Nurturing care during the first 1000 days of life: A systematic review

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Dissertation submitted in fulfilment of the requirements for the degree Master of Social Work in Child Protection at the North-West University

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Graduation: May 2019
Student number: 26963809
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It was just a dream when I first thought of furthering my studies, but it became reality when I was encouraged to enroll for this programme. The encouragement came from different sources and in different ways. The encouragement evoked my eagerness to enrich my knowledge and reach my goal. That is the reason why I would like to begin by thanking my Lord and savior Jesus Christ, whom has brought me through from strength to strength; and from one level of grace to another. I will forever be grateful Oh Lord.

I would like to take this opportunity to thank my supervisor, Mrs Tasleem Sayed, it warms my heart every time I think about the efforts, comments, guidance and time you spent to ensure that I become a good researcher. How you effortlessly managed to calm me down when I was in a panic mode, still surprises me. Many times, I wanted to give up, but your words of encouragement kept me going, your expertise added value to this research and guided me to understand what research and how a systematic review should be conducted, it is all about practically. I am truly grateful for having you as my supervisor.

It would have not been possible for me to know, understand and grow to love child protection and the systems involved if it had not been for Dr Hanelie Malan. I will never forget the stages of child development, because you always reminded us that we always must be mindful of those stages to be able to know how to assist a child in need of care and protection. Thank you for being a true advocate for children’s right to care and protection, also for transferring that passion onto me.

I would also like to thank the research committee panel for their valuable contributions that have helped to shape the outcomes of this research.

Thank you to my colleagues at work, who constantly reminded me that I need to focus and make time for my studies to succeed and achieve great things. I thank you for your support.

I would also like to acknowledge my awesome parents, Jacob and Ivy Chabangu, for always believing in me and encouraging me to do better in order to succeed. I am grateful for your love and support.

I also want to thank my loving parents in law, Jacob and Maureen Mputle, who have always supported me since I started this journey. Thank you for your words of encouragement, your love and support throughout this journey.
I am grateful to my siblings Nomabongo, Ntsako and Boikhutso, for looking up to me and believing in me.

To my loving husband, Odirile Mputle, thank you for your love, support and patience. Thank you for understanding when I had to be away from you because of my studies, for motivating me to be better and believing in my dreams. I am grateful.

Tanya-Lee Stewart and Elsa Esterhuizen, thank you for the expert language editing and assistance with the APA referencing, I really appreciate it.

To the North West University, I am grateful that I had the opportunity to start my journey with this prestigious institution; thank you for opening your doors to me and providing me with quality education and personal development. I am grateful.
I dedicate this dissertation to my loving husband, who has always been supportive, loving and forever patient with me.

I love you.
Research outline and preface

This mini-dissertation is submitted in article format as indicated in the 2018 General Academic Rules of the North-West University.

This mini-dissertation is submitted in partial fulfillment of the requirements for the Degree, Master of Arts in Social Work, Child protection.

The body of this dissertation will consist of the following

**Section 1: Background and orientation**

Section one includes the full research proposal together with the necessary documents required by the various committees. Section 1 serves as a baseline to the study and include an in-depth preparation that was followed in order to be able to commence with section 2.

**Section 2: Manuscript in article format**

Nurturing care during the first 1000 days: A systematic review

Section 2 consists of the manuscript in article format. This manuscript follows the guidelines of the Journal for *Children and Youth Services Review*. There are no strict requirements during the initial stages of the manuscript. However, the article was done according to the requirements of the guideline of the Publication Manual (6th edition) of the American Psychological Association.

**Section 3: Conclusion, limitations, future recommendations, policy brief and personal reflections**

In section 3, the researcher will provide conclusions based on the outcome of the study. Furthermore, the researcher will provide the limitations of the study as well as future recommendations. A policy brief is drafted for the purpose of circulating in in early childhood development centres as well as to pregnant mothers and their families. Lastly, the researcher will provide a personal reflection of this process.
Author contributions, letter of permission and declaration

Mrs LDP Mptule
 Mrs Mputle is a Masters student enrolled in the Child Protection programme, Social work. The student was responsible for the development of the proposal, primary researcher of the systematic literature review process as well as writing up of section 1, section 2 and section 3.

Mrs T Sayed
 Mrs Sayed served as the supervisor as well as the second researcher for the systematic review. Mrs Sayed was also responsible for guiding the student during the process.

Below is the declaration from the student and the supervisor approving their contribution to this mini-dissertation. The approval serves that this mini-dissertation has been accepted and fulfills the requirement for the degree, master’s in social work, child protection.
Declaration by co-author

I, Tasleem Sayed, hereby declare that this mini-dissertation submitted by the student, Mrs LDP Mputle complies with the requirements of the degree, master’s in social work, child protection. I hereby grant permission for the student to submit this mini-dissertation for examination purposes.

Mrs T. Sayed

Declaration by author (student)

I, Lizzia Doreen Palisa Mputle, ID no.: 8909250040080 hereby declare that this mini-dissertation is a product of my own work and that I have rightfully acknowledged all authors and sources in this mini-dissertation. I also declare that this mini-dissertation has not been submitted to any other university for examination purposes.

Mrs LDP Mputle
Author Guidelines: Manuscript in article format

This dissertation has been done in article format according to the 2018 General Academic Rules of the North West University.

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Manuscript in article format
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Summary

Parents are the key role players in ensuring favourable child wellbeing and healthy development, but a broad range of governmental programs also play a critical role. Previously children aged 5 years and primary school going were targeted for interventions and development in communities was gauged with this age group, many times neglecting the fact that for these children to reach that milestone there should have been suitable brain and cognitive development which takes place during the first 1000 days.

Children are dependent on the care of adults in their environments and these young children’s security in relationships should be strengthened by improving caregiver’s responsiveness and reducing their stress. The earliest social experiences in a child’s life can shape their developing neurological and biological system, such as exposure to toxic stress which may distort their response to stress later in life. Early interventions have been identified as having the potential to reverse or buffer the effect of chronic stress due to the plasticity of the developing brain.

Challenges have been identified, most especially in low-income countries, that wasting affects most children under five years of age and it carries severe health consequences; hence infants are found to be extremely vulnerable to wasting, while stunting generally increases with age from early childhood to around 24 months to 35 months.

It is therefore a result of poor nutrition in the early life, which may have long-term consequences and not only for the child but also the child’s family, the child’s community and even the child’s next generation. Exclusive breastfeeding is an available strategy to accomplish normal growth regardless of these disadvantages as well as prevention of inappropriate bottle use and introduction of solid food intake before the age of 4 months.

In many vulnerable families, capabilities of adult caregivers have to be built in order to achieve good outcomes for the children in their care. This should be done through supporting the development of children’s and caregiver’s self-regulation skills, mental health and executive functioning. In addition, there has to be some sort of strategies to improve the economic and social stability of the family, thereby maximizing the health benefits that will positively impact on young children across their life-course.
Health aspects, provision of good nutrition, responsive care, safety and security as well as early learning are all the domains that make up the nurturing care framework, when implemented together they can ensure that children achieve favourable development outcomes. Key role players should be involved in ensuring the implementation of the nurturing care in the first 1000 days of life in communities across the world.

*Key words: Nurturing care, health, nutrition, safety and security, responsive care giving, early learning, supportive interventions*

*431 words*
Section 1: Background and orientation to the study

As previously indicated in the research outline and preface, this dissertation is written in article format in accordance with the 2018 General Academic Rules of the North-West University. In this section the researcher proposes the planning of first phase of the research process providing background to the manuscript that will be presented in article format in Chapter 2.

The aim of this systematic review is to outline the most important factors that enrich nurturing care in the first 1000 days of life.

A nine-step process was followed comprising an in-depth systematic literature review to fit the requirements of the rigorous methodology.

The research proposal was developed by the researcher in collaboration with the supervisor and studied by several experts in the field of social work. The proposal was submitted the various scientific panels for approval, Community Psychosocial Research (COMPRES) and the Health Research Ethics Committee (HREC), respectively.

Please note that there will be an overlap between documents presented in chapter one and chapter two due to the fact that these chapters describe the same research process in different stages. The manuscript presented in article format in chapter two serves as the final research report according to the Journal of Children and Youth Services Review.
Section 1: Background and orientation

Scientific proposal

Nurturing care during the first 1000 days of life: A systematic review

The first 1000 days of life, which begins just before a baby is conceived and continues during pregnancy right up to the age of two, are most important (Warren & Consultant, 2011) since this short timeframe offers a window of opportunity to shape a healthy and prosperous future for the infant (Maguire & Irish Dietitians, n.d.). Pregnancy, birth and the early years are special times in which one is given the opportunity to nurture the health of children and provide them with a good foundation for healthy living (Warren & Consultant, 2011).

Section 28(1)(c) of the Bill of Rights in the South African Constitution ensures that every child has the right to social services: Every child has the right to a shelter, basic nutrition, basic health services and social services (Dutschke & Monson, 2008). The Constitutional court jurisprudence confirms that children have the right to parental or family care in the first place, which means that parents and families are primarily responsible for providing care and protection for their children (Dutschke & Monson, 2008).

Early healthy child development includes physical, emotional, social and cognitive domains of development and it is important to note that whatever happens to children during this early period of life may impact on their later years (Pem, 2015). The government has now expanded its objectives to include the development of the ability of families to cope with and nurture every vulnerable child under two years of age by promoting healthy pregnancy and providing maternal psychosocial support where needed (Department of Social Development, 2015). One reason that this period in a child’s life is considered critical is that the government has identified maternal depression as one of the psychosocial risks in the first 1000 days of the child’s life and it is this factor that presents a significant risk to the cognitive, physical, social, and emotional development of infants since maternal depression often leads to unresponsive care giving (Department of Social Development, 2015).

Nurturing care is defined as a stable environment that is sensitive to children’s health and nutritional needs with protection from threats, opportunities for early learning, and interactions that are responsive, emotionally supportive, and developmentally stimulating (Britto et al., 2017). Persson (2017) stated that optimal child development requires health, nutrition, security, safety and loving care as part of a nurturing environment that should be present before and long after pregnancy. The nurturing care framework by the World Health
Organisation (2018) is a road map for action. It was developed in response to the sustainable development goals of investing in children’s first 1000 days for them to reach their full potential. The nurturing care framework encompasses five domains significant to a child’s development: nutrition, health, early learning, responsive care, and security, and safety and security.

**Nurturing care – nutrition**

Studies prove that inadequate nutrition in the early years of childhood can result in stunting, which can cause diminished physical and cognitive development, neural tube disorders, low birth weight and birth-length, and lifelong developmental delays or disabilities (Bhutta, et al. 2014; Lake & Chan, 2015). In addition to being life-threatening, malnutrition can weaken children’s immune systems and make them susceptible to common communicable diseases such as pneumonia, diarrhoea, and malaria and, it can result in lifelong cognitive and physical deficits and other chronic health problems (Menon, 2015). Therefore, if a mother prepares herself through good, balanced nutrition in the pre-pregnancy period, she stands a good chance of delivering a healthy baby, less susceptible to ailments such as mentioned above.

**Nurturing care – health**

Perinatal depression is considered to have a negative impact on child health since it coincides with a period of substantial brain development during which infants are entirely dependent on their primary caregivers for physical care, security, and emotional regulation (Glover, 2014). Risk factors for maternal depression, such as poverty, low education, high stress, lack of empowerment, and poor social support are also factors that play a role in poor child development, suggesting a link between maternal depression and compromised early child development. Exposure to smoking, increased consumption of caffeine, and alcohol during pregnancy, was commonly described as potentially threatening to the health of both women and children (Fogarasi-grenczer, n.d.; Lassi, Imam, Dean, & Bhutta, 2014).

**Nurturing care – responsive care**

A lack of social support has been known to be a predictor of depression and postnatal depression in mothers (Nieto, Lara, & Navarrete, 2017) and it is noted that women require additional support during pregnancy (Røsand et al. 2011). This care can be provided by partners, family, and friends. Responsive care may enhance favourable developmental outcomes during the first 1000 days of life. Research has indicated that support systems for
caregivers are essential to providing practical assistance and emotional support during stressful times. This is because social support networks, when available, play an important promotive, and protective role, whether the support is offered by the immediate and extended family or community-based programmes (Berry & Malek, 2017).

**Nurturing care – early learning**

It is reported that uneducated women still continue unhealthy practices such as smoking (Onal Aral & Yalvac, 2016; “Opportunities to make a positive impact in the first 1,000 days of a child’s life,” 2015), consuming alcohol (Lennon & Heaman, 2015; Ruţa, Tarcea, Stere, Abram, & Avram, 2015) and not following a balanced diet (Mameli, Mazzantini, & Zuccotti, 2016; Persson, 2017; Verduci et al., 2016) while being pregnant. This risky behaviour may be the result of inaccessible information related to healthy pregnancies and, therefore, early learning can potentially change the mother’s behaviour during both pregnancy and post-pregnancy. Literature has defined positive parenting as the kind of parenting that can lead to good child outcomes; it is, therefore, parenting style that allows for secure attachment, manages the behaviour of children, teaches them to self-regulate, and provides cognitive stimulation (Gould & Ward, 2015). Early learning is also important in the interactions of the mother and baby since infants learn gestures and facial expressions from those closest to them (Black et al., 2017). Consequently, it can be concluded that children’s early development requires nurturing care (Black et al., 2017).

