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ORIGINAL PAPER

Maternal self-efficacy in newborn care: influence of maternal variables

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Abstract

Aim: To analyze the influence of sociodemographic, obstetric, childbirth, and breastfeeding variables on maternal self-efficacy in newborn care. *Design:* Descriptive cross-sectional study. *Methods:* The study was conducted in three hospital units in the Northern region of Portugal, with a non-probabilistic sample composed of 340 women recruited at postnatal wards on the day of hospital discharge. A questionnaire including the mother's sociodemographic, obstetric, childbirth, and breastfeeding data was used. For the analysis of maternal self-efficacy in newborn care, the Scale of Perceived Parental Self-Efficacy in Child Care was used. The scale is a 20-item self-report instrument developed to identify women with low levels of self-efficacy in newborn care. Descriptive and inferential statistics were used for data analysis. *Results:* Significant differences concerning maternal self-efficacy in newborn care were found with regard to level of education and parity, with multiparous women and women with lower levels of education presenting higher levels of self-efficacy in newborn care. *Conclusion:* The analysis of these variables could be valuable in building new knowledge to support the development of an action model that would allow at-risk women to be highly confident in their parenting role.

Keywords: breastfeeding, mothers, newborn, parenting, postnatal care, self-efficacy.

Introduction

One of the main conceptual theoretical models on which health policies are based in the world today is health promotion, of which self-efficacy stands out as one of the most significant concepts (Barreiro et al., 2020).

Social cognitive theory and self-efficacy refers to the belief in one's personal ability to perform certain activities or behaviors successfully, thereby increasing the probability of achieving the desired result (Bandura, 1997). This belief guides behavior, influencing the effort spent on a given task and the number of attempts to achieve the defined goal. The belief in self-efficacy is, therefore, a mediator of the factors that influence behavior and subsequent behavior (Bandura, 1997).

When applied to parenting, self-efficacy beliefs are seen as a powerful predictor of parental practices. The more effective parents perceive themselves to be in the task of caring for their newborns, the more successful they are in parenthood (Amin et al., 2018; Bahorski et al., 2020).

Trust in one's own abilities means challenges are regarded as something that can be overcome, rather than as something insurmountable and to be avoided. This sense of control, expressed by an individual's sense that he / she has the resources to carry out interventions successfully, becomes fundamental in day-to-day life since it is motivating and drives efforts to achieve goals and overcome obstacles, and is, therefore, essential to the acquisition of new skills and competences (Gangloff & Mazilescu, 2017; Silva & Carneiro, 2018).

Self-efficacy activates coping mechanisms in mothers which can be used in adverse situations (Bandura, 1997). The perception of maternal self-efficacy is very relevant in the care of newborns, since it directly affects behaviors, feelings, motivations, choices, and resilience when faced with difficulties (Abuhammad, 2021). It is, thus, an area of attention for nurses and midwives in order to identify mothers with greater need for support and guidance, thereby facilitating early intervention

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(Cardoso & Marín, 2018). Promoting confidence in newborn care during the postnatal period can reduce the time of hospitalization and the use of emergency services after discharge, contributing to the development of a positive self-perception in the performance of the parental role (Albanese et al., 2020) and stronger bonds between mother / father and child (Shoemark et al., 2021).

Finlayson et al. (2020) believe that postnatal care is underestimated and conclude that interventions that promote self-efficacy in the parental role should be considered as a means of achieving a positive impact on the postnatal maternal experience.

Self-efficacy is assessed by self-report. However, according to Wittkowski et al. (2017), the wide range of measurement instruments available for this (developed for specific studies) often results in inconsistent terminology with an ambiguous theoretical basis. Zheng et al. (2018) add that the factors that have an impact on the perception of self-efficacy remain poorly explored, presenting some ambiguity. It is therefore essential to take account of the background of the individuals under study, since it is known that different economic, social, and cultural frameworks often correspond to different beliefs, with an influence on the perception of self-efficacy. In Portugal, the existence of studies about the influence of sociodemographic, obstetric, childbirth, and breastfeeding variables on the perception of maternal self-efficacy in terms of parental competences it is not widely known.

