

Surveying Family Access, Kangaroo Mother Care and Breastfeeding Policy Across NICUs in Italy

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Research

Keywords: Developmental Care, parental access, premature new born, breastfeeding, skin to skin contact

Posted Date: May 5th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-481473/v1>

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Abstract

Background

Currently, there is a lack of data describing neonatal care in Italy, and the board of the Italian Society of Neonatology (SIN) is determined to promote a more active policy that favours family-centred developmental care. We aim to assess parental access to the NICUs, facilities offered to the family members, and to test “the state of art” regarding kangaroo maternal care (KMC) and breastfeeding policies in level III Italian NICUs.

Methods

A questionnaire both in paper and in electronic format was sent to all the 106 Italian level 3 NICUs; 86 NICUs (corresponding to the 80% units) filled out and sent the questionnaire back . The collected data were analysed; in addition a comparison between the 2017 survey and two previous survey related to the 2001-2006 data were performed in relation to the few items that had been answered by the two previous surveys.

Results

In total, 62% of NICUs reported a free 24-hour access for both parents (vs 35% in 2001 and 32% in 2006). Parents were requested to leave temporarily the unit during shift changes, emergencies and medical round in 64% of the units. Some parental amenities, such as an armchair next to the cot (94%), a room for pumping milk and a waiting room were common, but others, such as a bed (16%) and accommodation (35%) were not. KMC was practiced in 94% of units but in most cases (62%) was limited to specific times. In 13% of NICUs, KMC was not offered to the father. The average duration of a KMC session, due to an estimation from the unit staff, was described to be longer in 24-h open NICUs than in limited access NICUs. Breast feeding was successful in a small proportion of preterms staying in the NICU.

Conclusion

The number of 24-H open NICUs doubled over the last two decades. Some basic family facilities such as rooms with bed and shower for the parents remain uncommon. KMC and breastfeeding have become routine; however, the frequency and duration of KMC sessions reported by the NICUs professionals still do not meet the WHO recommendations.

Trial Registration

Not applicable

Background

The Neonatal Developmental Care (NDC) study group of the Italian Society of Neonatology (SIN) has long aimed to grant parents free access to the NICU 24 hours a day (1,2). Similarly, the WHO considers free access to the unit kangaroo mother care (KMC), and breastfeeding of paramount importance. To achieve this, they recommend increased training for staff and the implementation of protocols and programs to educate parents on the most effective practices for promoting developmental care (DC) and therein empower them to become primary caregivers.

Currently, there is a lack of data describing neonatal care in Italy, and the board of the Italian Society of Neonatology (SIN) is determined to promote a more active policy that favours family-centred developmental care. The NDC study group of the SIN first reviewed the existing literature and published a manual with recommendations on care and cure to support the development of preterm infants across Italy (5). For example, The WHO (6) recommends a minimum time of 60 minutes for each KMC session; this practice should be implemented as soon as the clinical conditions of the child allow it and should last through the entire stay in hospital. In stark contrast to these recommendations, the first survey conducted by the NDC study group in 2001 (10) showed that many NICUs claimed to practice KMC, but parents were only free to perform KMC without time constraints in 56% of NICUs. Moreover, KMC was practiced on average only once per day and for no more than one hour (10). Thus, parental visiting time was limited in a high percentage of centres

A second survey conducted between 2004 and 2006 by a European network was sponsored by the European Science Foundation and aimed to evaluate “Research on early development care for very preterm infants in NICU” (9). Published in 2009, this study demonstrated that in northern European countries (Sweden, Denmark, UK, Netherlands, Belgium) both parents had free, unmitigated access to the NICU at any time. France NICUs offered an intermediate degree of access. Finally, in Spain and Italy, unrestricted NICU access was only granted in less than one-third of NICUs. Moreover, in 70% of Italian NICUs, the mother was only allowed to stay in the ward during open hours, and additional restrictions were added during medical rounds, shift changes, and emergencies. In line with these data, a 2012 study (11) showed that Italy adopted restrictive parental access policies in 80% of NICUs, which was highest amongst Spain (73%), France (41%), and Sweden, Denmark, the UK, the Netherlands, and Belgium (all between 0 to 10%). These data demonstrate that despite KMC being well known and popular in Italian NICUs, its application remains limited and conditioned by restrictive opening policies in NICUs. To meet this gap, the Italian Society of Neonatology is fully committed towards promoting the full 24-hour opening of units to the families of preterm newborn infants and to support both DC and KMC policies. To this effect, the present survey aims to provide an updated analysis on the level of access families have to the NICU, on current KMC and breastfeeding across Italy.