**Nurturing care – safety and security**

Child neglect refers to the lack of caretaking behaviour necessary for a child to develop in a healthy manner (Mulder, Kuiper, van der Put, Stams, & Assink, 2018). Neglect is often considered to be a failure on the part of a caretaker to provide adequate supervision, emotional nurturance, appropriate medical care, food, clothing, and shelter (Scott, 2014). This definition also aligns with a definition of poverty, in which poverty is considered to be inadequate food, shelter, and clothing. However, not all children who are neglected are from impoverished families and not all children from impoverished families are neglected (Scott, 2014). It has been maintained by research that children who are subject to deprivation and violence in the home may suffer lifelong consequences that impede their ability to thrive and reach developmental milestones successfully and that young children who lack bonding with their caregiver and early cognitive stimulation will suffer developmental delays (Elder et al., 2014). The aspect of attachment as related to the relationship between a child and its
caregiver has been identified as important because of the profound effect it has on children’s emotional development in their relationships with their primary caregiver and involves keeping the child safe, secure, and protected (Stoll & Collett, 2017). Furthermore, Stoll and Collett (2017) maintain that creating a secure attachment between a child and its caregiver is an important outcome for promoting healthy emotional development in infants and go on to state that the more sensitive parent/caregiver is to their infant’s cues and signals at two months of age, the better the infant’s cognitive and emotional outcomes are. Nieto et al. (2017) also indicated that maternal attachment (the mother’s feelings and behaviour towards her child) is vital to the development of children’s internal working models of self, and attachment figure which are determined by the mother’s responsiveness to the child’s needs.

The five above-mentioned domains of nurturing care are the foundations of brain architecture and are laid down early in life through the dynamic interactions of genetic, biological, and psychosocial influences, and child behaviour (Walker et al., 2011). Children experience healthy brain development that enables them to reach towards their developmental potential within a care giving environment that supports cognitive and social–emotional development. With this strong foundation, they are able to build lifespan developmental trajectories, which assist them in terms of benefitting from family, community, and educational opportunities (Walker et al., 2011). While there is no doubt that adversities, challenges, and lack of opportunities that may affect brain development are evident, especially in rural areas, early interventions may improve the lives of the most disadvantaged and vulnerable children and their families (Lake & Chan, 2015). Positive parenting practices and nurturing care may enable favourable developmental outcomes in children, regardless of the lack of resources and opportunities. It is stated that the most valuable gift that a child can receive is free; it is simply a parent’s love, time, and support. This is no empty sentiment since science is now indicating why babies’ brains need love more than anything else (Winston & Chicot, 2016).

Studies that have been conducted regarding the first 1000 days of life have focused mainly on the nutritional needs of the mother (National Food and Nutrition Commission of Zambia, 2012; Persson, 2017; Verduci et al., 2016), the levels of iron and zinc intake on the foetus (Petry, Olofin, Boy, Donahue Angel, & Rohner, 2016), as well as excessive tobacco use (Barakoti, Ghimire, Pandey, Baral, & Pokharel, 2017), and while these studies add value to the understanding of children’s development during the first 1000 days, there is still a lack of comprehensive research regarding favourable developmental outcomes during this period of
life. The researcher has observed that many parents are unaware of the critical issues that a mother should consider, such as positive relationships, good nutrition, preventative care, and emotional well-being. The researcher has also noted that mothers in certain early childhood development centres lack information regarding the value of breastfeeding and that some mothers do not breast feed their infants as they are unaware of its benefits. Research indicates that breastfed children have high intelligent scores and there is growing evidence that breastfeeding may prevent obesity and chronic diseases later in life (Bégin, 2016). Therefore, interventions must be intersectoral, going beyond education to encompass health, nutrition, and protection in order to be most effective. Multiple positive experiences are required to ensure the healthy development of a child’s brain (Lake & Chan, 2015). This includes such aspects as nutrition, which feeds the brain; stimulation, which sparks the mind and; lastly, love, and protection, which buffer the negative impact of stress and adversity. To optimise the effects of distinct interventions, they should be mutually supportive and achieve the best possible results when implemented together (Lake & Chan, 2015). According to several researchers, there is evidence that a mother’s poor mental health, both before and after birth may adversely affect her baby’s physical (Grote et al., 2010), psychological (Laurent et al., 2013), mental (Suttar-Dallay et al., 2011), emotional, and behavioural development, particularly in socio-economically disadvantaged communities. Social workers have a crucial role to play in ensuring the welfare of children. Social welfare must ensure that caregivers are provided with appropriate assistance with mental health or substance abuse problems in order to provide children with optimal care giving conditions. Child protection services must then create safe, supportive and nurturing environments that will help children to avoid all kinds of violence as well as preventing child maltreatment. This is critical in enhancing early childhood development and laying the foundations for lifelong health and well-being (World Health Organisation, 2018).

**Contribution of the study**

By studying the effects that parents and caregivers have on children’s development, the researcher hopes to assist in the enrichment and effective implementation of early intervention programmes related to the first 1000 days of the life of a child. The research also aims to improve the effectiveness of existing parenting programmes in terms of child protection and, perhaps at a later stage, the study may help to “shed light on policies in developing countries” (Chen & Li, 2009:425).

In early developmental periods, such as the first 1000 days, it is essential to concentrate on interventions for the mother or caretaker because as the child matures, interventions that
include both the mother/caretaker and the child are crucial to the development of lifelong healthy habits (Elder et al, 2014). It has been indicated previously that studies have been done on the first 1000 days of life but have not yet comprehensively covered favourable development outcomes during this period. The intention behind conducting this study is to ultimately influence policy makers to invest more on the implementation of policies regarding children and caregivers during the first 1000 days. Emphasise on the importance of effective child protection systems together with the nurturing care framework will raise awareness and promote favourable development outcomes in the first 1000 days being practically implemented from the grassroots level. The five domains of the nurturing care framework have been mentioned and emphasised to indicate their importance, interrelatedness and practicality in ensuring favourable development outcomes in the first 1000 days as vital for effective policy implementation and sustainability.

**Review question**
What are the factors associated with nurturing care during the first 1000 days of life?

**Aims and objectives**

**Aim**

The aim of this systematic review is to outline the most important factors that enrich nurturing care in the first 1000 days of life.

**Objectives**

The specific objectives of this systematic review are to identify:

- The nutritional factors that can enhance development in the first 1000 days of life;
- The health factors of the caregiver and the child that can enhance development in the first 1000 days of life;
- The factors of responsive care that can enhance development in the first 1000 days of life;
- The factors of safety and security that can enhance development in the first 1000 days of life; and
- The factors of early learning that can enhance development in the first 1000 days of life.
**Review approach**

This review approach will follow a mixed analysis / synthesis.

It is estimated that over two million articles are published in more than 20,000 journals each year (Kings College London, 2014). Since researchers cannot keep up with all these publications, systematic reviews provide a summary of best available evidence and come to conclusions that are based on quality. A systematic review can be defined as a literature review that is designed to locate, appraise, and synthesise the best available evidence relating to a specific research question to provide informative and evidence-based answers (Boland, Cherry, & Dickson, 2014) since combining the results of several articles provides a more reliable and precise estimate of an intervention’s effectiveness than one study alone in appropriate cases (Garg, Hackam, & Tonelli, 2008). The researcher has chosen this specific method for this study as it serves as an efficient scientific technique to identify all factors that may contribute to the nurturing framework and, in doing so, enhance favourable developmental outcomes during the first 1000 days.

**Search strategy**

**Databases**

The researchers have conducted a preliminary search of the following databases. These databases are proposed as the preliminary search results yielded articles that are significant to the aim of the study.

The following databases are proposed for the inclusion of this systematic review:

- PubMed
- PsycINFO
- PsycArticles
- CINAHL
- Academic search premier

The key words include:
### Table 1: Search Strategy

<table>
<thead>
<tr>
<th>LEVEL ONE</th>
<th>KEYWORDS</th>
<th>FIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Parent OR caretaker OR caregiver OR mum OR dad OR mother* OR father*</td>
<td>All Text</td>
</tr>
<tr>
<td></td>
<td>AND</td>
<td></td>
</tr>
<tr>
<td>LEVEL TWO</td>
<td>Prenatal OR antenatal OR gestation OR maternity OR “conception to birth” OR “first 1000 days”</td>
<td>All Text</td>
</tr>
<tr>
<td>LEVEL THREE</td>
<td>Infancy OR “infancy stage” OR “infant development” OR “infancy development” OR “infant stage” OR infant</td>
<td>All Text</td>
</tr>
<tr>
<td></td>
<td>AND</td>
<td></td>
</tr>
<tr>
<td>LEVEL FOUR</td>
<td>Care OR “social support” OR “emotional support” OR “parenting styles” OR “parenting skills” OR nurture*</td>
<td>All Text</td>
</tr>
<tr>
<td></td>
<td>AND</td>
<td></td>
</tr>
<tr>
<td>LEVEL FIVE</td>
<td>Nutrition OR “maternal nutrition” OR “micronutrients” OR “growth monitoring” OR “breastfeeding”</td>
<td>All Text</td>
</tr>
<tr>
<td></td>
<td>AND</td>
<td></td>
</tr>
<tr>
<td>LEVEL SIX</td>
<td>“safe water” OR “sanitation”, “prevention of child abuse” OR “prevention of child neglect” OR “healthy environment”</td>
<td>All Text</td>
</tr>
<tr>
<td></td>
<td>AND</td>
<td></td>
</tr>
<tr>
<td>LEVEL SEVEN</td>
<td>Affection OR “care giving” OR relationship+ OR “daily feeding” OR “sleep routine”</td>
<td>All Text</td>
</tr>
<tr>
<td></td>
<td>AND</td>
<td></td>
</tr>
<tr>
<td>LEVEL 8</td>
<td>“language stimulation” OR “facial expressions” OR gestures OR “child play” OR “quality day care” OR reading OR “early learning”</td>
<td>All Text</td>
</tr>
</tbody>
</table>

Has a scope review been done to determine how many possible studies are available on the topic?

A scoping search has been done independently by both researchers
Year / time range of publication

There will be no limiters as all information will be vital in conducting this systematic review.

Target participant / population

From conception to the age of two years, this age range defines the first 1000 days.

Clearly indicate which of the following factors will be included / excluded from the search

Table 2: Inclusion & Exclusion criteria

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>INCLUDE OR EXCLUDE? PROVIDE BRIEF JUSTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full text journal studies</td>
<td>Include – there are no limiters; therefore, all articles / studies / dissertations / theses will be included</td>
</tr>
<tr>
<td>Peer reviewed studies</td>
<td>Include – there are no limiters; therefore, all articles / studies / dissertations / theses will be included</td>
</tr>
<tr>
<td>Non-peer reviewed studies</td>
<td>Include – there are no limiters; therefore, all articles / studies / dissertations / theses will be included</td>
</tr>
<tr>
<td>Quantitative studies</td>
<td>Include – there are no limiters; therefore, all articles / studies / dissertations / theses will be included</td>
</tr>
<tr>
<td>Qualitative studies</td>
<td>Include – there are no limiters; therefore, all articles / studies / dissertations / theses will be included</td>
</tr>
<tr>
<td>Mixed method studies</td>
<td>Include – there are no limiters; therefore, all articles / studies / dissertations / theses will be included</td>
</tr>
<tr>
<td>Review studies</td>
<td>Include – there are no limiters; therefore, all articles / studies / dissertations / theses will be included</td>
</tr>
<tr>
<td>PhD theses</td>
<td>Include – there are no limiters; therefore, all articles / studies / dissertations / theses will be included</td>
</tr>
<tr>
<td>Masters’ dissertations/mini-</td>
<td>Include – there are no limiters; therefore, all articles / studies / dissertations / theses will be included</td>
</tr>
<tr>
<td>dissertations</td>
<td></td>
</tr>
<tr>
<td>Conference proceedings</td>
<td>Include – there are no limiters; therefore, all articles / studies / dissertations / theses will be included</td>
</tr>
<tr>
<td>Studies published in languages other than English and/or Afrikaans</td>
<td>Exclude—unless the author provides a translated version</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
</tbody>
</table>

**Method of determining relevance**

Titles and abstracts will be screened

**Method of determining quality / quality appraisal**

This research will follow a systematic literature review approach according to the 9 steps described by Boland et al. (2014) and Uman (2011), which will be followed rigorously to ensure quality. Two researchers will be involved in the quality appraisal; the second researcher’s role is to guide the student in the method as well as making sure of the students search strategy.

**Indicate who the reviewers are and what their involvement in the appraisal will be.**

This systematic review will be done by two researchers, Doreen Mputle and Tasleem Sayed. The first researcher will be the student who will conduct all nine steps of the systematic review process as well as writing up on the report. The second researcher will ensure quality and assist the student during the process.

**Indicate which institution’s guidelines for quality appraisal will be used / adapted, e.g. NICE, ADA, PRISMA, EPPI, etc.**

For the purpose of the quality appraisal, the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) will be used to improve the reporting of systematic reviews and meta-analyses and consists of a 27-item checklist and a four-phase flow diagram (Moher, Liberati, Tetzlaff, & Altman, 2009) presented in figure 1.
Figure 1: PRISMA Flow Diagram
The process (steps) to be followed for this systematic review

**Step 1: Consideration of the different types of available information**

The first step of the systematic review process involves a broad search where several databases will be searched according to the search string. During this step, the researchers will formulate a research question and develop a review title (Boland et al., 2014).

**Step 2: Literature search**

This step involves identifying literature which addresses the review question (Boland et al., 2014)

**Step 3: Defining the inclusion and exclusion criteria**

Uman (2011) explains that during the third step of the systematic review, the researchers will identify the inclusion and exclusion criteria based on the Cochrane Acronyms. For the purpose of this study, the researcher will make use of the PICO acronym in order to define the inclusion and exclusion criteria as presented in figure 2.

