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Why is Kangaroo Mother Care not yet scaled in the UK? A systematic review and realist synthesis of a frugal innovation for newborn care

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ABSTRACT

Objective Kangaroo Mother Care (KMC) is a frugal innovation improving newborn health at a reduced cost compared with incubator use. KMC is widely recommended; however, in the UK, poor evidence exists on KMC, and its implementation remains inconsistent.

Design This Systematic Review and Realist Synthesis explores the barriers and facilitators in the implementation of KMC in the UK.

Data source OVID databases, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus and Google Scholar were searched.

Eligibility criteria Studies were UK based, in maternity/neonatal units, for full-term/preterm children. First screening included studies on (1) KMC, Kangaroo Care (KC) or skin-to-skin contact (SSC) or (2) Baby Friendly Initiative, Small Wonders Change Program or family-centred care if in relation to KMC/KC/SSC. Full texts were reviewed for evidence regarding KMC/KC/SSC implementation.

Results The paucity of KMC research in the UK did not permit a realist review. However, expanded review of available published studies on KC and SSC, used as a proxy to understand KMC implementation, demonstrated that the main barriers are the lack of training, knowledge, confidence and clear guidelines.

Conclusion The lack of KMC implementation research in the UK stands in contrast to the already well-proven benefits of KMC for stable babies in low-income contexts and highlights the need for further research, especially in sick and small newborn population. Implementation of, and research into, KC/SSC is inconsistent and of low quality. Improvements are needed to enhance staff training and parental support, and to develop guidelines to properly implement KC/SSC. It should be used as an opportunity to emphasise the focus on KMC as a potential cost-effective alternative to reduce the need for incubator use in the UK.

Summary box

What is already known?

- Kangaroo Mother Care (KMC) improves survival, health, somatic growth, neurodevelopment, psychoemotional well-being of stable newborns, even preterm infants, positively impacts family relationships and is cost-effective compared with incubator use. Although it is used routinely in low-income settings, no study has explored its use at scale in the UK.

What are the new findings?

- This study finds that research into KMC in the UK is inconsistent and of poor quality and other less intensive techniques, such as Kangaroo Care and skin-on-skin contact are used interchangeably with KMC.
- It also finds that challenges to KMC use in the UK include lack of routine training for healthcare professionals and families, national guidance and guidelines, coherent policies and a health technology assessment for its adoption at scale. Families may lack the time and space to practice KMC and neonatal care units are not fit for purpose regarding KMC implementation. Facilitators include hospital accreditation systems such as the Baby Friendly Initiative.
- Given the recognised benefits of KMC in certain infant groups, there are opportunities to improve KMC uptake in the UK and reduce the reliance for incubators in stable babies, for example, through enhanced training programmes both for parents and staff, changes in the culture of care, developing coherent guidelines and changing neonatal intensive care unit design to support parents to have their own privacy when practising KMC.

INTRODUCTION

Preterm birth is one of the leading causes of mortality for children under 5 years old.[1 2] In low-/middle-income countries (LMICs), incubators can be prohibitively expensive[3] and place an economic burden on neonatal intensive care units (NICUs) and wider healthcare systems.[4 5] Developed in 1978, in Colombia,[6] Kangaroo Mother Care (KMC) has proven to be a safe and effective alternative to incubators by improving physiological responses, metabolic functions, neurological and psychomotor development, family bonding as well as reducing risk of infections.[6–11] A randomised controlled trial (RCT) observed improvements in mortality in stable children receiving either KMC 24 hours a day compared with incubators care (3.1% for KMC, vs 5.5% for children in the control group).[12] However, regarding small and unstable children, the benefits of KMC are still uncertain and are the focus of current research.[13] An RCT observed a reduction in mortality and promoted KMC in this specific population[14] while another one did not observe any reduction in mortality.[15] KMC is defined as '(1) early, continuous, and prolonged skin-to-skin contact (SSC) between the mother/father and the baby; (2) exclusive breast feeding or breast milk feeding; (3) early discharge after hospital-initiated KMC with continuation at home; (4) and adequate support and follow–up for mothers at home',[16] which should involve continuously maintaining the kangaroo position and follow-up in a multidisciplinary KMC programme.[10 17] Kangaroo Care (KC) is SSC between the newborn and the caregiver. SSC involves the placement of the naked child on the naked mother's breast.[18] While KC and SSC may be used interchangeably,[19] they must not be confused with KMC.[20] In comparison to incubator use, KMC can be classified as a frugal innovation by reducing costs, focusing on core functionalities, and optimising performance.[6 12 16 20–22]

Compared with incubator care, KMC has further benefits both on children's health and parents' well-being.[6 12 16 23] However, other than in some other high-income countries (HICs) (Sweden, USA) implementation and adoption of KMC remain low in HICs, and in particular the UK (table 1).[16 24–27]

There are definitional concerns with KMC research and the few studies that have reported on KMC in the UK on close inspection actually use KC or SSC.[26 28] While the effects of KC and SSC seem positive,[29] the uptake of KC and/or SSC is poor in the UK.[30] Only 50% of parents have as much SSC as they want to and only 64.4% of children receive immediate SSC, a low rate compared with other European countries.[31 32] Several UK initiatives have been implemented to increase the uptake of KC/SSC such as the Small Wonders Change Program (SWCP), the Baby Friendly Initiative (BFI) and family-centred care (FCC);[33–40] however, the uptake of KC and/or SSC remains poor in the UK.[30] A UK-based economic evaluation concluded that for every 800 children receiving KC, between £688 136 and £2 009 563 would be saved per annum.[35 41] The second main component of KMC, breast feeding, reduces morbidity and the risk of necrotising enterocolitis and gastroenteritis which may lead to a cost savings of £119 084–500 696, and £34 809–67 060, respectively.[35] While KMC is defined as a low-cost and cost-saving intervention,[17 26] its implementation may involve, in the short run, direct and indirect costs, in terms of training and adequation of neonatal unit for the provision of this type of care. Hence, an economic evaluation of KMC in the UK is needed to observe how its benefits (eg, potential reduction in the risk of illnesses and length of stay) would reduce the economic burden of the National Health Service (NHS).

KMC is a complex intervention and its worldwide implementation is not consistent.[27] Given the cost effectiveness of KMC and its benefits on stable newborns, it is striking that it has not further scaled in the UK. It seems essential to unpack the mechanisms under which KMC works in the UK and those leading to its failure. The aim of this study is to explore the available published literature to understand the barriers and facilitators in the implementation and adoption of KMC in the UK. To this end, we use a Realist Synthesis Review because this permits an examination of how an intervention works and leads to its outcome, depending on the context,[42 43] asking 'what works, for whom, under which circumstances, in what respects, and how?'.[42 44] It provides an improved knowledge of the intervention and allows the researcher to make the most appropriate decisions to enable the intervention's success.[45]

Table 1 Barriers of Kangaroo Mother Care (KMC)[15–18]

Barriers for HCWs	Barriers for parents	Barriers for healthcare facilities
► Lack of guidance	► Fear	► Absence of leadership and governance
► Lack of training	► Pain and fatigue	► Poor health system delivery
► Poor resources	► Lack of support from staff	► Poor resources
► Concerns about its efficacy	► Lack of knowledge	► Strict parental visits policies
► Increased workload	► No private spaces	► Insufficient trained staff
► Reluctance to change current practice	► Sociocultural barriers	► Absence of KMC leaders
		► Poor/inefficient communication

HCWs, healthcare workers.

METHODS

The methodology is presented in five steps: (1) define the review scope, (2) develop initial programme theories, (3) search for evidence, (4) select and appraise evidence and (5) extract and synthesise data.[43]

Define the review scope

The uptake of, and evidence for, KMC in the UK is poor[26] and no study has been conducted only and specifically on KMC implementation and its potential barriers and facilitators in the UK so far. Therefore, this study aims to address this gap. As there is discrepancy in the definition of KMC,[20] the literature on KC or SSC was also explored.

Develop initial programme theories

Based on detailed review of international literature, including high-income, middle-income and low-income countries, six programme theories were defined as enhancing KMC uptake and nine programme theories were defined as 'rival' programme theories, that is, limiting its uptake (table 2).

Search for evidence

Electronic databases (Embase, Global Health, Health Management Information Consortium (HMIC), Medline, Midwives Information and Resource Service (MIDIRS), APAPsycInfo, CINAHL, Scopus) and Google Scholar were searched in May 2021 (see online supplemental appendix 1 for respective search terms and strategies). The search terms were based on (1) the context/country, (2) the method under study, and (3) preterm infants and parents as well as their synonyms. The common inclusion criteria were that studies had to be UK based, in maternity and/or neonatal units, and for full-term and/or preterm children. First, titles were reviewed, and selected studies were related to either (1) KMC, KC, or SSC or (2) BFI, SWCP or FCC. Second, the abstracts were reviewed and retained if related to (1) KMC, KC or SSC or (2) BFI, SWCP or FCC if in relation to KMC, KC or SSC. Full texts of eligible studies were reviewed for evidence regarding the context, mechanisms and outcomes of the KMC/KC/SSC approaches. Further articles were identified from reference lists of included articles. As there is very little evidence on KMC in the UK, non-peer-reviewed research was also included (online supplemental appendix 2).

Select and appraise evidence

Results were exported on the 14 May 2021 and duplicates were removed on EndNote. After the first screening, studies were organised regarding their main topic of investigation (KMC/KC/SSC/BFI/SWCP/FCC). Full-text screening was applied to the selected studies. The Critical Appraisal Skills Programme (CASP) checklist, recommended by Cochrane and the WHO for qualitative synthesis, was used to assess the quality of the studies.[46]

Extract and synthesise data

A data extraction form was created to extract pertinent information of the included studies such as the context, the mechanisms and the outcomes (online supplemental appendix 3). The aim was to clarify and assess the programme theories previously defined with the studies' findings and to understand 'what works, for whom and under which circumstances'.[42]

RESULTS

Kangaroo Mother Care

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow chart presents the screening and selection process for KMC articles. After the first screening, 17 studies were retained in the KMC category, from which 13 studies were removed. The remaining four were selected for the analysis (figure 1.).

The included studies involved one controlled trial,[28] one review[26] and two commentaries.[47 48]

All included studies aimed to analyse KMC[26 28 47 48] but only Donald provided an accurate definition of KMC[26] and also explored the benefits of SSC, using its evidence to provide information on KMC.[26] Platonos *et al* did not include KMC in their methodology but, instead, SSC.[48] The other commentary used references both on KMC and SSC to provide information on the KMC benefits.[47] Finally, the controlled trial only includes SSC in the KMC definition.[28] While all four studies aimed to explore KMC, (1) they provided either an incomplete or inappropriate definition (2) KMC's findings were based on SSC/KC evidence and (3) KMC, KC and SSC were used interchangeably. A summary of the link between the context and mechanisms to explain the observed outcomes from the included studies is presented below with the full data extraction available in online supplemental appendix 3.

Context

Two studies provided information on context while the two others did not.[28 47] Donald focused on a woman, separated from her child, without opportunity for early SSC.[26] Platonos *et al*, explored the participation of the Imperial College Healthcare NHS Trust Neonatal Service in the global 'Kangaroo Challenge', inspired by the Sunnybrook Children's Hospital in Toronto, Canada.[48]

Mechanisms

Two studies implemented specific tools such as written guidelines, training programme, informative tools for the parents and KMC-trained nurse to achieve their goals.[28 48]

Outcomes

Education and clear guidelines/policies are essential to enhance KMC practice and enabled an important

Table 2 Programme theories based on international literature (high-income countries (HICs) and low-/middle-income countries (LMICs))

Programme theories enhancing the KMC uptake	
Programme theory 1: family-centred care (FCC)	FCC has become more widespread, especially in paediatric and neonatal units with the aim to place parents and family at the centre and promote their empowerment and autonomy in the care of their baby. FCC supports parents and strengthens parent–child bonding, by encouraging KMC.[37 82] Therefore, FCC is expected to promote the KMC uptake.
Programme Theory 2: Baby Friendly Initiative (BFI)	The BFI has been developed by UNICEF UK in response to the very low rate of breast feeding in the UK.[79] This programme involves standards and 10 steps to follow to properly promote breast feeding and hence, to enable services to be accredited. SSC is involved in some of these steps as it facilitates the lactation, improves the child's development and reinforces parents–child bonding.[79] While the BFI accreditation may take years to be completed, it could be expected that hospitals working towards this award are already promoting SSC and breastfeeding practices. Therefore, BFI hospitals (already accredited or not yet) could increase the uptake of SSC and breastfeeding practices and hence, could improve KMC uptake.
Programme Theory 3: Best Beginnings—Small Wonders Change Program (SWCP)	'Best beginnings' UK charity has developed resources to promote the involvement of parents in their baby's care to enhance every newborn's health. The SWCP is a resource that educates both parents and staff using a DVD, a workshop and SWCP facilitators to strengthen FCC and parental involvement in KC/SSC and breast feeding.[36 38 49] Hence, SWCP could increase the uptake of KMC.
Programme Theory 4: Bliss Charity	Bliss is a UK charity that aims to offer the best care possible for every newborn. This charity supports parents and staff with neonatal care and encourages research with the purpose of improving survival and well-being of children.[83] Moreover, Bliss Charity, by developing the Bliss Baby Charter Audit tool, aims to assess and promote FCC and its related interventions, such as KMC.[61 82] Therefore, such a charity may increase the uptake of KMC.
Programme Theory 5: NHS/NICE guidelines	Guidelines and approval from the NHS and/or NICE are essential to promote the proper use of a method of care.[84] Regarding KMC, confusion about the definition is important and, hence, guidelines are necessary to promote KMC.[20] In the UK, few local guidelines exist and they are developed by and for specific trusts/hospitals.[62] Hence, those guidelines involving the use of KMC may potentially lead to a higher rate of this method.
Programme Theory 6: knowledge and confidence	An intervention aiming to improve knowledge and confidence on a practice may enhance the intention and behaviour of the staff to support the uptake of such practice.[36 68] Hence, we may expect that such process may be relevant to KMC as well.
Programme theories reducing the KMC uptake	
Rival Programme Theory 1: healthcare workers: lack of training, knowledge and confidence	The non-inclusion of KMC practice in the curriculum/training programme of healthcare workers (HCWs) would be an important barrier in the uptake of such method.[25] This lack of training leads to poor knowledge of the benefits of KMC and poor confidence in its practice. Hence, HCWs may perceive it as not being based on scientific evidence but only on perceptions which might prevent its promotion.[25] As KMC is a reverse innovation—innovation created by and for LMICs, which is used in HICs to improve health outcomes at a reduced cost—it could potentially be assumed that medical staff may be reluctant to implement KMC as perceiving it as an 'inferior method'.[24 25 85–88] Altogether, HCWs may find it easier and quicker, putting the stable preterm child in an incubator and might feel more comfortable/reassured of using continuous incubator care when children are unstable.
Rival Programme Theory 2: healthcare workers: lack of guidance/guidelines	There is a lack of clear and written protocols on the adequate use of KMC. HCWs are uncertain about when to start this method and concerned about the stability of the child while in KMC. Poor and inconsistent guidance, especially in unstable and high-risk babies, make them feel not confident enough to support KMC.[24 25]
Rival Programme Theory 3: healthcare workers: lack of resources	Time for training and supporting parents in doing KMC, the shortage of nurses available for such support and the short parents' visits due to strict policies may be considered by the HCWs as barriers for implementing KMC.[24 25]
Rival Programme Theory 4: healthcare workers: cultural/social norms	Standard care for newborns has been the norm for decades and some healthcare facilities and staff do not promote early contact between the baby and the mother right after the birth. Hence, they tend to directly bathe the baby and wrap it which prevents the early onset of KMC.[25 79]
Rival Programme Theory 5: caregivers: lack of knowledge/support	The lack of knowledge and support parents have on KMC impacts the rate of use of this method as confidence may decrease and concerns on its benefits may arise.[24] If there is a poor understanding on its use as well as a lack of support from the staff, the uptake of KMC may be low.[41 89]
Rival Programme Theory 6: caregivers: cultural norms	The lack of support from the community and/or family may also negatively impact the use of KMC.[41 89] The mothers may feel uncomfortable of practising KMC in public, may be reluctant to hold the baby covered by dirt/blood, or may feel negatively pressured on the choice to practice KMC by the family and in laws.[89]
Rival Programme Theory 7: healthcare facilities: poor infrastructure	Lack of private spaces, reclining chairs, beds and other infrastructure that facilitate the use of KMC may prevent the uptake of this method.[41]
Rival Programme Theory 8: healthcare facilities: management and leadership	Inadequate management, strict parental visits policies, lack of KMC champions, absence of leaders and insufficient budget may lead to poor uptake of KMC.[24 25]
Rival Programme Theory 9: healthcare facilities: elasticity in the delivery	There is an important interchangeability in the terms used for describing and defining KMC. Indeed, very few studies exploring KMC are really assessing the use of the four components of KMC. Most of them only include the main component, SSC. Hence, it may prevent the right implementation of KMC as some may think they have properly implemented it while they have just implemented KC/SSC.[25]

KC, Kangaroo Care; KMC, Kangaroo Mother Care; NHS, National Health Service; NICE, National Institute for Clinical Excellence; SSC, skin-to-skin contact.

increase in the number of hours performing SSC.[26 48] In the UK, different guidelines promote SSC.[47] The results of the fourth study were not displayed.[28]

Programme theory analysis

The included studies were critically appraised, using the CASP qualitative checklist as well as the RCT checklist.[26 28 47 48] The quality of each of the studies was based on question 8 for both checklists.[46] While only one of the studies had a high level of quality,[48] two had moderate level of quality,[28 47] and one had a low level of quality.[26] The detailed checklists can be found in online supplemental appendix 4. Because all studies mixed the terms KMC, KC and SSC when providing information/evidence on KMC,[26 28 47 48] it was difficult to develop and extract a strong conclusion on the barriers and facilitators of KMC. There was a lack of appropriate and relevant information to properly conduct a Realist Synthesis Review for

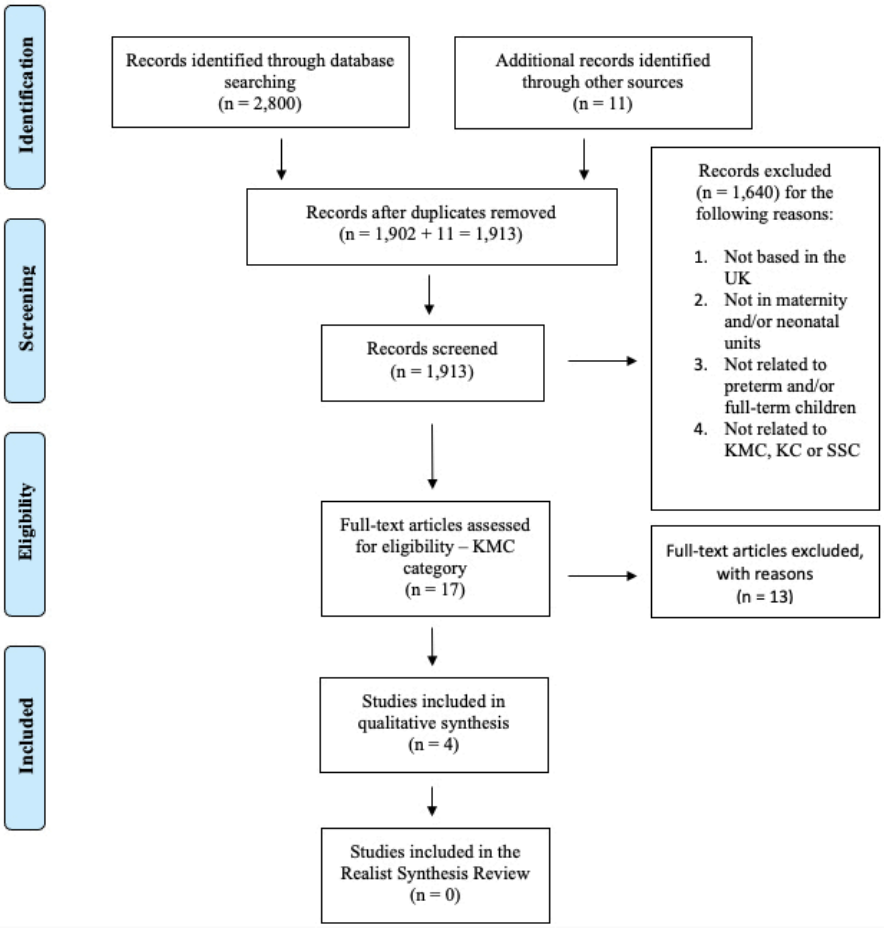

Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow chart—Kangaroo Mother Care (KMC). KC, Kangaroo Care; SSC, skin-to-skin contact.