Two were the aims of the survey : first, to analyse parental access and facilities offered to the parents, second, to test “the state of art” of kangaroo maternal care (KMC) and of the breastfeeding policy adopted in the single Italian NICUs.

Methods

Design

A multicentre descriptive observational survey was conducted from June 2017 to January 2018 in Italian NICUs hospitalising infants less than or equal to 32 weeks of gestational age. A NICU professional responsible for the distribution and collection of the questionnaires was identified in each region. They were available to sites to illustrate the aim of the study and to answer questions individual units may have had. An initial letter from the NDC study group accompanied the questionnaire, which was designed for self-administration. The final page for each questionnaire reported the location of the investigated NICU, the signature of the contact person, of the director of the unit and of the head nurse. The NDC (neonatal developmental care) study group of the Italian *Society of Neonatology (SIN)* developed the questionnaire (see appendix), which was made available to all the Italian NICUs both in paper and in electronic formats to also facilitate online completion. The questionnaire comprised four sections which assessed general characteristics of the ward; the degree of parental access to NICUs and general attitudes towards parents; KMC practices; and breastfeeding practices. A total of 107 questionnaires were sent to NICUs across all Italian regions and 86 (80%) were returned by email or mail with all four sections completed.

Statistical analysis

Rather than sampling subjects (patients or professionals), this study was designed using "purposive sampling" (10): we proposed the questionnaire directly to the directors of the NICUs caring for newborn under 32 weeks GA. Therefore, the sample estimation and statistical power procedures are not applicable for this study. Although the generalisation of the results is limited to the sample in question, the exploratory nature of this study made it possible to capture a wide array of variables through an ad hoc questionnaire, which in turn provides a great wealth of data on the quality of care within NICUs across Italy (11). Descriptive statistics were performed on all evaluated variables, including mean and standard deviations for continuous/scalar variables, and frequencies and percentages for categorical variables. To better assess how parental access related to the duration of KMC, NICUs with free access lasting more than 10 hours were distinguished from those which limited access to less than 10 hours per day. One-case non-parametric analysis was used to compare key variables obtained by the centres with limited opening hours. The duration of the KMC was an estimation from the unit staff statement, not the result of recording the single KMC sessions in the medical records

Results

Our survey involved approximately 80% of Italian NICUs, including 100% of centres from the northern regions, 50% of centres from the central regions, and 60% of centres from the southern regions.

Access to the ward

One-case non-parametric analysis of key variables demonstrated that the distribution of free access to parents significantly varied across centres in Italy. In total, 62% of the NICUs declared that they allowed

both parents free 24-h access to the unit, while 38% of centres indicated afforded access within some degree of time constraints. Of these, 72% provided a daily access for less than 10 hours and 28% for more than 10 hours (Tab 1).

During emergencies, shift changes and /or medical round, parents are invited to leave temporarily the unit in the majority (64%) of the NICUs. The ward access for non-parent relatives (in general only grandparents and siblings) is allowed only in certain time windows in half of the units but it is fully denied in 45% of centres.

Parents facilities

In the majority of Units, parents were provided an armchair next to the child's cot (94%), a room for pumping milk (92%), a waiting room (83%), and mothers were provided with access to the hospital canteen (72%). By contrast, other basic supportive facilities, such as rooms with beds and showers in the unit (26%), a reading room (29%), a dedicated kitchen (23%), and an adjoining accommodation (35%) were uncommon.

Kangaroo Mother Care and Breastfeeding

Characteristics of the KMC proposal and breastfeeding practices are listed in table 2

TABLE 2 (Here in the text).

