



# Use of the WhatsApp® group in the post-discharge follow-up of the premature infant: implications for nursing care

*Uso do grupo de WhatsApp® no acompanhamento pós-alta do bebê prematuro: implicações para o cuidado em enfermagem*

*Uso del grupo WhatsApp® en el seguimiento post-alta del bebé prematuro: implicaciones para el cuidado de enfermería*

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## ABSTRACT

**Objective:** to analyze the use of the WhatsApp® application, as a technological tool, to help mothers in the post-discharge follow-up of their premature infant. **Method:** a qualitative study conducted with 18 mothers of preterm infants who had been admitted to the neonatal units of a university hospital in the interior of São Paulo. Data were collected from July to November 2021 through messages left in a WhatsApp® group for the post-discharge follow-up of preterm infants. The messages were analyzed using Thematic Content Analysis. **Results:** the WhatsApp® group had good acceptance and adherence by the mothers, who were able to share their experiences, knowledge, and feelings. The main topics raised were: Breastfeeding the premature baby; Management of infant colic; Basic care of the premature baby at home; Experiences in the hospitalization of the premature baby; Challenges faced at home; Mothers' perception of the WhatsApp® group. **Conclusion and implications for the practice:** the mothers showed insecurities and doubts about the basic care of the premature baby at home. The strategy of using the WhatsApp® application in the health monitoring of premature babies showed satisfactory results, favoring the continuity of care and support to mothers.

**Keywords:** Communication; Nursing Care; Premature Infant; Smartphone; Technology.

## RESUMO

**Objetivo:** analisar o uso do aplicativo WhatsApp®, enquanto ferramenta tecnológica, para auxiliar as mães no acompanhamento pós-alta do bebê prematuro. **Método:** estudo de abordagem qualitativa realizado com 18 mães de bebês prematuros que haviam sido internados nas unidades neonatais de um hospital universitário no interior de São Paulo. Os dados foram coletados no período de julho a novembro de 2021 por meio de mensagens deixadas em um grupo de WhatsApp® destinado ao acompanhamento pós-alta dos pré-termo. As mensagens foram analisadas a partir da Análise de Conteúdo Temática. **Resultados:** o grupo de WhatsApp® teve boa aceitação e adesão por parte das mães, que puderam compartilhar suas experiências, seus conhecimentos e sentimentos. Os principais temas levantados foram: Aleitamento materno ao bebê prematuro; Manejo da cólica infantil; Cuidados básicos ao prematuro no domicílio; Vivências na internação do prematuro; Desafios enfrentados no domicílio; Percepção das mães sobre o grupo de WhatsApp®. **Conclusão e implicações para a prática:** as mães demonstraram inseguranças e dúvidas sobre os cuidados básicos com o prematuro em domicílio. A estratégia de utilizar o aplicativo WhatsApp® no acompanhamento em saúde do bebê prematuro apresentou resultados satisfatórios, favorecendo a continuidade do cuidado e o apoio às mães.

**Palavras-chave:** Comunicação; Cuidados de Enfermagem; Recém-Nascido Prematuro; Smartphone; Tecnologia.

## RESUMEN

**Objetivo:** analizar el uso de la aplicación *WhatsApp®*, como herramienta tecnológica, para asistir a las madres en el seguimiento post-alta del bebé prematuro. **Método:** estudio de abordaje cualitativo realizado con 18 madres de prematuros internados en las unidades neonatales de un hospital universitario del interior de São Paulo. Los datos fueron recolectados de julio a noviembre de 2021 a través de mensajes dejados en un grupo de *WhatsApp®* destinado al seguimiento post-alta de prematuros. Los mensajes fueron analizados a partir del Análisis de Contenido Temático. **Resultados:** el grupo de *WhatsApp®* fue bien aceptado y adherido por las madres, que pudieron compartir sus experiencias, sus conocimientos y sentimientos. Los principales temas abordados fueron: Lactancia materna del prematuro; Manejo del cólico infantil; Cuidados básicos para bebês prematuros en el hogar; Experiencias en la hospitalización de prematuros; Desafíos enfrentados en el hogar; Percepción de las madres sobre el grupo de *WhatsApp®*. **Conclusión e implicaciones para la práctica:** las madres mostraron inseguridades y dudas sobre los cuidados básicos del prematuro en el hogar. La estrategia de uso de la aplicación *WhatsApp®* en el seguimiento de la salud de los bebês prematuros mostró resultados satisfactorios, favoreciendo la continuidad de la atención y el apoyo a las madres.