Analyzing the variables that influence maternal self-efficacy in newborn care can support the development of an action model that allows women at risk to be discharged, confident in their ability to perform their parental role.

Aim

The aim of this study was to analyze the influence of sociodemographic, obstetric, childbirth, and breastfeeding variables on maternal self-efficacy in newborn care.

Methods

Design

Descriptive cross-sectional study.

Sample

The sample was comprised of postpartum women in a postnatal ward on the day of hospital discharge. The inclusion criteria were: Portuguese nationality, over 18 years of age, and rooming-in with the newborn during hospitalization. The exclusion criteria included: women with multiple fetuses; problems that required hospitalization in high dependency or intensive care units during pregnancy, delivery, or postpartum period; preterm birth; and not breastfeeding.

On the day of discharge, 395 women hospitalized in the postnatal ward were contacted, of whom 365 met the inclusion criteria and eleven were excluded for not having started breastfeeding. Of these, 340 agreed to participate and signed the informed consent form.

Data collection

A questionnaire including the mother's sociodemographic characteristics (age, area of residence, marital status, educational qualifications), obstetric (type of conception, parity, antenatal care, parenting antenatal classes), childbirth (type of birth, childbirth experience, skin-to-skin contact immediately after birth, days of hospitalization) and breastfeeding (within the first hour of the newborn's life, throughout hospitalization) data, was applied.

For the analysis of maternal self-efficacy in newborn care, we used the Scale of Perceived Parental Self-Efficacy in Child Care (Cardoso, 2012), a 20-item self-report instrument, developed, adapted, and validated for a Portuguese population to identify women with low levels of self-efficacy in newborn care ("Escala de Percepção de Autoeficácia Parental nos Cuidados ao Filho" – PAE_CF).

Two different arguments were behind the decision to use this scale. On the one hand, self-efficacy is understood to predict parental behaviors, since studies have shown that mothers with higher values of self-efficacy demonstrate more appropriate parental practices (Cardoso, 2012). On the other hand, the selection of items which the instrument is composed of was based on previous work to identify the learning needs of Portuguese mothers, related to the parental skills needed for an adequate performance of the parental role.

The scale consists of six factors: 1) Satiety and Comfort (items 7, 16, 17, 18 and 19); 2) Hygiene and Dressing (items 1, 2 and 3); 3) Breastfeeding (items 8, 9, 10, 11 and 12); 4) Complications and Effects of Breastfeeding (items 13, 14 and 15); 5) Treatment of Diaper Rash, (items 5 and 6); and 6) Newborn Health Preservation (items 4 and 20), measured on a four-point Likert scale (one – "totally disagree" to four – "totally agree"). Scores range between 20 and 80, with higher scores indicating higher levels of perceived self-efficacy in newborn care.

It is important to note that the scale factors were not used since in the original version they presented low Cronbach alpha values obtained from factor analysis,

meaning that the scale is more consistent when the items are analyzed in the global representation of the PAE_CF.

The research was conducted in three hospital units in the Northern region of Portugal, between January and June, 2018. There were no differences between groups with regard to the place of data collection. For this reason, we considered them as a single group.

Data analysis

The internal consistency of the PAE_CF was assessed using the following criteria: 1) Cronbach's alpha coefficient; 2) corrected item-total correlation, and 3) alpha estimate when an item was removed from the scale. Poorly functioning items were defined as: 1) items that increased the coefficient alpha by more than 0.10 when deleted or 2) items that had a corrected item-total correlation less than 0.30.

For the analysis of dichotomic variables, t-tests were used, and for non-dichotomic variables, one-way analyses of variance (ANOVA) were applied. The Bonferroni post-hoc test was used after the analysis of variance reducing the confidence intervals to prevent Type I error rates.

