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ORIGINAL

Use of colostrum as an innovative therapy in Neonatal Intensive Care Units

Uso del calostro como terapia innovadora en Unidades de Cuidados Intensivos Neonatales

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ABSTRACT

Colostrum is part of the lactomaterno component, it is a right of the human being and its benefits are widely known, but; it is not equally applied in the different NICU services of the city and the need to be implemented in a rigorous and standardized manner is urgent. For this reason, this research set out to investigate the situation of the use of colostrum in the city of Rosario, specifically; the level of compliance with colostrum therapy as a treatment and the obstacles they hinder. To achieve this, a research was carried out with a quantitative, descriptive, bivariate, comparative approach of the Observational and cross-sectional type. The design was descriptive, multicenter, where variables were proposed to be measured, such as: a) Level of compliance with the use of colostrum. (b) Obstacles to implementation; Nurses in the NICU who for some reason did not wish to participate in the study and those who are not working in service, for example, due to illness, were excluded from the study. In the first measurement, a written survey was applied to a total of 45 members of the nursing team from the different NICUs of the city of Rosario in both public and private institutions.

Keywords: Colostrum therapy; premature newborn; factors.

RESUMEN

El calostro forma parte de la lactancia materna, constituye un derecho del ser humano y sus beneficios son ampliamente conocidos; sin embargo, su aplicación no es uniforme en las diferentes Unidades de Cuidados Intensivos Neonatales (UCIN) de la ciudad, por lo que resulta urgente implementarlo de manera rigurosa y estandarizada. En este contexto, la presente investigación se propuso analizar la situación del uso del calostro en la ciudad de Rosario, específicamente el nivel de cumplimiento de la calostroterapia como tratamiento y los obstáculos que dificultan su implementación. Para ello, se llevó a cabo un estudio con enfoque cuantitativo, de tipo descriptivo, bivariado, comparativo, observacional y de corte transversal. Se empleó un diseño descriptivo y multicéntrico, en el que se evaluaron las siguientes variables: a) nivel de cumplimiento en el uso de la calostroterapia y b) obstáculos para su implementación. Se excluyó del estudio al personal de enfermería de las UCIN que no manifestó su deseo de participar y a aquellos que, por diferentes motivos, no se encontraban desempeñando funciones asistenciales al momento de la recolección de los datos, como por ejemplo, por licencia por enfermedad. En la primera medición se aplicó una encuesta escrita a un total de 45 integrantes del equipo de enfermería pertenecientes a las diferentes UCIN de la ciudad de Rosario, tanto de instituciones públicas como privadas.

Palabras clave: calostro terapia; recién nacido prematuro; factores.

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INTRODUCTION

To date, many published studies maintain that oropharyngeal colostrum administration (COF) is a strategy that optimizes the use of human milk, reduces the risk of infections, and promotes the recovery of newborns (NB) while protecting normal brain development.(1)Our work aims to evaluate the level of compliance with this therapy and the obstacles that hinder its application in neonatal services in the city of Rosario, given that there is little evidence of its application despite its widely demonstrated clinical benefits. The ultimate goal will be to generate results that strengthen knowledge among nurses in this care sector.(2)

Maternal and child health is an area of human development that requires professional training based on scientific evidence and constant updating of the healthcare team, including nurses.(3)A crucial issue for the early stages of this development is the use of colostrum therapy as part of the immune treatment for newborns who, due to their critical condition, cannot obtain it from their mother's breast. This is a relevant topic as it is an essential basic need and a human right.(4)

Technological advances in Neonatal Intensive Care Units (NICUs) have enabled critical-term and premature newborns to survive. To this end, one of the pillars of treatment is using human milk for feeding.(5)For newborns whose critical condition does not allow them to use this type of food enterally, colostrum is indicated in the oropharyngeal cavity. Its anti-infective properties increase defenses against enteric pathogens such as E. coli and other infectious agents. It is part of the innate immune response. It can reduce the incidence of nosocomial sepsis in very low birth weight newborns and necrotizing enterocolitis (NEC), a prevalent condition in this age group.(6)