<table>
<thead>
<tr>
<th><strong>P – Population</strong></th>
<th>Mothers, fathers, caregivers, infants up to the age of two years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I – Intervention / phenomena of interest</strong></td>
<td>Factors influencing favourable development outcomes</td>
</tr>
<tr>
<td><strong>C – Comparison (if any)</strong></td>
<td>There may be comparisons, but this study will not be investigating the comparisons at this stage</td>
</tr>
<tr>
<td><strong>O – Outcome</strong></td>
<td>Favourable outcomes in children up to the age of two</td>
</tr>
</tbody>
</table>

*Figure 2: PICO acronym*
Step 4: Development of the search strategy and location of relevant studies

The researcher has already come up with relevant search terms that are related to the study. Boolean operators will be used to limit searches (Boland et al., 2014). The initial search will be broad to ensure that as many articles as possible are obtained. The researchers will work through the list of databases available at the online library of the North-West University. The following databases have already been searched: Academic search premier, Cinahl, PsycArticles, PsycINFO, Medline, Eric. These databases were identified as having most articles that were found.

Step 5: Selection of eligible resources

Titles and abstracts will be screened and identified to suit the search strategy. Studies that do not fit the inclusion criteria will be discarded. Full text articles will be obtained if the abstract is relevant to the study.

Step 6: Extraction of data from relevant studies

During this step the researchers will apply the inclusion criteria to the full text articles and exclude those that are not relevant (Boland et al., 2014). Uman (2011) suggests that a data extraction form be used to extract data; due to the nature of the review, the researchers will adapt the data extraction form to fit with the current review. During this step the data extraction and critical appraisal will be done simultaneously.

Each researcher will extract data on the pre-specified data extraction form independently. Discrepancies in data will be adjudicated by consensus. However, if consensus cannot be reached, a third party, Dr Malan (a researcher in Child Protection) will be consulted. The NOTARI and MASTARI data extraction forms from The Joanna Briggs Institution (2014) will be used (Annexure A and B).

If data is missing or is in a language other than English, the researchers will contact the authors to provide the article. However, if the authors do not respond in time, the article will be excluded from the study.
Step 7: Assessment of the quality of studies through critical appraisal

During this process, the researchers will have identified the relevant studies that would be included in this review. The next step would therefore be to assess the quality of each included study. The tools that the researchers will make use of will be the Critical Appraisal Skills programme (CASP) for qualitative studies (Annexure C), and the Effective Public Health Practice Project (EPHPP) for quantitative studies (Annexure D), (Brownlee et al., 2013; CASP, 2006; Khan, Kuns, Kleijnen, & Antes, 2003). The researchers will assess the quality of the studies by observing how the study has been designed, conducted and reported and this will be the basis of the reliability of the studies (Boland, et al., 2014).

In terms of bias, the Cochrane Collaboration risk of bias tool (Higgins et al., 2011) will be used and adapted to evaluate the risk of bias. This will be done by both researchers, independently (Rajendran, 2001).

Step 8: Analysis and interpretation of the results

A thematic synthesis will be done by which themes will be identified (Thomas & Harden, 2008).

Step 9: Writing up, editing, and dissemination of findings

During this last step, the researchers will write up and send the review to experts for professional editing. Thereafter, the review will be submitted for examination purposes. Once the review has been examined it will be shared with various departments.

Data extraction

<table>
<thead>
<tr>
<th>DATA to be extracted</th>
<th>Brief motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author</td>
<td>This is important to include in the data extraction since once themes emerge, the researchers will know which article to identify / read</td>
</tr>
<tr>
<td>Title</td>
<td>For referencing purposes</td>
</tr>
<tr>
<td>Year</td>
<td>For referencing purposes</td>
</tr>
</tbody>
</table>
Journal For referencing purposes
Any specific culture If themes emerge, they can add value to certain cultural practices
Sample size A larger sample will add to the quality of the article
Age The context of the view is the first 1000 days of life
Study design This will determine what quality appraisal tools to use
Main objectives of the study This will add to the themes
Main findings This will add to the themes
Authors’ conclusions Recommendations

The NOTARI and MAStARI data extraction forms will be used and adapted for the data extraction tables as presented in table 1

**Data analysis / synthesis methods**

**Provide a detailed description of exactly how the analysis / synthesis will be done.**

Data synthesis will be conducted by both researchers who will independently extract data by means of the NOTARI and MAstRI data extraction tool from the Joanna Briggs Institute (2011) for qualitative methodologies and quantitative studies, respectively.

The student (first researcher) and the supervisor (second researcher) will conduct the preliminary scoping independently. The supervisor (second researcher) has been trained in conducting systematic reviews and has conducted a systematic review during her Master’s study with the guidance of Karlien Smit who was trained in conducting systematic / rapid reviews.

**Ethical aspects**

This study will not make use of any human participants and there is, therefore, no risk involved. The researcher will make sure that the original studies were done ethically through critical appraisal. The validity and reliability of the data will be established by following the rigorous methodology of a systematic review as described by Boland et al. (2014) and Uman (2011). The trustworthiness will be ensured by the expert knowledge of the supervisor and the student. The supervisor will train the student on how to conduct a systematic review. To further ensure trustworthiness, this proposal will be submitted to a panel of experts who will share their knowledge of the topic as well as the methodology. Moreover, it will later be submitted to the scientific committee COMPRES (Community Psychosocial Research) and
the HREC (Human research ethics committee) of the FHS (Faculty of Health Sciences) of the NWU (North-West University) for approval.

**Choice and structure of report**

The completed research report will include a research protocol, search strategy, screening, and critical appraisal, details of the data extraction and data analysis process, as well as details of strategies that will be used to determine the validity and reliability of the study.

This research report will be written in an article format and the researcher plans to submit this article to the Children and Youth Services Review. The article (and researcher) will adhere to the criteria and requirements of the Children and Youth Services Review.
References


Bégin, B., F. (2016). The First 1000 Days: Shaping Children’s Future What would you do if you knew that something existed that helps …, (October)


Fogarasi-grenczer, A. (n.d.). Socioeconomic factors of tobacco smoking during pregnancy, 4, 139–149.


Opportunities to make a positive impact in the first 1,000 days of a child’s life. (2015), (February).


Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology, 8*(1), 14. doi:


Section 2: Manuscript in article format

This dissertation has been done in article format according to the 2018 General Academic Rules of the North West University.
Nurturing Care during the first 1000 days of life: A systematic review

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Tasleem Sayed
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This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.
Nurturing Care during the first 1000 days of life: A systematic review

Abstract

The purpose of this systematic review was to outline the most important factors that enrich nurturing care in the first 1000 days of life and, by doing so, enable favourable developmental outcomes during the first 1000 days and later in life. A rigorous nine-step methodology of a systematic review was followed. A comprehensive search was conducted by two independent researchers by utilising six databases. A total of 16 articles were identified as per inclusion and exclusion criteria. Health factors, nutrition, safety, and security, early learning as well as responsive caring factors were identified as role players in the development of the child in its early years. In addition to these, supportive intervention was found as an extra factor supporting nurturing care.

Key words

Nurturing care, health, nutrition, safety and security, responsive care giving, early learning, supportive intervention
1. Introduction

The first 1000 days begins at conception and continues up to the child’s second birthday; this period is considered a ‘critical window of opportunity’ whereby foundations of optimum health (Cusick & Georgieff, 2018), growth (Elmadfa & Meyer, 2012; Mameli, Mazzantini, & Zuccotti, 2016; Redelinghuys, 2014), and neuro-development (Cusick & Georgieff, 2016; Walt, 2014) across its lifespan are established in aid of shaping a healthier and prosperous future (De Angulo, & Losada, 2016; Soliman, Eldabbagh & Zahraldin, 2016). This window of opportunity has shown to have the greatest potential for positive impact on long-term health outcomes (Centre for Social Impact, 2015), for both mother and child.

It is importance to note that in order to shape the future and improve the world, it has to happen during the first 1000 days (Roger Thurow, 2016). Therefore, the first 1000 days through pregnancy up to the second birthday determines the course of a child’s life and, in the long-term, the stability, and prosperity of his or her future. To shape a prosperous future for a child, nurturing care plays a vital role in the development of the child (Lake, 2016).

Nurturing care is defined as a stable environment that is sensitive to children’s health and nutritional needs with protection from threats, providing opportunities for early learning, and interactions that are responsive, emotionally supportive, and developmentally stimulating (Yousafzai, 2017). Nurturing care comprises of all the elements needed for the prevention of growth faltering (Menon, 2015) and to assist healthy brain development (Black et al., 2016; Lake & Chan, 2015; Winston & Chicot, 2016).

1.1 The Nurturing care framework

Nurturing care is supported by a large collection of social contexts that include home, parental work, child care, schooling, the wider community and policy influences (Persson, 2017); it also consists of a core set of interrelated components, including: behaviours, attitudes, and knowledge regarding care giving, stimulation, responsiveness, and safety (Black et al., 2016). Nurturing care has been characterised as a home environment that is sensitive to children’s health and nutritional needs, and is responsive, emotionally supportive, and developmentally stimulating (Black et al., 2016). The most powerful context for nurturing care is the immediate home and care setting of the young child, often provided by mothers and fathers, and other family members as well as child care services (Britto et al., 2017; Thompson, 2014; Stein et al., 2014).
It is stated that children grow and thrive in the context of dependable and close relationships that provide love, security, responsive interaction, nurturance, and encouragement to explore (Shonkoff et al., 2014). This foundation must be established between conception and early childhood (2 years of age) for the child to acquire skills and learning in middle childhood, throughout adolescence, and into adulthood (Black et al., 2016). These many factors also influence the attainment of competencies which include health, nutrition, security, and safety, responsive care giving, and early learning, which are all essential for nurturing care (Black et al., 2016).

1.1.1 Nurturing care - Nutrition

Adequate nutrition is one of the five domains of the nurturing care framework (World Health Organization, 2018). A wealth of research indicates that optimal nutrition during pregnancy and early childhood is important for brain functioning throughout childhood and adulthood (Menon, 2015). Studies have found that many children under the age of five years are at risk of not achieving full developmental potential due to malnutrition, which affects brain development, physical growth, motor development, and physical activity (Ngure et al., 2014).

1.1.2 Nurturing care - Health

It has been indicated that deficiency in iron and vitamins caused by chronic under-nutrition in a child’s early years can have detrimental results on women at childbirth (Save the Children, 2012) and children (Herman et al., 2014); additionally, it has been found that half of estimated prevalence of anaemia in developing countries is due to iron deficiency and anaemia during pregnancy (Pem, 2015). Iron deficiency and anaemia do not only influence the growth of the foetus but also has an impact on the immunological, cognitive, motor, and social-emotional development of the child after birth (Jamieson, Berry, & Lake, 2017). As well as for children whose developing physical systems are still developing, such exposures can cause more harm than it would if it were to occur at a later age (Donald, 2013; Pem, 2015). Longitudinal research has indicated that children who experienced severe iron deficiency in their first years of life have long-term challenges in the cognitive, affective and motor domains (Lukowski et al., 2010).
1.1.3 Nurturing care - Responsive Care

According to the Nurturing Care Framework developed by World Health Organisation (2018), responsive care involves sensitivity and awareness of a child’s action to communicate their needs and wants; as well as the caregiver’s capacity to respond to those signals. The child’s emotional and social development is strongly affected by the quality of their attachment to their caregiver (Kerr, 2015). Some parents struggle to provide for their families financially and the chronic stress they go through may make it difficult for them to provide the care and attention their children require (Sandstrom & Huerta, 2013). Warm, responsive care giving has many positive effects on child outcomes which may include children learning to self-regulate arousal systems, heightened moral functioning, and early conscience development (Gleason et al., 2016; Fay-Stammbach, Hawes & Meredith, 2014). Pem (2015) indicated that children need to spend their early years in environments that are stimulating, as less stimulating environments negatively affects brain development and leads to cognitive, social, and behavioural delays. Furthermore, studies indicate that play, communication, and interaction between child and caregiver is important for the stimulation of the child’s development (Pem, 2015). Positive parenting has been recommended as a critical factor that has immense influence on child outcomes (Whittle et al., 2014).

1.1.4 Nurturing care - Early Learning

Early learning is considered an important domain in nurturing care since a child learns gestures and facial expressions from those that are closest to them, which indicates that the interaction of a mother and child forms the first basis of early learning (Black et al., 2016). Early learning involves the caregivers’ acquired knowledge and education that will assist them in being aware of the factors that play a role in their child’s well-being and development. Thurow (2016) stated that stunting and child mortality had significantly decreased within 16 months of mothers attending communal education classes on best nutrition and hygiene practices in the first 1000 days period. Studies have also indicated that infants of mothers that attended adolescent mothers’ groups for a full year had more well-child visits, exceeded immunisations rates, and had additional health benefits; furthermore, none of their infants were reported for suspected child maltreatment (McHugh, Kvernland, & Palusci, 2017).
1.1.5 Nurturing care - Safety and Security

The WHO 2014 Global Status Report on Violence Prevention has included data from 133 countries on violence prevalence and prevention, including child abuse and neglect (Black et al., 2016). Literature has shown that maltreating families exemplify a toxic relational environment that poses considerable risk for maladaptation across diverse domains of development (Kim et al., 2013). It has also been indicated that children who are maltreated or left within abusive environments also suffer more than just physical or emotional damage but their development in relation to coping skills, social interaction skills, and attachment ability remains affected as well (Wodarski & Johnston, 2015). In a longitudinal cohort study done on Peruvian children at two years of age, it was discovered that the children who were from the worst conditions in terms of water source, water storage, and sanitation were 1.0 cm shorter than children with the best conditions (Ngure et al., 2014).

Literature has shown that when children experience poverty, poor health, malnutrition, stress, violence, abuse, neglect, inadequate care, or a lack of learning opportunities, particularly during the first years of their lives, their ability to fulfil their potential is at risk (UNICEF, 2016). It is therefore important to have all five domains of the nurturing care framework active and realised in the lives of children in order to attain improved child development outcomes, worldwide.