**Palabras clave:** Atención de Enfermería; Comunicación; Recien Nacido Prematuro; Tecnología; Teléfono Inteligente.

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## INTRODUCTION

The course of infant mortality in Brazil has changed in the last decades, since in the past the main causes were related to infectious and parasitic diseases, nowadays they involve problems generated by prematurity, with deaths prevailing in the neonatal period.<sup>1</sup> Neonatal mortality (0-27 days) can be considered the main component of child mortality and its decrease is part of the United Nations (UN) Sustainable Development Goals (SDGs).<sup>2</sup>

According to the World Health Organization (WHO), preterm is considered to be any child born with a gestational age below 37 weeks. Prematurity can be further stratified into: extreme preterm (<28 weeks); very preterm (28 to <32 weeks), and moderate preterm (32 to <37 weeks). Moderate preterm newborn (NB) can be further subcategorized into late preterm NB (34 to <37 weeks).<sup>3</sup>

Every year, fifteen million premature babies are born worldwide. About one million of these babies die from complications of prematurity, which is the leading cause of neonatal deaths (15.4%), followed by complications during delivery (10.5%) and neonatal sepsis (6.7%).<sup>4</sup>

The preparation of mothers and families for hospital discharge during the hospitalization of the preterm newborn (PTNB) is considered a moment of participation and learning, essential to facilitate adaptation to home care after discharge.<sup>5</sup>

The discharge of babies from the Neonatal Intensive Care Unit (NICU) to their homes demands from the family special care inherent to the PTNB. Often and historically, mothers become responsible for the home care of their children even if they are not properly prepared. Mothers of preterm infants show fears, anxieties and possible difficulties related to the care of PTNBs at home and such elements highlight the need to prepare families for home care from hospitalization to post-discharge, with emphasis on the educational role of Nursing.<sup>6</sup>

After discharge from the neonatal unit, there is a discontinuity of care. The adaptation process between NICU and home is characterized by the caregiver's pilgrimage, who encounters difficulties in accessing health care and in dealing with the preterm baby's needs.<sup>5</sup> Research has shown positive impacts on the use of the telephone, by voice or messaging, as a remote communication strategy in the follow-up of patients after discharge from the hospital. Still, further studies are needed to evaluate the potential use and effectiveness of social media and smartphone applications for patients and the healthcare team, which can become a tool of great help.<sup>7</sup>

This is a time when communication occurs very quickly, in which messages are instantaneous and the cell phone (smartphone) with internet connection is part of people's lives. According to data from the National Continuous Household Sample Survey (NCHSS), in its thematic module on Information and Communication Technology (ICT), 94% of households in the country had a cell phone in 2019. Moreover, sending and receiving text, voice, or image messages was considered the main reason for accessing the Internet by 95.7% of people aged

ten or older.<sup>8</sup> In this context, WhatsApp® has proven to be a fast and efficient mobile messaging technology.

WhatsApp® Messenger is an instant messaging application exchanged over the internet that enables communication by sharing text/voice messages, images, music, and videos.<sup>9</sup> The use of this application in health care has shown satisfactory results in the integration between theory and clinical practice in teaching, whether in Nursing<sup>10</sup> or in health care in general.<sup>11-13</sup>

The use of smartphones in healthcare was analyzed in a study to control absenteeism in the return of pediatric visits of children with tuberculosis through messages (SMS), telephone contact, calls and WhatsApp®. Among the different technologies, the WhatsApp® application showed the best return, with better acceptance and lower absenteeism rate.<sup>14</sup>

Thus, the WhatsApp® application can be of great value in the continuity of care for premature babies and their caregivers, who feel insecure due to the lack of guidance and support from professionals in establishing permanent care.<sup>5</sup>

However, the use of WhatsApp®, as a communication tool between professional and patient, is limited to a restricted number of publications.<sup>15</sup> The lack of initiatives that use WhatsApp® as a tool for Nursing care for preterm babies and their families motivated the creation of a WhatsApp® group focused on post-discharge follow-up in the Neonatal Unit (NU) or Neonatal Joint Nursing Home (NJNIH).

