in high-income settings it is estimated that 10% of infants require admission to a neonatal unit (NU) due to being born sick and/or premature (i.e. <37 weeks gestation)<sup>1</sup>. Infant hospitalization can have a profound and pervasive negative impact on parents due to being separated from their infants, the unfamiliar and overwhelming technological nature of the NU, lack of parenting confidence often associated with a perceived diminished parental role, and concerns of infant disability or death<sup>2-5</sup>. Parents of hospitalised newborn infants are at higher risk than parents of term infants for short and long-term mental health issues, such as depression, anxiety, or post-traumatic stress<sup>6-9</sup>. A meta-analysis found that 18.5% of mothers in high risk groups (including those who had a sick/premature infants) met the diagnostic threshold for post-traumatic stress disorder (PTSD), compared with 4% of mothers in community samples<sup>10</sup>. Poor parental mental health is associated with negative impacts on parent-infant relationships, and infant developmental outcomes<sup>11</sup>. While it is argued that NUs should provide a varied, flexible and sustainable programme of support options<sup>12,13</sup> currently there is no universal protocol for the provision of psychosocial support<sup>14</sup>.

A number of parent-infant dyad based interventions have been introduced into neonatal care, such as NIDCAP<sup>15</sup>, Creating Opportunities for Parent Empowerment<sup>16,17</sup> or skin-to-skin/kangaroo care<sup>18,19</sup>. These interventions have been designed to improve parental knowledge about infant developmental outcomes and confidence in providing infant care, and/or to improve infant's clinical outcomes. While these dyadic based interventions have also been associated with improved parental psychosocial outcomes<sup>17,20</sup>, this has not been consistent<sup>4</sup>, thereby suggesting that further support may be needed. It is also argued that parent-infant dyadic based interventions tend to focus on the health and needs of the baby, which can lead to parental psychological issues and concerns being neglected<sup>13,21</sup>.

Other interventions delivered to parents of sick and/or premature infants have had a primary focus to improve the psychosocial wellbeing of parents as individuals. These include a range of different interventions such as scrapbooking<sup>22</sup>, peer support<sup>23</sup>, cognitive behavioural therapy<sup>24</sup> that have been delivered by nursing and other specialist staff. As systematic reviews have tended to group these interventions with those that are parent-infant dyad based<sup>4,25</sup>, there are no comprehensive insights into what these interventions are, or whether or how they have been effective. There is also a lack of insight into the level of resources required to deliver these interventions. This information is essential as costly interventions are problematic to implement in resource-poor settings, and are generally difficult to sustain<sup>26</sup>. The challenges for clinicians and researchers to choose the most promising approaches from among the eclectic collection of treatments that have been studied has been noted<sup>4</sup>.

We aimed to address the current evidence gaps by undertaking a scoping review to identify the different types and evidence of interventions specifically designed to improve the psychosocial wellbeing (e.g. stress, anxiety, depression, PTSD symptoms, social isolation) of parents of sick/premature infants who required neonatal care. We were interested in any/all interventions that had this remit, including those could be provided by nursing staff, nurses who had accessed more specialist training as well as professionals from different professional backgrounds. This focus meant that we would not include interventions that had a key emphasis on the parent-infant dyad, parenting roles, enhanced clinical care practices or neonatal outcomes. We also aimed to estimate the level of resources (e.g. based on intensity, specialism required) required to deliver the intervention to aid decision-making and for commissioning purposes. Furthermore, in line with the main reasons for undertaking a scoping review, we aimed to

explore the extent of literature, to identify evidence gaps and to drive new research objectives<sup>27,28</sup>.

## **Methodology**

### *Review design aims*

We followed the methods by Peters et al<sup>29</sup> and Joanna Briggs Institute<sup>30</sup> to conduct a systematic scoping review and report the findings in line with the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist<sup>31</sup>.

The review aimed to identify all/any interventions that had a primary focus to improve the psychosocial wellbeing of parents of sick/premature infants who required neonatal care in order to:

- a) Identify the different types of interventions;
- b) Detail any evidence of the interventions;
- c) Estimate the level of resources (low, medium, high) required to deliver the interventions.