1.2 Purpose of the review

This study intends to emphasise the importance of the existence of enabling environments in order to ensure that nurturing care takes place. It has previously been indicated that studies have been done on younger children but have not yet comprehensively covered favourable development outcomes within the first 1000 days of life through a systematic review. Therefore, the focus of this study is on favourable development outcomes and the intention is to ultimately contribute to the creation of a policy document whereby all the necessary information regarding the first 1000 days can be integrated and provided to communities, and influence policy makers to invest more on the implementation of policies regarding children and caregivers in the first 1000 days. The five domains of the nurturing care framework have been mentioned and emphasised to indicate their importance, interrelatedness and practicality in ensuring favourable development outcomes in the first 1000 days as vital for effective policy implementation and sustainability.
2. Methodology

For the purpose of this study, a systematic literature review was selected as the method to critically review and synthesise the best available evidence on nurturing care during the first 1000 days of life. A systematic literature review was identified for the nature of this study as to fill the gap of existing research. As known to the researchers, no systematic review of such nature has been conducted before.

This systematic review followed a strict protocol and quality-focused approach as described by Boland, Cherry and Dickson (2014), and it was guided by the systematic review framework proposed by the Cochrane Collaboration. This study followed the nine-step methodology as described by Boland et al. (2014) and provided the researchers with an opportunity to globally consolidate the main findings of the study.

In order to provide wide body of literature, the articles included were not limited to any specific designs; therefore, all designs were viewed as inclusive as part of this review. No limiters were set either, and all publications till 31 August 2018 were considered for this review.

2.1 Search strategy

Two independent researchers screened several databases as previously proposed. Initially, the selection criterion was broad in nature but once the initial selection was conducted, the researchers developed a search strategy presented in Figure 1, which yielded articles that are significant to the aim of the study.
Figure 1: Search strategy

Databases were accessed through the online library of the North-West university and the following databases were selected; Academic search premier, Cinahl, PsycArticles, PsycINFO, Medline, and Eric. These databases were identified as the preliminary results generated the most articles that were found to be relevant in this review.

2.2 Inclusion and exclusion criteria

The two researchers selected the PICO acronym to define the inclusion and exclusion criteria. PICO was selected based on the P – Population, I – Intervention, or phenomena of interest, C – comparison, and O – Outcome. The inclusion criterion for this review includes mothers, fathers, caregivers, and infants up to the age of two years.

Articles were included if they fulfilled the following criteria:

- mothers, fathers, or caregivers in the study that took care of an infant below the age of two years old;
- pregnant woman of any age;
- articles that reported favourable developmental outcomes of infants up to the age of two years;
- articles that reported studies during the first 1000 days of life;
- articles that reported on nurturing care during the first 1000 days of life.
The researchers only selected English articles for this review with a limiter until 31 August 2018.

2.3 Selection of studies

Two independent researchers screened titles and abstracts within the selected databases. Each article was screened against the inclusion criteria. Once the titles and abstracts were screened thoroughly, the researchers screened the full texts of each article to establish its suitability for the review. At that stage, no review articles were found; therefore, it was not necessary to retrieve any reference lists.

2.4 Quality review and data extraction

Quality appraisal and data extraction were done simultaneously and independently by both researchers. All articles were critically appraised for methodological quality by using the tools available. The Critical Skills Appraisal Skills programme (CASP) (CASP, 2006) was used for qualitative articles and the Quality Assessment Tool (developed by the Effective Public Health Practice Project) (EPHPP) (Brownlee et al., 2013) was used for quantitative studies. After quality appraisal, one article was discarded as no ethical concerns were mentioned. The quality of included studies was assessed by using the Cochrane Collaboration Tool for assessing risk of bias (Higgins & Altman, 2008). Both researchers independently rated the risk of bias for each included article.

A data extraction tool was developed for this study by combining the NOTARI and MASTARI data extraction tools (The Joanna Briggs Institution, 2014). Detailed information was extracted from each article, which included country, group status, sample size, measures, study design, main objectives of the study, main findings, and authors’ conclusions. The researchers decided to include two tables with separate information from each article (Table 1 and Table 2). Data extraction was conducted together by both researchers.

2.5 Data analysis and data synthesis

Once data was extracted onto the data extraction form, it was analysed. Relevant information from each included article was entered into the data extraction form. Both qualitative and quantitative articles were analysed. The researchers used thematic synthesis as suggested by Thomas and Harden (2008) to combine the results of the included articles. Thematic synthesis is a means of identifying key themes from a specific body of research (Nicholson, Murphy, Larkin, Normand, & Guerin, 2016). Thematic synthesis was done for
both the quantitative and qualitative articles. Themes were then grouped against the nurturing care framework.

3. Results

A representation of findings according to the Preferred Reporting items for Systematic Reviews (PRISMA) is presented in figure 2.
Number of articles; (n=63)

Articles included from other sources (reference lists): (n= 0)

Duplicate articles: (n= 6)

Total number of articles eligible for inclusion in the review: (n=57)

Articles excluded based on titles and abstracts: (n=4)

Reasons for excluding articles:
- Articles did not fit the inclusion criteria
- Focus was mainly on medical issues
- Some articles had incomplete information

Articles excluded based on full text (n= 35)

Reason for excluding article:
- Full text articles could not be obtained on time
- The focus was not on the age range of the study
- The articles critical reviews that were not suitable

Total number of articles eligible for inclusion in the review: (n=18)

Articles excluded based critical appraisal: (n= 2)

Reasons for excluding articles:
- One article did not have result and a conclusion as it was a study protocol
- The other article did not address ethical issues

Totalnumberof articleseligiblefor inclusionin the review: 16

*Figure 2: PRISMA flow diagram*
As illustrated in Figure 2, a total of 497 articles were found, and out of these, only 16 met the inclusion criteria and formed part of the systematic review. All articles were retrieved from the electronic searches.

3.1 Demographic characteristics

A summary of the demographic characteristic has been outlined in Table 1. The samples investigated in Table 1 include parents/caregivers from the USA (Samanthia Zolnoski, Ann Michele Stacks, Amy Kohl-Hanlon, Tina A. Dykehouse, 2012; Lutzker, Bigelow, Doctor and Kessler, 1998; Paris and Dubus, 2005; Pollard, Nievar, Nathans and Riggs, 2014; McHugh, Kvernland and Palusci, 2017; Smith & Howard, 2008; Guttentag, Landry, Williams, Borkowski, Noria, Farris, Lanzi, Baggett, Swank, Crawford, Carta, Ramsey and Warren, 2014), India (Chanani, Waingankar, More, Pantvaidya, Fernandez and Jayaraman, 2018), Pakistan (Obradovic, Yousafzai, Finch and Rasheed, 2016) and Botswana (Nnyepi, 2011). It also includes children from the USA (Megan M. Julian and Robert B. McCall, 2016; Samanthia Zolnoski, Ann Michele Stacks, Amy Kohl-Hanlon, Tina A. Dykehouse, 2012; Lutzker, Bigelow, Doctor and Kessler, 1998; Smith, Akai, Klerman and Keltner, 2010), Denmark (Tegethoff, Greene, Olsen, Schaffner and Meinlschmidt, 2011), India (D’Alimonte, Deshmukh, Jayaraman, Chanani and Humphries, 2015; Chanani, Waingankar, More, Pantvaidya, Fernandez and Jayaraman, 2018), Pakistan (Obradovic, Yousafzai, Finch and Rasheed, 2016) and Indonesia (Torlesse, Cronin, Sebayang and Nandy, 2016). Child participants between the ages 0 – 2 years as well as caregivers between the ages of 17 – 47 years were included.
Table 1

*Demographic characteristics of included studies*

<table>
<thead>
<tr>
<th>Author</th>
<th>Title of article</th>
<th>Year</th>
<th>Journal</th>
<th>Country</th>
<th>Group status</th>
<th>Sample size</th>
<th>Sample size</th>
<th>Unspecified</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Children not born in Mumbai: 118</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D’Alimonte, Deshmukh, Jayaraman, Chanani and Humphries</td>
<td>Using Positive Deviance to Understand the Uptake of Optimal Infant and Young Child Feeding Practices by Mothers in an Urban Slum of Mumbai</td>
<td>2016</td>
<td>Maternal and Child Health Journal</td>
<td>India</td>
<td>Hindu 40%</td>
<td>-</td>
<td>-</td>
<td>4209 children</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>Muslim 60%</td>
<td></td>
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<tr>
<td></td>
<td>Authors</td>
<td>Title</td>
<td>Year</td>
<td>Journal</td>
<td>Country</td>
<td>Ethnicity</td>
<td>Data</td>
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<tr>
<td>4.</td>
<td>Julian and McCall</td>
<td>Social Skills in Children Adopted from Socially-Emotionally Depriving Intuitions</td>
<td>2016</td>
<td>ADOPTION QUARTERLY</td>
<td>United States of America</td>
<td>Elementary: Russian 177 Belarus 34 Other Eastern Europe 3</td>
<td>94 120 0</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Lutzker, Bigelow, Doctor and Kessler</td>
<td>Safety, Health Care, and Bonding Within an Ecobehavioral Approach to Treating and Preventing Child Abuse and Neglect</td>
<td>1998</td>
<td>Journal of Family Violence</td>
<td>United States of America</td>
<td>Latina/Latino 64% Caucasian 28% African American 7% Indian 1%</td>
<td>116 families</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Author(s)</td>
<td>Title</td>
<td>Year</td>
<td>Journal/Source</td>
<td>Country/Age Group</td>
<td>Number of Households</td>
<td>Number of Live Births</td>
<td>Number of Live Births</td>
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<tr>
<td>6.</td>
<td>McHugh, Kvernland and Palusci</td>
<td>An Adolescent Parents’ Programme to reduce Child Abuse</td>
<td>2017</td>
<td>Child Abuse Review</td>
<td>United States of America</td>
<td>Hispanic 70%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>African America 10-15%</td>
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<td></td>
<td></td>
<td>White 10%</td>
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<td>Other 5-10%</td>
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<tr>
<td></td>
<td>Strumpfl and Heymann</td>
<td>In Low- and Middle-Income Countries: A Quasi-Experimental Study</td>
<td></td>
<td></td>
<td>Lesotho, Uganda, Zimbabwe, Armenia, Bolivia, Colombia,</td>
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<td>Egypt, Ghana, Honduras, Cambodia, Madagascar, Malawi</td>
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<td></td>
<td>Nigeria, Nepal, Philippines, Rwanda, Senegal and Tanzania</td>
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<tr>
<td>8.</td>
<td>Ngwenya and Nnyepi</td>
<td>Threats to Maternal and Child Well-Being in Rural Communities in</td>
<td>2011</td>
<td>Health Care for Women International</td>
<td>Botswana</td>
<td>60 Households:</td>
<td>-</td>
<td>96.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ngamiland, Botswana</td>
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<td>Baherereoe</td>
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<td>Batawana</td>
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<td>Hambukushu</td>
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<td></td>
<td></td>
<td>Basarwa</td>
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<tr>
<td></td>
<td>Authors</td>
<td>Title</td>
<td>Year</td>
<td>Journal</td>
<td>Country</td>
<td>Population Details</td>
<td>Caregivers</td>
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<tr>
<td>9.</td>
<td>Obradovic, Yousafzai, Finch and Rasheed</td>
<td>Maternal Scaffolding and Home stimulation: Key Mediators of Early Intervention Effects on Children’s Cognitive Development</td>
<td>2016</td>
<td>Developmental Psychology</td>
<td>Pakistan</td>
<td>Predominantly residents from Naushero Froze</td>
<td>46%</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>of the 1302 children</td>
<td>Caregivers</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Paris and Dubus</td>
<td>Staying Connected While Nurturing an Infant: A challenge of New Motherhood</td>
<td>2005</td>
<td>Family Relations</td>
<td>United States of America</td>
<td>Mostly Caucasians</td>
<td>15</td>
<td></td>
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<td></td>
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<td></td>
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<td>African</td>
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<td></td>
<td>Western Europe</td>
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<td></td>
<td></td>
<td>Hispanic 9</td>
<td></td>
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</tr>
<tr>
<td>12.</td>
<td>Smith and Howard</td>
<td>Continuity of Paternal Social Support and Depressive Symptoms Among New Mothers</td>
<td>2008</td>
<td>Journal of Family Psychology</td>
<td>United States of America</td>
<td>African -American 65%</td>
<td>582</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>Caucasian 16%</td>
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<td></td>
<td></td>
<td>Latina 15%</td>
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<td></td>
<td></td>
<td>Multi-Ethnic 4%</td>
<td></td>
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<tr>
<td></td>
<td>Authors</td>
<td>Title</td>
<td>Year</td>
<td>Journal</td>
<td>Country</td>
<td>Race Distribution</td>
<td>Cluster Information</td>
<td></td>
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</tr>
<tr>
<td>13.</td>
<td>Smith, Akai, Klerman and Keltner</td>
<td>What mothers don’t know and doctors don’t say: Detecting early development delays</td>
<td>2010</td>
<td>Infant Mental Health Journal</td>
<td>United States of America</td>
<td>African American 62%</td>
<td>51% 49%</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Tegethoff, Greene, Olsen, Schaffner and Meinlschmidt</td>
<td>Stress during Pregnancy and Offspring Pediatric Disease: A National Cohort Study</td>
<td>2011</td>
<td>Environmental Health Perspective</td>
<td>Denmark</td>
<td>Danish</td>
<td>51% 49% 0</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Torlesse, Cronin, Sebayang and Nandy</td>
<td>Determinants of stunting in Indonesian children: evidence from a cross-sectional survey indicate a prominent role for the water, sanitation, and hygiene sector in stunting reduction</td>
<td>2016</td>
<td>BMC Public Health</td>
<td>Indonesia</td>
<td>70 clusters in Klaten</td>
<td>50.4% 49.6% 0</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>African American 76.5</td>
<td>82.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hispanic 5.9</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
of a Small-Scale Home Visitation Program

Children:

African American 76.5 0 11.8% 0
Hispanic 5.9
White 11.8
3.2 Assessment of methodological quality

The quality of each article was assessed using the Cochrane Collaboration risk of bias tool (Higgins et al., 2011) by two independent researchers. This tool was adapted to suit qualitative and quantitative studies since Rajendran (2001) suggests that tools can be adjusted to suit the review question.