KMC. Indeed, (1) none of the four included studies was specific to the KMC method/definition, (2) none provided information about strategic implementation in the UK, (3) none explored the potential barriers to KMC's implementation, and (4) most of them used worldwide references to provide evidence and were thus not specific to the UK. Therefore, trying to understand 'what is KMC, how does it work, for whom, in what circumstances, in what respects, and why', *in the UK*, was not possible.

KC/SSC

As KC/SSC is a main component of KMC and aims to improve breast feeding (the second main component of KMC) we expanded our inclusion criteria to include KC/SSC as a proxy to understand the implementation challenges of KMC.[16] Studies on both KC and SSC categories were included as the NHS guidelines use these two terms interchangeably.[19] One hundred twenty-eight studies were retained but 105 were removed as not fulfilling the inclusion criteria. The remaining 23 studies were included for the analysis (figure 2; online supplemental appendix 5).

Pre–post cohort interventions,[36 49] mixed-method study,[50] qualitative study,[51] participatory action research approach,[52 53] interpretative phenomenological approach,[54] literature review,[55 56] surveys,[30 57 58] audits[59 60] and commentaries[38 48 61–67] were included. The study population included (1) staff from neonatal and maternity units,[36 50 51 58 60 64 65] (2) mothers in maternity units,[54 63] (3) the whole family in neonatal and maternity units,[38 48 56 59] (4) both parents and staff from neonatal and maternity services,[49 52 53 55 57 62 67] or (5) no specific population.[30 61 66]

While some studies focus on SSC,[48 49 51–56 60 61 63–66] others focus on KC.[30 58] Certain authors also defined these two methods as being synonymous.[36 38 50 57 59 62 67]

A summary of the context, mechanisms and outcomes is provided below. The full data extraction form on these components is presented in online supplemental appendix 6.

Context

While all included studies referred to the UK, some focus on NICUs[48 50–52 57–61 67] and others on maternity units.[36 54 55 63]

Mechanisms

Studies highlighted barriers in the implementation of KC/SSC which are the lack of training,[50 51 58] lack of

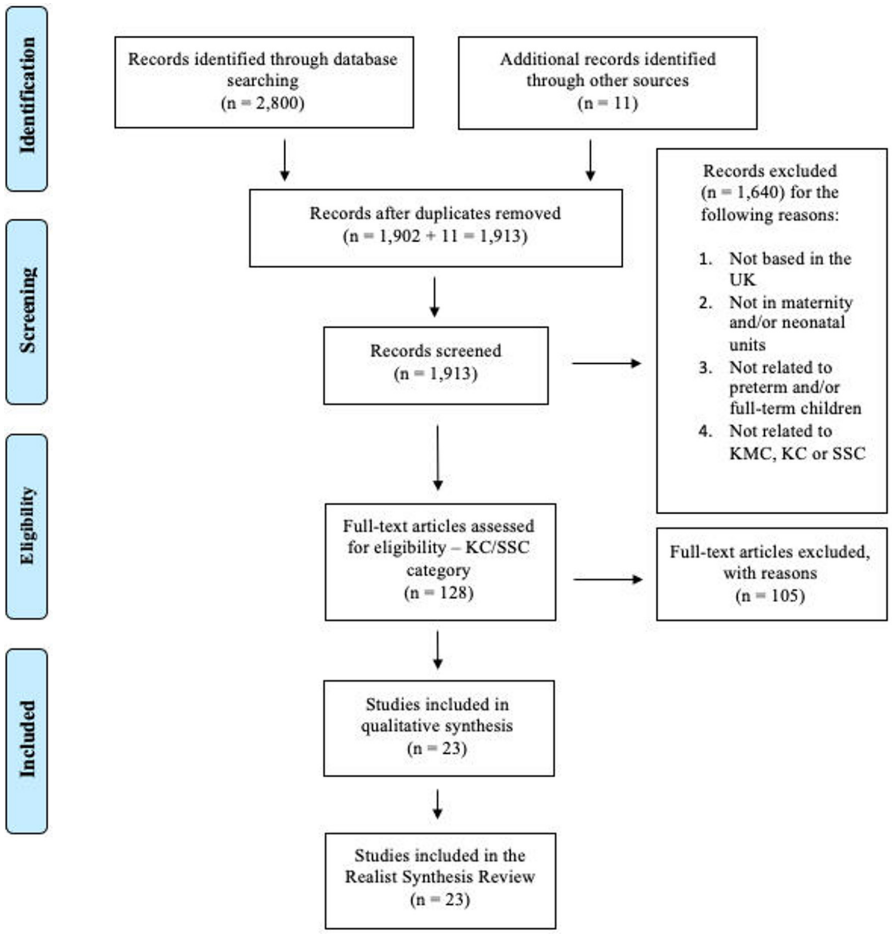

Figure 2 Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow chart—Kangaroo Care (KC)/skin-to-skin contact (SSC). KMC, Kangaroo Mother Care.

guidance/guidelines/policies,[50 51 58 62] lack of confidence,[50 58 60] fear,[58] poor trained staff availability,[50] time constraints,[60 65] phototherapy,[64] no guidance on humidification[51 67] and instability of the child.[51 58] Other barriers were perceived such as unwillingness from parents,[51 58] difficulty to change the currently well-implemented routine of care,[65 66] and inappropriate environment with lack of comfortable chairs and no private spaces.[50 51 58 65] Finally, mothers may face different sociocultural barriers in the KC/SSC practice such as being culturally different (too rich or from ethnic minority),[30 65] and having a blood phobia or being concerned to be dirty in front of family.[54] Partners may also feel jealous of the mother–child bond, and this might make mothers feel guilty to practice such method.[56] Midwives might have prejudices and may see breasts as being sexual which might further prevent the proper KC/SSC implementation.[55 56] KC/SSC practice decreases from north to south in the UK with increasing hospital-based deliveries.[30 66 67] Regarding enablers, the Bliss Baby Charter audit tool,[59 61] informative tools for parents,[48 63] training for staff and parents,[48 51–53 59 63 67] SWCP,[36 38 49 67] promotional/educative tools,[48 52 53 59 63 67] written guidelines,[48 67] comfortable chairs,[67] multidisciplinary approach involving parents in ward discussions[67] and the creation of a multidisciplinary team with trained staff are all facilitators in the implementation of KC/SSC.[59]

Outcomes

Eleven studies presented their outcomes in terms of increased KC/SSC practice.[36 38 48 49 52 53 57 59 61 63 67] Three studies observed an increase in knowledge, confidence and number of trained staff.[36 38 57] Finally, different studies proposed improvements such as to enhance training programmes, implement educational/informative tools both for staff and parents, apply changes in practice, remove any prejudices, improve the environment (reclining chairs, private spaces), and implement clear and coherent policies.[50 51 54–56 58–60 62 65 66]

Programme theory analysis

Using the same programme theories as for KMC but focusing on KC/SSC (figure 3), only the most supported/relevant programme theories are described below, with a complete description available in online supplemental appendix 7.

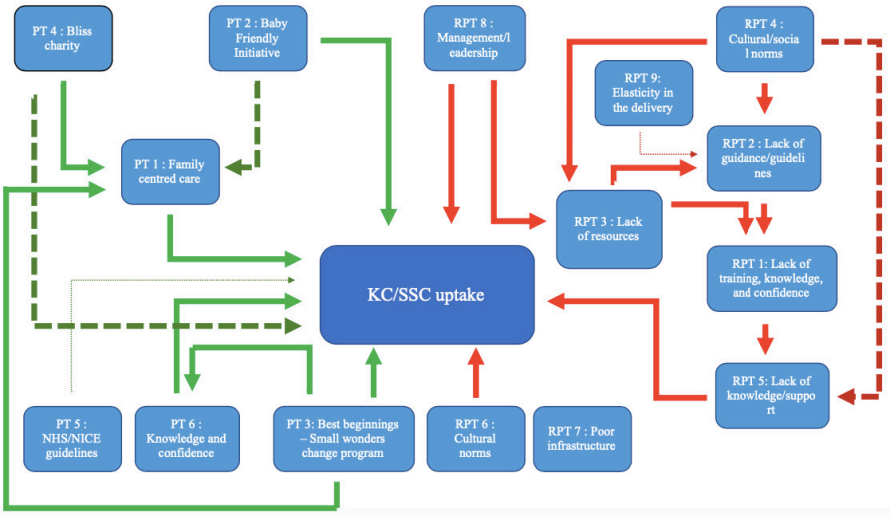

Figure 3 Programme theory analysis—Kangaroo Care (KC)/skin-to-skin contact (SSC). Large dark green/red dotted lines: positive/negative impact on KC/SSC, added after having analysis the findings with the programme theories. Thin dark green/red dotted line: findings not highlighted in the analysis of the included studies. Normal lines: no change. The findings of the included studies confirm these hypotheses. The green/red lines are positively/negatively impacting KC/SSC uptake. NHS, National Health Service; NICE, National Institute for Clinical Excellence; PT, programme theory; RPT, rival programme theory.

Programme theory 1: family-centered care (FCC) and programme theory 4: Bliss charity

Several included studies confirm this theory, adding that FCC enhances the practice of KC/SSC.[48 52 60 61] To encourage and promote FCC in neonatal units, Bliss charity has developed the Bliss Baby Charter audit tool which aims to enable units to define areas that need improvement. This tool, by enhancing FCC, improved the rate of KC/SSC practice.[59 61] This charity also developed guidance and informative tools on KC/SSC to strengthen the practice of KC/SSC.[48 62 67]

Programme theory 2: BFI

Two studies observe that BFI accreditation, by promoting KC/SSC through the fourth and seventh steps, improves the uptake of this practice.[63 65] Moreover, as FCC is a guiding principle of BFI, it encourages further the families to practice KC/SSC.[50]

Programme theory 3: best beginnings—SWCP

Findings from three studies confirm that the SWCP, involving an educative DVD for parents and staff as well as workshops, increases the confidence and knowledge of parents and staff and hence, improves the KC/SSC practice.[36 38 49]

Programme theory 6: knowledge and confidence

Different interventions, involving educational programmes (specific training, SWCP, educational sessions), have increased the practice of KC/SSC.[36 48 52 53 57 59] Indeed, an increase in the knowledge and confidence has been observed to enhance the intention of staff to promote and initiate KC/SSC.[36 68] Parental knowledge on KC/SSC is also paramount to improve the uptake of such method.[38 48]

Rival programme theory 1: healthcare workers: lack of training, knowledge and confidence

Knowledge and confidence play an essential role in the implementation of KC/SSC practice.[50] Such skills are lacking in staff who have not followed a KC/SSC training and, hence, it limits its appropriate integration.[50] Staff perceive the lack of training as an important barrier in the implementation of KC/SSC.[50 51 62] No study indicated that attitudes towards reverse innovation and LMICs may act as a barrier in KC/SSC implementation in the UK.

Rival programme theory 2: healthcare workers: lack of guidance/guidelines

The lack of clear guidelines is an important barrier to implement KC/SSC.[50 51 62 65 67] Without robust policies, staff lack information on timing, intensity, frequency and optimal environment which limits the integration of KC/SSC in the routine of care, and especially for high-risk babies.[58] Therefore, there is a crucial need to implement strong guidance to enhance KC/SSC practice for all newborns with a special emphasis on high-risk babies that need intensive care as they are the majority in the UK high-settings neonatal units.[51 62 65]

Rival programme theory 4: healthcare workers: cultural/social norms

A barrier in the implementation of KC/SSC in practice is the difficulty to change the already well-implemented routine of care.[55 65 66] According to some reports, preconceptions from midwives on nudity and on the sociocultural background of mothers may limit the willingness/choice of mothers to practice KC/SSC.[54–56] While early bathing may be considered as a cultural norm limiting the opportunity for SSC, none of the included reports confirmed this issue.

Table 3 Quality levels of the programme theories

Programme theory	Level of quality
PT 1: Family-centred care (FCC) and PT 4: Bliss Charity	Moderate to high level of quality (four studies have high quality and three have moderate).
PT 2: Baby Friendly Initiative (BFI)	Moderate to high level of quality (two studies have moderate quality and one have high quality).
PT 3: Best Beginnings—Small Wonders Change Program (SWCP)	Moderate level of quality (one study has low quality, one study has moderate, and one has high quality).
PT 5: NHS/NICE guidelines	N/A
PT 6: Knowledge and confidence	Moderate to high level of quality (five studies have high level of quality and three moderate).
RPT 1: HCWs: lack of training, knowledge, and confidence	High level of quality (six studies have high level while one has moderate).
RPT 2: HCWs: lack of guidance/guidelines	Moderate to high level of quality (four studies have high quality and two have moderate).
RPT 3: HCWs: lack of resources	Moderate to high level of quality (four studies have high level and two have moderate).
RPT 4: HCWs: cultural/social norms	Moderate level quality (two studies have high quality, two studies have moderate, and one has low level).
RPT 5: Caregivers: lack of knowledge/support	Moderate to high level of quality (three studies have high level and one has moderate).
RPT 6: Caregivers: cultural norms	Moderate to high level of quality (three studies have high level, one has moderate, and one has low level).
RPT 7: Caregivers: poor infrastructure	Moderate to high level of quality (three studies have high level and one has moderate).
RPT 8: Healthcare facilities	High level of quality (six studies have high level and one has moderate).
RPT 9: Elasticity in the delivery	N/A

Green, high level of quality; yellow, moderate to high level of quality, and red, moderate level of quality.
HCWs, healthcare workers; KC, Kangaroo Care; NHS, National Health Service; NICE, National Institute for Clinical Excellence; PT, programme theory; RPT, rival programme theory; SSC, skin-to-skin contact.

The CASP 'qualitative checklist' was used to appraise the studies however not all the checklist questions were applicable. The quality of each of the study was based on question 8.[46] For each of the programme theories, the level of quality is represented in the table 3. As PT 5 and RPT 15 were not supported by any included evidence, the level of quality was not applicable (N/A). The detailed checklists as available in online supplemental appendix 8.

DISCUSSION

The four included studies on KMC did not permit a full review of the programme theories due to insufficient information and muddled definitions of the intervention used. Expanding the search to include KC and SSC found that lack of education, knowledge, confidence and clear guidance/guidelines are barriers in its implementation. Similar challenges are observed in other contexts/settings such as in the USA.[69 70] Enablers included BFI, SWCP and FCC to strengthen KC/SSC practice, which is also observed in other countries.[71 72]

The disparity in the KMC definitions is a global issue.[20] Indeed, even in Sweden, where KMC is well implemented in the routine of care,[60] the KMC definition varies considerably.[73 74] While the benefits of KMC are well known, particularly in stable children, the null finding regarding the barriers and facilitators on its implementation in the UK highlights how essential further work is needed to research its use in the UK. Both the NHS and the Bliss charity define KC and SSC as being synonyms.[75 76] Clear definitions should be used for all studies related to either KMC, KC or SSC, within the UK and generally. Further work is needed to understand the timing, frequency and intensity of the KC/SSC, especially in clinically unstable and high-risk babies who need intensive care and humidification.[54 55 58 60 63 65 66] BFI guidance, aiming to improve breastfeeding rates, has been developed at the national level in the UK, including recommendation that KC/SSC that should be practised as soon as possible and for as long as possible.[63] However, only BFI hospitals follow these guidelines, preventing a consistent national integration of such practice.[54] The lack of local guidelines, developed by the trust or by charities, undermines the spread of this intervention.[62] Including KMC recommendations into BFI guidance as it already involves the KC/SSC and the breastfeeding components is an important opportunity. NHSE/I should develop a consistent guideline, for all services, to ensure that KMC practice is further integrated in the current healthcare system, as well as in healthcare educational programmes.[16 26]

Workplace culture is an important barrier for KC/SSC implementation and emphasis should be put on training programmes to overcome this challenge.[65] Currently, there are few training programmes in England and none in Northern Ireland on KC/SSC.[58] However, when educational tools are implemented as an intervention to improve such practice, results are positive.[67] Improvements are needed to develop standardised training programmes and incorporate them further into neonatal/maternity services as well as to use this opportunity to educate both parents and staff on KMC, allaying fears or concerns that midwives or parents may have.[54] We found evidence to suggest that parents' knowledge, availability, and willingness to practice KMC is an important barrier.[51 58] As they are the main drivers in its practice and that it asks for important commitment, it could be expected that it is a considerable challenge. This barrier may be further enhanced by poor staff knowledge, confidence and support.[58] Educational training for parents and staff should be ensured and the promotion of KMC could be initiated from the moment mothers register in antenatal clinics. Including other HCWs in KMC

promotion is important to ensure that parents have enough support without increasing the time pressure on nurses/midwives.[27]

The barriers of lack of guidance and specific training programmes are even more important when related to high-risk babies who need intensive care and where uncertainties remain regarding the timing, duration, and intensity of KMC for this population.[51 58] As UK neonatal units are principally treating high-risk babies, guidance and training, while necessary, may not be sufficient to promote KMC in the UK. Other cultural/societal challenges (such as families with other children to take care of, working obligations, poor/far access to the units), may limit parental visits and, hence, the opportunity to practice KC/SSC/KMC.[27] Moreover, neonatal units may not be designed with KMC in mind and therefore might not be suited to have a bed next to the baby which limit the possibility of parents staying as much as they want to.[27 77] Creating mother–baby units for preterm children would potentially provide the needed privacy for mothers/fathers/caregivers to practice KC/SSC/KMC.[27] The concept of 'Mother-NICU' units, where caregivers have a bed and chair at their disposal to enable immediate/intensive KMC, has been successfully implemented in Ghana, India, Malawi, Nigeria and Tanzania trial[14] and Estonia.[78] However, this will require significant investment and should be subject to a cost-effectiveness analysis. Use of KMC for unstable babies requires more evidence and research for use in the UK.

The findings exposed in this review may not accurately represent experiences, rather, it reflects what has been published. Indeed, there has been progress towards a supportive environment for KMC in the UK. First, the cultural practice of bathing the baby right after birth in the UK is becoming less important and is even often delayed in order to promote early SSC.[79] Second, the Royal College of Nursing has included the need for KC training in the UK.[80] Finally, replacing incubator care with KMC might be unrealistic in the UK as there will always be a place for their use in unstable babies where, for example, humidity, intubation and ventilation are required. Indeed, it may require a complete restructuring of NICUs architecture, drastic improvements in the duration and financial support of parental leave, and important changes in the UK culture where parents would be able to commit 24 hours per day with their babies on their chest. While incubators will probably always be part of the preterm baby's routine of care, particularly for unstable babies, there are still opportunities to increase the research and practice around KMC to enhance its use and reduce the constant reliance on incubator care, while improving newborn and parent well-being. As a reverse innovation,[81] being used extensively in other HICs (eg, Sweden)[74] KMC offers significant potential for the UK.