### *Search strategy*

The PEO (Population; Exposure; Outcomes/themes) structure<sup>32</sup> was used to identify the search terms and to define the inclusion and exclusion criteria. We used a three-step process as per Peters et al<sup>29</sup> scoping review guidance. 1. Search terms were initially developed during pilot searching in Medline and CINAHL whereby initial hits were examined to ensure we adequately identified the key words required for the second search. 2. Following the pilot search, we carried out searches in Medline, CINAHL, PsychInfo, Cochrane, Embase, Web of Science and Global Index; with search terms adapted to suit each bibliographic database (i.e. MeSH

headings). Search terms included: Mother or mom or mum or maternal or parental or father or dad or paternal; neonatal intensive care unit or NICU or nursery or preterm\* or prem\* or neonatal unit or special care baby unit or special care nursery or neonatal nursery or SCBU; psychol\* or wellbeing or support or counsel\* or help or care or intervention; wellbeing or well-being or well being or stress or anxiety or trauma or depression or psychosocial or psychosocial. 3. Once all hits had been screened via initial and full-text screening, the reference list of each included paper was checked for any relevant studies. We also searched under the names of key authors who publish in this area. All searches were carried out in March/April 2020.

The context of this review was any/all types of interventions that were specifically designed to improve the psychosocial wellbeing of parents of premature/sick infants delivered either during the inpatient stay or following discharge home. No infants (e.g. sick or/and preterm or needing monitoring) or parents (e.g. age, health, situation) were excluded. All types of neonatal care were included, e.g. 'neonatal nursery' for infants who do not require intensive care, and Level III NUs units for those with the highest level of need. Studies that reported on either quantitative measures of effectiveness, or qualitative insights regarding the parent's experiences of the intervention were included. Interventions that had a key focus on mother or father-baby dyads, their parenting roles, enhanced clinical care practices or neonatal outcomes were excluded. Any published studies with any design were included; quantitative, qualitative, mixed-methods and systematic reviews. No date restrictions were imposed. Studies published in English only were included due to time constraints of translation.

### *Screening*

All hits were de-duplicated in Zotero referencing software<sup>33</sup>. The remaining records were uploaded to Rayyan, a systematic review web application<sup>34</sup>. Title and abstract screening was

carried out by the first author [CF] with 100 records cross-checked independently by the second author [GT] to ensure accuracy of decisions. Full-texts were obtained and reviewed by [CF] and [GT] independently. Agreement for inclusion was made by consensus, and on occasion a colleague was sought to help resolve disagreements.

### *Charting the results*

For all included studies, the following information was tabulated: Author, date, title, country, income setting, category of intervention, study design/type of paper, aim/scope of the paper, study setting, population/sample, eligibility criteria, intervention information, intervention delivered by, data collection, intervention informed by which theory, timing of intervention (i.e. inpatient/out), findings of effectiveness and findings- views/experiences,. This was carried out by the first author. We also carried out a simple assessment of the intensity of resources required for the interventions. This involved mapping the level of resources required to deliver the intervention as low, medium or high (where low relates to interventions of low intensity such as writing, art therapy (unless with a therapist); medium relates to more intensive interventions or provided by staff with a higher level of training, such as counsellors or occupational therapists; high relates to high intensity interventions and provided by more specialist staff such as psychologists or psychiatry services), to provide additional contextual information.

## **Results**

Database searches generated 10,516 hits, 3,680 of which were duplicates. An additional five papers were found via reference checking and two were already known to the authors. Overall, 6,843 records were screened and 6,744 discarded based on title and abstract. Ninety-nine papers were included for full-text review with 61 records excluded due to not meeting the inclusion criteria. Of the included 38 papers, there were two instances of papers being from the



same study (Shaw<sup>35,36</sup> and Segre<sup>37</sup>/Siewert<sup>38</sup>), therefore, 36 studies were included. An overview of the search strategy is provided in the PRISMA diagram (see Figure 1).