A summary of the different aspects regarding the methodological quality of included studies is addressed in Figure 3.

<table>
<thead>
<tr>
<th>Selection bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Bias in participant selection. Taking into account the sample size and method)</td>
</tr>
<tr>
<td>- - - + - - ? - - - - + + - - -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attrition bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Completeness of outcome data)</td>
</tr>
<tr>
<td>- - - + - - - - - - - - + - -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reporting bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Selective reporting in the sense of significant and non-significant results)</td>
</tr>
<tr>
<td>- - - + - - - - ? - + - + + - -</td>
</tr>
</tbody>
</table>
Other sources of bias

(Interviewer / researcher / interviewee bias)

Key

Low risk
Possible bias that is unlikely to seriously alter the results -

High risk
Possible bias that raises some concern about the results +

Unclear bias
Unclear bias that seriously weakens the confidence about the results ?

Figure 3. Adapted Cochrane Collaboration Risk of Bias Tool

All relevant studies were appraised for methodological quality against the criteria of the CASP (CASP, 2006) for qualitative studies and EPHPP (Brownlee et al., 2013) for quantitative studies. Both researchers independently appraised the relevant studies for methodological quality and inclusion or exclusion from the systematic review to improve the reliability and validity of this study. Two articles were discarded after critical appraisal as one article did not indicate any measures for ethical consideration and the second article did not have complete results as it was a proposed study protocol.

Figure 3 provides a summary of the bias identified in all included studies. Four studies had a high risk of bias and two articles had indicated unclear risk of bias. Although these articles indicated possible bias that raised some doubt regarding the results, the researchers deemed the findings appropriate and necessary to the review. Therefore, the researchers included all articles, taking into account that other articles supported their findings.

Table 2 below provides a summary of the main findings from included studies.
<table>
<thead>
<tr>
<th>Author</th>
<th>Measures</th>
<th>Study design</th>
<th>Main objective of the study</th>
<th>Main findings</th>
<th>Author conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chanani, Waingankar, More, Pantvaidya,</td>
<td>• Primary caregiver interviews.</td>
<td>Quantitative</td>
<td>To examine factors associated with exclusive breastfeeding, and whether exclusive breastfeeding, in a community-based nutrition programme to prevent and treat wasting among children under the age of three, is associated with enrolment during the mother’s pregnancy.</td>
<td>The results indicated that mothers who received the nutrition programme, home visits, or attended group counselling sessions were more likely to breastfeed. Results further indicated that having a normal weight-for-height z-score was associated positively with exclusive breastfeeding.</td>
<td>Prenatal enrolment in community-based programmes working on child nutrition in urban informal settlements of India can improve exclusive breastfeeding practices.</td>
</tr>
<tr>
<td>Fernanadez and Jayaraman (2018)</td>
<td>• Home-based counselling.</td>
<td>design</td>
<td></td>
<td></td>
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<tr>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
2. D’Alimonte, Deshmukh, Jayaraman, Chanani and Humphries (2016)

- Semi-structured key informant interviews.
- Observation check-list.

Qualitative design:

To explore the factors that influence the uptake of infant and young child feeding behaviours among mothers.

Emergent themes among positive deviant mothers that were not seen among non-deviant mothers include: practising optimal feeding practices; making well-informed food choices aided by advice from health workers, relatives, and female elders; absorbing health and nutrition information from the media sources, including the use of supplementary complementary feeding; acknowledging the importance of maternal health; and having access to a

exclusively breastfed than infants enrolled after birth.

Practical considerations include exploring how to tailor Community Management of acute malnutrition (CMAM) programmes to include social support and counselling training for health workers to engage more closely with mothers.
social support system for help with child rearing. The relationship between mother and health worker seemed to influence how well they listened to the health worker’s recommendations. Mothers with well-nourished children (Positive deviant mothers) reported exclusive breastfeeding for 6 months and timely introduction of complementary foods in contrast to the reports of non-positive deviant mothers.

3. Guttentag, Landry, Williams, Borkowski, Farris, Lanzi, Baggett, Swank, Crawford,

- Parent outcomes: Observation of parenting practices by means of the Landry Parent-Quantitative design

To examine the efficacy of a multi-module parenting intervention, “My Baby & Me”, that

As hypothesised, mothers receiving the high-intensity “My Baby & Me” intervention showed

A randomised control study to test the efficacy of such an approach may be informative in
Warren and Ramey (2014)

Child Interaction Scales.

- Child outcomes:
  - The Landry Parent-Child Interaction Scale.
  - The Brief Infant-Toddler Social and Emotional Assessment (BITSEA).
  - The Preschool Language Scale.
  - The Cognitive Scale of the Bayley Scales of Infant and Toddler Development.

began prenatally, and continued until children reached 2.5 years.

greater increases in a range of parenting behaviours, such as contingent responsiveness, and quality of verbal stimulation when compared to mothers in the low-intensity condition (primarily an information and referral treatment). At enrolment, mothers in these two groups were comparable in terms of major risk factors (e.g., depression, psychological distress, substance abuse, age, and education), as well as most of their responsive behaviours at 4 months (i.e., before the full responsive parenting curriculum was delivered and could reasonably have a
determining how to best balance participant retention, adequate dosage and timing of intervention sessions, and cost-effectiveness.
strong effect on maternal behaviours). Thus, the sizeable gains seen over time for mothers in the high-intensity treatment were likely due to the intervention itself.


- SSRS (Social Skills Rating System) survey
- CBCL (Child Behaviour Checklist).

Quantitative design

To investigate the social skills of adopted PI children, particularly with respect to age at adoption, age at assessment, and gender, and compare the social skills of PI (Post-Institutionalised) children to those of never-institutionalised parent-reared children.

Children adopted before 18 months of age have better social skills than those adopted after this age; those assessed in childhood demonstrated better social skills than those assessed in adolescence.

PI females, especially later-adopted adolescents, have particularly poor social skills. Children with poor social skills tend to have higher

Future studies would benefit from utilising additional measures of social skills and social problems, and examining more discrete categories of social skills.

Obtaining assessments of the social skills of PI children’s siblings or peers would be ideal because siblings and peers represent the individuals to whom PI children are

- Health care: task analysis for parents
- Home safety: by using the Home Accident Prevention Inventory (HAPI)
- Bonding: Planned Activities Training (PAT).

Qualitative design

To describe Project SafeCare, an eco-behavioural research, and treatment project with families reported or at risk for child abuse or neglect.

Following health training, parent performance improved dramatically for both parents.

While the improvements shown here were small, they demonstrated that the parent-child interactions training component which involved training in PAT and appropriate interaction skills resulted in improvements in parent and child interactions and the parent's use of PAT. Unfortunately, the parent was not available for follow-up. Additional data demonstrating the rates of behavioural problems.

There are clear deficiencies in health care skills, safety, and some areas of parent-child interactions; direct training in these areas is expected to result in improvements in these directly-assessed skills.
5. McHugh, Kvernland and Palusci (2017)

- Evaluation of child abuse reports
- Group meetings

Evaluation design

To evaluate the health outcomes for infants and their adolescent parents in mother-baby dyads in adolescent mother’s group at Bellevue Hospital.

Adolescent mother-infant dyads that completed a full year of the programme during 2011–2012 had significantly improved measures of infant health compared to those who did not.

Infants completing the programme had more well-baby visits and more emergency room visits at the institution and as well as more immunisation.

An adolescent parenting programme with separate medical care for teen parents and their infants offers several health benefits for infants and their families.


- Demographic and Health Survey
- Interviews
- Statistical Analysis

To evaluate whether paid maternity leave policies affect infant, neonatal, and post-neonatal mortality in

In the fully adjusted model, an additional month of paid maternity leave was associated with 7.9

Further work is needed to elucidate the mechanism that explains the benefits of paid maternity
<table>
<thead>
<tr>
<th>Sensitivity Analysis</th>
<th>Quantitative design</th>
<th>low and middle-income countries.</th>
<th>fewer infant deaths per 1,000 live births.</th>
<th>leave for infant mortality.</th>
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<td></td>
<td></td>
<td></td>
<td>Each additional month of paid leave was associated with a reduction in infant, and neonatal mortality, respectively. An increase in the duration of paid leave available to mothers might influence postnatal factors, including the duration of breastfeeding and vaccination uptake, which are consistently associated with better infant health. Findings suggest there is potential for improving infant health by increasing the duration of paid maternity leave in LMICs.</td>
<td></td>
</tr>
</tbody>
</table>
8. Ngwenya and Nnyepi (2011)

Structure Interview Schedule:
- Household Resources, Caring Capacity, and Dependency
- Access to Health Service
- Pregnancy, AIDS services and Child Malnutrition
- Early Childhood Education, Development, and Poverty.

Qualitative design

To explore threats to maternal and child well-being in two non-riparian and two riparian communities in the east and west of the Okavango River Basin in Ngamiland District, Botswana.

A significant proportion of children’s caregivers have access to low-tier primary health care provision in the study area, but inadequate physical infrastructural development limits their access to specialised care, particularly emergency obstetric services. Childhood malnutrition is also a concern in the study area, and it mostly affects children whose caregivers have limited access to resources. The findings with regards to sanitation are consistent with other remote areas, where the Central Statistics Office reports that less than 30% of remote

Improving maternal and child access to education and health services remains a challenge in the district. It is therefore recommended that interventions prioritise sensitive aspects of child well-being, early childhood education, and development.
areas and small settlements have access to safe sanitation facilities. Poor access to sanitation facilities in the region is truly a common problem. Overall, poor households’ access to resources observed in these villages needs to be attended to; otherwise, it is bound to greatly undermine women’s care giving ability and, consequently, compromise children’s well-being.


- Intervention exposure.
- Maternal scaffolding—using the Observation of Mother and Child Qualitative design

To identify underlying mechanisms that explain longitudinal effects of the RS (Responsive Stimulation) intervention on the maternal scaffolding that was assessed at the completion of the (RS) intervention when children were two years of age, mediated Given the limited access to and poor quality of early education opportunities outside the home, more programmes should be
Interaction protocol (OMCI).

- Home stimulation quality using the Home Observation for Measurement of the Environment Inventory.
- Child Intelligence using the Weschler Preschool and Primary Scale of Intelligence-III.
- Executive functioning composite.

The RS intervention was successful at promoting long-term cognitive development by fostering both short- and long-term improvements in maternal scaffolding and responsive care giving. The RS intervention was designed to explicitly promote scaffolding skills as a way to foster school readiness of disadvantaged children living in rural areas of LMIC.

The results of the RS intervention provide an in-depth understanding of the relationship challenges and surprises that these women faced. In addition, the study provides a broader perspective to include fathers and other close family members. A family perspective is emerging in many types of home visiting programmes, but mothers still remain underrepresented in research.

Future studies should use a broader range of qualitative designs to understand more thoroughly the participants’ experience as new mothers and their perceptions of the impact of the home visitors relationship. To understand more thoroughly the participants’ experience, qualitative in-depth interviews were conducted. Viewed through the lens of Relational Cultural Theory, the results provide an in-depth understanding of the relationship challenges and surprises that these women faced. In addition, the study provides a broader perspective to include fathers and other close family members. A family perspective is emerging in many types of home visiting programmes, but mothers still remain underrepresented in research.

Future studies should use a broader range of qualitative designs to understand more thoroughly the participants’ experience as new mothers and their perceptions of the impact of the home visitors relationship. Viewed through the lens of Relational Cultural Theory, the results provide an in-depth understanding of the relationship challenges and surprises that these women faced. In addition, the study provides a broader perspective to include fathers and other close family members. A family perspective is emerging in many types of home visiting programmes, but mothers still remain underrepresented in research.

describes how the participants viewed their volunteer home-visitors as important sources of connection and support. From the mothers’ descriptions, they were able to tease out different types of loneliness and the diverse ways in which they experienced help from their home-visitors. Given the negative impact of isolation on women and infants, that these new mothers felt connected with someone who had lived through similar life changes and understood the new mothers experience is an important finding.

Qualitative interviews:
- Model of Adjustment and Adaptation.
- Belsky’s Model

To exam postnatal adjustment in diverse women.

Current results suggest that prevention and intervention efforts targeting new mothers’ depression, marital adjustment, and parenting should address maternal stressors, resources, and meanings in a variety of domains, including the mother’s personality, work, romantic, and co-parenting relationship(s), and social network (including friends and extended family).

The findings also indicated the diversity in women’s experiences of what they find stressful or helpful.

Current findings can inform existing prevention and intervention paradigms such as prenatal education; screening and brief intervention during routine postnatal check-ups; home visitation; and counselling with individual mothers, couples, and families.

Professionals are encouraged to keep an open mind and collaborate with clients about their own ideas and experiences.
   - Life History Interview
   - BDI-II (Beck Depression Inventory). Quantitative design
   The longitudinal perspective is intended to provide insight into the patterns of change for both paternal instrumental support and maternal depressive symptoms in isolation as well as in combination with each other.
   Consistent with our hypothesis, the present study found that paternal support declines early after the birth of the child, but then the change levels off by 24 months. The present study found that levels of maternal depression also declined from 6 to 24 months’ post-partum.
   It was also found that not living with the child’s father was associated with a higher level of depressive symptoms at 4 months but that father residence was unrelated to change in depressive symptomatology over time.
   Family interventions should focus firstly on maternal well-being and later emphasise the importance of paternal involvement and support.