Other HICs such as the Nordic countries, where KMC has been implemented in routine care, should be taken as example to help understand what the facilitators would be to enhance KMC practice within the UK.[26 74] Various evidence exists on the strategies needed to properly increase the KMC implementation including focussing on parents' knowledge, parents' support, nurses' training and confidence, and the facilities provided by healthcare systems (such as private spaces, opportunities to stay overnight and flexible visit policies).[24 41 74] Moreover, embedding KMC in the national programme of maternal and newborn care would enable to have appropriate policies and guidelines, both necessary for a proper KMC implementation.[24 41]

This paper is the first to systematically review the opportunities and challenges of implementing KMC and KC/SSC in the UK; however, it does have several limitations. First, KC/SSC was used as a proxy to better understand KMC implementation. Studies that incorporate KMC as part of a wider programme of neonatal care, such as Family Integrated Care, may have been missed in our search. Second, KC and SSC have been used as synonyms, based on the NHS and Bliss definitions,[75 76] and most of the included studies used these terms interchangeably. Third, the CASP checklist used was not always applicable and not all components could be answered. Finally, non-peer-reviewed papers were included which may limit the quality and robustness of this review.

CONCLUSION

No evidence was found regarding the barriers and challenges to scaling KMC in the UK suggesting that it is a poorly researched area. KC/SSC had to be taken as a proxy to better understand the barriers and facilitators to KMC. There are opportunities through hospital accreditation systems to embed KMC as a standard of care where adequate training, culture change and education is available to support mothers and clinical staff, and potentially in reducing reliance on incubator use for this well-established and cost-effective method for stable preterm babies. A clear definition for KMC use within the UK is needed to develop guidelines that are essential to improve newborns' health. Putting KMC at the centre of a Mother-NICU investment programme will provide the needed space and privacy to practice this important intervention.

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Appendices:

Appendix 1. Search strategies

CINAHL – 1,120 results

1. (MH "United Kingdom") OR "United Kingdom" - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
2. UK - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
3. England - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
4. Scotland - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
5. Northern Ireland - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
6. Wales - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
7. Britain - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
8. National Health Service - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
9. NHS - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
10. AF NHS - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
11. AF London - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
12. S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11
13. (MH "Kangaroo Care") OR "kangaroo care" - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
14. Kangaroo N1 care - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
15. Kangaroo mother* - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
16. skin to skin - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
17. (MH "Family Centered Care") OR "family centered care" - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
18. family centred care - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
19. baby friendly N1 initiative - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
20. Small wonders - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
21. S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20
22. mother* OR father* OR parent* OR neonat* OR baby OR babies - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
23. Newborn* - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
24. New-born* - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
25. preterm child* - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
26. Premature child* - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
27. Preterm infant* - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
28. Premature infant* - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
29. Preterm baby - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
30. premature baby - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
31. preterm babies - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
32. premature babies - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
33. Preemie* - Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
34. S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33
35. S12 AND S21 AND S34

SCOPUS – 425 results

```
( TITLE-ABS-KEY ( "United kingdom" ) OR TITLE-ABS-KEY ( "UK" ) OR TITLE-ABS-KE
Y ( "Scotland" ) OR TITLE-ABS-KEY ( "Wales" ) OR TITLE-ABS-KEY ( "Northern Ireland
" ) OR TITLE-ABS-KEY ( "London" ) OR TITLE-ABS-KEY ( "England" ) OR TITLE-ABS-K
EY ( "Britain" ) OR TITLE-ABS-KEY ( "National Health Service" ) OR TITLE-ABS-KEY ( "N
HS" ) OR AFFILCOUNTRY ( "United Kingdom" ) ) AND ( TITLE-ABS-KEY ( "Kangaroo W/
1 Care" ) OR TITLE-ABS-KEY ( "Kangaroo Mother*" ) OR TITLE-ABS-KEY ( "skin to skin
" ) OR TITLE-ABS-KEY ( "Baby friendly W/1 initiative" ) OR TITLE-ABS-KEY ( "Family cen
tered care" ) OR TITLE-ABS-KEY ( "Small Wonders" ) ) AND ( TITLE-ABS-KEY ( "mother*
" ) OR TITLE-ABS-KEY ( "parent*" ) OR TITLE-ABS-KEY ( "neonat*" ) OR TITLE-ABS-K
EY ( "baby" ) OR TITLE-ABS-KEY ( "babies" ) OR TITLE-ABS-KEY ( "Newborn*" ) OR TI
TLE-ABS-KEY ( "New-born*" ) OR TITLE-ABS-KEY ( "Preterm child*" ) OR TITLE-ABS-K
EY ( "Premature child*" ) OR TITLE-ABS-KEY ( "Preterm infant*" ) OR TITLE-ABS-KEY ( "
Premature infant*" ) OR TITLE-ABS-KEY ( "Preterm baby" ) OR TITLE-ABS-KEY ( "Prematu
re baby" ) OR TITLE-ABS-KEY ( "Preterm babies" ) OR TITLE-ABS-KEY ( "Premature babies
" ) OR TITLE-ABS-KEY ( "Preemie*" ) )
```

OVID – EMBASE – 414 results:

1 exp United Kingdom/
2 United Kingdom.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
3 Scotland.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
4 Northern Ireland.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
5 Wales.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
6 England.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
7 Britain.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
8 London.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
9 national health service/
10 National Health Service.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
11 NHS.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
12 NHS.in.
13 london.in.
14 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13
15 exp kangaroo care/
16 (Kangaroo adj2 Care).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
17 Kangaroo Mother*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
18 skin to skin.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
19 (Baby friendly adj2 initiative).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
20 Family cent* Care.mp. or exp family centered care/
21 Small Wonders.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

22 15 or 16 or 17 or 18 or 19 or 20 or 21
23 mother*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
24 father*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
25 parent*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
26 neonat*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
27 baby.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
28 babies.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
29 Newborn*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
30 New-born*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
31 (Preterm child* or Premature child*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
32 (Preterm infant* or Premature infant*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
33 (Preterm baby or Premature baby).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
34 (Preterm babies or Premature babies).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
35 Preemie*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
36 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35
37 14 and 22 and 36

OVID – MEDLINE – 240 results:

1 United Kingdom.mp. or exp United Kingdom/
2 Scotland.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
3 Wales.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
4 Northern Ireland.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
5 England.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
6 Britain.mp.
7 London.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
8 NHS.mp.
9 National Health Service.mp.
10 NHS.in.
11 London.in.
12 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11
13 exp Kangaroo-Mother Care Method/
14 (Kangaroo adj2 Care).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
15 Kangaroo Mother*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
16 skin to skin.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
17 (Baby friendly adj2 initiative).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
18 family cent* care.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
19 Small Wonders.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
20 13 or 14 or 15 or 16 or 17 or 18 or 19

21 mother*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
22 father*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
23 parent*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
24 neonat*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
25 baby.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
26 babies.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
27 Newborn*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
28 New-born*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
29 (Preterm child* or Premature child*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
30 (Preterm infant* or Premature infant*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
31 (Preterm baby or Premature baby).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
32 (Preterm babies or Premature babies).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
33 Preemie*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
34 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33
35 12 and 20 and 34

OVID – Global Health – 44 results:

1 exp UK/
2 United Kingdom.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
3 Scotland.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
4 Wales.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
5 Northern Ireland.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
6 England.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
7 Britain.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
8 London.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
9 National Health Service
10 NHS.mp.
11 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10
12 (Kangaroo adj2 Care).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
13 Kangaroo Mother*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
14 skin to skin.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
15 (Baby Friendly adj2 initiative).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
16 Family cent* Care.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
17 Small Wonders.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
18 12 or 13 or 14 or 15 or 16 or 17
19 mother*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
20 father*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
21 parent*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
22 neonat*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
23 baby.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
24 babies.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
25 Newborn*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
26 New-born*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
27 (Preterm child* or Premature child*).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
28 (Preterm infant* or Premature infant*).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
29 (Preterm baby or Premature baby).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
30 (Preterm babies or Premature babies).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
31 Preemie*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
32 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31
33 11 and 18 and 32

OVID – HMIC – 12 results:

1 United Kingdom.mp. or exp United Kingdom/
2 Scotland.mp. [mp=title, other title, abstract, heading words]
3 Northern Ireland.mp. [mp=title, other title, abstract, heading words]
4 Wales.mp. [mp=title, other title, abstract, heading words]
5 England.mp. [mp=title, other title, abstract, heading words]
6 Britain.mp. [mp=title, other title, abstract, heading words]
7 London.mp. [mp=title, other title, abstract, heading words]
8 exp NHS/ or NHS.mp.
9 National Health Service.mp.
10 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9
11 Kangaroo Mother*.mp. [mp=title, other title, abstract, heading words]
12 (Kangaroo adj2 Care).mp. [mp=title, other title, abstract, heading words]
13 skin to skin.mp. [mp=title, other title, abstract, heading words]
14 (Baby Friendly adj2 Initiative).mp. [mp=title, other title, abstract, heading words]
15 Family cent* care.mp. [mp=title, other title, abstract, heading words]
16 Small Wonders.mp. [mp=title, other title, abstract, heading words]
17 11 or 12 or 13 or 14 or 15 or 16
18 mother*.mp. [mp=title, other title, abstract, heading words]
19 father*.mp. [mp=title, other title, abstract, heading words]
20 parent*.mp. [mp=title, other title, abstract, heading words]
21 neonat*.mp. [mp=title, other title, abstract, heading words]
22 baby.mp. [mp=title, other title, abstract, heading words]
23 babies.mp. [mp=title, other title, abstract, heading words]
24 Newborn*.mp. [mp=title, other title, abstract, heading words]
25 New-born*.mp. [mp=title, other title, abstract, heading words]
26 (Preterm child* or Premature child*).mp. [mp=title, other title, abstract, heading words]
27 (Preterm infant* or Premature infant*).mp. [mp=title, other title, abstract, heading words]
28 (Preterm baby or Premature baby).mp. [mp=title, other title, abstract, heading words]
29 (Preterm babies or Premature babies).mp. [mp=title, other title, abstract, heading words]
30 Preemie*.mp. [mp=title, other title, abstract, heading words]
31 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30
32 10 and 17 and 31

OVID – MIDIRS – 515 results:

1 [United Kingdom.mp. or exp United Kingdom/]
2 Scotland.mp. [mp=abstract, heading word, title]
3 Wales.mp. [mp=abstract, heading word, title]
4 Northern Ireland.mp. [mp=abstract, heading word, title]
5 England.mp. [mp=abstract, heading word, title]
6 Britain.mp.
7 London.mp. [mp=abstract, heading word, title]
8 NHS.mp.
9 National Health Service.mp.
10 [NHS.in.]
11 [London.in.]
12 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11
13 [exp Kangaroo-Mother Care Method/]
14 (Kangaroo adj2 Care).mp. [mp=abstract, heading word, title]
15 Kangaroo Mother*.mp. [mp=abstract, heading word, title]
16 skin to skin.mp. [mp=abstract, heading word, title]
17 (Baby friendly adj2 initiative).mp. [mp=abstract, heading word, title]
18 family cent* care.mp. [mp=abstract, heading word, title]
19 Small Wonders.mp. [mp=abstract, heading word, title]
20 13 or 14 or 15 or 16 or 17 or 18 or 19
21 mother*.mp. [mp=abstract, heading word, title]
22 father*.mp. [mp=abstract, heading word, title]
23 parent*.mp. [mp=abstract, heading word, title]
24 neonat*.mp. [mp=abstract, heading word, title]
25 baby.mp. [mp=abstract, heading word, title]
26 babies.mp. [mp=abstract, heading word, title]
27 Newborn*.mp. [mp=abstract, heading word, title]
28 New-born*.mp. [mp=abstract, heading word, title]
29 (Preterm child* or Premature child*).mp. [mp=abstract, heading word, title]
30 (Preterm infant* or Premature infant*).mp. [mp=abstract, heading word, title]
31 (Preterm baby or Premature baby).mp. [mp=abstract, heading word, title]
32 (Preterm babies or Premature babies).mp. [mp=abstract, heading word, title]
33 Preemie*.mp. [mp=abstract, heading word, title]
34 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33
35 12 and 20 and 34
36 United Kingdom.mp. [mp=abstract, heading word, title]
37 UK.mp. [mp=abstract, heading word, title]
38 Scotland.mp. [mp=abstract, heading word, title]
39 Northern Ireland.mp. [mp=abstract, heading word, title]
40 Wales.mp. [mp=abstract, heading word, title]
41 England.mp. [mp=abstract, heading word, title]
42 Britain.mp. [mp=abstract, heading word, title]
43 London.mp. [mp=abstract, heading word, title]
44 NHS.mp. [mp=abstract, heading word, title]
45 National Health Service.mp. [mp=abstract, heading word, title]
46 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45
47 (Kangaroo adj2 Care).mp. [mp=abstract, heading word, title]
48 Kangaroo mother*.mp. [mp=abstract, heading word, title]
49 skin to skin.mp. [mp=abstract, heading word, title]
50 (Baby friendly adj2 initiative).mp. [mp=abstract, heading word, title]
51 Family cent* care.mp. [mp=abstract, heading word, title]
52 Small Wonders.mp. [mp=abstract, heading word, title]
53 47 or 48 or 49 or 50 or 51 or 52

54 mother*.mp. [mp=abstract, heading word, title]
55 father*.mp. [mp=abstract, heading word, title]
56 parent*.mp. [mp=abstract, heading word, title]
57 neonat*.mp. [mp=abstract, heading word, title]
58 baby.mp. [mp=abstract, heading word, title]
59 babies.mp. [mp=abstract, heading word, title]
60 Newborn*.mp. [mp=abstract, heading word, title]
61 New-born*.mp. [mp=abstract, heading word, title]
62 (Preterm child* or Premature child*).mp. [mp=abstract, heading word, title]
63 (Preterm infant* or Premature infant*).mp. [mp=abstract, heading word, title]
64 (Preterm baby or Premature baby).mp. [mp=abstract, heading word, title]
65 (Preterm babies or Premature babies).mp. [mp=abstract, heading word, title]
66 Preemie*.mp. [mp=abstract, heading word, title]
67 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66
68 46 and 53 and 67

OVID – APAPsycInfo – 30 results:

1 United Kingdom.mp.
2 Scotland.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
3 UK.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
4 Northern Ireland.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
5 Wales.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
6 England.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
7 London.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
8 Britain.mp.
9 NHS.mp.
10 National Health Service.mp.
11 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10
12 (Kangaroo adj2 Care).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
13 Kangaroo Mother*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
14 skin to skin.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
15 (Baby friendly adj2 initiative).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
16 Family cent* care.mp.
17 Small Wonders.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
18 12 or 13 or 14 or 15 or 16 or 17
19 mother*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
20 father*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
21 parent*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
22 neonat*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
23 baby.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
24 babies.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
25 Newborn*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
26 New-born*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
27 (Preterm child* or Premature child*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
28 (Preterm infant* or Premature infant*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
29 (Preterm baby or Premature baby).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
30 (Preterm babies or Premature babies).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
31 Preemie*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
32 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31
33 11 and 18 and 32

Appendix 2. Full text review - KMC

Author	Year	Title	Setting	Aim	Findings	Inclusion Y/N	If N, explain
Lawn et al.	2013	Born Too Soon: Accelerating actions for prevention and care of 15 million newborns born too soon	Multi countries / LiST	They observe what needs to be done to reduce preterm birth: Antenatal Care and preterm care. What are the research gaps?	They observed that KMC is improving the care of the preterm birth and could prevent plenty of neonatal deaths	N	This study hasn't been included because besides explaining how KMC would prevent plenty of neonatal and maternal deaths, it is mainly specific to LMIC and, moreover, it doesn't provide any information on its implementation and context of implementation for improving its success. Moreover, it is not specific to the UK
Lawn et al.	2013	Born Too Soon: Care for the preterm baby	Multi countries	Understand the essential care for preterm baby. What are the packages for increasing their health and reduce their mortality?	KMC is important and should be better implemented, especially in LMIC	N	This study hasn't been included because besides explaining how KMC would prevent plenty of neonatal and maternal deaths, it is mainly specific to LMIC and, moreover, it doesn't provide any information on its implementation and context of implementation for improving its success. Moreover, it is not specific to the UK

Puri, B.K. et al.	2020	Breastfeeding following kangaroo mother care	Multi countries	Develop the interest on SSC first on animals and then on humans. They then focused on KMC and explained a Systematic Review and a Meta-Analysis showing that KMC increase the breastfeeding rates.	KMC increases the breastfeeding rates	N	This study mainly explained the "history" of SSC and its benefits to finally explain KMC and its benefits, from different studies from all over the world. They conclude that KMC increases the breastfeeding rates. Therefore, it doesn't speak about KMC and the context of its implementation. Moreover, it is not based in the UK
Platonos et al.	2018	Celebrating a fortnight of skin to skin holding	Imperial College Healthcare NHS Trust	To celebrate International Kangaroo Mother Care (KMC) fortnight this year, Imperial College Healthcare NHS Trust Neonatal Service, consisting of a level 2 and 3 neonatal unit, took part in a global “Kangaroo challenge”.	Emphasize the importance of staff supporting parents to be at the center of their child's care and the vital benefits of skin-to-skin on their baby	Y	
Guenther et al.	2017	Consensus-based approach to develop a measurement framework and identify a core set of indicators to track implementation and progress towards effective coverage	Multi countries	The aim is to develop and define indicators that will enable to assess the	10 specific indicators have been defined based on: 1) service readiness, based on	N	Not based in the UK.

		of facility-based Kangaroo Mother Care		KMC implementation.	the WHO building blocks framework; and 2) service delivery action sequence covering identification, service initiation, continuation to discharge, and follow–up to graduation.		
Donald et al.	2017	Critical analyses of the implications of Kangaroo Mother Care on a preterm infant	Case study in the UK	The aim of this article is to, through a case study, describe the experiences of a women who underwent a caesarean section and who did not have the possibility of early SSC.	There is not enough guidelines/guidance in the NHS to properly implement KMC despite its well-known benefits.	Y	
Mann et al.	2016	Design, Implementation, and Early Outcome Indicators of a New Family-Integrated Neonatal Unit	Catholic Medical Center in Manchester, NH	It reviews how FCC have been implemented in the units.	/	N	USA based

Browne et al.	2011	Developmental Care for High-Risk Newborns: Emerging Science, Clinical Application, and Continuity from Newborn Intensive Care Unit to Community	Not defined	They observed that preterm children may have neurodevelopmental issue later and that the environment may play a crucial role in the development of the neurological system of the child	Developmentally supportive care (DSC) is growing and may improve the outcomes.	N	Not specific to the UK and, besides giving some positive outcome of KMC, it does not give any information on its implementation and outcomes. It provides information on DSC but not on the KMC.
Moore et al.	2016	Early skin-to-skin contact for mothers and their healthy newborn infants (21 different countries)	Multi countries (21 countries)	It assesses the effects of immediate or early SSC for healthy newborn infants compared to standard contact.	Evidence supports the use of SSC to promote breastfeeding.	N	Just one study from the included studies comes from the UK. It is Carfoot et al. that is already included in our results but in the "SSC section" as it only speaks about SSC.
Puthussery et al.	2018	Effectiveness of early intervention programs for parents of preterm infants: A meta-review of systematic reviews	Multi countries	The aim is to appraise and synthesize the evidence on the effectiveness of interventions for parents of preterm infants.	Kangaroo Care (KC) showed the most frequent positive impact across outcomes followed by Mother Infant Transaction Program.	N	It is based on KC and not all evidence is from the UK.
Entwistle et al.	/	The evidence and rationale for the UNICEF UK Baby Friendly Initiative standards	UK	This book explores the evidence on the revised UNICEF UK Baby Friendly Initiative (BFI) Standards.	Explain the standards and some include KMC	N	It speaks about Kangaroo Care while using the abbreviation KMC. Moreover, they do not speak about KMC implementation and how it can be done

							depending on the different contexts.
Langley et al.	2017	Evidence suggests that kangaroo mother care improves premature infant outcomes	UK	Review the benefits of KMC.	Lack of research in the UK setting (much more in LMIC) on KMC and most guidelines are on SSC.	Y	
Bailey et al.	2012	Kangaroo mother care	/	This article reviews the benefits of KMC.	Describe the benefits on different components: Thermoregulation, Breastfeeding, Growth, Mortality, Infections, Pain, Maternal bonding.	N	The paper explains and review the benefits of KMC using different evidence, from different settings. It is not specific to the UK. No information is given related to the KMC's implementation.
Curran, R. et al.	2008	A Kangaroo Mother Care research study: a work in progress	UK	Explore the psychological effects of KMC on both parents and preterm children	It will provide psychological and behavioral data on 3, 6, 9 and 12 months follow up, after having done KMC 1h/day for 14 days.	Y	
Cattaneo et al.	2018	Report on an international workshop on kangaroo mother care: Lessons learned and a vision for the future	Multi countries	Explore the barriers and enablers of KMC world widely.	(1) Barriers and enablers, (2) what needs to be done to improve its implementation.	N	No information is from the UK.