[insert Figure 1]

An abridged study characteristics table is presented in **Table 1**. The 36 studies spanned from 1990-2020; 9 studies were from the US, 10 Iran, 2 Turkey, 1 Switzerland, 3 Canada, 3 Brazil, 1 Colombia, 2 Australia, 1 Greece, 1 Indonesia, 1 UK, 1 Germany and 1 India. In relation to income status, 18 high, 17 upper-middle and 1 low-income status. Twenty-six studies focused on mothers only, 1 focused on fathers only and 9 focused on parents collectively (partner dyads). Regarding the study designs, 3 were pre/post-test, 15 RCT's, 6 quasi-experiments, 2 pilot feasibility trials, 2 pilot RCT's, 2 pilot pre/post-tests, 1 sequential control group design, 3 qualitative studies, 2 cohort studies. Four of the interventions were delivered in the community, 3 were provided both within the NU and after discharge, and 1 was unclear. All the remaining interventions were delivered in a NU setting. Most studies were focused on parents of premature infants, and 9 targeted parents of low/very low birth weight or very premature infants.

**[Insert Table 1]**

The studies were categorised, as illustrated in Figure 2: 11 were creative oriented (writing, art, music), 4 group or peer support, 3 relaxation or mindfulness, 4 spiritual/religious, 11 psychotherapeutic-based (psychology, cognitive-behavioural therapies etc.), 3 'other' (sleep, acupuncture and training father's in emotional support, to support their partners). In the following sections we describe the nature of the interventions, the reported outcomes and views or experiences of the participants (where reported), and the estimated level of resources (low, medium, or high) needed to deliver the intervention.

[Insert Figure 2]

### *Creative interventions*

Eleven studies used creative approaches to address parental psychosocial wellbeing. Two medium resourced studies were carried out by occupational therapists using art-based approaches<sup>22,39</sup>. Mourdian et al<sup>22</sup> introduced scrapbooking to a weekly drop-in session that could be attended by any or both parents. Forty parents participated and the researchers assessed anxiety levels pre and post group attendance, and captured interview data to discern their views and experiences. The study found a moderate effect on anxiety levels, but noted a larger trial was needed. The qualitative findings suggested parents found the intervention acceptable and valuable - scrapbooking was a (welcome) distraction from their worries, enhanced relaxation, reduced social isolation and instilled a sense of hope. John et al<sup>39</sup> carried out a similar study using a range of creative activities (although minimal details provided) during weekly sessions for 34 mothers. Although implemented under occupational therapy principles, the groups were facilitated by a medical social worker. The authors found some decrease in anxiety levels but noted the effect was temporary<sup>39</sup>.

Five studies carried out narrative writing interventions<sup>41-46</sup>, all of which were deemed to require a low level of resources. One study focused on fathers only<sup>41</sup>. All studies generally asked participants to write about their experience of having a premature baby, albeit at different times and frequencies; the premise being that expressive writing could reduce feelings of anxiety or social isolation, experiences of depression or PTSD. Overall, the studies reported heterogeneous results, for example, Akbari et al<sup>41</sup> reported a significant effect and Kadivar et al<sup>44</sup> reported minor effectiveness. Three studies<sup>43-45</sup> reported parents' views or experiences of the intervention. Two<sup>43,45</sup> found that participants valued the intervention as useful or as a source of stress relief, and would recommend the intervention to others<sup>45</sup>. However, Kadivar et al<sup>44</sup>

raised cultural concerns regarding the acceptability of the writing intervention, highlighting that the local population (Iran) was historically uncomfortable with writing about their feelings. The authors advised that wider implementation may be a challenge due to similar cultural issues<sup>44</sup>.

One study carried out a two-arm intervention; narrative writing and art therapy<sup>40</sup> – participants were asked to undertake expressive writing three times in 10 days or drawing three times in three days. The paper contained minimal details of what the intervention comprised, such as whether it involved facilitated sessions or carried out independently. The authors reported a null hypothesis and whilst the intervention was assessed as likely requiring low resources, the lack of information is problematic<sup>40</sup>.