KMC was offered in 94% of the NICUs but in the majority of them (62%) was limited to specific time in the day and in 13% of them fathers were not involved; it was offered more than once per day in 65% of the units. As far as the relationships between KMC and weeks of postmenstrual age (PMA), KMC was offered in 30% of units at PMA lower than 28 weeks, in 20% of units between 29 and 30 weeks, in 16% of the units at PMA higher than 30 weeks. Moreover, 84% of the units reported daily KMC with twins. KMC was routinely offered to 70% of preterm new born infants on respiratory support, but only in 36% of the NICUs when the infant was on mechanical ventilation, in 80% during cPAP (continuous positive airway pressure) and HFNC (high flow nasal cannula).

End of KMC: in 57% of units, KMC was usually stopped when the preterm newborn was discharged, while KMC was stopped with the beginning of full oral feeding (13%) or during the transition from intensive to post-intensive care (30%). In the presence of a central venous and/or umbilical catheter, KMC was routinely practiced in 68% of NICUs. Importantly, in 60% of the units, NICU initiatives to perform KMC were recorded in the medical records. A written protocol for KMC was reported in 43% of NICUs. Moreover, only 44% of Units reported the inclusion of specific KMC training over the last 3 years.

Coming to the breastfeeding, during KMC it was promoted or encouraged in 90% of neonatal Units, but only in 6% when the newborn was still in NICU. KMC was proposed several times a day in 65% of neonatal units. In 75% of NICUs, the mother's raw milk was used, while 29% of units supported extraction at the cot side (incubator or little bed), and 40% of units allowed for simultaneous extraction. In 56% of

neonatal unit, a milk bank was present in the Unit. However, almost all centres (93%) had a specific room with breast milk extraction. Finally we compared the duration of a single session and the total daily KMC duration between 24-h open NICUs and those with limited time access. Even if this comparison is indicative only of a trend, not of data recorded in the medical records, the data coming from the staff statement seem to indicate that the average reported duration of single KMC session and of overall daily duration of KMC session last longer in 24 h open than in time limited opening NICUs.

The reported average time of a single KMC session and total daily KMC were 106 minutes and 166 minutes, in NICUs with limited time access and in 24-h open NICUs respectively

Discussion

This survey was performed in 2017 and despite a heterogeneous response rate, covered early 80% of all NICUs across Italy. Consequently, our analysis has allowed us to provide an updated picture on current DC policies and to identify urgent needs for improving DC and KMC policies across Italian NICUs.

Free admission for parents to the NICU is part of the organisational and structural practices suggested by the international recommendations for health and hospital policies to improve the care of hospitalised newborn babies and to allow for better clinical and neuro-psychological logical development (20). Over the last two decades, Italy has taken significant strides towards allowing parents free access to NICUs. De Vonderweid and Leonessa (10) indicated from their 2001 survey that across 108 of 112 NICUs in Italy, only 29% and 24% of Italian NICUs provided free access for mothers and fathers, respectively. Similarly, in 2009, a study of eight European countries between 2004-2006 (9), reported free access in only 31% of NICUS in Italy and 27% in Spain. This was in stark contrast to the 100% of NICUs offering free access for both parents in Sweden, Denmark, and the UK, 90% in the Netherlands and Belgium, and 72% in France (8). In the vast majority of the units, especially after excluding NICUs from Italy and Spain, the durations of visits were not limited, and except for some limitations during medical rounds, visits were unrestricted. Indeed, across all countries, medical rounds restricted access considerably more than other conditions. Only two countries within EU (European Union), Spain and Italy, had time-limited free access policies for family members. Despite some improvements from 10 years prior, (from 18 to 31% in Italy and from 11% to 27% in Spain) overall rates remained low (9).

The current survey has revealed significant progress, and the increase in persistently open units from 31% to 62% over the last 15 years is encouraging. Nevertheless, more work is needed to reach parity with the northern European countries. In assessing whether parental access and attitudes towards parents are in accordance with a "developmental care" (18,19) approach, our study shows that 39% of NICUs strongly limit entry times. Particularly striking is that we found that in 73% of partially opened NICUs, average parental stay was 4 hours and further restrictions relating to shift changes, emergencies and medical rounds were reported.