Colostrum, a whitish fluid, is essential to breast milk in the first days of human life.(7)As Cesar (1) explains, "It is different from mature milk; it has higher concentrations of secretory IgA, growth factors, lactoferrin, anti-inflammatory cytokines, oligosaccharides, soluble CD14 (cluster of differentiation), antioxidants, and other protective components." Evidence points to epigenetic effects on morbidity and mortality in this population through gene activation and in the oral and intestinal microbiomes. These benefits could significantly reduce serious infections and thereby improve survival and long-term outcomes, including protection of brain development or neurodevelopment, according to a study by Qin et al.(2)of 98 lactating women who successfully provided breast milk samples, 32 (33 %) were mothers of preterm infants and 66 (67 %) were mothers of term infants, demonstrated that melatonin is an essential component for the recovery of the critically ill newborn as a chronobiological agent, since the maximum value of melatonin produced in human milk was highest in colostrum, followed by transitional milk and mature milk, decreasing considerably during the first month after birth.(8)

Because not all NICUs require neonatal training as a prerequisite for nursing staff, many nurses have this as their first work experience. As a result, not all of them have previous experience with nutritional treatments or infectious complications in this type of patient, which is why this important care is sometimes delayed or poorly implemented.(9)Other hindering factors may be related to the institution itself, such as infrastructure or the organization of the service, handling methods, and application techniques, among others.

In this regard, Rojas (3), in his research "Perception of the health team on the benefits of colostrum as a protective factor for ECN in premature newborns," found that participants had a favorable opinion about the preventive results of this measure. Even though it was not applied in a third facility, there is a favorable perception of its potential benefit and low implementation cost. I also determined that some limitations to its application would be insufficient staffing and training and the need to purchase equipment and supplies. In addition, some professionals who have applied a colostrum administration protocol in premature infants in the Valparaíso Region report good health outcomes and promote team motivation toward this practice.(11,12)

The importance of this practice being protocolized and standardized in NICUs due to its benefits has been strongly emphasized in recent years, demonstrating its importance in very low birth weight premature infants, even with beneficial effects for discharge, as stated by Aguilera et al.(4)and colleagues, who evaluated the impact of early colostrum administration compared to historical control on the in-hospital evolution and breastfeeding of very low birth weight premature newborns, finding that early oral colostrum use was feasible and associated with higher breast milk volume at discharge, constituting a beneficial intervention in the care of very low birth weight premature infants.

That is why, beyond being an innovative treatment, colostrum is part of breastfeeding, is a human right, and its benefits are widely known. Still, it is not equally applied in the different NICU services in the city, and it urgently needs to be implemented rigorously and standardized.

For this reason, this research aimed to investigate colostrum use in the city of Rosario, specifically the level of compliance with colostrum therapy as a treatment and the obstacles that hinder its implementation.

METHODS

The study has a quantitative, descriptive, bivariate, comparative, observational, and cross-sectional design. The design was descriptive and multicenter, proposing variables to be measured, such as a) Level of compliance with colostrum use. b) Obstacles that hinder its application. Nurses from NICUs who did not wish to participate in the study and those who were not working, for example, due to illness, were excluded from the study.

RESULTS

The data were collected in two stages. In the first stage, a written survey was administered to 50 participants. In the second stage, the same instrument was administered online, obtaining eight responses from nursing team members from different NICUs in the city of Rosario, both in public and private institutions, who agreed to participate voluntarily and anonymously. The results were processed using Epi Info version 7250 and yielded the following results:

Of the total number of nurses participating in the study, 63,79 % work in public NICU services in the city and 36,21 % in private NICU services. Of these, the responses obtained were:

- The level of compliance with the use of colostrum is low (41,38 %).
- All nurses recognize the importance of colostrum for critically ill newborns in the NICU.
- The obstacles encountered were: first, the absence of medical indications (18,96 %); second, poor in-service training (10,34 %); and third, lack of building infrastructure (8,62 %).
- It is administered in all shifts and to some patients when medically indicated (48,28 %).
- They use a clean technique to administer it (65,52 %).
- The mother extracts the colostrum (58,62 %) with the lactation team (43,11 %). However, if medically indicated, the NICU nurse administers the colostrum (79,31 %) in all shifts (60,34 %).
- In 62,07 % of services, there are protocols for colostrum management.
- 86,21 % have educational materials to guide the colostrum administration process, including protocols (34,48 %) and procedure guides (51,52 %). However, despite having educational materials, almost half of those surveyed (51,72 %) acknowledged that they only sometimes use them, and 31,03 % always use them.