14. Smith et al., (2010) Interviews To examine the detection of early This study found that despite regular, and These findings suggest that at-risk mothers
-Children’s development: using Mental Development Index of the Bayley Scales of Infant Development

-Awareness of Developmental Concerns: using Brief Infant-Toddler Social and Emotional Assessment (BITSEA)

-Maternal Knowledge of Child Development: using Knowledge for Infant Development Inventory (KIDI)

Quantitative design

developmental delays of high-risk infants by first-time mothers in a community sample of families. often frequent, visits to clinics, or offices, mothers reported that delays were missed by medical professionals in nearly all of the EI (Early Intervention)-eligible children. This study revealed that more than 2 in 5 children of at-risk mothers were eligible for individualised services under the IDEA (Individuals with Disabilities Education Act) guidelines before the age of 2 years.

Despite receiving regular medical services, mothers reported that very few eligible children were identified by medical professionals as having any problems must be educated not only about how to recognise potential developmental problems but also about how to advocate for additional developmental testing or other resources.
14. Tegethoff, Greene, Olsen, Schaffner and Meinlschmidt (2011)

- Telephonic interviews
- Symptom Check-List
- The General Health Questionnaire
- Life Event Questionnaire

Mixed method design

To determine whether common psychosocial stress during pregnancy is a risk factor for a wide spectrum of paediatric diseases in the offspring.

The data provides evidence for an increased risk of mental disorders during the first 2.5 years of life in offspring of mothers reporting high life stress during pregnancy compared with mothers reporting low life stress. In the present study, emotional stress during pregnancy was associated with an increased risk of infectious diseases only and life stress was associated with an increased risk of conditions originating in the prenatal period.

Maternal life stress during pregnancy may be a common risk factor associated with impaired child health. The results suggest new approach to reduce childhood diseases.
<table>
<thead>
<tr>
<th>15. Torlesse, Cronin, Sebayang and Nandy (2016)</th>
<th>A structured pre-tested questionnaire.</th>
<th>To identify factors associated with stunting among children aged 0 – 23 months in Indonesia to inform the design of appropriate policy and programme responses. Results indicated that in households that drank untreated water, the adjusted odds on child stunting was over three times higher if the households used an unimproved latrine; however, in households that drank treated water, the adjusted odds on child stunting was not significantly higher if the households used an unimproved latrine. Policies and programmes in Indonesia must consider water, sanitation, and hygiene interventions. Operational research is needed to determine how best to converge and integrate water, sanitation, and hygiene interventions into a broader multi-sectoral approach to reduce stunting in Indonesia.</th>
</tr>
</thead>
</table>
- Parenting: The Adult Adolescent Parenting Inventory-2 (AAPI-2)  
- Parent Mental Health: Depression and Anxiety subscales of the Brief | To underscore the importance of ongoing training and supervision, attention to fidelity, and programme evaluation. A less scientific analysis revealed that more than half of the children whose behaviour was “of concern” at pre-test and for those who had a follow-up evaluation did not have behavioural problems at follow-up. This Future evaluation research must pay greater attention to fidelity and implementation of programmes |
Symptom Inventory

- Child Language Development: The Bayley III
- Children’s Problem Behaviour: The Brief Infant-Toddler Social-Emotional Assessment
- Implementation: Microsoft Access database

finding suggests that at the individual level, some important changes may have occurred. Significant improvements were also realised in parent mental health, which could support more nurturing parenting and improved child outcomes in the future.
According to Table 2, of the 16 articles, six were qualitative in nature, seven were quantitative in nature, two were evaluation designs, and one was a mixed method design. The quantitative articles made use of questionnaires and different scales (Torlesse, Cronin, Sebayang and Nandy, 2016; Smith, Akai, Klerman and Keltner, 2010; Smith & Howard, 2008; Nandi, Hajizadeh, Harper, Koski, Strumpf and Heymann, 2016; Julian and McCall, 2016; Guttentag, Landry, Williams, Borkowski, Farris, Lanzi, Baggett, Swank, Crawford, Warren and Ramey, 2014; Chanani, Waingankar, More, Pantvaidya, Fernanadez and Jayaraman, 2018). The qualitative articles made use of interviews and observation checklists (Pollard, Nievar, Nathans and Riggs, 2014; Paris and Dubus, 2005; Obradovie, Yousafzai, Finch and Rasheed, 2016; Ngwenya & Nnyepi, 2011; Lutzker, Bigelow, Doctor and Kessler, 1998; D’Alimonte, Deshmukh, Jayaraman, Chanani and Humphries, 2016). Whereas the evaluation articles made use of existing programmes and reports, interviews and observations (McHugh, Kvernland and Palusci, 2017; Zolnoski, Stacks, Kohl-Hanlon, Dykehouse, 2012) and, lastly, the mixed method included the qualitative and quantitative methods making use of questionnaires and telephonic interviews (Tegethoff, Greene, Olsen, Schaffner and Meinlschmidt, 2011).

4. Discussion

The aim of this systematic review was to highlight favourable developmental outcomes of nurturing care during the first 1000 days of life based on the nurturing care framework that was formulated by the World Health Organisation (2018). The first 1000 days, from conception to the age of two years is considered as the most important development phase in children’s lives where their physical, cognitive and socio-emotional development could have lifelong consequences on their health and well-being later in life (Persson, 2017; Stoll & Collett, 2017). Infants need nurturing care, which includes good health care, nutrition, security, safety, responsive care giving, and early learning in order to reach their full potential (Bhardwaj et al., 2017:22.34).

The nurturing care framework by the World Health Organisation (2018) includes five domains that are significant to a child’s development, namely: nutrition, health, early learning, responsive care and, security, and safety. The results from this systematic review have revealed that all these five domains are important in child development and most importantly during the first 1000 days of life. An additional domain that was identified in this study was supportive interventions. Research has shown that life chances of children which refers to opportunities
that an individual has to improve their quality of life, are influenced by the circumstances and experiences that they are exposed to from before birth and throughout childhood, and disadvantages can start before birth and accumulate throughout their life course (Britto et al., 2017; Warren & Consultant, 2011).

Studies confirm that the well-being, health, and productivity of a child, adolescent, and adult takes shape during the early years and, in particular, during the first 1000 days of life (Britto et al., 2017; UNICEF, 2018).

*Nurturing Care: Health*

The World Health Organization estimated that 1,500 women die daily from avoidable pregnancy-related complications worldwide and many of these deaths are often due to poor access to health services or failures in the health system (Ngwenya, & Nnyepi, 2011). Provision of antenatal care, skilled care at birth, and essential new-born care has been shown to dramatically improve prospects for safe pregnancy and child survival (UNICEF, 2016). Research on an Adolescent Parent Programme to reduce child abuse that was conducted on 29 mother-infant dyads indicated that a lack of adequate medical care and preparations for parenting coupled with parental misperception of the child’s abilities to understand and comply with parental requests, are strong risks for future maltreatment (McHugh et al., 2017).

Findings of this review have indicated that in cases where mother-infant dyads attended and completed parenting programmes or attended support groups, their infants were more likely to have more well-baby clinic visits and timely immunisations (McHugh et al., 2017), compared to caregivers who have none to low-tier primary health care limited by poor access to transportation and bad roads (Ngwenya, & Nnyepi, 2011), ultimately affecting the child’s well-being. Results of this review have also shown that an increase in the duration of paid maternity leave to mothers may have an effect on postnatal factors such as the duration of breastfeeding and vaccination uptakes which are all associated with better infant health (Nandi et al., 2016). This confirms that mothers, especially new mothers require additional support, not only from partners, and families, but from experts in the field, and this can lead to promoting healthy behaviour in mothers and their infants.
**Nurturing Care: Nutrition**

Malnutrition affects an estimated 165 million children in low and middle-income countries and contributes to up to 45% of child deaths (Black et al., 2016). The findings of this review strongly indicate that nutrition plays a fundamental role in the development of a child (Chanani et al., 2018; Ngwenya, & Nnyepi, 2011) an identified a study that was conducted on a group of mothers who enrolled in a programme for infant health that indicated that by the end of the programme, mothers were far more aware of the basic nutritional guidelines for their infant babies (D’Alimonte, Deshmukh, Jayaraman, Chanani, & Humphries, 2016). This finding correlates with the nurturing care framework that states that the domains of the framework cannot be viewed in isolation. These mothers used a method of learning to empower them with necessary nutritional information pertaining to their children’s needs.

Chanani et al. (2018) confirm that breastfeeding is directly correlated with normal birth, weight-height in infants. While breastfeeding is an important asset to favourable developmental outcomes in children (Bui, Lee, Le, Van Dung, & Vu, 2016), Pollard et al. (2014) indicated that although mothers were aware of the gains of breastfed children, they found it difficult to breastfeed. These mothers did not receive support and assistance regarding breastfeeding and therefore did not continue since they struggled. This indicates that there is a need for more expert support from nurses or medical professionals to assist mothers in the breastfeeding process. In a study where mothers received social and peer support from friends, family and experts their chances of breastfeeding increased (D’Alimonte et al., 2016).

**Nurturing care: Safety and security**

Worldwide, 1.4 million children die each year from preventable diarrheal diseases and some 88% of diarrhoea cases are related to unsafe water, inadequate sanitation, or insufficient hygiene (Cheng, Schuster-Wallace, Watt, Newbold, & Mente, 2012; Hall & Sambu, 2014). Findings of the current study have indicated that there is an association between stunting and both household sanitation and water treatment (Torlesse, Cronin, Sebayang, & Nandy, 2016). These findings are also supported by the observational and cross-sectional study based on major databases from international sources which found strong associations between access to water and sanitation, and child, infant, and maternal mortality on a global scale (Cheng et al., 2012). Findings of this review have found that negligent mothers generally demonstrate a level of depression and parental stress, and the developmental ecological model has recognised this as part of the factors that influence the likelihood of abuse in families (Lutzker, Bigelow,
Doctor, & Kessler, 1998), which eventually affects the parent-child interaction and jeopardises the safety and security of the child. Furthermore, findings also indicated that earlier assessments and better understanding of the child’s developmental status is a potential link that leads to improved parenting outcomes (McHugh et al., 2017; Smith, Akai, Klerman and Keltner, 2010). Once again, it has been confirmed that support to mothers is essential for favourable developmental outcomes in children.

*Nurturing Care: Responsive Care*

It has been found that a mother who has a positive attitude towards parenting in general may be more likely to respond with empathic reactions to her infant’s distress; thus, prompting her to demonstrate more sensitive and responsive behaviours (Gleason et al., 2016), and research has demonstrated that paternal support is positively related to maternal well-being after the birth of the child (Smith & Howard, 2008), which will also positively affect the child’s well-being (Gleason & Narvaez, 2014). Findings of the current study have indicated that paternal support declines early after the birth of the child, but that changes level off by 24 months; furthermore, it is stated that even though the support declines from 4 months – 24 months, the overall level of instrumental support remains relatively high (Smith & Howard, 2008). The findings of this study also indicate that parenting interventions enable caregivers to establish strong relationships with their families and contributed to improving key outcomes for themselves and their children as well as to promote long-term cognitive development since the intervention had a significant, direct effect on executive functioning and performance intelligence (Guttentag et al., 2014; Obradovic, Yousafzai, Finch and Rasheed, 2016). Additionally, further findings of this study have suggested that children who are adopted from socially –emotionally depriving institutions may exhibit poor social skills in adolescence; particularly, if they were adopted after 18 months and are female (Julian & McCall, 2016; Pentecost, 2016).

It has been stated that warm, sensitive, and responsive care is the foundation of sociomoral behaviour (Gleason & Narvaez, 2014). Furthermore, consideration of other parenting and communal practices, such as breastfeeding, touch, allo-parenting, and play might illustrate the difference between adaptive and optimal development (Gleason & Narvaez, 2014). Therefore, it can be assumed that children who receive responsive care from their caregivers are most likely to grow up being empathetic and displaying positive emotions.
Evidence has shown that experiences at home set the stage for success in learning and that learning outcomes are also tied to the multiple kinds of advantages and disadvantages that children face (UNICEF, 2016). Furthermore, it has been stated that poverty often leaves children with deficits in terms of learning outcomes (UNICEF, 2016). Results of this study have shown that the use of gestures and language in ways that provided support to help children understand and engage in cognitive and social interaction during the parenting intervention in combination with contingent responsiveness will likely enhance the mother-child relationship over time (Guttentag et al., 2014). Findings from the research done on Maternal Scaffolding and Home Stimulation further indicated that linguistic stimulation in the home plays a critical role in promoting growth of early language development and that earlier and concurrent measures of maternal scaffolding behaviours exerted independent children’s verbal intelligence (Obradovic et al., 2016).

**Support Interventions**

Informed by social ecology, nurturing care extends beyond families to include community caregivers and support for families (Black et al., 2016). The systems model that forms the basis of the life course conceptual framework includes both an enabling environment for caregiver, family, and community, and an enabling social, economic, political, climatic, and cultural context (Black et al., 2016). It has been further indicated that interventions to change caregiver behaviour are only one part of a comprehensive strategy for enhancing child survival and development since they need to be complemented with interventions targeting communities and health care systems (Elder et al., 2014). Interventions to encourage stakeholders, parents, health care workers, teachers, church leaders, and even pregnant adolescents to participate in the design of culturally appropriate programmes are more effective when they provide skills training on personal development (Elder et al., 2014).