In light of the above, the objective of this study is to analyze the use of WhatsApp®, as a technological tool, to assist mothers in the post-discharge follow-up of preterm newborns.

## METHOD

This is a qualitative approach study, product of a professional master's thesis. Qualitative research is that which deals with subjectivities and existing relationships, considering the life history, values, beliefs, and the symbolic universe of the subjects.<sup>16</sup> Thus, this study sought to explore the interactions and the themes generated in a virtual group about the care of premature babies, based on the experiences and perceptions of mothers.

A WhatsApp® group called "My Premature Baby" was created. The group was created by two nurses, graduate students of the School of Nursing of Ribeirão Preto, University of São Paulo (EERP-USP), one of whom also worked at the HC Criança of the University of São Paulo (HCC-USP). The same nurses also acted as moderators/facilitators of the group, which operated during office hours, Monday to Friday, from 8am to 5pm. Participants in this study were mothers of preterm infants who had been admitted to the NU and NJNIH of the HCC-USP.

The HCC-USP, inaugurated on May 12, 2015, is a hospital located in the municipality of Ribeirão Preto, attached to the Clinical Hospital of the Ribeirão Preto School of Medicine of the University of São Paulo (HCFMRP-USP), whose goal is to promote comprehensive and humanized care for children and adolescents under 17 years, 11 months, and 29 days. The HCC-USP has 175 beds, including a 20-bed NICU and a 21-bed Neonatal Intermediate Care Unit (NICU).

The following inclusion criteria were established: families of preterm babies (<37 weeks), with no restrictions regarding gestational age, literate, with their own cell phone (smartphone), with internet access, using the WhatsApp® application and consenting to receive messages from the group. Exclusion criteria included: families of PTNBs with heart diseases and malformations; evidence of physical, mental or visual impediment of the family member to use the application. The exclusion of babies with heart disease and malformations was due to the fact that such cases have very specific demands, compared to PTNBs without such particularities, which could not be met in a more generalist group. Cases, in which the post-discharge follow-up of the baby was carried out in the supplementary health network, as well as the place of residence of the families, were not considered exclusion criteria.

Non-probability sampling (by convenience) was adopted, i.e., all families of preterm infants discharged from the HCC-USP during the period in which data collection occurred at the moment immediately before the preterm infant's hospital discharge were invited. The invited family member could indicate up to two main caregivers of the child, himself and another, to be included in the group.

Data collection occurred between July and November 2021. After verbal invitation, the Free and Informed Consent Term (FICT) was read and signed. At this time, a questionnaire was applied for socio-demographic and clinical characterization containing the following variables: gender of the baby (female/male); gestational age (weeks and days); birth weight (grams); unit of hospitalization (NICU/PICU/NCA); type of breastfeeding practiced at the time of discharge (exclusive breastfeeding, mixed breastfeeding or exclusive use of infant formula); length of NB stay (days). Gestational age was estimated by pediatrician assessment (New Ballard method).

Subsequently, the participants were included in the application group, and began to exchange messages on preterm care with the other participants and nurses/moderators of the group. The group received new participants as hospital discharges occurred in a continuous flow scheme. The babies were followed from the time of hospital discharge until the group was closed. Thus, the follow-up period varied according to the date of entry into the group.

The group dynamic worked as follows: for each new participant, the rules of operation and welcome messages were made available. Then, the participant could spontaneously exchange text or audio messages with the other participants. The role of the nurse moderators involved the monitoring and supervision of the group, as well as answering questions, guiding the mothers, and stimulating discussions in idle periods of the group by sending messages, photos, or trigger videos. The materials made available were from the Ministry of Health or the booklet "Caring for the premature baby: guidelines for the family".<sup>17</sup> The two moderators acted together, trying to promptly meet the group's demands according to each one's availability.

If any message was sent that represented a potential risk to the integrity or health of the babies, such as, for example, false

or erroneous information regarding care, the nurse moderators acted to welcome the mothers, avoiding judgments or reprisals, but arguing and exposing based on evidence, in an accessible language, the most appropriate orientations.