Charpack et al.	2020	Strategies discussed at the XIIth international conference on Kangaroo mother care for implementation on a countrywide scale	Multi (33 countries)	Based on 7 objectives, it gives strategies for implementing KMC.	Different strategies for different specialists, at different levels.	N	It is not based in the UK and no information is given on how it should be implemented in this context.
UNICEF et al.	2020	Protecting, promoting, and supporting breastfeeding: THE BABY-FRIENDLY HOSPITAL INITIATIVE FOR SMALL, SICK AND PRETERM NEWBORNS	UK	It addresses the application of the BFHI principles.	Guidance on BFI standards and how they should be implemented.	N	It is not based to the UK and not related to the context of the KMC implementation and potential challenges/facilitators

Appendix 3. Data extraction form - KMC

Author	Title	Setting	Background	Type of study	Population	Intervention	Definition of the intervention	Aim	Mechanisms (+method)	Outcomes of interest
Platonos et al.	Celebrating a fortnight of skin to skin holding	Imperial College Healthcare NHS Trust - London, UK	The neonatal unit collaborates with the Family Integrated Care (FICare) team at Sunnybrook Children's Hospital in Toronto which invited them to take part in the event. It is a unit that the IFDC (team of imperial) has visited and were impressed by their integration of KMC posters/displays.	Commentary	Families in level 2 and level 3 neonatal units of the service. In total, 12 families in the level 3 participated and in the level 2, 20 families participated	SSC	No specific definition. No information on timing, frequency, and intensity	To celebrate International Kangaroo Mother Care (KMC) fortnight this year, Imperial College Healthcare NHS Trust Neonatal Service, consisting of a level 2 and 3 neonatal unit, took part in a global "Kangaroo challenge". The aim was to reinforce the practice of SSC.	Before the start, medical staff received training and performed a quiz to ensure appropriate knowledge on the method and address any concerns. Written guidelines on how to perform the method were made available and posters were displayed to raise awareness. On day 1, the families received tools to promote the use of SSC and write down their performance (informative Bliss booklets on its	The level 3 unit has reached an average of 1h33 of SSC per family per day and the level 2 unit has reached an average of 2h38 of SSC per family per day. They aim to continue celebrating KMC by such challenge to enhance further the awareness of KMC and its use.

									benefits, kangaroo diary, badges). During the 2 weeks, educational support was available both for the staff and the families by the Bliss booklets and educational workshop with practical and theoretical components.	
Donald et al.	Critical analyses of the implications of Kangaroo Mother Care on a preterm infant	UK	The case study shows that the newborn has been directly transfer to NICU. There has been 5 days of separation. The mother believes to be a failure has not having been able to answer to the need of her child	Review (presented as a case study)	A woman who underwent a c-section of her premature baby at 32 weeks	SSC and KMC	KMC and SSC defined. No information on timing, frequency, and intensity	Through a case study, the aim is to explore the experience of a women, after a c-section, who did not have the chance to practice early SSC. Evidence on providing KMC will be explored. The focus is on the separation	Four questions have been asked and discussed: "(1) What is the current best evidence for implementing kangaroo care on a preterm infant? (2) What are the implications of mother/infant separation immediately	In the UK, the practice of KMC by the HCWs is supported by NICUs but barriers remain important. Hence, they advised HCWs to understand them and find strategies to enable parents to practice KMC. Moreover, BFI, which use FCC as a main

								between mother and child, its impact, and the barriers of KMC in neonatal setting.	after birth? (3) What makes skin to skin contact the basis of breastfeeding ? (4) What are the methods to overcome the challenges faced with implementing kangaroo care and making it more successful for the nurse, the infant and the parents?"	principle, also incorporates this idea of putting the parents at the center of the care of their children. They also stipulated that KMC implementation needs clear and proper policy as well as multidisciplinary approach to education. Finally, KMC implementation in emergency needs to be search further to answer the case study.
Langley et al.	Evidence suggests that kangaroo mother care	UK	N/A	Commentary	/	KMC and SSC	No specific definition. No information on timing, frequency, and intensity	Explore, review, and synthesize the different benefits of the KMC method	Review, with the help of different studies, not only based in the UK, the different benefits and how KMC may improve the health of newborns.	The UK literature and policy echo that research across the world. KMC is supported in the literature, not only as equal to or better than care provided by conventional services. Many neonatal units

										follow guidance supplied by UN Children's Fund UK (2013), which encourages KMC as part of its BFI. NICE also recommends the use of SSC right after birth.

Curran et al.	A Kangaroo Mother Care research study: a work in progress	UK - Multi site: The Elizabeth Garrett Anderson, Barnet, Whittington, and Royal Free Hospitals (part of the North Central London Perinatal Network)	N/A	Controlled trial	100 preterm infants and their parents. Half received KMC and the other half received standard care. Eligible babies were those: (1) weighting less than 2000gr, (2) gestational age less than 37 weeks, (3) infants were stable and (4) parents without psychopathological history	Half of them receive KMC and the other half standard care. KMC was advised for a minimum of 60min/day for 14 consecutive days	KMC = SSC. No information on timing, frequency, and intensity	Analyze the psychological effects of KMC on both the parents and their preterm infants. The aim is to establish the effects of KMC during the 1st year of life of the infant. The areas considered are: "(1) The interaction between the infant and parents, (2) the psychological well-being of the parents, (3) the parents' relationship, (4) the infant's cognitive, motor and behavioral development ".	Guidelines have been created for the medical staff (based on the WHO guidelines). An information sheet has been developed for the parents. The implementation was supervised by a KMC-trained nurse who provided teaching seminars and 1-1 sessions with parents and nurses. KMC is initiated with preemies from 32 weeks. Parents were provided with mirror, binder, a diary, and comfortable reclining chairs. To assess the psychological components,	Psychological and behavioral results have been asked by contacting the team. No answer has been received.

									they used: standardized questionnaires, video recordings of parents-infants relationship, and the Bayley's developmental assessment. The psychological component of the parents is assessed by the degree of anxiety, parental stress, presence of symptoms of depression. The parents-infants relationship was assessed by observing their relationship (during playtimes, etc). The parental couple relationship was assessed by measuring	

									marital satisfaction, parenting alliance, perception of social support. The infant cognitive, motor, and behavioral component is measured by a standardized developmenta l scale. Data were collected at entrance, 3 months, 6 months, 9 months and 1 year.	

Appendix 4. CASP checklists – KMC

Qualitative CASP checklist

	Platonos et al.	Langley et al.	Donald et al.
Q1 - Was there a clear statement of the aims of the research?	NO	NO	YES
Q2 - Is a qualitative methodology appropriate?	YES	Can't tell	YES
Q3 - Was the research design appropriate to address the aims of the research?	Can't tell	Can't tell	YES
Q4 - Was the recruitment strategy appropriate to the aims of the research?	Can't tell	Can't tell	Can't tell
Q5 - Was the data collected in a way that addressed the research issue?	YES	Can't tell	Can't tell
Q6 - Has the relationship between researcher and participants been adequately considered?	NO	Can't tell	Can't tell
Q7 - Have ethical issues been taken into consideration?	NO	Can't tell	Can't tell
Q8 - Was the data analysis sufficiently rigorous?	YES	Can't tell	NO

Q9 - Is there a clear statement of findings?	YES	YES	YES
Q10 - How valuable is the research?	The authors provide information on how SSC may be increased. It is valuable as it provides relevant clues on what should be implemented to increase the SSC practice.	The results correspond to a summary of previous research that have been conducted on the topic. Hence, there is no specific methodology, design that have been created. It is a commentary from a journal.	This review is valuable as it gives relevant information on the method. However, an important confusion exists regarding the terms used and the evidence come from different countries/setting which make them difficult to apply to the UK context.

RCT CASP checklist:

	Curran et al.
Q1 - Did the study address a clearly focused research question?	YES
Q2 - Was the assignment of participants to interventions randomized?	NO
Q3 - Were all participants who entered the study accounted for at its conclusion?	Can't tell
Q4 - Were the participants 'blind' to intervention they were given? Were the investigators 'blind' to the intervention they were giving to participants? Were the people assessing/analyzing outcome/s 'blinded'?	NO – NO – NO
Q5 - Were the study groups similar at the start of the randomized controlled trial?	YES
Q6 - Apart from the experimental intervention, did each study group receive the same level of care (that is, were they treated equally)?	Can't tell
Q7 – Were the effects of intervention reported comprehensively?	Can't tell

Q8 - Was the precision of the estimate of the intervention or treatment effect reported?	Can't tell
Q9 - Do the benefits of the experimental intervention outweigh the harms and costs?	Can't tell
Q10 - Can the results be applied to your local population/in your context?	Can't tell
Q11 - Would the experimental intervention provide greater value to the people in your care than any of the existing interventions?	Can't tell

Appendix 5. Full text review KC/SSC

Authors	Year	Title	Setting	Aim	Findings	Inclusion Y/N	If N, explain
McIntyre, H. et al.	2015	20th Anniversary of the UNICEF Baby Friendly Initiative UK	Newcastle	Conference report on BFI	BFI standards and steps are beneficial for children and parents	N	No information on SSC implementation, in a specific context (UK).
Entwistle et al.	2017	Achieving sustainability and building a "Baby Friendly Foundation"	UK	Improve BFI - Improve breastfeeding rates	/ Review	N	No information on SSC implementation, in a specific context (UK).
Samuel, P. et al.	1995	Achieving Baby Friendly status	The Royal Bournemouth Hospital (RBH)	The first in Britain to be awarded Baby Friendly Hospital status. Penelope Samuel, midwife at the RBH, explains what was involved.	Review the BFI 10 steps: Inclusion of SSC in step 4: 1 hour of SSC right after birth unless not possible	N	It does not give any information on SSC implementation and/or adoption and its relevant barriers/facilitators, in a specific context (UK).
Ashmore et al.	1997	Achieving baby friendly status in a large city hospital	Jessop Hospital in Sheffield	Review how the hospital achieved BFI in 2 years	Review the BFI 10 steps: Inclusion of SSC in step 4: 1 hour of SSC right after birth unless not possible	N	No information on SSC implementation, its barriers, and facilitators.
Steinhauer et al.	2015	Achieving skin to skin contact in theatre for healthy newborns	UK	Review the reasons why SSC is not often proposed following a C section	26.2% of birth in UK are C-section in 2015. Contact between mother and baby is often delayed. Education and communication seem crucial to enable midwifes to start the discussion and hence, promote SSC	N	This paper discusses the importance of implementing early SSC right after birth, for women who underwent a C-section. However, they do not explain why and what are the barriers/facilitators of such procedure.

Gibbs et al.	2016	The acquisition of parenting occupations in neonatal intensive care: A preliminary perspective	Level 3 NICU in a large urban center in the United Kingdom	To explore the experiences that enable parents to participate in occupations associated with the role of parenting in a neonatal intensive care unit (NICU).	By using an occupation-based approach enable parents to be more involved and not only in basic care.	N	No information on SSC implementation, in a specific context (UK).
Gitau et al.	2002	Acute effects of maternal skin-to-skin contact and massage on saliva cortisol in preterm babies	Neonatal units at Hammersmith and Queen Charlotte's Hospitals, London, UK.	To compare the acute effects of maternal skin-to-skin contact and massage in a group of preterm babies.	The period of skin-to-skin contact consistently reduced saliva cortisol.	N	No information on SSC implementation, in a specific context (UK).
Higman et al.	2012	Assessing clinicians' knowledge and confidence performing four evidence-based practices in the nicu using the neonatal unit clinician assessment tool	UK	A case study of how a tertiary hospital unit with 100 staff undertook the Neonatal Unit Clinician Assessment Tool (NUCAT).	Confidence in knowledge was significantly reduced when individuals received their scores, but confidence in breastfeeding practice was not reduced.	N	No information on KC implementation, in a specific context (UK).

Higman et al.	2015	Assessing clinicians' knowledge and confidence to perform kangaroo care and positive touch in a tertiary neonatal unit in England using the Neonatal Unit Clinician Assessment Tool (NUCAT)	The Neonatal unit in University Hospitals Coventry and Warwickshire NHS Trust	Assess knowledge of KC and PT, assess confidence of KC and PT, association between objective knowledge and subjective confidence in knowledge and practice and finally, assess the change in confidence in knowledge and practice of KC and PT after performing a test and receiving feedbacks.	Clinicians who spent 75% or more of their working week providing clinical care on the neonatal unit knew more about PT. Clinicians who received training in FCC practices had significantly more confidence in their knowledge and practice of KC and PT. Confidence in knowledge and practice in KC was significantly reduced when clinicians received their knowledge scores.	Y	
Davis et al.	2012	Audit tool can help to standardize neonatal rights and family-centered care	UK	Implementation of an audit tool: Bliss Baby Charter audit tool.	The audit improves the implementation of FCC and has enabled a rise in SSC in a neonatal unit.	Y	
Radford et al.	2003	Baby friendly education standards. Aiming to improve breastfeeding training	UK	BFI launched a program to address the standards of pre-registration education in breastfeeding in provided to student midwifes and health visitors.	That would enable to improve SSC practice, to improve knowledge of students and to allow teaching department to focus elsewhere.	N	It does not give any information on SSC implementation and potential barriers/facilitators on its implementation and/or adoption.
Radford et al.	2005	Baby Friendly hospitals are the answer	UK	Interview	Q/A on BFI	N	No information on KC/SSC implementation, in a specific context (UK).

Pollock et al.	2003	Baby friendly in South Derbyshire	South Derbyshire Acute Hospital NHS Trust	Laurence Pollock reports on the Trust Success: Second re-accreditation for the UNICEF UK BFI award	They increased the rate of breastfeeding by 2% the year before.	N	No information on KC/SSC implementation, in a specific context (UK).
Radford et al.	1997	The Baby Friendly Initiative - supporting a mother's choice	UK	Review of the benefits of BFI and its 10 steps	More and more healthcare services work towards achieving the award/accreditation. This aimed to increase the breastfeeding rate and support for mothers.	N	No information on SSC implementation, in a specific context (UK).
UNICEF	2020	Baby Friendly Initiative Statement on infant feeding during the COVID-19 outbreak	UK	Statement for online assessment for BFI	Explanation on how the assessment will be conducted and how to be prepared for them	N	No information on KC/SSC implementation, in a specific context (UK).
/	2011	Baby Friendly News. Changes to the UNICEF UK Baby Friendly Maternity Standards	UK	Changes/review of the UNICEF UK BFI maternity standards	There is more emphasize on SSC and KC in different steps. Increase the time for SSC (1h now). Moreover, it advised to perform KC not 6x/day but 8x/day.	N	Despite proposing/advising change in the duration of early SSC and the frequency of KC, it does not provide any information on SSC/KC implementation and its potential barriers/facilitators.
Anon et al.	2006	The baby friendly page	UNICEF UK conference	Review how the mother-infant bond may shape the brain development of the baby	SSC is crucial to help developing the brain of the baby and should be performed as much as possible	N	No information on KC/SSC implementation, in a specific context (UK).

/	2002	Baby Friendly rising in Wales and West Midlands, while Scotland has most Baby Friendly births	Wales, West Midlands and Scotland	Review the hospital which have been accredited BFI	Hospitals have been achieving BFI accreditation with success, while increasing their breastfeeding rates	N	No information on KC/SSC implementation, in a specific context (UK), neither on its potential barriers/enablers.
McElhone et al.	2014	Baby Friendly Scotland: a nationwide approach	Scotland	How Scotland approaches the BFI accreditation	Compared to England, Northern Ireland or Wales, Scotland shows the higher rate of BFI births. They highlight the importance of SSC right after birth and for as long as possible to improve children and mothers' health and breastfeeding.	N	It does not give any information on SSC implementation in the UK and what are its barriers and facilitators.
Rogers et al.	2003	Baby Friendly: a way to accreditation. Part 2	Calderdale Royal Hospital (CRH) - Maternity unit	Review the steps 3 to 10	Step 4: They explain how they improved the rate of SSC (57% of mothers --> 97% of mothers). Step 7: Importance of rooming-in by increasing information of KC and bed-sharing.	Y	
Philipson et al.	2008	Baby steps to better care. BLISS Baby Report 2008	UK	Bliss sent a survey to all the hospitals with a neonatal unit in the UK in early 2008, asking them about their activity in 2006 and 2007. We also asked nearly 500 parents about their experience of having a baby born sick or premature.	Lack of staff, lack of support, heterogeneous care. More nurses are needed.	N	No information on KC/SSC implementation, in a specific context (UK). This report noticed the benefits of SSC and need for it without giving information on implementation, barriers, facilitators.