Indeed, more than 64% of NICUs denied parents access to the ward during medical rounds. Another negative feature of Italian NICUs was the low rate of units (45%) that provided access to relatives, such

as siblings, grandparents, uncles, and friends. We speculate that these negative aspects could be related to the fact that 70% of NICUs lacked accommodation facilities (sleeping room, family room, reading room, adjoining accommodation, dedicated kitchen). Indeed, our survey showed that a large number of NICUs do not provide a kitchen reserved for parents, or the option for a bed or accommodation near or inside the ward. Moreover, very few centres have stated that they have family rooms.

The present survey showed that KMC is a well-known and widespread practice in all Italian regions; however, implementation strategies across centres were inconsistent and deviated from the WHO recommendations. The reported average time of a single KMC session and total daily KMC were 106 minutes and 166 minutes, respectively. This value falls within the minimum standard indicated by the WHO, which recommends that KMC should be performed as often as possible during the 24 hours, should be conducted across the entire duration of the hospital stay, and should be conducted at home after discharge from the hospital. Although KMC was promoted by most surveyed NICUs, restrictive policies regarding the entry of parents into the ward impede its practice. All the questionnaire reported a neat (thought not measurable) relationship between opening hours and reported duration of KMC, where 24 hours open NICU allowed on average longer KMC sessions to restricted opening NICUs. In addition, NICUs with especially restrictive opening time (less than 10 hours per day) showed that KMC time was further reduced respect to those open for more than 10 hours per day (respectively 1 hour/d on average vs 4 hours/d on average) /d) . Limitations to KMC also reduce the chance for early breastfeeding (21). Our survey shows that 43% of Italian NICUs discontinue early KMC, either when the baby shifts from the NICU to post-intensive care cots (30%), or when the baby commences bottle feeding (13%). Breastfeeding is usually favoured by a stable habit for daily KMC (22,23), especially for those infants in intensive care. Unfortunately, the limited hours and additional restrictions for KMC across many Italian NICUs seemed to impede breastfeeding. Other factors that hindered breastfeeding in preterm infants included the lack of raw milk from their mother (25%), and a lack of strategies for allowing preterm babies to breastfeed given an inability for the mother to extract milk next to the cot of their baby (71% of the centres). The mother who can extract the milk at the cot side can do it immediately after a KMC session, which is a natural stimulus for the oxytocin reflex (24-26). Milk bank are present only in 56% of the Unit: the lack of donated human milk bank is another obstacle, as it leads to the start of formula milk (27,28). Moreover only 30% of the centres offer KMC under 28 weeks PMA; this figure may be conditioned by the high percentage (36%) of vague answers, such as "when the child is stable" or similar. This statement does not allow the evaluation of these data with certainty and in the absence of shared protocols for the use of KMC, confirming the importance of using national recommendations for the implementation of KMC as neonatal therapy.

Strikingly, only 43% of units had written KMC protocols, with a significant gap across NICUs. This lack of written KMC protocols may indicate that staff do not perceive the presence of parents, KMC, and breastfeeding as legitimate therapeutic interventions. On the contrary, the literature clearly stresses that empowering parents as primary caregivers, KMC, and breastfeeding are the strongest initiatives for promoting early attachment and interaction between the baby and family members (2–5, 14-22, 29-33). Conversely, early attachment and interaction are important early indicators for optimal child development

(2-14-22). Our survey outlines the need for the Italian Society of Neonatology to insist on residential courses to promote discussion, knowledge, training, and sharing these concepts with the NICUs professionals. A survey approach, despite being difficult, complex, and time-consuming, is a precious tool for monitoring changes in developmental care-oriented policy throughout the country. It has further allowed for the identification of gaps and helped to uncover steps for overcoming aforementioned restrictions.

Our survey has **clear limitations**. A self-administered questionnaire may be subjective, and only reflect the ideas of the person tasked with filling out the questionnaire and not of the team or unit as whole. Actual inspection of the units would be ideal for checking individual unit policies and to directly collect the opinions of staff and parents. However, the actual inspection of such a large number of units throughout the country would be logistically difficult and expensive. Moreover, the subjectivity of team members responses and the lack of an accurate recording in the clinical charts of number and length of KMC session are a clear limitation: when talking of KMC and breastfeeding that are universally perceived as quality markers for the NICU the individual staff judgement may overscore these aspects. We are planning to overcome this limitation in the next survey protocols, which will include the recording of activities with the possibility of building a “log-file” to collect measurable information, accepting the data on KMC duration only for those NICUS that perform accurate recording of the length and number of single KMC sessions.