Among the group's rules, the importance of not sharing the messages with third parties or sending pictures with the baby's face was emphasized, prioritizing the child's right to privacy. Nevertheless, the mothers should also be aware of the risk of losing the messages outside the group environment. When receiving the mothers, it was also clarified that the participation in the group did not replace, under any circumstances, the need and importance of attending routine consultations in primary care or in a high-risk outpatient clinic.

When it was necessary to send photos of the babies, the mothers were instructed to contact, in private, one of the nurse moderators. In situations involving specific health demands of the NB, such as acute complaints, the mothers were welcomed and oriented to seek medical care.

After data collection was completed, the messages sent during the group's period of activity were grouped, read, and analyzed. The group dialogues, including text and audio messages - later transcribed - were extracted and registered using a Microsoft Office Excel® spreadsheet. The researchers received training and orientation for the data collection and analysis procedures. For data analysis and categorization, Content Analysis, Thematic modality was used, with the following stages being applied: pre-analysis; exploration of the material and treatment of the results obtained. Content analysis occurs by means of communication analysis techniques, and can be applied to extremely heterogeneous discourses. The transport of meanings from a sender to a receiver, whether controlled or not, must be written down and deciphered by content analysis techniques. To be considered valid, content analysis must meet the following criteria: completeness, objectivity, homogeneity, relevance and exclusivity.<sup>18</sup>

Thus, first, a floating reading of the messages sent in the group of the WhatsApp® application was performed, followed by the categorization of the content in groups according to their common characteristics. The category analysis is done by dividing the text into units from the similarities between its elements. To facilitate the categorization process, we chose the strategy of dyeing, with similar colors, the messages that had similar meanings and themes.<sup>18</sup>

The results obtained were presented in charts with the distribution of the participants' statements in thematic categories. The participants were identified by alphanumeric codes with the letter M for mother followed by the numbering corresponding to the chronological order of inclusion in the group (e.g., M3), ensuring the confidentiality of the participants.

The research was submitted, analyzed and approved by the Research Ethics Committee of the Ribeirão Preto School of Nursing of the University of São Paulo (REC-EERP/USP) under Protocol CAAE nº 36207920.2.0000.5393 and Opinion nº 4.728.761.

## RESULTS

Among the family members invited, 22 mothers agreed to participate in the research. However, it was not possible to establish telephone contact with four of them, totaling 18 mothers who effectively participated in the study and were included in the research. Of these, three were mothers of twins, resulting in 21 PTNBs monitored. The results of the socio-demographic and clinical characterization are presented in Table 1.

Of the PTNBs' relatives who were invited and agreed to participate in the study, 100% were female, and the sample of participants in the WhatsApp® group was composed exclusively of mothers of infants.

Most of the PTNBs followed were male (57.1%, n=12). The length of stay of PTNBs ranged from five to 156 days, with an average of 39 days of hospitalization. The largest number of infants were from the PICU (71.4%, n=15) followed by the NICU (19.1%, n=4) and NCA (9.5%, n= 2).

The mean gestational age of PTNBs was calculated as 32 weeks and five days, ranging from 25 weeks and one day to 36 weeks and four days. The sample of PTNBs followed had a mean birth weight of 1,778 grams, and the PTNBs with the lowest birth weight were born with 780 grams, while the PTNBs with the highest birth weight were equal to 3,115 grams.

**Table 1.** Socio-demographic and clinical characterization of the participants. Ribeirão Preto, São Paulo, Brazil, 2022.

Variables Sociodemographic/ clinical	Accompanied Infants (n= 21)	%
<b>Sex</b>		
Female	09	42.9
Male	12	57.1
<b>Place of hospitalization</b>		
NICU	4	19.1
PICU	15	71.4
NCA	2	9.5
<b>Type of breastfeeding</b>		
Exclusive Breastfeeding	8	38.1
Mixed Breastfeeding	9	42.9
Exclusive Use of Infant Formula	4	19.0
<b>Gestational Age (weeks + days)</b>		
Mean [Min. – Max.]	32 + 5 [25 + 1 - 36 + 4]	
<b>Hospitalization time (days)</b>		
Mean [Min. – Max.]	39 [5 – 156]	
<b>Birth weight (grams)</b>		
Mean [Min. – Max.]	1.778 [780 – 3115]	

Regarding the type of breastfeeding being practiced at the time of discharge, there was a predominance of Mixed Breastfeeding (MBF), with 42.9% (n=9), and Exclusive Breastfeeding (EBF), 38.1% (n=8), to the detriment of the exclusive use of infant formula (19%, n=4).