Findings of this review have indicated that prenatal enrolment in community-based programmes working on child nutrition can improve exclusive breastfeeding practices (Chanani et al., 2018). Findings further indicated that mothers who attended the “My Baby & Me” intervention showed greater increases in a range of parenting behaviours, such as contingent responsiveness, and quality of verbal stimulation (Guttentag et al., 2014). In eco-behavioural research done to describe the Safe Care Programme, findings indicated that the
parent-child interactions training component, which involved training in PAT (Planned Activities Training) and appropriate interaction skills, resulted in improvements in parent and child interactions and the parents’ use of PAT (Lutzker et al., 1998). Another study done on adolescent parent’s programmes aimed at reducing child abuse demonstrated that mother-infant dyads that completed a full year of the programme had significantly improved measures of infant health and that infants had more well-baby visits and more immunisations (McHugh et al., 2017).

These findings are an indication that support interventions have an impact on the parents’ life as well as the child, and that they also play a role in promoting favourable developmental outcomes, most especially in the first 1000 days of life. Different activities implemented in the various support interventions can address other aspects of the nurturing care framework through the participation of caregivers and their infants. It has been indicated that an enabling environment supports the family and caregivers who are the providers of nurturing care; enabling environments also supports the caregivers’ nutrition, mental and physical health benefits, children’s growth and development as well as the enhancement of caregivers’ receptiveness to parenting programmes (Black et al., 2016).

5. Conclusion

The domains of the nurturing care framework are interrelated, and it is difficult to have one without the other. Under-nutrition in early childhood can result in stunting, and when left unaddressed at that point, it can affect cognitive development, leading to learning difficulties, and poor health later in life. Over and beyond that, there are physical, and emotional consequences, which also deny children the chance to play and learn, causing them to miss out on early childhood education. Additionally, living in an environment that provides little stimulation or emotional support can severely restrict a person’s productivity as an adult (UNICEF, 2016).

The child protection system has a role to play in creating a safe, supportive, and nurturing environment in order to help children avoid all forms of violence; the social welfare sector also has to play a role in providing appropriate assistance in terms of the caregiver’s mental health or substance abuse problems in order to provide children with the most favourable care giving conditions (UNICEF, 2018).
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Chapter 3: Conclusion, limitations, recommendations, policy brief and reflection

This chapter draws on the conclusion and acknowledges the limitation within the study and makes recommendations for studies that could be done in the future. There will be a policy brief that is aimed at the Department of Social Development and Department of Health recommending the importance of nurturing care during the first 1000 days of life. The researcher will reflect on the research process and learning experience throughout the master’s study.

Conclusion

The aim of this study was to outline the most important factors that enrich nurturing care in the first 1000 days of life. The PICO acronym was utilized to address the research question. There were 16 articles found through electronic searches which provided valuable information on various factors that contribute to nurturing care during the first 1000 days.

Evidence has indicated that access to health care, proper nutrition, responsive care, safety and security as well as early learning are key factors in the first 1000 days, that will ensure that children reach favourable developmental outcomes and that in the absence of these factors children may experience physical, cognitive, emotional and social challenges later in life. Children are exposed to a wide range of risks in their environments (in utero and post birth) such as poor nutrition, depression, smoking and alcohol abuse, lack of clean water and sanitation, violence, non-responsiveness of caregivers and no access to healthcare services (Ngwenya & Nnyepi, 2011). However, it remains the responsibility of the caregiver to ensure that their infants receive the care and support they require to ensure favourable development outcomes. There are five domains of the nurturing care framework which include Health, Nutrition, Early Learning, Responsive care as well as Security and Safety. In addition to the five domains, an important domain was identified, the need for supportive interventions in ensuring favourable developmental outcomes. It was identified that there was a need for an additional sixth factor to the nurturing care frameworks, which is support interventions. It was discovered that supportive interventions such as support groups, group counselling, and parenting programmes assist caregivers to be better responsive care givers and these interventions enable caregivers to fulfil the other five domains of nurturing care.

In this regard caregivers are taught to consider the needs of the child as well as to be aware and deal with their own social issues which may be affecting their livelihoods. It must be taken into
consideration that all these six factors work effectively together therefore they must be implemented together to create a nurturing environment for children starting with the first 1000 days of life, to acquire favourable outcomes later in life.

**Limitations**

The researchers took into consideration and acknowledged certain limitations that emerged within the review when the interpretation of the results and discussions were completed:

- The researchers acknowledge that the review had a specific focus which meant that there was a scope limitation only pertaining to factors contributing to nurturing care in the **first 1000 days of life**. It could be that some articles were excluded due to this limitation.
- Another factor that contributed to the exclusion of some articles was that most of the studies were more focused on nutrition and clinical matters.
- Even though 497 articles were initially found, only 16 were included while the rest of the articles were excluded mostly due to the age range which did not fit with the focus of the study.
- There were 2 articles that had to be excluded from the review as one did not have any results or conclusions and the other one did not address ethical issues.
- The search strategy was challenging, time consuming and needed a lot of effort to find the final search strategy

**Recommendations**

The findings of this study have confirmed that nurturing care is indeed fundamental for better child development more especially during the first 1000 days of life. It is therefore recommended that government should focus and invest more on public health care and nutrition interventions. Specific attention should be on prenatal and postnatal support to promote access to health care for pregnant women, caregivers and their infants. This will then ensure better health outcomes as well as provision of minimal nutritional supply to families.

Furthermore, since it has been identified that supportive intervention also plays a role in promoting nurturing care, specialized professionals (including Social Workers, Nurses,
Community Health Care Worker and Early Childhood Development Practitioners) should be adequately trained and assigned to attend to supportive interventions in the communities addressing social, health and safety issues, including early learning strategies. Policies regarding the provision of fully comprehensive parenting programmes, that will be freely accessible to all caregivers especially in poor regions, should be established and implemented. There should be strategies to make these programmes compulsory for caregivers of children at risk due to the caregiver’s exposure to depression, mental illnesses, alcohol abuse, poverty and other detrimental circumstances to create a nurturing environment for children. Future studies should focus more on identifying supportive interventions that have included all the domains of the nurturing care framework to promote favourable child development outcomes.

**Policy Brief**

A policy brief is a policy document that is produced for the support and advocate with the intention to engage and persuade informed, non-specialist audiences. The non-specialized audience may comprise of people who work regularly on the issue addressed in a brief, but will mostly not conduct policy research themselves or read expert texts (Young & Quinn, 2017). The purpose of this policy brief is to present recommendations to the Department of Social Development and Department of Health to encourage access to health care services and social services to promote nurturing care among caregivers, most especially those caring for children aged 0-2 years. This policy brief might assist children to reach their full potential which will benefit them even later in life.
If we want to shape the future and improve the world, we only have 1000 days to do it.”

Roger Thurow

Evidence has indicated that access to health care, proper nutrition, responsive care, safety and security as well as early learning are key factors in the first 1000 days of life, that will ensure that children reach favourable developmental outcomes and that in the absence of these factors children may experience physical, cognitive, emotional and social challenges later in life.

The aim of this study was to outline the most important factors that enrich nurturing care in the first 1000 days of life.

There were 16 articles identified after the inclusion and exclusion criteria were set. For this systematic review, the nine-step rigorous methodology was followed by two independent researchers as per the proposal.

Results of this review have confirmed that the domains of the nurturing care framework are interrelated, and it is difficult to have one without the other. These findings are an indication that these domains including supportive interventions have an impact on the parents’ life as well as the child, and that they also play a role in promoting favourable developmental outcomes, most especially in the first 1000 days of life.

Why Nurturing Care during the first 1000 days of life?

The focus of this study was on favourable development outcomes and the intention is to ultimately contribute to the creation of a policy document whereby all the necessary information regarding the first 1000 days can be integrated and provided to communities, and influence policy makers to invest more on the implementation of policies regarding children and caregivers in the first 1000 days.

Recommendations

- For better health outcomes for infants, the Government must invest more on public health and nutrition interventions.
- Support interventions should be enforced by policies.
- Future studies should focus on identifying support interventions that incorporate all the domains of the nurturing care framework to promote favourable child development outcomes.
Reflection

I have always known that my love for children and learning will lead me somewhere in life, but I never thought acquiring a master’s degree would be part of the plan. I am grateful that I had this opportunity to meet other scholars who share the same passions as I do and lecturers who were supportive in helping me reach my goal. Although I am now at the end of this journey, it was not always easy. The time I spent doing my research led to less time spent with family, there was less time for leisure and this were the sacrifices I had to make to reach my goal. At times, I felt like giving up because there was so much to be done, but I remembered why I was doing this research, I remembered the impact that it could make in the lives of children, I thought of the effort and time that I had already put into this research, the sleepless nights I had; and that gave me the courage to go on.

The research process

I share the same sentiments as the author who wrote that ‘one of the primary requisites for undertaking research for a higher degree is that it contributes new knowledge in the field of study, and that it is an original investigation of some kind’ (O’Hanlon, 1994). When I registered at the North-West University, I knew that I was enrolling for the Masters in Social Work, specialising in Child Protection but I did not know what it truly entails. It was required of me to attend theory classes as well research classes in the first year of studying, which was not always because there were assignments to be submitted either during or before class attendance. Although it became better with time, the struggle to finalise my research topic took time and it became a challenge, but eventually after several attempts and assistance from my supervisor I managed to settle on a research topic that will contribute to new and additional knowledge in the field of health and social sciences.

The research process that I undertook on undergraduate level was totally different from the one I started on postgraduate level, as this one was more in-depth, challenging and addressed real issues. I had never done a systematic review before, and I was not even planning to take this route but when my supervisor suggested that we take this route I became overwhelmed by the information and the work it entailed, but due to my need for seeking knowledge, I was willing to learn and I took up this challenge. My supervisor encouraged me to attend training on systematic reviews which was offered by the North-West University, Potchefstroom campus, I became even more overwhelmed by all the new information but through contact sessions with my supervisor and reading up, the process started to make
sense me. Writing up my research proposal was unsettling and challenging. My research proposal was reviewed several times during the research process by my supervisors, a small group panel of experts in the field, where after it was reviewed and approved by the Community Psychosocial Research (COMPRES) panel and Health Research Ethics Committee (HREC) of the North-West University, Potchefstroom Campus. Once this stage passed, I knew that much work had to be done, I had to meet deadlines and continuously make corrections as I submit to my supervisor, the process was time consuming and draining but I had to persevere to achieve work of quality.

My learning experience

The main reason why I enrolled for a master’s in Social Work, Child Protection was solely because I wanted to take part and play a role in the field of Child Protection since my dream has always been child oriented. Therefore, I believed I would not be able to make any great changes if I was not equipped with the relevant skills and knowledge. My research capabilities and strength were very weak when I started this master’s programme, I did not have much confidence in myself because I was not sure if I was doing the correct thing. I realised that by attending and participating in this master’s programme I gained more confidence as I am now able to give presentations in the presence of many experts, I have also noticed that my writing skills have improved as I am now more skilled and informed than I was at the beginning of this process. This research journey has also taught me to prioritise and manage my time accordingly; through all this I also learnt self-discipline. This attribute will not only assist me to succeed academically but they also have an impact in my personal development.

In conclusion, I must say that all the sleepless nights, less time with family, exhaustion and worries were not for nothing, but they proved to make way for a fruitful journey that will add valuable contributions of knowledge to the field of child protection.
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Annexure A

Approved HREC application

Dear Ms Sayed

APPROVAL OF YOUR APPLICATION BY THE HEALTH RESEARCH ETHICS COMMITTEE (HREC) OF THE FACULTY OF HEALTH SCIENCES

Ethics number: NWU-00006-18-S1

You are kindly informed that after review by the HREC, Faculty of Health Sciences, North-Wes University, your ethics approval application has been successful and was determined to fulfill all requirements for approval. Your study is approved for a year and may commence from 01/01/2018. Continuation of the study is dependent on receipt of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation. A monitoring report should be submitted two months prior to the reporting dates as indicated i.e. annually for minimal risk studies, six-monthly for medium risk studies and three-monthly for high risk studies, to ensure timely renewal of the study. A final report must be provided at conclusion of the study or the HREC. Faculty of Health Sciences must be notified if the study is temporarily suspended or terminated. The monitoring report template is obtainable from the Faculty of Health Sciences Ethics Office for Research, Training and Support at Ethics-HRECMonitoring@nwu.ac.za. Annually, a number of studies may be randomly selected for an internal audit.

The HREC, Faculty of Health Sciences requires immediate reporting of any aspects that warrant a change of ethical approval. Any amendments, deviations or other modifications to the proposal or other associated documentation must be submitted to the HREC, Faculty of Health Sciences prior to implementing these changes. These requests should be submitted to Ethics-HRECApply@nwu.ac.za with a cover letter with a specific subject title indicating, “Amendment request: NWU-XXXXXX-XX-XX”. The letter should include the title of the approved study, the names of the researchers involved, the nature of the amendments being made (indicating what changes have been made as well as where they have been made), which documents have been attached and any further explanation as to why the amendment request being submitted. The amendments made should be indicated in yellow highlight in the amended documents. The e-mail, to which you attach the documents that you send, should have a specific subject line indicating that it is an amendment request e.g. “Amendment request: NWU-XXXXXX-XX-XX”. This e-mail should indicate the nature of the amendment. This submission will be handled via the expedited process.

Any adverse/unexpected/unforeseen events or incidents must be reported on either an adverse event report form or incident report form to Ethics-HRECIncidentSAS@nwu.ac.za. The e-mail, to which you attach the
documents that you send should have a specific subject line indicating that it is a notification of a serious adverse event or incident in a specific project e.g. "SAE Incident notification: NWU-XXXXX-XX-XX". Please note that the HREC, Faculty of Health Sciences has the prerogative and authority to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process.

The HREC, Faculty of Health Sciences complies with the South African National Health Act 01 (2003), the Regulations on Research with Human Participants (2014), the Ethics in Health Research: Principles, Structures and Processes (2015), the Belmont Report and the Declaration of Helsinki (2013).