Finigan et al.	2010	Baby-friendly hospitals: what can they achieve?	UK (The Pennine Acute NHS Hospitals Trust, Blackburn, Derby, Bradford and Halifax hospitals)	How hospital may achieve BFI 10 steps	Step 4: Importance of SSC, midwifes realize how it can reduce their workload at the end. SSC is also reviewed in step 9.	N	Within the 4th and the 9th, it highlights the importance of SSC due to all its benefits. However, no information on its implementation (barriers and facilitators) have been provided.
McColl et al.	1999	Becoming baby friendly	Torbay Hospital Maternity Unit	our aim was to achieve Baby Friendly status	In Step 4, they explained, quickly that it has been well met and that they aim to further enhance SSC	N	No information on SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Spiro et al.	2015	Best beginnings: From bump to baby	UK	Resources put in place by Best Beginnings for improving the health of every new-born in the UK	Different resources such as DVDs and apps are increasingly used to support parents with their child. The "Small Wonders" DVDs is used as part of local care provision and has been observed to increase KC/SSC practice.	Y	
Scottish Gov et al.	2017	The best start: a five-year forward plan for maternity and neonatal care in Scotland	Scotland	Guidelines - 5-year plan for neonatal units	It does include and recommend KC/SSC.	N	No information on KC/SSC implementation, in a specific context and how this context influences the implementation/adoption. No information on barriers, challenges, and

							facilitators in the uptake of KC/SSC.
Campbell et al.	2011	Bliss self-assessment audit tool pilot	Royal Victoria Infirmary (RVI), Newcastle	Review the experience of the neonatal unit (NICU) at the Royal Victoria Infirmary (RVI), Newcastle underwent in implementing the audit tool and the positive impact carrying out the audit has had on the unit.	One highlighted area was that some parents and staff felt that babies were not receiving the recommended levels of skin- to-skin contact. By improving education and implementing different tools, the knowledge increased as well as the practice of SSC.	Y	
Cole et al.	2011	Bliss: a new direction	UK	The aim is to establish a Bliss Nurse in each region of the UK to ensure that all neonatal units deliver FCC.	Such nurse will enable appropriate care delivery.	N	There is no information on KC/SSC implementation and its potential barriers/facilitators in the UK.
Lawn et al.	2013	Born Too Soon: Care for the preterm baby	Based on multiple references	What is the essential practice to improve newborn's health and reduce their mortality?	KMC is important and should be better implemented, especially in LMIC	N	Not based in the UK. Do not provide any information on its implementation (barriers, challenges, and facilitators)
Puri et al.	2020	Breastfeeding following kangaroo mother care	Based on multiple references	Explore SSC in animals and humans and review the KMC benefits.	KMC/SSC increase the breastfeeding rates	N	Not based in the UK. Do not provide any information on its implementation (barriers, challenges, and facilitators)

Ellis et al.	2011	Breastfeeding: implementing the baby friendly initiative	UK	Review of the benefits of BFI and its 10 steps	Quick emphasize of the need that nurses should support mother in SSC	N	No information on SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Platonos et al.	2018	Celebrating a fortnight of skin to skin holding	Imperial College Healthcare NHS Trust	To celebrate International Kangaroo Mother Care (KMC) fort- night this year, Imperial College Healthcare NHS Trust Neonatal Service, consisting of a level 2 and 3 neonatal unit, took part in a global "Kangaroo challenge".	Emphasize the importance of staff supporting parents to be at the heart of their babies care and the vital benefits that closeness of skin-to-skin care brings to their baby	Y	
Meder et al.	2020	Cerebral oxygenation in preterm infants during maternal singing combined with skin-to-skin care --> HUNGARY	Hungary	/	/	N	Hungary based
Pary-Okeden et al.	2019	Close-contact care for unwell babies	/	KC and SSC are well-known for neonates. However, evidence is lacking for older infants and this study observe its benefits on this population.	There were no reported safety incidents from caregivers who have carried unwell babies	N	No information on KC/SSC implementation, in a specific context and how this context influences the implementation/adoption.
Meek et al.	2012	Cochrane review: non-nutritive sucking,	From multiple evidence	Explore the non-pharmacological procedures for pain management.	Kangaroo care is effective for preterm infants.	N	No information on KC/SSC implementation, in a specific context and how this context

		kangaroo care and swaddling/facilitated tucking are observed to reduce procedural pain in infants and young children					influences the implementation/adoption.
/	1997	Conference report. The Baby Friendly Initiative in Scotland	Scotland	Conference report on breastfeeding rate and BFI	Experience of different units while increasing their breastfeeding rates	N	No information on SSC implementation (barriers, challenges and facilitators), in a specific context (UK).
Guenther et al.	2017	Consensus-based approach to develop a measurement framework and identify a core set of indicators to track implementation and progress towards effective coverage of facility-based Kangaroo Mother Care	Based on multiple references	To develop indicators to monitor KMC implementation.	10 specific indicators have been developed based on two main components: 1) service readiness, based on the WHO building blocks framework; and 2) service delivery action sequence covering identification, service initiation, continuation to discharge, and follow–up to graduation.	N	Not based in the UK. Do not provide any information on SSC/KC implementation (barriers, challenges, and facilitators)
Armstrong et al.	2012	Constructing a programme of change to improve the provision of family-centered	neonatal unit at the Royal Bolton Hospital	Developed a Family Centered Team to increase FCC in neonatal units. Audit tool was used to	SSC is the number one priority. The audit tool enabled to highlight barriers and work through it.	Y	

		developmental care on a neonatal unit		observe which areas need more work.			
Miles et al.	2006	A controlled trial of skin-to-skin contact in extremely preterm infants	Hammersmith Hospital, Queen Charlotte's, Chelsea Hospital	Comparison between standard care (control group) and an intervention group in which mothers were encouraged to provide a session of skin-to-skin contact once daily for 4 weeks.	No difference	N	It provides information on SSC and how it can be beneficial or not. However, no information on its implementation.
Bauwens et al.	2018	Creating a nurturing environment at Aberdeen: sharing ideas 'across the pond'	Neonatal Unit, Aberdeen Maternity Hospital	A trip in USA enable to take inspiration to implement new tools.	New ideas to implement best care for newborns while putting the parents at the center of the care	N	No information on KC/SSC implementation, in a specific context and how this context influences the implementation/adoption.
Donald et al.	2017	Critical analyses of the implications of Kangaroo Mother Care on a preterm infant	Case study UK	The aim of this article is to, through a case study, describe the experiences of a women who underwent a caesarean section and who did not have the possibility of early SSC.	There is not enough guidelines/guidance in the NHS to properly implement KMC despite its well-known benefits.	N	This paper does not give information on SSC implementation and its potential barriers/facilitators in the specific context of the UK.
Jesney et al.	2016	A critical analysis of the role of the nurse in the implementation	UK	Assess the role of neonatal nurses in the care of newborns and in the promotion of SSC	They are essential for proper SSC. Discuss the barriers of its implementation and strategies to overcome these	Y	

		of skin-to-skin on the neonatal unit					
Clarke et al.	2021	Delivery room cuddles for extremely preterm babies and parents: concept, practice, safety, parental feedback	UK	Experience from a mother who had cuddle her baby before death	Importance of first cuddle and FCC since the really beginning!	N	No information on KC/SSC implementation, in a specific context and how this context influences the implementation/adoption.
Bates et al.	2019	Delivery room cuddles for preterm babies: should we be doing more?	Great Western Hospital in Swindon	To suggested standard operating procedure for facilitating a delivery room cuddle (DRC)	Positive impact of DRC for both children (preemies) and parents.	N	There is no information regarding the implementation, barriers/challenges/facilitators.
Mann et al.	2016	Design, Implementation, and Early Outcome Indicators of a New Family-Integrated Neonatal Unit	Catholic Medical Center in Man-chester, NH	It reviews how FCC has been implemented in the unit.	/	N	USA based
Baum et al.	2009	Developing a new DVD for parents of every premature and sick baby in the UK	UK - Best beginnings charity	To propose a resource that will improve neonatal practices (breastfeeding, KC/SSC, ...). It will motivate units to provide better care.	It improves breastfeeding rates and SCC.	N	It does not explain how to implement SSC, how to train staff for it and if the DVD worked and how.

Skene et al.	2019	Developing family-centered care in a neonatal intensive care unit: An action research study	Regional Neonatal unit	A participatory research action to implement and evaluate FCC practices. It aims to improve SSC and enable unlimited parental visits.	Both changes have been improved.	Y	
Hamilton et al.	2009	Developmental care in the UK: A developing initiative	National survey of the 214 neonatal units in the UK	To review changes in developmental care over time in the UK from 2005 to 2008	Kangaroo care increased from 50% to 80%.	Y	
Shaw et al.	2019	Documentation in the neonatal unit: The support given to parents and their participation in their baby's care	UK tertiary neonatal unit	Observe how often the parents are involved in the care of their preterm infant and how this is documented	Documents to support parents to participate were lacking. Improvements need to be made.	N	No information on KC/SSC implementation, in a specific context and how this context influences the implementation/adoption.
Lowson et al.	2015	The economic benefits of increasing kangaroo skin-to-skin care and breastfeeding in neonatal units: analysis of a pragmatic intervention in clinical practice	UK	It aims to increase SSC and breastfeeding practice by demonstrating and comparing the costs and benefits of these methods.	Both were cost effective as well as clinically beneficial.	N	No information on SSC implementation and its potential barriers and facilitators.

Mooncey et al.	1997	The effect of mother-infant skin-to-skin contact on plasma cortisol and beta-endorphin concentrations in preterm newborns	Hammersmith Hospital, Queen Charlotte's, Chelsea Hospital	To assess the effect of SSC on plasma p-endorphin and cortisol concentrations in stable, preterm infants on a newborn intensive care unit.	It reduces endorphin in newborns.	N	No information on KC/SSC implementation, in a specific context and how this context influences the implementation/adoption.
Puthussery et al.	2018	Effectiveness of early intervention programs for parents of preterm infants: A meta-review of systematic reviews	Based on multiple references	The aim is to appraise and synthesize the evidence on the effectiveness of interventions for parents of preterm infants.	Kangaroo Care (KC) showed the most frequent positive impact across outcomes followed by Mother Infant Transaction Program.	N	Not specifically based in the UK
Entwistle et al.	2014	Embedding the Baby Friendly Initiative in UK health services	UK	Review the positive change towards BFI	SSC is now perceived as "normal practice".	N	No information on KC/SSC implementation, in a specific context and how this context influences the implementation/adoption.

Kwah et al.	2018	Evaluation of an intervention to increase clinician knowledge and confidence to support breastfeeding, kangaroo care and positive touch within neonatal units	Liverpool Women's Hospital (LWH) and Guy's and St Thomas Foundation Trust (GSTT).	The aim of this study was to evaluate the SWCP on clinician knowledge and confidence to support parents in neonatal units to undertake breastfeeding and kangaroo care.	Both clinician knowledge and confidence significantly increased following the intervention. This study suggests that a clinician focused intervention can lead to positive changes in clinician confidence, knowledge, and practice in supporting parents to undertake breastfeeding and kangaroo care in neonatal units.	Y	
Yoxall et al.	2016	Evaluation of the small wonders change programme	UK	Evaluate the impact of SWCP on staff knowledge and attitudes, parental knowledge and experience and preterm feeding outcomes.	It does improve knowledge and confidence in supporting FCC. It seems to improve the knowledge regarding SSC.	N	While the SWCP improve knowledge and practice among medical staff, it does not give any information on SSC implementation and how SWCP has impacted its use.
Entwistle et al.	/	The evidence and rationale for the UNICEF UK Baby Friendly Initiative standards	UK	This book explores the evidence on the revised UNICEF UK Baby Friendly Initiative (BFI) Standards.	Explain the standards and some include KMC	N	Guidance/guidelines: No information on SSC/KC implementation (barriers, challenges, and facilitators).
Langley et al.	2017	Evidence suggests that kangaroo mother care improves premature infant outcomes	Based on multiple references	Review the benefits of KMC	NICE encourages the use of SSC (2005)	N	No information on KC/SSC implementation, in a specific context and how this context influences the implementation/adoption.

Brandon et al.	2003	Facilitating kangaroo care	UK	To explore impacts of KC and steps to properly implement it.	They describe the benefits of a specific incubator to facilitate KC	N	No information on SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Redshaw et al.	2010	Family centered care? Facilities, information, and support for parents in UK neonatal units	All UK NNU managers	To assess how UK neonatal units deal with parent communication, support, and information during neonatal care and after discharge.	Policy and practice promoting FCC vary by hospitals.	N	No information on SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Fisher et al.	2018	Fathers in neonatal units: Improving infant health by supporting the baby-father bond and mother-father coparenting (not specific to the UK)	Based on multiple references	Review and explore evidence on the benefits of SSC by the father	Need to improve dissemination of knowledge and increase the practice and involvement of fathers	N	No information on SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Hoockway et al.	2011	First family-centered care coordinators appointed to support families through the difficult and stressful time of having a baby in neonatal care	UK - St George's Hospital	Creation of the post of family-centered care coordinator (FCCC) in the unit to improve families' experiences (FCC).	This post would enable better FCC within neonatal unit.	N	No information on SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).

Anon et al.	2016	Focus - Exeter neonatal unit: first to receive full Baby Friendly accreditation	Exeter neonatal unit - UK	Review how they achieved BFI standards/accreditation	They ameliorate the resources (beds, chairs, …) as well as enable parents to stay during ward rounds.	N	No information on SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
UNICEF	2012	Guide to the Baby Friendly Initiative standards	UK	Review the BFI standards	SSC information through different steps	N	While it recommends the use of SSC and highlight, they will assess it to be sure it is well implemented, embedded in the BFI standards, it does not give information on SSC implementation.
UNICEF	2017	Guide to the UNICEF UK Baby Friendly Initiative standards. 2nd edition	UK	SAME than 2012	SAME but review in 2017	N	SAME than 2012
Smith et al.	2008	Hospitals are failing to help mothers breastfeed babies: UNICEF	UK	Observe how UK services have been CFI accredited	Not enough does have the BFI accreditation and too many women stop too early…	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Cockcroft et al.	2012	How can family centered care be improved to meet the needs of parents with a premature baby in neonatal intensive care?	UK	Observe in 2 different neonatal setting the way they involve parents in the care of their premature baby	FCC is essential but vary in different setting. Hence, policy/guidance should be implemented to ensure best practice	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).

Uytenbogaerd et al.	2020	How COVID-19 affects mother-baby contact	UK	How to respond to the COVID-19 pandemic in relation to SSC	Vertical transmission is unusual and poor evidence support it. However, contact with mother remains essential.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Finigan et al.	2004	'I just wanted to love, hold him forever': women's lived experience of skin-to-skin contact with their baby immediately after birth	UK	Explore the experience of women who practice SSC just after birth.	Five themes emerged: Immediate feelings of "bonding" with their babies, touch and stroking, the "gaze" and getting to know the baby, natural and instinctive behavior, not wanting to let go the baby.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Fallon et al.	2019	The impact of the UK Baby Friendly Initiative on maternal and infant health outcomes: A mixed-methods systematic review	UK	It explores the impact of BFI on maternal and infant health in the UK as well as the experience of women receiving BFI care.	BFI care depend on the support from the staff, but it is observed that such care may improve breastfeeding.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Ashmore et al.	2001	Implementing skin-to-skin contact in the immediate postnatal period	UK	Discuss the benefits of early SSC, right after birth, both for the mother and the child as well as the benefits for breastfeeding. Review how SSC is embedded in BFI steps.	They provide information from UNICEF UK on the barriers to implement SSC from HCWs. Moreover, they discussed the different ways to overcome these barriers.	Y	

Thomson et al.	2012	Implementing the WHO/UNICEF Baby Friendly Initiative in the community: A 'hearts and minds' approach	2 primary health-care facilities located in the North-West of England.	To describe a 'hearts and minds' approach to community Baby Friendly Initiative implementation	Thematic networks analysis generated a global theme of a 'hearts and minds approach' to BFI implementation, which embodies emotional and rational engagement.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Hunt et al.	2008	The importance of kangaroo care on infant oxygen saturation levels and bonding	Based on multiple references	Review on how KC improves the level of oxygenation and bonding with parents.	Highlights how important is KC and that works need to be done to improve its implementation	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Platonos et al.	2018	Integrated family delivered care project: Parent education programme	Imperial College Healthcare NHS Trust	Parent education is one of the main "pillars" of Family Integrated Care (FIC); therefore, it was considered central point in our Integrated Family Delivered Care (IFDC) programme.	Education has been provided through an app to ensure all women may access it. The parents' educational session in NICUs took place with specialized/specific staff. The feedback for evaluation were very positive and education seem essential for FCC	N	This paper discuss how the Trust implemented this educational component as being at the center of the FCC development/implementation. However, it does not give any specific information on KC/SSC implementation and its potential barriers, challenges and facilitators.
Aloysius et al.	2018	Integrated family delivered care: Development of a staff education programme	Imperial College Healthcare NHS Trust	FIC: Educational program for parents and staff is one of the four pilar of FIC. Development of such educational program and explanation is provided.	Education for nurses and parents to enable them and empower them to be at the center of the care of their babies	N	This paper discusses the program of education of nurses at Imperial College NHS Trust to enable FIC and better supper/education for parents in NICUs. However, no information

							on KC/SSC is provided regarding its implementation.
Ashmore et al.	2013	An introduction to the new UNICEF UK Baby Friendly Initiative standards	UK	Review the new BFI standards	New BFI standards have been put in place to ensure that they follow the most up-dated evidence.	N	This paper explores the different change that have been brought to BFI standards. However, it does not give any additional information on KC/SSC and neither on its implementation (+barriers/facilitators)
Gregson et al.	2011	Kangaroo care in pre-term or low birth weight babies in a postnatal ward	Pembury Hospital, Maidstone, and Tunbridge Wells NHS Trust	To compare the efficacy of KC/SSC with standard care in premature, low birth weight and babies of diabetic mothers in a transitional care ward setting.	Kangaroo care is a simple intervention that reduces length of hospital stay and improves breastfeeding rates on discharge from hospital.	N	It gives information on KC and SSC and its benefits that it provides in transitional ward. However, no information on SSC/KC implementation, how to implement it and what are its barriers and facilitators in the UK context.
McGowan et al.	2017	Kangaroo Care in the high-technology neonatal unit: Exploring evidence-based practice, policy recommendations and education	Northern Ireland - Neonatal units	To investigate the extend of KC practice in Northern Ireland using a survey to explore nursing knowledge, barriers and perceptions concerning KC.	Neonatal nurses had an overall good understanding of KC and its benefits. Knowledge relating to eligibility of infants for KC caused the greatest uncertainty. Different barriers have been highlighted as well as ways to overcome those.	Y	

		priorities in Northern Ireland					
Rapley et al.	2002	Keeping mothers and babies together -- breastfeeding and bonding	UK	Observation of the closeness between the mother and the child and observe if it impacts breastfeeding.	They discuss especially the 4th and 7th steps of BFI standards as they involve SSC and they observed that closeness may improve breastfeeding.	N	While it provides very little information on some of the barriers of SSC such as weighting the baby and conflicting policies, it relates to the closeness between mothers and their children with the aim to observe if it improves breastfeeding. Hence, no information on SSC implementation have been provided.
Read et al.	2017	Maintaining Baby Friendly neonatal standards	Exeter neonatal unit - UK	They comment on their journey through BFI accreditation	BFI standards have improved how families are integrated in the care of their babies.	N	No information is provided regarding SSC implementation and different barriers, challenges, and facilitators on its implementation/adoption in a specific context.
De Rooy et al.	2010	Management of the vulnerable baby on the postnatal ward and transitional care unit	Based on multiple references	Explore the care of vulnerable children and how breastfeeding is important.	Caring methods such as SSC encourage breastfeeding and hence, enable to promote and strengthen the health of preterm children.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).

Padden et al.	1997	Maternal experiences of preterm birth and neonatal intensive care	3 NICUs Northwest England	This study observes the experiences and feelings of mothers during the post-partum period.	Through the understanding of what the mothers feel when they give birth to a preterm child, it may help to know how to properly implement a FCC in neonatal settings	N	This study does not provide any specific information on SSC neither its barriers nor facilitators in the SSC implementation.
UNICEF	2015	Meeting baby for the first time	VIDEO - UNICEF UK	Review the benefits of SSC	An educational group, with a trained specialist review the benefits and how such method works.	N	While it highlights the need for implementing KC/SSC by emphasizes all its benefits, it does not provide any information on barriers, challenges, or facilitators in the SSC implementation in the UK context.
Finalyson et al.	2014	Mothers' perceptions of family centered care in neonatal intensive care units	UK	To explore mothers' perceptions of family centered care (FCC) in neonatal intensive care units (NICUs) in England.	Mothers struggle to find their place in the NICUs setting.	N	No information on SSC/KC in the specific UK context. No information on barriers, challenges, or facilitators in the SSC/KC implementation have been explored in this study.

Lim et al.	2018	Neonatal nurses' perceptions of supportive factors and barriers to the implementation of skin-to-skin care in extremely low birth weight (ELBW) infants - A qualitative study	London - UK	This study aimed to investigate neonatal nurses' perceptions of supportive factors and barriers to the implementation of SSC in extremely low birth weight (ELBW) infants.	Humidity was perceived as a significant barrier for SSC in ELBW infants. Other barriers included concerns for infant safety, insufficient training, increased workload, lack of clear guidelines and management support. It ascertained the facilitation of parental readiness, development of clear guidelines, provisions of continuing education as well as organizational support as supportive factors in the implementation of SSC in ELBW infants.	Y	
/	2006	New mothers should hold on to babies for longer, says midwife	UK	Comment the need for increasing SSC practice right after birth and for as long as possible	Mary Price defends the need to improve SSC practice by exploring its benefits and by recommending that SSC should be performed longer.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK). It does just review some benefits of SSC and recommend greater use both in intensity and quantity.
Ashmore et al.	2006	NICE's new postnatal guidelines recommend the implementation of UNICEF's Baby Friendly Initiative	UK	NICE postnatal guidelines recommend the implementation of BFI standards	Q/A with Sue Ashmore	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).