Despite these limitations, an important strength of our survey was that the group who planned and oversaw this initiative was composed of 12 members from the developmental care study group board plus a number of regional contact persons, who were responsible for relaying the questionnaire to individual NICUs across the 20 Italian regions. Not only do these members collaborate to encourage responses to the questionnaire (an 80% response rate of all Italian NICUs is a clear success) but also provided quality control given that were familiar with individual NICUs their specific features and protocols. Moreover, most of these agents have participated with in the study since the initial discussions for the study plan and had the opportunity to see and discuss the results of the survey after the collection of the questionnaires.

Conclusions

Compared to the two previous studies performed in the early 2000s, the percentage of full day open units in Italy has remarkably increased. However, facilities for family members remain inadequate for many centres. KMC has become a routine practice but still does not meet the WHO recommendations. As the implementation of DC and KMC is primarily a social cultural issue, the Italian Society of Neonatology has identified education, teaching, and training in DC, KMC, and breast feeding through the country as the primary goals of SIN in upcoming years.

List Of Abbreviations

DC : developmental care; PMA: postmenstrual age ; SIN: Italian Society of Neonatology;

DCSG : Developmental Care Study Group ; HFNC high frequency nasal cannula ; EU European Union

Declarations

Ethics approval and consent to participate

Not applicable

According to what we know an ethics approval for this type of study that does not mention and involve parents, families and the single infant is not needed . All the Directors of the operating Units involved with collection of the data and elaboration of the data presented in this manuscript have agreed to participate to this research.

- Consent for publication

All the authors have consented for the publication of this manuscript.

- Availability of data and material

The single Questionnaires either in paper and in electronic format and the first review of the data have been collected and have been saved by dr. Claudia Artese and Dr.Silvia Perugi in the Careggi NICU of Florence University Hospital, Florence.

- Competing interests

no competing interests have emerged

- Funding

The expenses due to the collection of the questionnaires , the English review of the manuscript by English native speakers Company and the future fees due to the I J Ped (in case of acceptance and following publication by I J Ped) will be payed by the Deveelopmental Study Group of the SIN through iDea Congress S.R.L Corso Venezia 8, 20121 Milano reference Dr Stefania Lucivero , Idea Congress www.ideacpa.com, s.lucivero@ideacpa.com).

- Authors' contributions

Claudia Artese : designed the research and collected the data, revised the first and final version of the manuscript

Fabrizio Ferrari : contributed to collection of the data and to writing the manuscript

Sivia Perugi : contributed to the design of research, execution and collection of the data

Paola Cavicchioli : contributed to the design, promotion and execution

Giuseppe Paterlini : contributed to the design, execution and writing

Fabio Mosca: contributed with the design and promotion of the survey

The Developmental Care Study Group: consist of 10 members that actively contributed to the promotion, dissemination, execution and discussion of the results.

- Acknowledgements

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Grazia Colombo Developmental Care Study Group (DCSG) of the Italian Society of Neonatology (SIN).

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We would like to thank the staff of all participating NICUs. Thanks go to the Italian Society of Neonatology for supporting the survey (SIN) Thanks to the parents of the VLBW preterm infants considered in this survey and thanks to the parent's Association Vivere for supporting this survey

- Authors' information (optional)

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Tables

Table 1: Access of parents and non-parental relatives to the NICU

<i>Access to the ward</i>	<i>% of NICU's</i>
Free access for both parents 24h	62
Limited access:	38
<10 h	72
>10 h	28
Parents left out during clinical activities*	64
Access for non parents:	
Free access 24h/d	3
Allowed for a limited time	52
Never allowed	45