Two studies were music interventions<sup>47,48</sup>. One was a prospective RCT that assessed parents' anxiety and depression<sup>47</sup>, and the other a pilot study that used a purposefully designed scale to assess anxiety, stress, mood, restfulness and motivation<sup>48</sup>. Riberio et al<sup>47</sup> provided weekly individualised music therapy sessions, using music as a conduit to explore the participant's feelings. Roa & Ettenberger's<sup>48</sup> study provided weekly group sessions where participants were led through visualisation techniques first, before introducing music played by the therapist; parents were invited to breathe with the music or could join in through humming or singing. Both studies found a moderate improvement in outcomes following the intervention, and one reported how participants valued the distraction, relaxation and time to themselves<sup>48</sup>. Both studies were rated as requiring high resources due to being delivered by a music therapist and intervention complexity.

### *Group or peer support*

Two studies explored peer support<sup>23,49</sup> and two studies explored group support<sup>50,51</sup>, all assessed as requiring a medium level of resources. The peer support interventions used volunteers who had experienced a premature birth and NU care and were trained to support other parents. Preyde & Ardal's<sup>23</sup> cohort study was found to be effective on all primary outcome measures (e.g. anxiety, depression and stress) and was valued by mothers. Ardal et al<sup>49</sup> carried out a qualitative investigation to explore the experiences of mothers buddied with peer supporters who spoke their own language and were from similar cultural groups. The authors reported that participation promoted adaptive coping, enhanced social support, and shared culturally understandings were positively evaluated as enhancing feelings of being understood<sup>49</sup>.

The two group support studies used different approaches and research designs. Abdeyazdan et al<sup>50</sup> carried out the study in several phases; initial educational session with the intervention group, a psychological training session (without details as to what this entails), followed by a group session for parents to share their feelings. The study found that participants had significantly reduced levels of stress at the end of the intervention<sup>50</sup>. Whereas, Turner et al<sup>51</sup> carried out a qualitative study on mother's experiences of attending group support. The intervention involved a weekly no-cost support group facilitated by NU professionals where mothers could share feelings, seek support, ask questions and receive information. Mothers were reported to value the support group as a space to share the emotional experience, enhanced positive feelings, encouraged friendships and reduced feelings of isolation<sup>51</sup>.

### *Relaxation or mindfulness*

One study examined a low resourced mindfulness intervention<sup>52</sup>. This comprised a pilot pre/post study with 24 mothers who were asked to listen to four purposefully designed

mindfulness audio recordings (5 or 10 minutes long) as and when desired. The study found some significant improvements in some measures (e.g. depression, anxiety, negative coping) and none in others (positive coping, mindfulness, attachment to the infant). Women reported decreased distress, increased calm, improved interpersonal relationships, enhanced capacity for self-care and improved sleep.

Two studies examined relaxation interventions<sup>53,54</sup> that slightly differed in their design, level of resources and/or approach, both showing minimal evidence of efficacy. The low resourced relaxation study by Howland et al<sup>54</sup> was a pre/post-test intervention with 19 mothers. The intervention was a 10-minute pre-designed audio recording of guided imagery that mothers were tasked to listen to once a day for 8 weeks; the study did not yield significant results on psychological distress. Whereas, Fotiou et al<sup>53</sup> carried out a RCT with 59 parents on a high resource intervention package that comprised all parents receiving five interactive ‘training sessions’ (largely focused on the needs of their premature infant), and the intervention group receiving additional teachings into positive thinking, healthy lifestyle, and self-knowledge, and three different relaxation techniques (diaphragmatic breathing (deep breathing), progressive muscle relaxation, and guided imagery) during each session. The intervention group was also given an audio CD with recorded relaxation techniques to be practiced for the 3 months following the infant's discharge (with reminders sent via weekly text messages or telephone calls). While both groups demonstrated reduced levels of anxiety, women in the intervention group had significantly lower trait anxiety at the end of the intervention<sup>53</sup>.