Additionally, differences on the scores of maternal self-efficacy in newborn care were analyzed using a multivariable ANOVA model, including all the variables found to be statistically significant in each group of the previous analysis (sociodemographic, obstetric, childbirth, and breastfeeding).

The statistical significance level was set at 0.05. The statistical analyses were performed using SPSS for Windows version 27.

Results

Descriptive data

The age of the participants varied between 18 and 46 years old, with an average of 31.13 years (SD = 5.29). Regarding educational qualifications, 40.1% (n = 136) of women had higher education, 36.0% (n = 122) had secondary education, and 23.9% (n = 81) had basic education. Most women lived in urban areas (65.6%; n = 223), were married or lived in nonmarital partnership (71.9%; n = 244), conceived spontaneously (94.1%; n = 319), were primiparous (50.3%; n = 171), had antenatal care (84.7%; n = 288), and attended parenting antenatal classes (69.5%; n = 235).

Regarding childbirth, most women had a vaginal birth (72.6%; n = 247), had a positive experience (86.5%; n = 294), and had skin-to-skin contact with the newborn immediately after birth (77.6%; n = 264).

The length of stay in the postnatal ward was three or more days for most women (54.4%; n = 185).

Concerning breastfeeding, most of the newborns were breastfed in the first hour of life (75.0%; n = 255) and exclusively breastfed during the stay (82.4%; n = 280), Table 1.

Scale Internal Consistency

The Cronbach's alpha coefficient of the PAE_CF was 0.93 and did not increase by more than 0.10 if any of the items were deleted. The mean score for the scale PAE_CF in this sample was 66.78 (SD = 8.71), ranging from 35 to 80.

Main results

Regarding sociodemographic variables, no significant differences were found in maternal self-efficacy scores in newborn care according to age, area of residence, and marital status. Significant differences in maternal self-efficacy scores were found relating to educational qualifications ($F\ [2.336] = 9.23$; $p < 0.001$). Women with basic education had significantly higher scores for self-efficacy perception than those with secondary education and those with higher education.

Regarding obstetric variables, no significant differences were found in maternal self-efficacy scores in newborn care relating to type of conception, antenatal care, and having attended or not having attended parenting antenatal classes. However, significant differences were found relating to parity ($t\ [338] = -3.69$; $p < 0.001$), with multiparous women presenting higher scores compared to primiparous women.

There were no statistically significant relationships between variables relating to childbirth and breastfeeding.

Differences on the scores of self-efficacy in newborn care were analyzed using a multivariable ANOVA model, including all variables found to be statistically significant in each group in the previous analysis (educational qualifications and parity). It was found that educational qualifications ($F\ [2.333] = 6.13$; $p = 0.002$) and parity ($F\ [1.333] = 8.46$; $p = 0.004$) remained statistically significant, indicating that both women with a lower level of education and multiparous women had, on average, higher levels of self-efficacy in newborn care.

Table 1 Scores of the PAE_CF for sociodemographic, obstetric, childbirth, and breastfeeding characteristics (n = 340)