The most recurrent themes that permeated the interactions between the mothers and the professionals responsible for the WhatsApp® group are presented below: Breastfeeding the preterm baby; Management of infant colic; Basic care of the preterm infant at home; Experiences during hospitalization of the preterm infant; Challenges faced at home; Mothers' perception of the WhatsApp® group.

### Breastfeeding the premature baby

One of the most recurrent themes in the group discussions was related to the premature infant's nutrition. Many mothers reported difficulty in establishing lactation, usually related to the separation period and the suspension of breastfeeding due to the severity of the clinical condition of PTNBs, which contributed to a reduction or interruption of milk production. General doubts were also shared regarding breastfeeding on demand, the preparation and offering of infant formulas.

*My baby was born at 25 weeks, stayed three months in the hospital, during this period, my milk dried up; when she left, I started to breastfeed again, only that the milk still does not come out, but some of the mothers had this experience of the baby staying in the hospital and then the milk dried up, then went back to breastfeeding and the milk came back again? (M11)*

*My baby was hospitalized for two months... During this time, we went through a lot of things, sometimes the milk diminished, but thank God it did not dry up... I milked until late at night... A lot of suffering. It was not easy. But I managed to breastfeed her as soon as she was free to go to the breast... After she started to suckle, the production increased a lot. (M9)*

*She only breastfeeds when she wants to and when she is very hungry. I can be feeding her every four hours? She pees a lot, I always observe. But that can happen whether she lost weight or not? Because I am afraid (M4)*

*I have a doubt: can making formula with very hot water harm my baby? (M11)*

*Good evening, my baby started taking formula, she is three months old, she'll be four now, on the 20th, and she weighs 4,500 kg. How many ml can I give her? (M5)*

Manifestations of myths involving lactation were observed, especially the belief that breast milk is weak and/or insufficient. Furthermore, an excessive concern with the premature infant's weight gain was noted, with positive reports of successful breastfeeding when adequate weight gain was verified.

*I found that my milk is not increasing, my breasts feel shriveled... I am drinking plenty of water. My twins suckle and it seems that there is plenty of milk, but in less than an hour, they want more, even though I let them suck at will! When I give the complement and not the breast, they sleep for 3 hours exactly. (M3)*

*She was born at 34 weeks; it was twins, so she stayed there for a month and some days. They gave me formula, but only if I saw that the milk was not sustaining. But I have plenty of milk. Then, she suckles very well. So, she stayed only on the breast (M5)*

*How difficult it was in the beginning. It seemed that I would not have milk. But, thank God, my story changed. Today, I went to the pediatrician; she already had a significant weight gain with breast milk alone. I am very happy that I did not give up. Breastfeeding is good for you. Never give up, girls. (M1)*

### Management of infant colic

Another theme that was highlighted in the group was intestinal colic in infants and premature newborns. Regarding the management of colic, among the main strategies used by mothers, the offering of teas to control and relieve pain was mentioned, as well as tips on medications for colic - herbal, homeopathic, and simethicone-based - and other non-pharmacological measures, such as massage techniques for babies (Shantala).

*How long does this suffering with colic take? (M9)*

*From what I've been through with my other child, it can last up to three months and at most five months! Mostly with three! (M3)*

*Do any of you with premature babies give the baby tea? Chamomile? (M5)*

*I never gave, but I have friends who always give and say they are very good for me. (M4)*

*I gave it when my baby had severe colic and it solved nothing. (M13)*

*I saw the pediatrician on Friday. He gave me this one. Mylicon. Every eight days if the pain persists. I used a natural one too, it was very good and loosened her intestines too, then, it is a little powder, you put in the pacifier, it is called Funchichorea. (M5)*