Higman et al.	2008	Nurses' understanding about the delivery of family centered care in the neonatal unit	UK	To study neonatal nurses' attitudes within the context of Family Centered Care (FCC)	Review the difficulties and barriers in the implementation of the FCC	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK). The focus is on FCC and not on KC/SSC.
Renfrew et al.	2020	Optimizing mother-baby contact and infant feeding in a pandemic [Version 2]	UK	Optimizing close contact between mother and child, especially during the COVID-19 pandemic	Review of the risks and how to promote KC/SSC despite the pandemic.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK)
Sheridan et al.	2010	Organizational culture and routine midwifery practice on labour ward: implications for mother-baby contact	UK	It observes the mother experiences and feelings and midwifes' knowledge, practice, and beliefs.	The period after birth is often interrupted with different tasks. The labour ward culture does not support uninterrupted contact with the mother.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK). It only observes the first contact right after birth and that it may interrupted for different tasks.

Penn et al.	2015	Overcoming the barriers to using kangaroo care in neonatal settings	UK (+ evidence based elsewhere)	It observes how SSC improves the child's health, breastfeeding rate, and parents-child bonding	They discuss the KC barriers: From babies and parents (based on other countries' evidence), from healthcare workers (based on other countries' evidence), guidance/guidelines (local guidelines but not national in the UK which prevent proper implementation!) and nursing knowledge and skills (despite no national guidance/guidelines, nurses may observe what is done elsewhere to implement KC/SSC in their unit such as different projects as SWCP, Bliss, ...).	Y	
Pallas-Alonso et al.	2012	Parental involvement and kangaroo care in European neonatal intensive care units: A policy survey in eight countries	Belgium, Denmark, France, Italy, The Netherlands, Spain, Sweden, and the United Kingdom.	To compare the policies and practices regarding parental involvement and KC as well as differences in the tasks mothers and fathers are allowed to carry out.	This study showed that, although most units in all countries have policies encouraging parents to be involved, the intensity and ways of involvement varied within and between countries	Y	
Read et al.	2018	Parents as partners in care: Lessons from the Baby Friendly Initiative in Exeter	Exeter neonatal unit - UK	They review how this neonatal unit works, through the BFI standards.	Working on these standards improve the well-being of the patients. For example, providing breast pump as well as bed in the room will improve SSC practice.	N	This paper indeed explains that by providing reclining chairs and breast pumps besides the beds increase the uptake of SSC. However, it does not explain SSC

							implementation and its barriers/facilitators.
Eriksson et al.	2010	Parents' experience of providing skin-to-skin care to their newborn infant. A metastudy	Different countries	/	/	N	Not based in the UK
Bailey et al.	2017	Piloting kangaroo mother care in the community: dyadic responses to a novel innovation facilitating skin-to-skin contact	Birmingham City University	The pilot study aims to observe the effect of the garment on neonatal thermo regulation, maternal infant feeding and responsiveness, and the maternal perceptions of wearing and using the garment.	The garment seems to maintain an appropriate temperature with very few/little variation. No adverse outcome has been observed.	N	The research project aims to explore what impact the facilitation of SSC may have on SSC uptake and duration. However, this pilot study only observes the effect of the garment on different aspect of the child's health. It is considered as a safety evaluation of the garment before larger trial. Therefore, it does not give information on SSC rate of use. Hence, this pilot study does not involve information relevant on SSC implementation.
Staniszweka et al.	2012	The POPPY Study: Developing a	UK	Develop a model for FCC: The POPPY model	The POPPY model involves the promotion of SSC/KC method.	N	It does not give any information on what seem to increase the

		Model of Family-Centered Care for Neonatal Units					uptake of KC or what seems to prevent its use.
Wagg et al.	2013	Prescribing skin-to-skin contact and baby-wearing: Interventions in Norfolk	Norfolk	Explore how Norfolk prescribes SSC to promote breastfeeding	By prescribing SSC and Baby-wearing, the breastfeeding rates should increase. Moreover, Norfolk added to the 7 steps plan of UNICEF an 8th step which is skin-to-skin contact	N	This paper, by using SSC to improve the uptake of breastfeeding, does not give any information on SSC implementation and its potential challenges and facilitators in the UK setting.
Carfoot et al.	2005	A randomized controlled trial in the north of England examining the effects of skin-to-skin care on breast feeding	Warrington Hospital, Cheshire, UK.	To examine the effect of early SSC with healthy full-term babies on initiation and duration of breast feeding.	When comparing mothers who had SSC and those standard care, the SSC group showed earlier breastfeeding, mothers were more satisfied, there was decrease in the child's temperature but no difference between the groups was perceived at 4 months	N	While it reviews the benefits and the interest of implementing SSC, it just explores how this method increase the rate of breastfeeding. Hence, it does not give any information on the implementation of SSC, barriers, and facilitators.
/	2002	Skin contact has no benefit for preterm babies	UK - Researchers from ICL	To observe if SSC has benefits on children and mothers	No benefits have been observed for children and mother	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Marshall et al.	2012	Skin to skin contact after birth	UK	Review the experience of SSC right after birth	SSC provides benefits for mother and child. Absence of SSC may lead to adverse effect. Barriers remain important and not all women/mother practice SSC.	Y	

Whitelaw et al.	1988	Skin to skin contact for very low birthweight infants and their mothers	Hammersmith hospital neonatal unit	RCT to observe if SSC improves confidence of the mother, influences behavior of the child and if it prolongs lactation.	Early SSC does not seem more efficient than any other forms of contact.	N	While it gives relevant information on the benefits of SSC on very low birth weight children, it does not provide any information on SSC implementation in the UK.
Gregson et al.	2016	Skin-to-skin contact after elective caesarean section: Investigating the effect on breastfeeding rates	South-east England	They aim to observe if early SSC after a C-section may increase the breastfeeding rates	Early SSC will impact the breastfeeding at 48h and 6 weeks. There is a correlation between the duration of SSC during the first 24hours and the breastfeeding at 48h	N	It does not give any information on how to implement SSC, what are the barriers, challenges or facilitators.
Sheridan et al.	1999	Skin-to-skin contact immediately after birth	Outer London Maternity Unit	Review the SSC benefits, and observation of 10 mothers and their midwives the hour after birth.	Most of the midwives are aware of the benefits of SSC just after the birth. However, in practice it does not always happen like that, and some had perceptions/feelings which seem not to encourage mother to have early SSC.	Y	

Finigan et al.	2013	Skin-to-skin contact: multicultural perspectives on birth fluids and birth 'dirt'	Hospital Maternity in England	To explore the experiences of women from three population groups of immediate SSC with their newborn babies - Bangladesh, Pakistan, and England	The three mothers, despite their different cultural background found the fluids/dirt on their baby totally normal and part of a natural process which is the birth. However, some are ashamed to be dirty in front of family or have blood phobia. Early SSC should be addressed depending on the mother and not only based on prejudices. Midwives need to be open-minded and flexible depending on the wishes of the mother.	Y	
Trotter et al.	2005	Skin-to-skin contact: therapy or treatment?	UK	It is discussed how SSC may be seen as an alternative to standard treatment and not just as a therapeutic measure	SSC should be implemented in maternity, neonatal, at home to improve health of their children. They used a case study where unstable symptoms of an infants returned to normal while being in SSC.	N	No information on SSC/KC implementation and its potential barriers/facilitators. It reviews the benefits but besides that, do not give any other information on what seem to increase/decrease the uptake of KC/SSC
Wallace et al.	2001	Skin-to-skin contact. Benefits and difficulties	UK (+ evidence based elsewhere)	Review the benefits of SSC and observe what prevents it.	The barriers of SSC may be that breast is seen as "sexual" part of the body, which can enhance by the partner and hence, the mother may be reluctant to practice it. Moreover, midwives are also subject of their own culture/background and hence, they are not all willing to promote SSC.	Y	

Vincent et al.	2011	Skin-to-skin contact. Part one: just an hour of your time	UK	Explain the new standards of BFI and the change in the recommended time of SSC after birth from 30min to 1 hour	It gives and explains the benefits of SSC and promote the SSC right after birth for at least 1h.	N	No information on SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Vincent et al.	2011	Skin-to-skin contact. Part two: the evidence	Based on multiple references	Review the benefits of SSC	Lots of important and crucial benefits which highlight the need for incorporate SSC.	N	No information on KC/SSC implementation, in a specific context (UK).
Longbottom et al.	2015	Skin-to-skin during elective caesarean sections: A multidisciplinary staff perspective	UK	Women who underwent C-section may not have early SSC which may have negative consequences on maternal and neonatal health. They evaluate the staff perception of SSC in theatre ward for women who have c-section.	Following normal vaginal delivery, 85.7% of staff believe the baby should be given directly to the mother or birth partner compared to only 54.8% following elective caesarean section.	N	No information on SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Watson et al.	2014	Small wonders change programme. Supporting parents to be at the heart of their baby's care	UK	SWCP has been developed to address the gap between policy and practice and encourage parents to be at the center of the care of their child.	In one region, they used the DVD for implementing changes. This resulted in a 20% increase in the proportion of children receiving SSC.	Y	
Baum et al.	2011	Small wonders: A change programme to empower parents to be the cornerstone of their sick and	UK	There is a need to empower parents in the care of their baby (by increasing breastfeeding, KC, and parental confidence)	Best beginnings have already developed a DVD for improving breastfeeding rates and developed another one, SWCP to improve non-medical care for the children	N	Even if the DVD may speak about KC, this paper does not provide any information on KC implementation and on how the DVD improved the KC uptake.

		premature infant's care					
Green et al.	2005	Special care for sick babies - choice or chance? The first BLISS Baby Report	UK	Observe the different measures put in place in neonatal units in the UK and if it corresponds to what normally needs preterm and vulnerable babies (recommendations).	There is not enough nursing staff when comparing to the recommendation. Other infrastructure is not enough, and, for example, SSC/KC is not enough proposed and practiced despite the benefits of this method.	N	No information on SSC/KC implementation. While it gives information on its benefits and poor uptake through the survey, it does not give information on KC implementation, in the UK.
Cowan et al.	2013	Supporting skin-to-skin care in the neonatal unit	Jessop Neonatal Unit	In 2011 a group of nurses developed a project to raise the benefits of KC and increase the number of children receiving it.	SSC was already in place and a guideline developed. However, it was only used as an ad-hoc. The group assess the number of children receiving SSC in the unit to have a baseline information. All parents and staff received informative tools as well as useful resources. At the start of the project, 20% of stable babies received SSC and 6 months later, 70%! Now, KC is included in the induction training for new staff.	Y	
Aduko et al.	1998	The UNICEF baby-friendly initiative workshop for key workers	UK	UNICEF runs a 1-day workshop to go through the 10 steps, share experiences, learning from others. Moreover, it explains what the	Enhance the need for going to the workshop when trying to get the BFI accreditation	N	There is no information on SSC/KC implementation and its potential barriers and facilitators in a specific context. It does just review the benefits of the

				assessment is and what does it involves.			10 steps, including SSC as well as the preparation to the assessment.
Dickens et al.	2011	UNICEF UK Baby Friendly Initiative Annual Conference 2010	UK	V.D. explores what has been discussed in the BFI conference, related to its personal own interest, and related to its practice.	It reviews and summarize each of the presenters.	N	While summarizing the presentations, only 2 mentioned SSC to improve breastfeeding rates. Hence, no information on SSC implementation in UK has been discussed.
Dickens et al.	2013	UNICEF UK Baby Friendly Initiative Annual Conference, 5-6 December 2012: a personal perspective	UK	V.D. exposes what has been discussed in the BFI conference, related to its personal own interest, and related to its practice.	It reviews and summarize each of the presenters.	N	While summarizing the presentation, only 2 mentioned SSC to reduce infants' stress and pain in diabetic mothers for which SSC is very important. However, no information on SSC implementation in UK specifically and its potential barriers, challenges and facilitators has been discussed.

Dickens et al.	2015	UNICEF UK Baby Friendly Initiative Annual Conference, Newcastle 26-27 November 2014	UK	V.D. exposes what has been discussed in the BFI conference, related to its personal own interest, and related to its practice.	It reviews and summarize each of the presenters.	N	While summarizing the presentation, only 2 mentioned SSC to improve breastfeeding and that if there is no SSC, the 9 stages enabling the baby to breastfeed will be interrupted. However, no information on SSC implementation in UK specifically and its potential barriers, challenges and facilitators has been discussed.
BFI	2016	UNICEF UK Baby Friendly Initiative: Guidance for neonatal units	UK	Guidance for neonatal units by BFI UNICEF	Encourage SSC	N	No information on SSC implementation (barriers, challenges, and facilitators), in a specific context (UK). It just recommends BFI.
Byrom et al.	2021	UNICEF UK Baby Friendly Initiative: Providing, receiving and leading infant feeding care in a hospital maternity setting-A critical ethnography	North of England - Maternity staff	It explores what are the influence the BFI standards have on general practice.	The BFI revised standards appear to influence the experiences of working within and being cared for in a BFI accredited maternity unit. Through all the study, staff highlighted that BFI standards have positively impacted SSC.	N	While it explains the standards and highlights that the new ones positively impacted different practices such as SSC, it does not give any information on its barriers/facilitators in the UK.

Price et al.	2005	Using action research to facilitate skin-to-skin contact	Maternity unit in the UK	To improve knowledge of breastfeeding and implement uninterrupted SSC.	The practice of SSC increased from almost nil, to over 80%.	Y	
UNICEF	2020	Protecting, promoting, and supporting breastfeeding: THE BABY-FRIENDLY HOSPITAL INITIATIVE FOR SMALL, SICK AND PRETERM NEWBORNS	UK	This document addresses the application of the BFHI principles for small, sick, and premature newborns and their mothers in neonatal wards.	It reviews the BFI standards and recommends the practice of SSC as being essential for the health of the small and sick premature newborns.	N	This is a guidance on BFI standards. It explores the benefits of it and what does it bring for specific preterm children. No information on implementation have been revealed (barriers, challenges, and facilitators). Moreover, it is not based in the UK
UNICEF	/	The UNICEF UK - Baby Friendly Initiative - Review of the standards – Consultation document	UK	Review of the BFI standards (10 steps)	Involve encouragement and recommendation for performing KC/SSC	N	This is a guidance/review on a guidance on BFI standards. It explores the benefits of it and what does it bring for specific preterm children. No information on implementation have been revealed (barriers, challenges, and facilitators). Moreover, it is not based in the UK
UNICEF	/	UNICEF UK BABY FRIENDLY INITIATIVE - THEORY OF CHANGE	UK	The theory of change explains how this program works for improving children feeding	They review and summarize the benefits of the different standards and steps of BFI.	N	This is a review of a guidance which mention SSC as something that needs to be performed for improving the health of the mother and the child and breastfeeding rates.

							However, no information regarding SSC implementation and its potential barriers/facilitators has been developed.
UNICEF	/	UNICEF UK BABY FRIENDLY INITIATIVE - AN EVALUATION OF THE BURDETT PROJECT: SUPPORTING SIX NEONATAL UNITS ACROSS THE UK TO IMPLEMENT THE UNICEF UK BABY - FRIENDLY NEONATAL STANDARDS - SUMMARY	6 neonatal units in the UK	The Burdett project is a Grant for 6 neonatal units to support them to achieve and work towards BFI accreditation.	ALL units have been achieving stages 1 and 2 and one unit have achieved full accreditation.	N	No information on SSC implementation (and barriers/challenges/facilitators) have been provided.
UNICEF	/	UNICEF UK BABY FRIENDLY INITIATIVE - BURDETT EVALUATION:	6 neonatal units in the UK	The Burdett project is a Grant for 6 neonatal units to support them to achieve and work towards BFI accreditation.	ALL units have been achieving stages 1 and 2 and one unit have achieved full accreditation. It gives information on how to promote SSC (chairs, beds, …).	N	No information on SSC implementation (and barriers/challenges/facilitators) have been provided.

		TRANSFORMING CARE ON NEONATAL UNITS					
Lefebvre et al.	2012	Kangaroo Care on the post-natal ward	Maidstone and Tunbridge Wells NHS Trust	Observed how KC may impact breastfeeding rate, length of stay and satisfaction on postnatal ward	It reduces length of stay, increases breastfeeding, and improves satisfaction. KC is now a routine practice in the Trust.	N	Despite having observed how KC has improved satisfaction, breastfeeding and reduce length of stay, it did not provide any information on its implementation and what have been put in place to implement such practice.
NICE	2018	Guidelines: Specialist neonatal respiratory care for babies born preterm	Guidelines	Recommendation for babies in neonatal units	They do mention and advised KC/SSC in their guidelines.	N	No information on KC/SSC implementation and potential barriers/challenges/facilitators it may encounter. Moreover, the evidence is not based in the UK
RCPCH	2016	National Neonatal Audit Programme 2016 Annual Report on 2015 data	UK	It aims to improve standard of care for preterm children, in neonatal units	They highlighted different areas for improvement and strengthening.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).
Best Beginnings	/	NUCAT	UK	Breastfeeding rates vary considerably within the UK. It is often due to poor training and support from staff promoting these practices.	The NUCAT aims to assess the staff knowledge and confidence and the confidence in their knowledge in breastfeeding, breastmilk expression and KC.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).

Robyn Smart et al.	2018	Southwest Neonatal Network Guideline: Skin to skin guidelines	Southwest Neonatal Network - UK	Guidelines for neonatal units in this Neonatal Network to promote the use of SSC	Promote SSC, explain its benefits, both for the mothers and the children, and explain how to properly prepare parents to it.	N	No information on KC/SSC implementation (barriers, challenges, and facilitators), in a specific context (UK).

Appendix 6. Data extraction form KC/SSC

Author	Title	Context	Background	Type of study	Population	Intervention (SSC or KC)	Definition of the method	Aim	Mechanisms (+method)	Outcomes of interest
Higman et al.	Assessing clinicians' knowledge and confidence to perform kangaroo care and positive touch in a tertiary neonatal unit in England using the Neonatal Unit Clinician Assessment Tool (NUCAT)	The Neonatal unit in University Hospitals Coventry and Warwickshire NHS Trust - Tertiary center	N/A	Mixed methods study	The NUCAT has been applied to medical staff (all the unit). Purposive sample was used to include as much different clinicians as possible.	KC (defined as being = to SSC)	KC = Skin-to-skin contact. No information on timing, intensity, and frequency	To assess knowledge in KC and PT, assess confidence in KC and PT, assess the association between objective knowledge and subjective confidence in knowledge and practice and finally, assess the changes in confidence in knowledge and practice of KC and PT after performin	The Neonatal Unit Clinician Assessment (NUCAT) tool is currently used to assess the knowledge in different practices supporting breastfeeding of clinical staff. Staff self-rated their knowledge in confidence and practice before and after their knowledge has been assessed objectively (NUCAT) and their scores being reported. Staff highlighted barriers are lack of confidence in practice, lack	The confidence in knowledge was lower in medical staff who did not receive any KC training and the confidence in practice was lower for (i) those who spent less than 75% of their time caring babies and (ii) those who did not receive specific KC training. After having received the scores of the

								g a test and receiving feedbacks .	of evidenced based knowledge, lack of clear guidance, lack of training and education for staff, fear, no KC guidance/guidelines, lack of comfortable chairs, and poor staff availability. Staff are willing to improve training to reduce these barriers. Half of clinician had no training before! Training has an important impact on their confidence in knowledge and practice.	NUCAT, the staff' self-rated scores of confidences in knowledge and in practice have been reduced. Through the KC interviews, it has been observed by the staff that KC increase/improve their rapport with the parents, that parents have poor knowledge on KC, and that their perceptions were positive about KC and its benefits.
Davis et al.	Audit tool can help to standardize neonatal rights and family-centered care	UK - neonatal units	N/A	Commentary	/	SSC	No definition	The Bliss Baby Charter Audit tool, to	Audit tool following the standards of the Bliss Baby Charter of	The audit improved, at the Royal Victoria

								improve FCC. 1/5 neonatal units is already implementing the audit tool.	2005 which outline the rights/respects for every sick or preterm child.	Infirmary, the rate of SSC practice.
Rogers et al.	Baby Friendly: a way to accreditation. Part 2	Calderdale Royal Hospital (CRH) - Maternity unit	N/A	Commentary	Breastfeeding mothers	SSC	No specific definition except Skin-to-skin contact. Advised ASAP and for an unlimited time. KC is not defined and use afterwards	Review the implementation of steps 3 to 10 in CRH.	Step 4: They explain how they improved the rate of SSC: Leaflets for mothers, information session for staff. Both education and video helped to achieve this goal. Step 7: Importance of rooming-in by increasing information of KC and bed-sharing.	Step 4: 57% of mothers had SSC before accreditation and 97% of mothers after being accredited.