### *Spiritual/religious interventions*

Four studies focused on spiritual wellbeing within a Muslim faith context using RCT intervention studies with heterogeneous results<sup>55-58</sup>. Alemdar et al<sup>55</sup> carried out a low resourced

individualised spiritual needs assessment and the mother's identified a spiritual practice of their choice to carry out during the second visit (prayer, reading the Quran, placement of a cevşen-muska or evil-eye-talisman onto the infant's incubator). The study found a significant reduction in stress levels for the intervention women. Edraki et al's<sup>56</sup> study comprised a medium resource spiritual care training intervention comprising four 30-minute sessions held every other day that involved assessment of the mother's needs, sharing feelings and recommendations to develop the quadruple spiritual relationships (i.e., with God, oneself, people, and nature). These included engagement in prayer, invocation, forgiveness, kindness toward others, specific recitations in times of anxiety, use of pleasant aromas, cheerful colours, and use of recommended *Hadiths* provided in an educational booklet. The researchers report a significant reduction in anxiety measures in women in the intervention group<sup>56</sup>.

The study by Reihini et al<sup>57</sup> also offered spiritual training but at a higher resource, and with a different focus. Sixty mothers of preterm infants received 15 minutes training everyday over 14 days into infant-related information. The intervention group (30) then received specific instruction in various concepts such as "trust in God", "intercession", "patience", "charity" (altruism and forgiveness), and "invocation" over six training sessions. The authors found a significant increased level of comfort following the intervention.

Different again, was the low resource intervention carried out by Sharifina et al<sup>58</sup>. In this RCT, mothers received an audio file of Tavassol prayer and were asked to listen to the recording daily for at least 20 minutes for seven days. The authors reported significantly reduced anxiety scores at one-week post-intervention however, this was not maintained one-month post-intervention. None of the spiritual-based studies reported the views or experiences of the participants.

### *Psychotherapeutic interventions*

Eleven studies (13 papers) related to psychotherapeutic interventions, further categorised as 2 psychotherapy-based interventions, 5 cognitive-behaviour therapy (CBT), 3 psychologist approaches and 1 listening visits (LV). The two psychotherapy interventions<sup>59,60</sup> had different study designs. Laela et al<sup>59</sup> carried out a quasi pre/post test to determine the effectiveness of thought stopping and support therapy on parental post-partum blues and/or anxiety. These therapies were reported as branches of psychotherapy and were administered by nurses. The study reported a decrease in anxiety and depression scores, but there was insufficient information regarding the nature or administration (frequencies, number of sessions) of the intervention. The other<sup>60</sup> was a qualitative grounded theory study that explored six mothers' experiences of receiving psychotherapeutic counselling (delivered by the ward Sister, a trained psychotherapist) during their infant's NU stay. Participants were reported to have valued the counselling service as it offered a source of consistency and stability during the challenges of a premature birth, and a space to 'offload' difficult feelings<sup>60</sup>. We assessed the psychotherapeutic interventions as requiring medium levels of resources as the interventions were delivered by nursing staff.

Five studies used CBT<sup>24,35,36,61-63</sup>, all of which required a high level of resource, and of note, one study<sup>63</sup> specifically targeted mothers with low-income status. All studies varied in the timings, frequencies and delivery of the interventions, and measured different outcomes. For example, two studies used CBT in group settings<sup>24,62</sup>, whereas the other three studies delivered one-to-one sessions that varied between three sessions<sup>61</sup>, one or two sessions a week for three or four weeks<sup>35,36</sup> or four sessions<sup>63</sup>. The studies reported varying effectiveness with some reporting significant reductions in depressive symptoms<sup>61</sup>, anxiety<sup>24,35,36</sup>, trauma symptoms<sup>35,36</sup>

and stress<sup>63</sup>. Hagan et al<sup>62</sup> reported a null hypothesis for depression. Mothers in two of the studies reporting finding the intervention beneficial<sup>61</sup> or helpful<sup>63</sup>.