Characteristics		PAE_CF Scores	n (%)	mean (SD)
Sociodemographic	age	18–25	49 (14.5)	68.33 (8.04)
		26–30	100 (29.6)	66.57 (8.63)
		31–40	179 (53.0)	66.56 (9.05)
		≥ 41	10 (2.9)	67.40 (4.72)
	area of residence	urban	223 (65.6)	66.62 (8.79)
		rural	117 (34.4)	67.08 (8.56)
	marital status	single	88 (26.0)	66.73 (8.69)
		married / non marital partnership	244 (71.9)	66.82 (8.54)
		divorced	7 (2.1)	64.00 (14.38)
	educational qualifications	≤ 9	81 (23.9)	69.98 (8.14)*
		> 9 ≤ 12	122 (36.0)	66.78 (8.80)*
		> 12	136 (40.1)	64.84 (8.48)*
Obstetric	type of conception	spontaneous	319 (94.1)	66.72 (8.73)
		medically-assisted procreation	20 (5.9)	67.70 (8.83)
	parity	primiparous	171 (50.3)	65.08 (9.31)*
		multiparous	169 (49.7)	68.50 (7.72)*
	antenatal care	no	52 (15.3)	66.58 (8.97)
		yes	288 (84.7)	66.81 (8.68)
	parenting antenatal classes	attended	235 (69.5)	66.69 (8.48)
		did not attend	103 (30.5)	67.06 (9.32)
Childbirth	type of birth	vaginal	247 (72.9)	66.74 (8.63)
		c-section	93 (27.4)	66.87 (8.99)
	childbirth experience	positive	294 (86.5)	66.83 (8.86)
		negative	46 (13.5)	66.41 (7.81)
	skin-to-skin contact	yes	264 (77.6)	67.23 (8.50)
		no	76 (22.4)	65.11 (9.27)
	days of hospitalization	2	155 (45.6)	67.41 (8.50)
		≥ 3	185 (54.4)	66.24 (8.87)
Breastfeeding	within the first hour after birth	yes	255 (75.0)	67.16 (8.50)
		no	85 (25.0)	65.62 (9.14)
	throughout hospitalization	breast milk	280 (82.4)	67.18 (8.43)
		partial	60 (17.6)	64.92 (9.78)

*Missing values were considered to be random; *p ≤ 0.001; PAE_CF – "Escala de Percepção de Autoeficácia Parental nos Cuidados ao Filho"*

Discussion

The PAE_CF was developed to measure the perception of the mother's self-efficacy in newborn care in the first two weeks after birth. In this study, the Cronbach's Alpha was 0.93, a value higher than those reported in the original PAE_CF study (0.808) (Cardoso, 2012). These results suggest that the instrument showed good reliability criteria (Field, 2013).

Sociodemographic variables, such as age and marital status have consistently been found to relate to maternal self-efficacy (Amin et al., 2018; Bahorski et al., 2020; Brandão et al., 2018; Kristensen et al., 2018; Monteiro et al., 2020; Panza et al., 2020; Shoemark et al., 2021; Shorey et al., 2015). This is in contrast to our study, in which the results showed no significant difference regarding these variables. However, in support of our findings, Botha et al. (2020) corroborate some of the results achieved in a sample of 250 women in the first days after birth. For these authors, maternal age and marital status did not demonstrate a statistically significant relationship to maternal self-efficacy.

As in our study, data collection in Botha et al. (2020) occurred during postpartum hospitalization and this may explain the discrepancy in the results found compared to the rest of the literature. During hospitalization, these variables may have less impact on maternal self-efficacy than after discharge, when mothers find themselves in a family environment without the permanent support of healthcare and other specialized professionals.

In terms of sociodemographic variables, the only significant differences found were in educational qualifications. Women with basic education reported higher levels of self-efficacy in newborn care. This is particularly apparent in parental skills associated with the preservation of the health, satiety / comfort of the

newborn and breastfeeding and its effects and complications. There is no consensus in international literature regarding the influence of educational qualifications on maternal self-efficacy. Brandão et al. (2018) report that this inconsistency in the data found is often associated with the context in which the study was conducted. They developed an investigation that targeted only pregnant Portuguese women, whose results were congruent with our findings, whereby women with higher educational levels reported lower self-efficacy in breastfeeding. However, in different contexts, the results are inconsistent. For example, contrary to the results obtained in Portugal, in a study conducted in China (Wang et al., 2021; Zheng et al., 2018), Singapore (Shorey et al., 2015), and Brazil (Tristão et al., 2015) higher educational qualifications seemed to be associated with higher parental self-efficacy in newborn care. In contrast, in Finland, no statistically significant associations between these two variables were found (Botha et al., 2020), which was also the case in a Brazilian study conducted by Monteiro et al. (2020).

Regarding pregnancy variables, no significant differences were found relating to the type of conception, whether or not the women received antenatal care or attended antenatal parenting classes.