*[I am also going through the same thing with colic [...] a neighbor had commented to me about Colic Calm, but it is a little expensive, however, I did not see any help in my case here with the boys, it is homeopathic and such [...]. (M3)*

*Good morning, I have not yet seen my baby at the pediatrician, and he is having colic at night, can I give him Luftal? (M7)*

*So, they usually just say to massage him when they feel colic (M15)*

*Thank you, I will do all that. I love the massage, it must be very good. (M7)*

### Basic care of the premature baby at home

Most of the mothers' doubts were related to basic care and not to specific care for prematurity. Mothers of babies born preterm also sought help in the group - and even privately from the nurses/researchers - bringing acute complaints from the baby and pointing out difficulties of access to pediatric care, either in Basic Health Units (BHU) or in emergency care.

*What to do with our little ones in this hot weather? With or without clothes? on the ventilator? Put on socks, or stay without? So many doubts. (M9)*

*Any tips for two-month-old babies with stuffy noses? Here in my city it is very cold. [I just left the consultation there at the HCC with them. Now, we have to keep washing the little nose with serum. (M3)*

*My baby pooped and blood came out, I took a picture. Is it something? Because she was hospitalized there for more than a month with a problem in the intestine. [...] then I don't know what is happening, and as she has had so many problems, I am afraid [...] In my town, there are certain days when the pediatricians are right; if there isn't one tomorrow, can I take her there? (M5)*

*Is exchanging day for night normal around here? What to do besides what we already know? Leave the house lighted during the day and normal noises and at night more silence and so on... Here, she spends the day in a lazy mood and at night she is all lit up, from 9 pm until 1 am. I even think that mine likes to sleep with the light on, it even seems like the deepest sleep. At night, when I turn off the light, sleep seems to be more intense... (M9)*

Some mothers also reported concern about the cognitive and motor development of the premature babies, sending messages regarding the stimuli that should be performed, physical therapy exercises, and about the corrected age.

*What kind of play can we be doing with our babies [...]. To stimulate sound, vision, movements? [...] do any of you have tips on how to let the baby have his hands more open and be able to hold his neck by himself? (M4)*

*The occupational physiotherapist talked about massaging the hand... On the palm, on the fingers... (M9)*

*There is also the corrected age difference, is it? Like, my corrected age is with 40 days... being that it is already with two and a half months. (M9)*

## Experiences during premature hospitalization

This theme, as well as the others, was based on excerpts of messages sent by mothers on the WhatsApp® application. Mothers shared, in the group, their experiences regarding the process of hospitalization of PIs, reporting feelings of fear related to the hitherto unknown environment of neonatal units. In general, mothers faced the experiences at the NU with a sense of victory, a struggle marked by complications, fear of loss, grief, separation from the NB, but also by positive and successful moments, such as weight gain and restoration of the babies' health.

*The biggest challenge for me, in the ICU, were the interurrences, which were many, each day was something new and gave me great fear of the worst happening [...] she really wins, I stayed one month and 26 days in HC, it was a struggle day after day, but, thank God, she won. Mine was born extremely premature, with 865 grams, and was also an emergency C-section due to preeclampsia, and she was not growing in my belly because of my umbilical cord, which was not passing nutrients to her. But, thank God, we won, she was very strong, all premature babies are very strong. (M15)*

*[29 weeks, one kilo and ninety grams. Some complications and complications ... 71 days in HC... And today she is my daily joy, my friend companion, my little girl, my joy... It fit in my hands, today, it does not fit in my arms, my love (M4)*

*[...] stayed a month in HC; was born at 35 weeks with the bag ruptured 18 days, infection and today here with almost five kilos; I thank God and everyone in the ICU and NICU. (M13)*

## Challenges faced at home

After hospital discharge, mothers still report experiencing difficulties, insecurities, and fears that accompany them from the hospital setting to their homes. Among the most recurrent difficulties reported by mothers, the concern with weight gain and the monitoring of oxygenation/respiration needs stand out.