We wish you the best as you conduct your research. If you have any questions or need further assistance, please contact the Faculty of Health Sciences Ethics Office for Research, Training and Support at Ethics.HRECApply@nwu.ac.za.

Yours sincerely

[Signature]
Prof Wayne Towers
HRSC Chairperson

[Signature]
Prof Minnie Groeff
Ethics Office Head
Annexure B

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Annexure C

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CASP Checklist: 10 questions to help you make sense of a Qualitative research

How to use this appraisal tool: Three broad issues need to be considered when appraising a qualitative study:

- Are the results of the study valid? (Section A)
- What are the results? (Section B)
- Will the results help locally? (Section C)

The 10 questions on the following pages are designed to help you think about these issues systematically. The first two questions are screening questions and can be answered quickly. If the answer to both is “yes”, it is worth proceeding with the remaining questions. There is some degree of overlap between the questions, you are asked to record a “yes”, “no” or “can’t tell” to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

About: These checklists were designed to be used as educational pedagogic tools, as part of a workshop setting, therefore we do not suggest a scoring system. The core CASP checklists (randomised controlled trial & systematic review) were based on JAMA 'Users' guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL, and Cook DJ), and piloted with health care practitioners.

For each new checklist, a group of experts were assembled to develop and pilot the checklist and the workshop format with which it would be used. Over the years overall adjustments have been made to the format, but a recent survey of checklist users reiterated that the basic format continues to be useful and appropriate.

Referencing: we recommend using the Harvard style citation, i.e.: Critical Appraisal Skills Programme (2018). CASP (insert name of checklist i.e. Qualitative) Checklist. [online] Available at: URL. Accessed: Date Accessed.

©CASP this work is licensed under the Creative Commons Attribution – Non-Commercial-Share Alike. To view a copy of this license, visit http://creativecommons.org/licenses/by-nc-sa/3.0/ www.casp-uk.net

Critical Appraisal Skills Programme (CASP) part of Oxford Centre for Tripe Value Healthcare www.casp-uk.net
### Section A: Are the results valid?

1. **Was there a clear statement of the aims of the research?**
   - Yes
   - Can’t Tell
   - No

   **HINT:** Consider
   - what was the goal of the research
   - why it was thought important
   - its relevance

   **Comments:**

2. **Is a qualitative methodology appropriate?**
   - Yes
   - Can’t Tell
   - No

   **HINT:** Consider
   - If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants
   - Is qualitative research the right methodology for addressing the research goal

   **Comments:**

### Is it worth continuing?

3. **Was the research design appropriate to address the aims of the research?**
   - Yes
   - Can’t Tell
   - No

   **HINT:** Consider
   - if the researcher has justified the research design (e.g., have they discussed how they decided which method to use)

   **Comments:**
4. Was the recruitment strategy appropriate to the aims of the research?

- Yes
- Can’t Tell
- No

**HINT:** Consider
- If the researcher has explained how the participants were selected
- If they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study
- If there are any discussions around recruitment (e.g., why some people chose not to take part)

**Comments:**

5. Was the data collected in a way that addressed the research issue?

- Yes
- Can’t Tell
- No

**HINT:** Consider
- If the setting for the data collection was justified
- If it is clear how data were collected (e.g., focus group, semi-structured interview etc.)
- If the researcher has justified the methods chosen
- If the researcher has made the methods explicit (e.g., for interview method, is there an indication of how interviews are conducted, or did they use a topic guide)
- If methods were modified during the study. If so, has the researcher explained how and why
- If the form of data is clear (e.g., tape recordings, video material, notes etc.)
- If the researcher has discussed saturation of data

**Comments:**
6. Has the relationship between researcher and participants been adequately considered?

- Yes
- Can't Tell
- No

**HINT:** Consider
- If the researcher critically examined their own role, potential bias and influence during (a) formulation of the research questions (b) data collection, including sample recruitment and choice of location
- How the researcher responded to events during the study and whether they considered the implications of any changes in the research design

**Comments:**

---

Section B: What are the results?

7. Have ethical issues been taken into consideration?

- Yes
- Can't Tell
- No

**HINT:** Consider
- If there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained
- If the researcher has discussed issues raised by the study (e.g. issues around informed consent or confidentiality or how they have handled the effects of the study on the participants during and after the study)
- If approval has been sought from the ethics committee

**Comments:**

---
8. Was the data analysis sufficiently rigorous?

- Yes
- Can't Tell
- No

HINT: Consider
- If there is an in-depth description of the analysis process
- If thematic analysis is used. If so, is it clear how the categories/themes were derived from the data
- Whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process
- If sufficient data are presented to support the findings
- To what extent contradictory data are taken into account
- Whether the researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation

Comments:

9. Is there a clear statement of findings?

- Yes
- Can't Tell
- No

HINT: Consider whether
- If the findings are explicit
- If there is adequate discussion of the evidence both for and against the researcher's arguments
- If the researcher has discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)
- If the findings are discussed in relation to the original research question

Comments:
## Section C: Will the results help locally?

**10. How valuable is the research?**

**HINT:** Consider

- If the researcher discusses the contribution the study makes to existing knowledge or understanding (e.g., do they consider the findings in relation to current practice or policy, or relevant research-based literature)
- If they identify new areas where research is necessary
- If the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used

**Comments:**
Annexure E

EPHPP tool

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATINGS

A) SELECTION BIAS

(01) Are the individuals selected to participate in the study likely to be representative of the target population?
1 Very likely
2 Somewhat likely
3 Not likely
4 Can’t tell

(02) What percentage of selected individuals agreed to participate?
1 80 - 100% agreement
2 60 – 79% agreement
3 less than 60% agreement
4 Not applicable
5 Can’t tell

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B) STUDY DESIGN

Indicate the study design
1 Randomized controlled trial
2 Controlled clinical trial
3 Cohort analytic (two group pre + post)
4 Case-control
5 Cohort (one group pre + post (before and after))
6 Interrupted time series
7 Other specify
8 Can’t tell

Was the study described as randomized? IF NO, go to Component C.

No
Yes

IF Yes, was the method of randomization described? (See dictionary)

No
Yes

IF Yes, was the method appropriate? (See dictionary)

No
Yes

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c) **CONFOUNDERS**

(01) Were there important differences between groups prior to the intervention?
1. Yes
2. No
3. Can't tell

The following are examples of confounders:
1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(02) If yes, indicate the percentage of relevant confounders that were controlled (either in the design [e.g. stratification, matching] or analysis)?
1. 80 – 100% (mostly)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't Tell

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d) **BLINDING**

(01) Were (were) the outcome assessor(s) aware of the intervention or exposure status of participants?
1. Yes
2. No
3. Can't tell

(02) Were the study participants aware of the research question?
1. Yes
2. No
3. Can't tell

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e) **DATA COLLECTION METHODS**

(01) Were data collection tools shown to be valid?
1. Yes
2. No
3. Can't tell

(02) Were data collection tools shown to be reliable?
1. Yes
2. No
3. Can't tell

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f) WITHDRAWALS AND DROP-OUTS

(01) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?
   1 Yes
   2 No
   3 Can’t tell
   4 Not Applicable (i.e. one time surveys or interviews)

(02) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest):
   1 80-100%
   2 60-79%
   3 less than 60%
   4 Can’t tell
   5 Not Applicable (i.e. Retrospective case-control)

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G) INTERVENTION INTEGRITY

(01) What percentage of participants received the allocated intervention or exposure of interest?
   1 80-100%
   2 60-79%
   3 less than 60%
   4 Can’t tell

(02) Was the consistency of the intervention measured?
   1 Yes
   2 No
   3 Can’t tell

(03) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?
   1 Yes
   2 No
   3 Can’t tell

H) ANALYSES

(01) Indicate the unit of allocation (circle one)

   community organization/institution practice/office individual

(02) Indicate the unit of analysis (circle one)

   community organization/institution practice/office individual

(03) Are the statistical methods appropriate for the study design?
   1 Yes
   2 No
   3 Can’t tell

(04) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?
   1 Yes
   2 No
   3 Can’t tell
GLOBAL RATING

COMPONENT RATINGS
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<td>F</td>
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<td>1</td>
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</tbody>
</table>

GLOBAL RATING FOR THIS PAPER (circle one):

1  STRONG (no WEAK ratings)
2  MODERATE (one WEAK rating)
3  WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No
Yes

If yes, indicate the reason for the discrepancy

1  Oversight
2  Differences in interpretation of criteria
3  Differences in interpretation of study

Final decision of both reviewers (circle one):

1  STRONG
2  MODERATE
3  WEAK
PRISMA 2009 Checklist

<table>
<thead>
<tr>
<th>Section/topic</th>
<th>#</th>
<th>Checklist item</th>
<th>Reported on page #</th>
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</thead>
<tbody>
<tr>
<td>TITLE</td>
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</tr>
<tr>
<td>Title</td>
<td>1</td>
<td>Identify the report as a systematic review, meta-analysis, or both.</td>
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<tr>
<td>ABSTRACT</td>
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<tr>
<td>Structured summary</td>
<td>2</td>
<td>Provide a structured summary including, as applicable, background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.</td>
<td></td>
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<tr>
<td>INTRODUCTION</td>
<td></td>
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<tr>
<td>Rationale</td>
<td>3</td>
<td>Describe the rationale for the review in the context of what is already known.</td>
<td></td>
</tr>
<tr>
<td>Objectives</td>
<td>4</td>
<td>Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).</td>
<td></td>
</tr>
<tr>
<td>METHODS</td>
<td></td>
<td></td>
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<tr>
<td>Protocol and registration</td>
<td>5</td>
<td>Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.</td>
<td></td>
</tr>
<tr>
<td>Eligibility criteria</td>
<td>6</td>
<td>Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.</td>
<td></td>
</tr>
<tr>
<td>Information sources</td>
<td>7</td>
<td>Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.</td>
<td></td>
</tr>
<tr>
<td>Search</td>
<td>8</td>
<td>Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.</td>
<td></td>
</tr>
<tr>
<td>Study selection</td>
<td>9</td>
<td>State the process for selecting studies (i.e., screening, eligibility, included in systematic review and, if applicable, included in the meta-analysis).</td>
<td></td>
</tr>
<tr>
<td>Data collection process</td>
<td>10</td>
<td>Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.</td>
<td></td>
</tr>
<tr>
<td>Data items</td>
<td>11</td>
<td>List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.</td>
<td></td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>12</td>
<td>Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.</td>
<td></td>
</tr>
<tr>
<td>Summary measures</td>
<td>13</td>
<td>State the principal summary measures (e.g., risk ratio, difference in means).</td>
<td></td>
</tr>
<tr>
<td>Synthesis of results</td>
<td>14</td>
<td>Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.</td>
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</tbody>
</table>
# PRISMA 2009 Checklist

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<tr>
<td>Risk of bias across studies</td>
<td>15</td>
<td>Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).</td>
</tr>
<tr>
<td>Additional analyses</td>
<td>16</td>
<td>Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.</td>
</tr>
<tr>
<td><strong>RESULTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study selection</td>
<td>17</td>
<td>Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.</td>
</tr>
<tr>
<td>Study characteristics</td>
<td>18</td>
<td>For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.</td>
</tr>
<tr>
<td>Risk of bias within studies</td>
<td>19</td>
<td>Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).</td>
</tr>
<tr>
<td>Results of individual studies</td>
<td>20</td>
<td>For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.</td>
</tr>
<tr>
<td>Synthesis of results</td>
<td>21</td>
<td>Present results of each meta-analysis done, including confidence intervals and measures of consistency.</td>
</tr>
<tr>
<td>Risk of bias across studies</td>
<td>22</td>
<td>Present results of any assessment of risk of bias across studies (see item 15).</td>
</tr>
<tr>
<td>Additional analysis</td>
<td>23</td>
<td>Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see item 16]).</td>
</tr>
<tr>
<td><strong>DISCUSSION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summary of evidence</td>
<td>24</td>
<td>Summarize the main findings including the strength of evidence for each main outcome: consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).</td>
</tr>
<tr>
<td>Limitations</td>
<td>25</td>
<td>Discuss limitations at study and outcome level (e.g., risk of bias), and at review level (e.g., incomplete retrieval of identified research, reporting bias).</td>
</tr>
<tr>
<td>Conclusions</td>
<td>26</td>
<td>Provide a general interpretation of the results in the context of other evidence, and implications for future research.</td>
</tr>
<tr>
<td><strong>FUNDING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding</td>
<td>27</td>
<td>Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.</td>
</tr>
</tbody>
</table>

*For more information, visit: [www.prisma-statement.org](http://www.prisma-statement.org).*
Annexure G

Declaration of language editing and APA

To whom it may concern

DECLARATION OF LANGUAGE EDITING

Re: Nurturing Care during the first 1000 days of life: A systematic review

This serves to confirm that I undertook the language editing of the above-mentioned document on behalf of Ms Lizzie Doreen Pelisa Mputle, NWU student no. 26963809.

All language and grammar errors identified were marked electronically by means of "track changes". Implementation of comments and changes was left up to the author.

Should you have any queries please contact me on 084 556 7745.

Yours sincerely

[Signature]

TS Stewart
Member: South African Translators’ Institute
SATI registration no: 1003470
QUALITY CONTROL: REFERENCING PROTOCOL

To whom it may concern

I, Elsa Maria Esterhuizen, hereby declare that the quality control of the referencing style according to the NWU Harvard guidelines as used in the thesis submitted for the degree MSW (Child Protection) at the Potchefstroom Campus of the North-West University by

Lizzia Doreen Palisa Mputle (26963809):

Nurturing care during the first 1000 days of life: A systematic review

was conducted and completed on 6 December 2018.

E.M. Esterhuizen
(B.A. UED, H.L.D. M.Ed. (Educational Technology))
Annexure H

Turn it in report