Three studies used various psychological interventions<sup>64-66</sup>. Jotzo & Poets<sup>66</sup> implemented a high resource one-off crisis intervention with 50 parents combined with additional psychological aid throughout the infant's hospitalization, both conducted by the departmental psychologist. The intervention involved general trauma preventive measures and components specifically geared toward premature birth with a significant reduction in trauma symptoms reported<sup>66</sup>. Similarly, requiring high levels of resources, Carvalho et al<sup>64</sup> undertook an RCT of a psychological group intervention facilitated by a psychologist. While the intervention and control group received psychologist input, the intervention group also received support materials (video and a manual). Anxiety and depression levels were reduced in both groups, although the reduction in clinical levels was significantly greater in the intervention group<sup>64</sup>. In the low resource study by Cobiella et al<sup>65</sup>, 30 women were randomised to a short videotape training intervention that provided problem-focused (9 minutes) or emotion-focussed (13 minutes) strategies or to a control group that received information on the hospital and NU (11 minutes). At follow-up, both treatment groups reported significantly less anxiety, and those who received emotion-focused coping had lower depression scores<sup>65</sup>.

One study implemented nurse-led listening visits (LV) that emphasised empathic listening and collaborative problem solving<sup>37,38</sup>. A feasibility trial comprised six consecutive 45–60 minute LV sessions provided every 2-3 days on the NU<sup>37</sup>: with the second publication providing information into how the intervention was implemented<sup>38</sup>. The high resource intervention showed beneficial results regarding depression, anxiety and improvements to quality of life scores, and 91.3% of the mothers rated the quality of help as excellent<sup>37</sup>.



### *Other*

Three studies were categorised as ‘other’, one used acupuncture<sup>67</sup>, one provided emotional training to fathers<sup>68</sup> and one used light therapy<sup>69</sup>. Haddad-Rodrigues et al<sup>67</sup> reported a null hypothesis from a small RCT with 29 mothers to determine whether acupuncture delivered weekly would reduce anxiety levels. The high resource intervention was carried out by a licensed nurse acupuncturist. Tafazoli et al<sup>68</sup> carried out a pre/post-test study to investigate the effect of emotional support training to fathers on acute stress disorder (ASD) symptoms in mothers of preterm newborns. The medium resourced intervention (with no details as to who delivered it) involved a 120-minute training session provided to fathers in groups of one to three individuals using lecture and question and-answer methods of teaching, followed by the provision of an educational pamphlet. The authors reported significant reductions in ASD symptoms in the mothers<sup>68</sup>. Finally, the medium resource pre-post-test study by Lee et al<sup>69</sup> used light therapy that aimed to improve mental health via improved levels of quality sleep for 30 first-time mothers of low birth weight infants. First, the researchers provided an individual discussion regarding sleep hygiene and then used daily bright light treatment administered 30 minutes/day for three weeks. Significant improvements on all outcomes - sleep disturbance, fatigue, depression, quality of life - was reported<sup>69</sup>.

### **Discussion**

This scoping review focused on interventions that were specifically designed to improve the psychosocial wellbeing of parents whose sick/premature infants required neonatal care. Overall, 36 studies were identified that included sixteen different interventions spanning creative approaches, psychotherapeutic, and group or peer support. Creative or psychotherapeutic approaches were the most common and included a range of techniques and

therapies. We have reported the study's findings as reported in the publications, however, a meta-analysis would be required to assess the efficacy of specific interventions.

Overall, the evidence base was highly heterogenous with studies targeting different populations, e.g. parents of premature infants<sup>44</sup>, very low birth weight infants<sup>39</sup>, or very premature infants<sup>43</sup>. Some studies lacked sufficient detail in terms of who and how the intervention was delivered<sup>40,50,59</sup>. While most studies reported some evidence of effectiveness, inconsistencies were found. For example, one relaxation study demonstrated effectiveness<sup>53</sup>, but the other did not<sup>54</sup>, which may be due to the variation in intensity. Some studies also demonstrated that while there was a positive effect at the end of the intervention, this was not always maintained at follow-up<sup>39,57</sup>. Intervention administration also differed, as for example, CBT sessions were provided at different times, different intensity and different modalities (group or one to one). Thus while a recent meta-analysis reported that CBT significantly reduced depression when administered in a NU context<sup>25</sup>, this would suggest that delivery type is less important and does not deter from its therapeutic value. In some studies, both the intervention and control groups received 'treatment' e.g. <sup>64</sup> or other therapeutic practices<sup>56</sup>. Furthermore, as on occasion, only one intervention had been undertaken (e.g. mindfulness<sup>52</sup>, light therapy<sup>69</sup>), and often with small samples, it was impossible to draw any meaningful conclusions.