Spiro et al.	Best beginnings: From bump to baby	UK	N/A	Commentary	Parents	SSC = KC	No specific definition except Skin-to-skin contact. No information on timing, intensity, and frequency	Review the resources that Best Beginnings provides: From bump to breastfeeding DVD (to enhance breastfeeding), SWCP (to enhance FCC and KC), Baby Buddy (phone app to strengthen the involvement of parents at the center of the care of their baby.	SWCP (DVD + workshops)	The DVD increase the rate of use of SSC by increasing confidence and knowledge of parents.

Campbell et al.	Bliss self-assessment audit tool pilot	Royal Victoria Infirmary neonatal unit	The Bliss Baby Charter is a guideline and hence, it has not always been passed to clinical staff. Moreover, it needs a specific aspect for evaluation. A multidisciplinary team was created and involving different specialists (two senior consultant neonatologists, modern matron, social worker, physiotherapist, community - liaison sister, CC, an education	Audit study	Parents of preterm children (through questionnaires)	SSC = KC	No specific definition except Skin-to-skin contact. No information on timing, intensity, and frequency	Bliss changed the Bliss Baby Charter into a self-assessment audit tool for the units to determine what are the areas for improvement. This neonatal unit have been using this tool and improvements have been observed.	With the help of the multidisciplinary team, the audit tool was reviewed by the team to observed and propose area of improvements. Questionnaires were handed out to parents and clinical staff to observe what were their perceptions of FCC in the unit. Hence areas for improvement were determined. One area was the SSC possibility; parents and staff perceived children did not receive the right amount of SSC. Hence, they increased the staff	Since the start of the programme (audit), the rate of use of SSC has increased.

			specialist nurse, a senior research nurse) and two parent representatives to ensure appropriate self-assessment						awareness, developed educational programmes (posters, emails, …), created a multidisciplinary team, and implemented stickers to demonstrate the use and the duration of KC/SSC.	

Platonos et al.	Celebrating a fortnight of skin to skin holding	Imperial College Healthcare NHS Trust - London, UK	The neonatal unit collaborates with the Family Integrated Care (FICare) team at Sunnybrook Children's Hospital in Toronto which invited them to take part in the event. It is a unit that the IFDC (team of imperial) has visited, and they were impressed by their integration of KMC in the routine of care.	Commentary	Families in level 2 and level 3 neonatal units of the service. In total, 12 families in the level 3 participated and in the level 2, 20 families participated	SSC	No specific definition. No information on timing, frequency, and intensity	To celebrate International Kangaroo Mother Care (KMC) fortnight this year, Imperial College Healthcare NHS Trust Neonatal Service, consisting of a level 2 and 3 neonatal unit, took part in a global "Kangaroo challenge". The aim was to reinforce the practice of SSC.	Before the start, medical staff receive training and performed a quiz to ensure appropriate knowledge on the method and address any concerns. Written guidelines on how to perform the method were made available. On day 1, the families received different tools to promote the use of SSC and write down their performance (Bliss booklets on its benefits, diary, badges). During the 2 weeks, educational support were available both for the staff	The level 3 unit has reached an average of 1h33 of SSC per family per day and the level 2 unit has reached an average of 2h38 of SSC per family per day. They aim to continue celebrating KMC by such challenge to enhance further the awareness of KMC and its use.

									and the families.	
Armstrong et al.	Constructing a programme of change to improve the provision of family-centered developmental care on a neonatal unit	The Neonatal unit at the Royal Bolton Hospital	The team took inspiration from the Uppsala unit where FCC and KMC is the norm. The unit is managed by family-focused pediatric and neonatal nurses. The past two years involved	Audit study	Medical Staff	SSC	No specific definition except Skin-to-skin contact. ASAP and for an unlimited time.	A Family Care Team (FCT) has been created. They are experienced practitioners. They embedded FCDC into every day's life to empower parents to be at the center of	An audit tool assessed developmental care, family centered care, breastfeeding, SSC, cues, and pain. This was enabled through a mix between qualitative and quantitative open-ended questions, multiple choices and scaled questions.	As SSC is at the "basement" of FCC, they aimed to provide educational session for all the staff, information for parents, posters, and reclining chairs.

			lots of new recruitments and training to create a tertiary unit (through the New Leader Educational Program).					their child's care. The FCT defined SSC as being their number 1 priority. As continuous SSC seems difficult, they proposed intermittent SSC asap and for as long as possible. The aim is to observe what prevents the consistent application of FCDC across the unit and hence, develop a specific education	48% of the staff knew the benefits of SSC but 44% believed that 1-2 hours were sufficient which is not exact when looking at the 2 hours recommendation of the WHO. They highlighted that barrier of SSC may be staff confidence, time constraints	

								al programme to overcome this.		
Jesney et al.	A critical analysis of the role of the nurse in the implementation of skin-to-skin on the neonatal unit	Based on different evidence (but those on SSC implementation are related, mainly, to the UK)	N/A	Commentary through a case study	Nurses	SSC	Definition OK. Duration OK. No information on timing	Observe the role of nurses in providing guidance and support for parents when practicing SSC. Use a case study of twins to explore the literature (from UK and	One main barrier was the fact the children have been under phototherapy (SSC should last at last 60-90min BUT phototherapy should not have breaks of more than 30 minutes). Communication is hence an important barrier as well as the lack of staff.	Nurses have a vital role in implementing SSC

								elsewhere) to answer some questions and assess how the nurse is essential to promote SSC.	Moreover, mothers having underwent a c-section may need more help.	
Skene et al.	Developing family-centered care in a neonatal intensive care unit: An action research study	Regional Neonatal unit	A multidisciplinary team, including staff and parents, designed the intervention, implemented the changes, and evaluated them.	A participatory action research approach	Parents and staff from a neonatal unit	SSC	No specific definition except skin-to-skin contact. No information on timing, intensity, and frequency	In a regional neonatal unit, the aim is to implement and assess FCC interventions which promote the involvement and empowerment of parents in the care of their children.	A participatory action research, by a multidisciplinary team, enabled to implement 2 changes in practice: improve SSC and permit unlimited visited time for the parents (presence in ward rounds and other procedures). The data were collected from questionnaire, focus groups, and interviews from medical staff. Phase 1: Nurses were	Successful implementation depends on evidence, facilitation, and context. The 2 interventions were backed up by solid evidence. Phase 1 was essential to understand the context. These changes enabled an increase in the frequency and

									frustrated of not being able to answer to the needs of the parents to be involved in the care of their baby. In phase 2: Findings of phase 1 have been discussed. Nurses were not confident in SSC and hence, a training of one month was planned (workshops, good practice, ...). Posters and photographs were also used to raise awareness. Phase 3: The changes implemented were positively perceived.	duration of SSC.

Hamilton et al.	Developmental care in the UK: A developing initiative	214 neonatal units in the UK	N/A	National Survey	Staff and parents in neonatal units	SSC = KC	No specific definition except for skin-to-skin contact. No information on timing, intensity, and frequency.	KC is one of the main developmental care interventions. The aim is to review the developmental care in the UK and assess, between 2005 and 2008, if there is a difference in 3 components: Environmental control, parental involvement (including KC) and developmental care skills and staff.	The national survey was carried out by postal questionnaire, completed by the senior nurse in each unit. In 2008, using similar methodology, matching data were collected in a national survey of the 212 operational UK neonatal units as part of the POPPY project	In all units (type 1, type 2 and type 3) the uptake of KC has increased over time (80% of units reporting frequently practicing it). Besides, the number of skilled staff increased importantly between 2005 and 2008 as well in developmental care.

Kwah et al.	Evaluation of an intervention to increase clinician knowledge and confidence to support breastfeeding, kangaroo care and positive touch within neonatal units	Liverpool Women's Hospital (LWH) and Guy's and St Thomas Foundation Trust (GSTT).	N/A	Pre post cohort intervention study (mixed methods study)	Clinician staff (all) in 2 neonatal units	KC (but seems to use it interchangeably with SSC)	No specific definition except for skin-to-skin contact. No information on timing, intensity, and frequency.	To observe and assess the impacts of the SWCP on knowledge, confidence in the knowledge, confidence in the practice of the clinicians.	The intervention involves a DVD, a workshop and SWCP facilitators (trained neonatal nurse). The NUCAT was used to assess the clinicians.	Knowledge increase after the intervention. Both confidence in knowledge and practice increased after the intervention. The interviews highlighted that such improvements led to an increase in the uptake of such practice (KC). Quantitatively, it is difficult to say that the increase in knowledge and confidence increase the practice, but other studies have

										observed that such increase leads to an increase in the intention and behavior to support practice. The knowledge and confidence were related to different topics such as KC, breastfeeding and PT
Ashmore et al.	Implementing skin-to-skin contact in the immediate postnatal period	UK	Postnatal period especially	Commentary	Clinicians/ Health professionals	SSC	No specific definition except for skin-to-skin contact. ASAP but not no information on frequency/intensity.	Review the 10 steps of BFI and observe how they involve SSC. Afterwards, they explain what seem to be the barriers of SSC.	The UK Baby Friendly Initiative Team has reviewed the point of view/perception of staff working in BFI accredited units regarding the barriers in the implementation of early SSC between	To overcome these barriers, staff need to be aware of its benefits through posters, leaflets, and educational programmes. Policies/protocol are

									mother and children. The barriers are staff do not have enough time, they do not have enough private room/space, they have other priorities (more important) and that mothers are different (too rich/posh). The most significant barrier would be that it involves a drastic change in the staff's routine, and it may be very difficult to change practice that have been implemented for years.	also needed to be revised. On the other hand, parents also need to be aware of SSC benefits (posters, videos, discussion) already in antenatal clinic. Notes regarding the time of SSC should be kept for informing staff.

McGowan et al.	Kangaroo Care in the high-technology neonatal unit: Exploring evidence-based practice, policy recommendations and education priorities in Northern Ireland	Northern Ireland - 3 neonatal units	N/A	Survey	Neonatal nurses	KC	Definition OK. Duration OK. Timing OK	1. Explore the knowledge, practice, barriers, and the perceptions of nurses in these neonatal units regarding KC. 2. Make recommendation related to the findings from 1. These hospitals provide level 1, 2 and 3 neonatal units but the focus of the study will be on KC in level 3 neonatal unit.	Survey using the Kangaroo Care Questionnaire designed by Engler et al. (2002). It includes scales related to knowledge, practice, barriers, and perceptions. The main barriers to implement KC were: "Fear for the safety of the child" (fear of extubation/removal of a line), reluctance from neonatal staff (no promotion from senior nurse, lack of time, inconsistency in the practice and recommendations on KC, and poor knowledge to support parents),	Nurses demonstrated good knowledge and understanding of KC. KC is not used routinely. In the high-technology setting, there is a lack of national and local policies which prevent the right implementation of KC in the routine (including timing, intensity, and the right environment). Besides, education and appropriate training seem also essential.

									inappropriate environment (not enough private spaces, no reclining chairs), and lack of willingness from the parents to start KC.	Today, NO standardized educational program, specific to KC, available in Northern Ireland (and very few in the UK and Europe). This highlights an essential need to develop further this educational component to improve the implementation of KC and increase knowledge and confidence regarding its practice (in high-risk babies). Parental education is also

										essential. The barriers highlighted in this study such as limited time and poor infrastructure may be reduced through education.

Lim et al.	Neonatal nurses' perceptions of supportive factors and barriers to the implementation of skin-to-skin care in extremely low birth weight (ELBW) infants - A qualitative study	3rd level neonatal unit in London.	The nurses included in the study are registered neonatal nurses who have > 1y of experience in caring ELBW infants	Qualitative study including semi-structured interviews	7 neonatal nurses	SSC	Definition OK. No information on timing, intensity, and frequency.	Explore the barriers and facilitators from nurses' points of view regarding the implementation of SSC in extremely low birth weight children (<1000gr).	Semi structured interviews aimed to understand the perceptions of the nurses. A guide for the interview was used. 1. Humidification needed by the ELBW child, umbilical lines and instability were perceived as barriers to implement SSC in these children. 2. Nurses perceived different skills being needed to implement SSC: knowledge, experience, confidence in SSC, and the ability to assess the eligibility of the child. Some perceived it as	Educational programmes are essential and needed to improve knowledge and hence, strengthen practice of SSC. Adjustment of the environment (less noise, more privacy), increased the staff number, improve managerial support, adequate staffing, educational program, better guidance/protocol would enhance SSC practice.

									increasing the workload. They perceived training as an essential tool, but none have been following one. They all stressed the importance of training and clear guidance/policies to ensure an appropriate implementation. 3. Parents were not perceived by nurses as always being ready for SSC: training, support and informative sessions for parents would help to implement SSC. 4. NICU environment: Workload, staff shortage, not enough space, not enough resources,	

									noisy environment, were the most important barriers.	

Penn et al.	Overcoming the barriers to using kangaroo care in neonatal settings	Based on different evidence (not all from UK)	N/A	Commentary	Babies/parents and Healthcare workers	SSC = KC	Definition OK. No information on timing, intensity, and frequency.	Review how KC improves clinical outcomes, reduces mortality, improves breastfeeding, and improves the relationship between mothers and their children.	Review of the literature to observe, firstly, the evidence on its benefits and secondly, potential barriers. There are no guidelines which recommend the KC/SSC practice in routine so the NHS trust or the ward need to implement it by itself. The UK does not have national guidelines, it is issued locally by Trusts or charities such as Bliss. Altogether, the environment, protocols, and the knowledge may appear as barriers and need to be improved in neonatal units.	The authors proposed recommendations in practice for the neonatal nurses (improve knowledge, develop protocols, provide support/education to families), clinical leaders (ensure all staff have skilled and have an appropriate knowledge, a guideline/guidance to follow, and audit the outcomes) and NHS Trusts (investment in training, mandate protocols, incite national

										guidelines). Nurses may refer to other protocols and resources to implement changes and use audit tool to evaluate.
Pallas-Alonso et al.	Parental involvement and kangaroo care in European neonatal intensive care units: A policy survey in eight countries	Belgium, Denmark, France, Italy, The Netherlands, Spain, Sweden, and the United Kingdom.	Poor knowledge exists on the parents' involvement and NICUs policies uptake at the international level. In Europe, it has been observed that the practice of developmental care decreases from North to South.	Prospective multicenter survey	/	KC	Definition OK, including both SSC and SSC with clothes. No information on timing, intensity, and frequency.	A European survey on the developmental care have been conducted in 8 countries in Europe to understand the different policies in these different NICUs. It observes how parents are	The survey included a structured questionnaire to collect all the necessary information including participation from the parents, visits from the parents and the uptake of KC. 362 NICUs have been received the questionnaire by email. Policies in the UK seem to be quite	The UK uptake of KC seems to be low.

								involved in the care of their children, the tasks they are performin g in these different settings.	friendly towards parents, encouraging them to perform KC. In the UK, parents have appropriate right to choose when to come/leave, are informed and involved in the decision-making process. A reason which may explain why they do not practice KC may be because they highly value privacy and discretion and hence, they may be more restrictive/relu ctant to practice KC.	

Marshall et al.	Skin to skin contact after birth	UK	Since birth has moved from home to hospitals, early contact may be limited	Commentary	/	SSC	No specific definition except for skin-to-skin contact. Timing, ASAP and for as long as possible.	To review the benefits of early SSC, right after birth, and some of the barriers that may prevent its use.	The main barriers are the routine of care already implemented or when the ward is needed for another women (busy labour ward).	SSC should be continued later as well.
Sheridan et al.	Skin-to-skin contact immediately after birth	Outer London Maternity Unit	N/A	Review of the literature and qualitative study (through observation and interviews)	10 mothers, their babies, and their nurses during the first hour after birth - Labour ward	SSC	No specific definition except for skin-to-skin contact. Timing ASAP and should be maintain for as long as possible.	SSC is a well-known method, but it is still not practiced everywhere. This qualitative evaluation aims to observe and assess the midwives and mothers' perceptions on SSC and what are its barriers	Observation of these 10 mothers and their babies as well as interviews with the mothers and midwives who cared for them during the observation period. SSC was not observed to be relevant for all midwives. Not all have the same knowledge about it. Some midwives appeared to be uncomfortable to see mothers without their	Hence, it highlights the importance of clear training. Further work and evidence need to be presented to improve the point of view of midwives to make SSC the normality and to encourage this positive/well-perceived choice. Recommen

									clothes. These attitudes and poor knowledge may be passed on to mothers who hence may be reluctant to practice SSC. Moreover, mothers, sometimes, do not want to hold the baby in SSC because of the dirt.	dations for changes in the routine are make examinatio n while in SSC, let the mother take the baby and not always the midwives, SSC during transfers, scale (weighting) may be done later.

Finigan et al.	Skin-to-skin contact: multicultural perspectives on birth fluids and birth 'dirt'	Maternity unit in England	Traditionally, blood from menstruation and birth may be perceived as "polluting" in certain culture (Islamic families, orthodox Jewish, Sikhs, Hindus). In clinics, prejudices are based on the cultural background instead of the individual. This study aims to understand the experiences/voices of the women involved.	An interpretive phenomenological approach	Twenty women who experienced 1h or more of uninterrupted SSC right after birth	SSC	No specific definition except for skin-to-skin contact. Timing ASAP and no information on intensity and frequency.	Explore the experiences of women who experienced early SSC, after birth, from 3 different population groups: English, Pakistani and Bangladeshi.	Different methods enabled the collection of the data: records of a diary, video, and photographs. That enabled the women to reflect to this moment. Interviews were conducted with each of the participants. The women did not report any disgust or any trouble to have their baby, with some fluids, on their chest right after birth. One woman, from Pakistan, said that the fluids did not bother her on the baby but more when it was on her. She felt ashamed/uncl	These findings highlight nurses need to be cautious when addressing SSC and to not have any prejudices regarding the cultural background of the patient as it is a case-by case basis, and no one is the same. For local policies, the environment needs to be open-minded and supportive of the choice of every mother. Choices need to be presented clearly to women and appropriate

									ean when her family was there. Another mother report that she couldn't deal with the blood because she has a blood phobia.	training and leadership is needed to support these women. For national policies, BFI policies, through the 4th steps, may improve SSC. Some maternity units seem to struggle with this step and nurses shared that sometimes they "work against the clock" and have no time to properly provide SSC. In this study, once all prejudices were removed, all nurses

										found time to ensure all women had access to it.