Limitations of the study

Of the 14 institutions in the city that have neonatal services, some responded in writing that they did not want to participate because they do NOT use colostrum as therapy in critically ill newborns. On the contrary, others welcomed the initiative to conduct this survey, which had never been done before in the city, as “a significant contribution to advancing neonatal treatment and improving the care we provide in our facilities.”

Not all nurses agreed to participate in the study, showing a reluctance to provide their signature or the information required in the informed consent form, which is why these surveys were canceled.

The waiting time for responses from the institutions was prolonged, increasing the time required to generate results.

Opportunities for discussion for improvements

There is diversity in the organization of neonatal services in the city of Rosario; not all have the same building structure or handle colostrum in the same way. It may be necessary to mediate standardized management methods that facilitate the use of colostrum in the city and, no less importantly, for institutions to emphasize improving the infrastructure that accompanies its safe and risk-free handling.

As already mentioned, newborns have the right to be fed their mother’s milk; it is a human right, and the effects and benefits of colostrum are widely known. Therefore, this study did not investigate these widely publicized benefits but rather the level of compliance with this therapy.

Although it is a recognized right, the question arises: what happens to those newborns in critical condition who do not have their own mother's colostrum to start treatment for reasons that occur at the time of birth, such as HELLP syndrome, abandonment, illicit substance use, etc.?

Although lack of infrastructure was identified as a factor hindering compliance with colostrum therapy and was mentioned in the responses of both public and private institutions in the city, what is the level of commitment of the management of these institutions, local governments, or scientific institutions to help improve the health of critically ill newborns in these services? There is a history of working with human milk, one of which is in the city of Neuquén, in the south of the country, where human milk is collected raw and distributed in pasteurized form, indicating equitable distribution to all neonatal units in the province that requested supplies from both the public and private subsectors, with a predominance of Neonatal Therapy III b, as is natural given that these are the units that care for the most vulnerable newborns in their first weeks of life, thus adhering to the "National Network of Human Milk Banks" of the Argentine Republic. Law No. 26,873 is a specialized service responsible for collecting, transporting, processing, quality controlling, preserving, and distributing human milk. Improving the infrastructure may make it possible to have colostrum available in institutions that need it and to recommend its administration as an immunological therapy and neurodevelopmental protection for this highly vulnerable population. Perhaps this lack of infrastructure is a determining factor in its non-use, as it was recognized along with other associated factors by the nurses in this study in the NICUs of Rosario.

Another opportunity to improve the obstacle of poor training would perhaps be to incorporate nursing staff with prior training in neonatal care with the necessary knowledge to care for critical newborns at this vulnerable stage of growth with specific therapies and integrate this as an important topic in the basic undergraduate training curriculum since most of the participants were undergraduate students (professional nurses).

It is necessary to continue monitoring the use of colostrum in NICUs. Colostrum promotes the initiation of breastfeeding and improves adherence and maintenance, thereby strengthening pediatric nutrition in the future.

CONCLUSION

Regarding the hypothesis that the existence of obstacles to the application of colostrum therapy in critically ill newborns leads to its poor implementation in NICUs in Rosario, the nurses' responses identified common factors that are repeated in the different NICU services of the participating institutions and determined that, although there is a lack of training in this area, there is knowledge of colostrum management among the nursing staff who administer it; however, there is a deficit in the medical indications necessary for its administration, as well as a lack of infrastructure to help with colostrum management and preservation, resulting in its poor application.

As a committed researcher, I believe "Investing in today means improving conditions for tomorrow.".