We identified all the different types of interventions that had been delivered by nursing and other specialist staff and provided an assessment of resources to inform decision-making. While the level of resources often differed both within and between the intervention types, this work highlights low resource interventions worthy of further consideration due to their positive impact on outcomes and potential for sustainability, e.g. expressive writing,

relaxation/mindfulness, as well as those that require more resources, but perhaps greater impacts, e.g. CBT, listening visits. It is important to note, however, that not all parents will either want or benefit from additional support; this was highlighted in the study by Cobiella et al<sup>65</sup>, whereby mothers reported little distress at baseline. Furthermore, given some parents may avoid specialist mental health provision due to fear of stigmatization or reprisals<sup>70,71</sup> it is conceivable that a range of interventions should be available to suit parents individual needs or preferences<sup>13</sup>. While some interventions (e.g. relaxation, CBT, spiritual practices) were not supported by qualitative data, those that did provided insights into potential mechanisms of effectiveness. For example, the parents' qualitative accounts of narrative writing, music therapy, mindfulness, peer support and psychotherapeutic interventions identified aspects that parents valued; these included distraction, self-care, to 'offload', relaxation, stress relief, reduced social isolation, and time to themselves<sup>43,45,48,52,60</sup>. These insights could help to theoretically inform future intervention designs<sup>72</sup> with testing of effectiveness informed by realist methodologies to help determine 'what works'<sup>73</sup>.

The strengths of this study are the comprehensive search over multiple databases, and its specific focus. Most interventions in neonatal care are designed to evidence that if parent's knowledge and skills improve, then so will their mental health; with this logic found to be effective for some<sup>17,74</sup>, but not all interventions<sup>15</sup>. We, however, were specifically interested in interventions that primarily focused on improving parents' psychosocial wellbeing and was designed to complement existing work in this area. Study limitations include restrictions to published articles which may have missed some key papers. As a scoping review precludes quality assessment, further work to assess key design features, and implications on effectiveness would be useful. Intervention fidelity was not assessed due to this data not being

reported in many of the included papers; future work should include a more detailed assessment of fidelity to identify key gaps.

Through this work we were able to identify key evidence gaps. First, the lack of interventions undertaken in low-income countries, and few studies focused on fathers (and none with a more inclusive emphasis on ‘partners’). Second, while we provided a simplified resource assessment, no study included any cost-related data. Third, it highlights the need to consider cultural issues as some interventions (e.g. expressive writing<sup>44</sup>) may not be culturally acceptable, and as all the spiritual/religious studies related to the Muslim faith, further interventions focused on wider religious or spiritual beliefs may prove interesting.

## **Conclusion**

Parents of premature/sick infants face high levels of psychological morbidities. This scoping review had a specific focus on identifying interventions exclusively designed to improve the psychological and social needs of parents of sick/premature infants that required neonatal care. Thirty-six studies were identified, categorised into different intervention types; creative oriented, group or peer support, relaxation or mindfulness, spiritual/religious, psychotherapeutic-based, and ‘other’. While some interventions were effective, there was high heterogeneity and studies using a similar intervention, e.g. CBT often used different designs, protocols and outcome measures. While further work to assess intervention quality is needed, key evidence gaps identified include the lack of studies in low-income countries, very few studies focused on fathers or partners and some interventions only had one effectiveness study. The potential mechanisms of effectiveness identified within the qualitative studies provide a useful theoretical basis for intervention design. Further testing to determine ‘what works’ in

different populations and contexts, and to help develop minimum standards of psychosocial support in neonatal care is needed.

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## Figure legends:

Figure 1: PRISMA diagram

Figure 2: Overview of interventions

## Table legends:



Table 1: Study characteristics