Wallace et al.	Skin-to-skin contact. Benefits and difficulties	Labour ward: evidence from UK and elsewhere	Influence in the society and in the labour ward that makes the SSC implementation sometimes difficult.	Literature Review	Family in neonatal and maternity units with their babies (right after birth)	SSC	No specific definition of SSC except skin-to-skin contact. No information on timing, intensity, and frequency.	Observe why SSC is not well implemented, what prevents it.	Review of the literature. The barriers may be that breast is seen as "sexual" part of the body, which can be enhanced by the partner and hence, the mother may be reluctant to practice it. Men/father may also become jealous of the intensive SSC between the child and mother which hence may make the mother feel guilty of doing so. Moreover, midwives are also subject of their own culture/background and may, sometimes, reinforce this "sexual breast" prejudice, as	Midwives need to educate mothers about the benefits and practice of SSC through breastfeeding education. They should also educate about SSC for women who do not breastfeed as they also need it. Communication to avoid misconception is the key.

									there is not clear and homogeneous guidance and hence, they are not all willing to promote SSC.	
Watson et al.	Small wonders change programme. Supporting parents to be at the heart of their baby's care	UK	N/A	1. Survey. 2. pre/post study design (in one UK region)	Staff and parents in neonatal units	SSC	No definition	The SWCP aims to enhance the knowledge, and confidence of staff to support parents to be at the center of the care of their children.	1. Survey has been carried on in all hospitals that received the SWCP DVD. 2. Quantitative assessment in one region where the DVD has been implemented with parents and staff to implement changes on	1. The Survey noticed that in all the hospitals, 83% have watched it and found it very useful. 2. The one region which used the DVD as a mean of change observed that there

									the SSC uptake.	were a 20% increase in the uptake of SSC.
Cowan et al.	Supporting skin-to-skin care in the neonatal unit	Jessop Wing Neonatal Unit - Sheffield Teaching Hospitals NHS Trust	In high technologies setting, SSC is more intermittent than continuous. Group of nurses in the unit and other HCWs wanted to set up a project to enhance SSC. The inspiration comes from Uppsala.	Commentary	Staff and parents in neonatal units	KC (in skin-to-skin) = SSC	Definition OK. No information on specific timing/frequency/intensity except that it is more intermittent in HICs.	The project aims to raise awareness of KC and hence, strengthen the number of babies receiving SSC.	A guideline for SSC was already in place but this method was used as an occasional practice, for specific purpose rather than a routine method of care. A service evaluation has occurred in the neonatal ward and transitional care ward to observe the number of babies receiving SSC. Audit through the project aimed to assess the number of children receiving SSC. All	At the start, 20% of stable babies received SSC. 6 months after the start of the project, 70% of them received this method. In the high-dependency unit, almost 100% of them received SSC, while in the intensive care, a fewer received it due to lack of stability. Now, in this

									parents received informative Bliss booklet on SSC, and a card saying "I am ready for KC" for reminding parents and staff that they should use it when appropriate. Kangaroo stickers with information on the frequency and intensity were also available. A multidisciplinary approach was essential during ward rounds to include staff and parents in the discussion regarding, among others, suitability, and methodology for KC (inclusion of parents in the decision-	hospital, KC/SSC is embedded in the training curriculum for new staff, an event on KC is planned to raise awareness and mentors are available to support younger staff. Information on humidity needs also to be reviewed for early preterm children who require a certain percentage of humidity in their incubators. For them, specific decision is needed as

									making). Besides, comfortable chairs were provided. The SWCP DVD was also available for all staff and parents. Finally, "boob tubes" were designed for women who were insecure/uncomfortable of doing KC.	well as appropriate guidelines.

Price et al.	Using action research to facilitate skin-to-skin contact	Maternity unit in England	This maternity unit has low breastfeeding rate (in 2000) compared to the national average. Babies in this unit did not have (usually) access to SSC	Action research project	8 women and their midwives	SSC	No specific definition except for skin-to-skin contact. No information on timing, frequency, and intensity.	To improve the rate of breastfeeding and raise awareness regarding SSC.	The sample was approached for semi-structured interviews. Month 1: Focus groups enabled discussions to highlight areas which need changes. It permitted suggestions for changes such as informative booklets, teaching sessions, and informative sheets for parents. Month 2-3: After having visited 2 BFI units, the service started teaching sessions for midwives, displayed posters and created an evaluation sheet to assess SSC practice. Month 4:	Month 12: A newsletter was provided to show and demonstrate the progress in the SSC practice; 0% at the beginning, 36% at five months and 52% at month 10. 6 months later, 80% of children benefited from SSC.

									Focus groups discussions highlighted the need for advising SSC already in labour ward. Moreover, women who had SSC during this period were contacted for interview and for participating in the focus group. Month 5-6: SSC uptake was raised and improvement on SSC informative sheets delivery was discussed. Month 7-8-9-10: They discussed the SSC implementation in theatres.	

Appendix 7. Programme theories analysis

Programme theory	Rationale
PT 1: Family centered care (FCC) and PT 4: Bliss charity	The FCC aims to empower parents and to place them at the center of the child's care. Several included studies confirm this theory, adding that such culture of care enhances the practice of KC/SSC (50, 61, 64, 72). KC/SSC is an essential intervention, embedded in FCC, but knowledge about its practice is not coherent among all staff and hence, specific training on KC/SSC would enhance FCC (72). From there, having a strong FCC implementation/culture of care, where all staff are well-trained and the context well-understood, would, in turn, increase further the frequency and duration of KC/SSC (64, 72). To encourage and promote FCC in neonatal units, Bliss charity has developed the Bliss Baby Charter audit tool which aims to enable units to define areas that need improvement. This tool is increasingly used and, by working towards FCC, it has greatly impacted some units by improving the parental involvement and hence the rate of KC/SSC practice (50, 71). This charity has also developed guidance and informative tools on KC/SSC to enhance the parental involvement and to educate the families to strengthen the practice of KC/SSC (52, 61, 77).
PT 2: Baby Friendly Initiative (BFI)	Two of the included studies positively observe that the BFI accreditation improves the uptake of KC/SSC, especially through the 4th and 7th steps (73, 75). Indeed, the Calderdale Royal Hospital (CRH), by working towards the BFI accreditation, made such improvements that the SSC practice raised to 97% at accreditation (73). Ashmore et al. corroborate these findings and emphasize the crucial need to properly implement KC/SSC when working towards BFI accreditation (75). Moreover, as FCC is a guiding principle of BFI, it encourages further the families to practice KC/SSC (62).
PT 3: Best Beginnings – Small Wonders Change Program (SWCP)	Findings from three of the included studies confirm the assumption that the SWCP increases the uptake of KC/SSC (36, 38, 48). Indeed, a commentary confirms that the SWCP helps to increase the confidence and knowledge of

	the parents and hence, improves the KC/SSC practice (38). This finding has also been observed by another study, a pre-post study intervention, which used the SWCP as an intervention and evaluated the changes with the NUCAT scores (36). After the intervention, knowledge and confidence in knowledge and practice – regarding methods such as KC/SSC – increased and the interviews highlighted that such improvements permitted a rise in its practice (36). Quantitatively, Watson et al., also observe a rise in the uptake of KC (20%) when the SWCP was used as an intervention (48). None of the studies refute this theory and hence, we may be confident saying that such intervention helps the right implementation of KC/SSC and improve its uptake.
PT 5: NHS/NICE guidelines	None of the included studies provides information regarding a local or national guideline that would aim to improve the practice of KC/SSC. On the contrary, it was noticed that, to date, no clear and coherent guidelines on KC/SSC exist which prevent its proper implementation (52). However, it has been observed that when guidance on KC/SSC is locally implemented and displayed for the unit, in the context of a specific intervention, the uptake of KC/SSC improves (61).
PT 6: Knowledge and confidence	Increasing knowledge and confidence seems to facilitate the willingness of the staff to support and promote practice such as KC/SSC (36, 53). Indeed, different interventions, all including an educational programme to raise staff's knowledge, confidence, and awareness, has increased both the number of skilled staff as well as the practice of KC/SSC (36, 61, 64, 65, 69, 71). As such positive impacts have resulted from educational programmes, some units have embedded KC/SSC in their training curriculum for all new staff to ensure appropriate implementation (77). On the other hand, parental knowledge on KC/SSC is also paramount as it helps improving the uptake of such method (38, 61).

PT 7: Healthcare workers: Lack of training, knowledge, and confidence	Knowledge and confidence play an essential role in the implementation of KC/SSC practice (62). However, such skills are lacking in staff who has not followed a KC/SSC training and hence, it limits the appropriate integration of this positive method (62). It is observed that only few healthcare workers know the benefits of KC/SSC and too many have incorrect conception on how it is practiced (67, 70, 72). Staff in neonatal units perceive the lack of training as an important barrier as it limits their knowledge and confidence in the implementation, support, and decision-making regarding the suitability for KC/SSC (52, 62, 63). Due to poor training, staff seem not comfortable and afraid to implement such practice which exacerbate and reduce further KC/SSC implementation (62, 70). For instance, in Northern Ireland, no training programme specific to KC/SSC exists and too few in the UK (70). Hence, educational programmes, on all type of newborns, should be strengthened and are paramount to overcome these barriers (63, 70, 75).
PT 8: Healthcare workers: Lack of guidance/guidelines	The lack of clear and coherent guidelines is an important barrier for staff to implement KC/SSC within the unit (52, 62, 75). It has been highlighted that in high-technology settings, no national and local policies, either for stable and/or unstable children, exist (70). As there are no policies, staff lack information on timing, intensity, frequency, and optimal environment for properly implement KC/SSC which limits its integration in the routine of care (70). Moreover, uncertainty about suitability for extremely low birth weight (ELBW) children who need humidification is important and no evidence, guidance, and recommendation exist. Such lack of appropriate guidelines unable the proper KC/SSC implementation in this specific situation (63, 77). Therefore, there is a crucial need to implement strong guidance, either at the local level by nurses and clinician leaders and/or at the national level by the NHS, to enhance KC/SSC practice for all newborns (52, 63, 75).
PT 9: Healthcare workers: Lack of resources	First, several studies found that the implementation of KC/SSC is time-consuming and increases the workload, especially when women underwent a

	c-section or when children are unstable as they need more help from the nurses (63, 70, 72, 74, 75). Education may be a way to overcome this "time-consuming" barrier (70). Second, the lack of trained staff or general staff shortage are also an important barrier in the KC/SSC implementation (62, 63, 74). Third, none of the included studies explored the barrier of frequent/intermittent parental visits that may prevent the proper KC/SSC implementation.
PT 10: Healthcare workers: Cultural/social norms	One important barrier in the implementation of KC/SSC in practice is the difficulty to change the already well-implemented routine of care (67, 75, 76). Midwives may have other priorities such as weighing and bathing the baby or transferring the mother which might limit the ability to have early KC/SSC (67). Other midwives may also have prejudices and might feel uncomfortable to see mothers without any clothes, reinforcing the sexual prejudice that exist regarding the breast (67, 68). Such attitudes may be passed on to mothers who, hence, might be reluctant to practice KC/SSC (67). Finally, the preconceived ideas on the mothers' socio-cultural backgrounds that nurses might have often characterized their attitudes and limit the free choice of mothers regarding KC/SSC practice (66). Hence, nurses and midwives need to stay open-minded and treat women on a case-by-case basis to enhance opportunities to practice KC/SSC (66, 67).
PT 11: Caregivers: Lack of knowledge/support	It is observed, through the different findings, that parents have often a poor knowledge on KC/SSC method which prevent its practice (62). Indeed, while HCWs' knowledge plays a crucial role in the uptake of such method, the impact of the knowledge of parents should not be underestimated (75). Nurses often perceive parents as being not ready for KC/SSC practice due to poor understanding and hence, educational programmes should involve parents to enhance the KC/SSC implementation (63, 70).

PT 12: Caregivers: Cultural norms	Authors have observed that the cultural background of mothers may limit the KC/SSC practice (30, 66-68, 75). In the UK, a high value is puts on privacy and discretion which may explain the reluctance of mothers to practice KC/SSC (30). Moreover, other findings have highlighted that some mothers perceive themselves "too rich/posh" to have KC/SSC or are reluctant to hold their baby because of the dirt (67, 75). However, authors highlight that caution needs to be taken when exploring such issues as socio-cultural background may not be the only reason for a poor KC/SSC uptake and, sometimes, it might only be due to blood phobia or an embarrassment to be covered by dirt in front of the family (66). Another important cultural barrier is that breast is often seen as "sexual". Such perception may be enhanced by the partner and lead to a reluctance from the mother to practice KC/SSC (68). Finally, the jealousy of the mother-child bonding from the partner might make feel the mother guilty to practice KC/SSC and hence, may reduce its uptake (68).
PT 13: Caregivers: Poor infrastructure	Lack of appropriate infrastructures in the unit may create a non-suitable climate for KC/SSC practice. Indeed, lack of reclining and comfortable chairs, no private rooms or space and noisy environment are important barriers that limit the integration of KC/SSC in the routine of care (62, 63, 70, 75).
PT 14: Healthcare facilities: Management and leadership	Few findings help to corroborate this theory. Indeed, one study notices that nurses perceive the lack of support from senior/leader nurses as an important barrier in the implementation of KC/SSC (70). On the contrary, interventions involving mentors/leaders/facilitators as well as managerial support to improve KC/SSC practice demonstrate great positive impact on its implementation and hence, is highly recommended to achieve such goal (36, 52, 63, 77). Compared to other European countries, parents living in the UK seem to have an appropriate right to choose when visiting their child (30) and it has been observed that unlimited parental visits do improve the frequency and duration of KC/SSC practice (64). However, no specific information regarding how the lack of clear parental visits guidelines as well as

	insufficient budget may reduce the KC/SSC uptake have been explored in these included studies.
PT 15: Healthcare facilities: Elasticity in the delivery	All the included studies explore either the KC method or the SSC method. Some explore these two methods, using the terms interchangeably, as being synonyms (36, 38, 52, 62, 69, 71) while other focus on either SSC or KC (30, 48, 50, 61, 63-68, 70, 72-77). However, none of the study confirm this programme theory as none mention that the two different terms, referring to similar method, make the implementation of KC/SSC confusing and/or difficult.

Appendix 8. CASP checklists - KC/SSC

	Armstrong et al	Campbell et al.	Davis et al.	Finigan et al.	Higman et al.	Jesney et al.	Rogers et al.	Spiro et al.
Q1 - Was there a clear statement of the aims of the research?	YES	NO	NO	YES	YES	YES	YES	NO
Q2 - Is a qualitative methodology appropriate?	YES	YES	Can't tell	YES	YES	YES	YES	YES
Q3 - Was the research design appropriate to address the aims of the research?	YES	YES	Can't tell	YES	YES	Can't tell	Can't tell	Can't tell
Q4 - Was the recruitment strategy appropriate to the aims of the research?	Can't tell	Can't tell	NO	YES	YES	Can't tell	Can't tell	NO
Q5 - Was the data collected in a way that addressed the	YES	YES	Can't tell	YES	YES	Can't tell	Can't tell	NO

research issue?								
Q6 - Has the relationship between researcher and participants been adequately considered?	Can't tell	NO	NO	YES	Can't tell	Can't tell	NO	NO
Q7 - Have ethical issues been taken into consideration?	NO	NO	NO	YES	YES	NO	NO	NO
Q8 - Was the data analysis sufficiently rigorous?	YES	Can't tell	Can't tell	YES	YES	Can't tell	Can't tell	NO
Q9 - Is there a clear statement of findings?	YES	YES	YES	YES	YES	Can't tell	YES	YES
Q10 - How valuable is the research?	Valuable and useful to observe how the intervention	It is valuable. It does give information on how the tool is useful to	This commentary is useful to have a summary of the key	Valuable and relevant.	It provides great information regarding the knowledge	The study is relevant and valuable as it provides information on	This commentary is valuable as it reviews evidence and	Gives information on how SWCP improves SSC uptake. No

	increased the SSC uptake	determine areas that need improvements. It notices the necessary mechanisms developed by the unit to make improvements. It is a pilot study which give relevant information.	findings, explaining the different benefits of a tool in improving SSC practice.		and confidence in practice on KC.	how the nurses perceive the SSC implementation and provide potential barriers to its implementation.	provide information on how BFI steps involve the uptake of SSC.	reference to other study/research is provided. Hence, the objectivity may be limited.

	Cowan et al.	Price et al.	Sheridan et al.	Wallace et al.	Ashmore et al.	Hamilton et al.	Kwah et al.	Lim et al.
Q1 - Was there a clear statement of the aims of the research?	YES	YES	YES	NO	NO	YES	YES	YES
Q2 - Is a qualitative methodology appropriate?	YES	YES	YES	YES	YES	YES	YES	YES
Q3 - Was the research design appropriate to address the aims of the research?	YES	YES	YES	NO	Can't tell	YES	YES	YES
Q4 - Was the recruitment strategy appropriate to	Can't tell	YES	YES	NO	NO	YES	YES	YES

the aims of the research?								
Q5 - Was the data collected in a way that addressed the research issue?	Can't tell	YES	YES	NO	NO	YES	YES	YES
Q6 - Has the relationship between researcher and participants been adequately considered?	Can't tell	YES	YES	NO	NO	YES	YES	Can't tell
Q7 - Have ethical issues been taken into consideration?	NO	YES	YES	NO	NO	NO	YES	NO

Q8 - Was the data analysis sufficiently rigorous?	Can't tell	YES	YES	NO	Can't tell	YES	YES	YES
Q9 - Is there a clear statement of findings?	YES	YES	YES	YES	YES	YES	YES	YES
Q10 - How valuable is the research?	It is valuable as it gives relevant information on the mechanisms implemented to increase the uptake of KC	Valuable and relevant.	Valuable and relevant.	Valuable and relevant to understand SSC and its potential barriers to implementation. However, there is no information on the robustness of the evidence used to back up these arguments.	It is valuable and relevant to better understand the potential barrier of SSC implementation.	Valuable and relevant.	Valuable and relevant. It is a mixed-method study which, besides the qualitative evaluation with interview, also used a quantitative questionnaire to complete the findings.	This study is valuable and relevant to understand the perceptions of nurses on barriers in the implementation of SSC

	Marshall et al.	McGowan et al.	Pallas-Alonso et al.	Penn et al.	Platonos et al.	Skene et al.	Watson et al.
Q1 - Was there a clear statement of the aims of the research?	NO	YES	YES	NO	NO	YES	YES
Q2 - Is a qualitative methodology appropriate?	YES	YES	YES	YES	YES	YES	YES
Q3 - Was the research design appropriate to address the aims of the research?	Can't tell	YES	YES	Can't tell	Can't tell	YES	YES
Q4 - Was the recruitment strategy appropriate to the aims of the research?	NO	YES	YES	NO	Can't tell	YES	Can't tell

Q5 - Was the data collected in a way that addressed the research issue?	Can't tell	YES	YES	NO	YES	YES	Can't tell
Q6 - Has the relationship between researcher and participants been adequately considered?	Can't tell	YES	YES	NO	NO	Can't tell	Can't tell
Q7 - Have ethical issues been taken into consideration?	NO	YES	NO	NO	NO	YES	Can't tell
Q8 - Was the data analysis sufficiently rigorous?	Can't tell	YES	YES	YES	YES	YES	Can't tell

Q9 - Is there a clear statement of findings?	YES	YES	YES	YES	YES	YES	YES
Q10 - How valuable is the research?	It is relevant and valuable regarding the SSC method. However, it is difficult to know if the evidence used and the perspective of the author are reliable.	Valuable and relevant.	Valuable and relevant.	It is valuable and relevant. It reviews important evidence/literature and appraise them.	The authors provide information on how SSC may be increased. It is valuable as it provides relevant clues on what should be implemented to increase the SSC practice.	Valuable and relevant.	It is relevant. However, as it is an abstract there is very few information on the methodology and participants which unable to properly appraise this study