*At home, the biggest challenge was the beginning, learning how to deal with bathing and breastfeeding; because of the weight gain, I was a little insecure if my milk was supporting her. (M15)*

*My biggest challenge was to leave the hospital with him and today, at home, breastfeeding scared me a lot, but I only have joys and victories, he is getting fat and healthy and growing. (M13)*

*When we go home, there is that insecurity, is he breathing, is everything alright... Several times, at night, I would wake up to see if he was breathing, with my hand on my lung or my face close to my nose... (M4)*

## Mothers' perception of the WhatsApp® group

On the group's closing day, the mothers expressed their opinions and impressions about the experience they had with the baby's health follow-up through the "My Premature Baby" group.

*I will miss you (M11)*

*Thank you, from the bottom of my heart, you were very special, you gave valuable tips, safety and comfort. (M13)*

*The group was well accompanied; you gave us support in our doubts. Thank you so much for giving us this! (M3)*

*Thank you for your attention and affection. God bless you all. (M9)*

## DISCUSSION

A priori, it was expected that the WhatsApp® group would consist of fathers, mothers, grandparents, and other caregivers. One of the first results that drew attention was that only mothers agreed to participate in the group. As in other studies that addressed issues related to maternal care in children hospitalized or affected by some health problem, the results of this study reinforce the evidence that mothers continue to be the main caregivers of children, with little participation of fathers and other caregivers.<sup>19,20</sup>

The child's nutrition was one of the most recurrent themes in the group, as evidenced in a qualitative study that analyzed the knowledge of 29 family members (mothers, fathers, grandparents and aunts) regarding the care of preterm infants at home after hospital discharge, pointing to the topic of feeding (breastfeeding, supplements and introduction of food) as the greatest generator of doubts among families.<sup>21</sup> The low milk production reported by mothers is generally associated with ineffective sucking in PTNB, and some mothers consider prematurity an unfavorable condition for breastfeeding.<sup>22</sup> On the other hand, maternity hospitals with staff trained to support the lactating woman can minimize the difficulties of breastfeeding at home.<sup>23</sup>

Colic is one of the most common problems in the neonatal period, as well as one of the main complaints brought by parents to pediatricians' offices.<sup>24</sup> The culture of using medicinal teas, as well as pharmacological, allopathic, or herbal methods in the treatment of infantile colic<sup>25</sup> is strong among mothers, as pointed out by the findings of this research.

Studies have cited basic care of the newborn as the most recurrent orientations given by nursing professionals before discharge.<sup>26,27</sup> However, in this study, several gaps were observed among mothers regarding basic baby care. The updating of the vaccination schedule was not the subject of doubts of the mothers in the group, unlike other studies on the subject.<sup>21,28</sup>

The PTNB discharge from the hospital is a moment of great expectation by the mother and other family members. However, the process of leaving the NU and going home also involves great insecurity on the part of the child's caregivers.

The educational work of Nursing professionals in the preparations for discharge is of extreme importance to empower and increase the confidence of the family for home care. The Nursing team must propose and implement educational programs to train mothers of preterm babies, who sometimes reveal that they have not received sufficient guidance and are not prepared for the care of the baby at home.<sup>27</sup> This educational process must consider the mothers' own anxieties, insecurities, and doubts, seeking a more significant learning process that involves not only the biological elements of care, but also psychological aspects, the mother's social support network, and the affective bond. The ideal is that this process starts as early as possible and not only at the time before discharge, characterized by high levels of anxiety that may interfere with the mother's learning.

The strategy of using groups to promote support for parents of newborns is well described in the literature and should be encouraged, as it has benefits such as: strengthening the parent-baby bond, alleviating the families' suffering and increasing the parents' security in caring for the PTNB.<sup>29</sup>

As expected, the WhatsApp® group had good acceptance by mothers. The experience of a family health team in using WhatsApp® as a telemedicine tool (text messages and phone calls) showed equally satisfactory results, with this use being well accepted and assimilated by the registered population.<sup>30</sup>

As pointed out by other studies, the WhatsApp application is able to expand the population's access to health, as well as the bond between users and health professionals, highlighting one of its main qualities in promoting rapid communication and almost immediate real-time responses.<sup>7,30</sup>