*shift change for the nurses, emergencies, medical round

Table 2: Characteristics of the KMC proposal and breastfeeding practices

<i>KMC and breastfeeding practices</i>	% of NICUs
<i>KMC proposal</i>	
24 a day	38
The father never does the KMC	13
Repeated more than once a day	65
KMC offered from (PMA in weeks)	
< 28	30
29-30	20
>30	16
Others #	34
<i>KMC in twins</i>	84
<i>KMC during respiratory support</i>	70
MV	36
cPAP	80
HFNC	80
O ₂ supply	84
<i>End of KMC</i>	
At the transfer in post-intensive care unit	30
Beginning of full enteral feeding	13
At discharge	57
<i>KMC and central catheters</i>	68
<i>NICU initiatives to perform KMC</i>	
Recording in medical records	60
Written protocols on KMC	43
Specific training in the last 3 years	44
<i>Breast feeding promotion</i>	
Promotion during KMC	90%
Raw milk use	75%
Milk extraction at the cot side	29%

Simultaneous extraction	40%
Milk bank	56%
Room for breast milk extraction	93%

MV: mechanical ventilation; CPAP: continuous positive airway pressure; HFNC: High flow nasal cannula.
 # no answer or annotation like: "when the baby is stable"

Figures

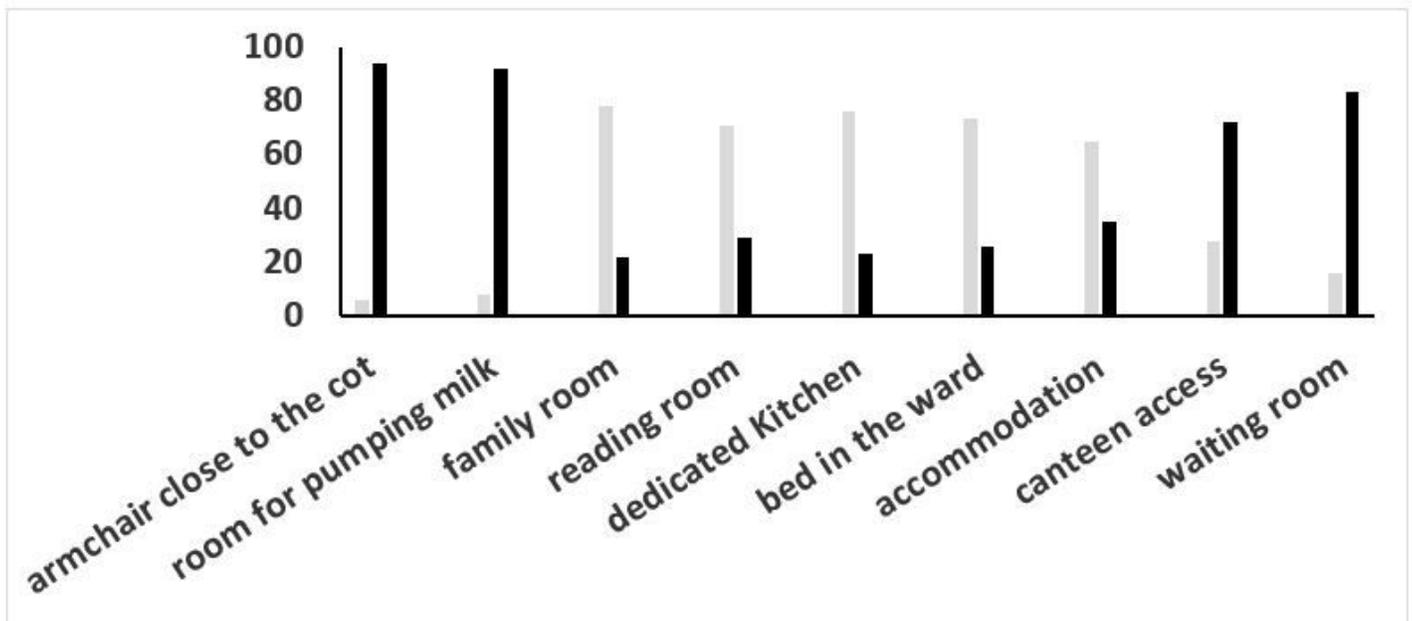


Figure 1

Basic parents' facilities in the NICU are reported

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Attachment1.questionnaire1.pdf](#)