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CONFLICT OF INTEREST

None

AUTHORSHIP CONTRIBUTIONS

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Data curation: Ruth Tirsa Castillo Benites, Ofelia Casas, Marcela Antonia Reynoso, Andrés García.
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Writing - proofreading and editing: Ruth Tirsa Castillo Benites, Ofelia Casas, Marcela Antonia Reynoso, Andrés García.

APPENDIX

Figure 1. Department or sector of participants

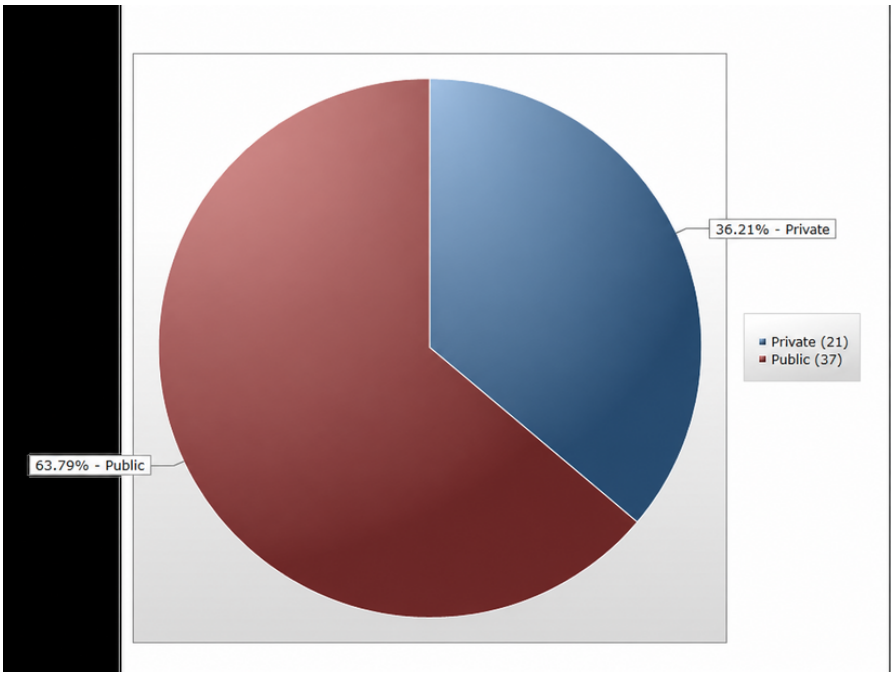

Table 1. Do you use colostrum as therapy?

Do you use colostrum as therapy?	Frequency	Percent	Cum. Percent
Sometimes	22	37,93	37,93
Never	12	20,69	58,62
Always	24	41,38	100,00
Total	58	100,00	100,00

Table 2. What do you think are the obstacles to the use of colostrum in your service?

Obstacles	Frequency	Percent	Cum. Percent
Missing	18	31,03	31,03
a-	6	10,34	41,38
a-b-	5	8,62	50,00
a-b-c-d-e-	2	3,45	53,45
a-b-c-d-e-b	1	1,72	55,17
a-b-e-	2	3,45	58,62
a-c-d-	1	1,72	60,34
a-c-e-	1	1,72	62,07

Obstacles	Frequency	Percent	Cum. Percent
a-e-	1	1,72	63,79
b	1	1,72	65,52
b-	10	17,24	82,76
b-c-	1	1,72	84,48
c-	2	3,45	87,93
d-	5	8,62	96,55
e-	2	3,45	100,00
Total	58	100,00	100,00

Table 3. How often do you use teaching materials?

How often do you use this teaching material?	Frequency	Percent	Cum. Percent
Sometimes	30	51,72	51,72
Never	10	17,24	68,97
Always	18	31,03	100,00
Total	58	100,00	100,00

Table 4. Level of education

Level of training	Frequency	Percent	Cum. Percent
No response	1	1,72	1,72
Assistant	1	1,72	3,45
Professional nurse	38	65,52	68,97
Specialist	1	1,72	70,69
Graduate	15	25,86	96,55
Other	2	3,45	100,00
Total	58	100,00	100,00