The health monitoring offered by the WhatsApp® group "My Premature Baby" provided the construction of new knowledge in a participatory and collaborative process that involved guidance, sharing of tips and clarification of doubts. Similar results were found in other studies that made use of WhatsApp® as a health tool.<sup>7,31</sup> For example, the WhatsApp® group "Caring to Prevent", of the *Plataforma de Saberes* Project, of the *Instituto Nacional de Infectologia Evandro Chagas of the Fundação Oswaldo Cruz (INI/Fiocruz)*, was considered a favorable space for dialogue and sharing of knowledge about the prevention of COVID-19 among the social actors involved.<sup>31</sup>

The participation in the group meant, for these mothers, more support and security when taking on the home care of the baby. Generally, mothers have feelings of anxiety and insecurity when they go home, where they will no longer have the support of the health team and the resources of the hospital environment. In this sense, the group facilitated this transition/adaptation process, involving the support of nurses and the mothers themselves. Similarly, a study that analyzed the health monitoring of HIV patients via WhatsApp® also found that this strategy helped to make patients safer to deal with the treatment, besides being able to share their achievements.<sup>7</sup>

Many mothers reported the presence of acute symptoms in the child, showing difficulties in scheduling appointments, availability and access to pediatric care in the public health network.

This fact may indicate a fragility of the health system in meeting the demands of PTNBs families after hospital discharge. Some mothers still reported a desire to be seen by the neonatologist at the hospital to treat low complexity problems, which should be directed to the Basic Health Units (BHU) or the Emergency Care Units (ECU). It is worth noting that, in addition to having been oriented, at the beginning of the research, about the follow-up offered by the group not replacing the routine care of the BHU, the nurse moderators also encouraged the mothers to attend the scheduled appointments.

After the premature child's hospital discharge, mothers face other challenges and factors that hinder the continuity of care. Among these factors, one can mention the lack of resources in the municipality of origin and other deficits in primary care services that hinder the access and the link between the family and the BHU. The weaknesses of the health network point to the need for improvements in the services and also for greater support from the health teams in welcoming and resolving the demands of preterm.<sup>32</sup>

It is necessary that the primary care team be prepared and have sufficient resources to receive and welcome the premature baby and his family in their territory, paying attention to their specificities, seeking to build a new bond of trust, as had been established in the hospital environment. Such data also leads to believe in the need to reinforce the counter-reference process between the NU or NCA and the BHU.

## CONCLUSION AND IMPLICATIONS FOR PRACTICE

This study showed that the most recurrent themes that permeated most of the discussions in the group were: preterm infant nutrition (breastfeeding and infant formula), infant colic and other basic care. Such topics, in addition to the particularities of prematurity, should be seen as a priority by the Nursing team when preparing for hospital discharge. The current pre-discharge training still needs improvement, since most of the mothers who participated in the WhatsApp® group showed doubts and insecurities about the basic baby care.

Although it is not able to meet all the educational and care needs of the PTNBs' family post-discharge, the WhatsApp® group proved to be effective in guiding mothers about baby care and promoting interaction among mothers, who could share their experiences, feelings and knowledge with their peers.

The strategy of using mobile technology to promote post-discharge follow-up of preterm infants is not intended, under any circumstances, to replace routine and face-to-face care, but to add to and enhance the continuity of care for preterm infants. The baby's follow-up through the WhatsApp® application has positive points, such as high adherence by mothers in a technology widely used by the population, representing low or no cost for health services. In addition, this may become a possibility to promote the preterm baby's health remotely and interactively, something particularly useful in times of social distance when

collective actions and educational groups may be reduced or interrupted.

The use of the app as a tool for monitoring the health of preterm infants also has limitations. Although this is not the group's objective, it is inevitable that doubts arise about the acute signs and a symptom manifested by the baby and, in these cases, the application does not replace the face-to-face evaluation. The use of the application also ends up being limited to a portion of the population that has a cell phone, internet access and a certain level of literacy, which is a challenge that is particularly greater when dealing with plural and unequal territories such as Brazil.

This study presented, as limitations, the fact that it did not have the participation of family members other than the PTNBs' mother, making it impossible to have a deeper access to the perceptions of other members of the baby's family. In addition, the messages sent by the nurse moderators were not analyzed, making it impossible to analyze the orientations and responses issued by the professionals.

Further studies are needed, with more robust results, on the effectiveness of the use of mobile technologies in premature care, especially via cell phones and applications such as WhatsApp®.

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