There were significant differences in the sample relating to parity. In general, multiparous women had higher self-efficacy in newborn care than primiparous women, especially regarding parenting skills associated with health preservation, hygiene and dressing, treatment of diaper rash, and the complications and effects of breastfeeding. This finding is in line with several studies conducted in different contexts (Albanese et al., 2020; Botha et al., 2020; Tristão et al., 2015; Wang et al., 2021; Zheng et al., 2018) and is corroborated by the idea that previous experiences of success are the element with the greatest influence on the acquisition of self-efficacy (Sousa, 2019).

The results of Kristensen et al. (2018) support the assumption that parenting is a difficult time for primiparous women, regardless of maternal age, marital status, and educational qualifications. These women should, in every circumstance, be the focus of healthcare professionals, since it is unequivocal that higher levels of self-efficacy are associated with greater effort and persistence in the overcoming of possible difficulties, which are interpreted as positive challenges (Vieira et al., 2018).

In a sample of pregnant Portuguese women, Brandão et al. (2018) found that multiparous women showed significantly higher levels of self-efficacy in breastfeeding than primiparous women, especially when previous experiences were successful, which is consistent with previous studies.

Interestingly, our results indicated that antenatal parenting classes did not influence maternal self-efficacy in the postpartum period. This data is not corroborated by most authors, who report that anticipatory guidance is commonly used to improve parental skills, as well as the feeling of self-efficacy (Fong et al., 2018; Panza et al., 2020). Verbal reassurance from trusted individuals, significant people, and experts and the analysis of the performance of others with similar attributes are other powerful factors in promoting self-efficacy (Albanese et al., 2020). However, classes can also induce more anxiety, raising expectations with regard to expected behavior (Sousa, 2019).

According to Cardoso and Marín (2018), in the postnatal period, Portuguese mothers who showed a higher level of knowledge had attended parenting antenatal classes during pregnancy. To characterize the level of knowledge and skills associated with parental competence, and the promotion, and monitoring of infant health up to six months of age, the authors identified the following characteristics of the best prepared mothers: multiparous women, who cohabited with the child's father, with more educational qualifications, and who reported the nurse / midwife as the main source of information after birth. Single mothers, primiparous, those whose pregnancy was not planned, and those who did not have antenatal classes were considered more vulnerable since they demonstrated a greater lack of knowledge and skills (Cardoso & Marín, 2018). From this perspective, it is urgent to establish whether mothers who demonstrate a higher level of knowledge and skills are the same as those who have a higher sense of self-efficacy.

When all other variables under analysis were considered – both those related to childbirth (i.e., type of birth, childbirth experience, skin-to-skin contact immediately after birth, number of days of postpartum hospitalization) and breastfeeding (i.e., breastfeeding in the first hour of the newborn's life and throughout hospitalization) – no statistically significant relationships between any of them and maternal self-efficacy in newborn care were found. Again, Botha et al. (2020), who also collected data before mothers were discharged, did not find any statistically significant relationships between maternal self-efficacy and the type of delivery, corroborating our findings. These results are

completely at odds with those of Monteiro et al. (2020) in a sample of 224 Brazilian mothers, whose perceived self-efficacy in breastfeeding had a positive association with vaginal birth. Another result that deserves attention is the fact that maternal self-efficacy was not affected by the length of stay in the postnatal ward. This relationship has already been widely studied in the United Kingdom, where the length of stay is increasingly being reduced. According to Bowers and Cheyne (2015) not all women benefit from the same length of postpartum hospitalization and add that this period must be used so that the postpartum women can recover, while a considerable amount of care can be provided in the community with more advantageous results. Albanese et al. (2020) suggest replicating, in the United States, the model already used in the United Kingdom, of shorter postpartum hospitalizations, while keeping in mind the possible benefits of providing physical and mental benefits to postpartum women.

According to Jones et al. (2021), the international tendency towards early hospital discharge is not supported by policies based on scientific evidence and there should be concerns about the time needed to prepare families for homecoming, especially in contexts with poor community care.

Recently, the World Health Organization (World Health Organization [WHO], 2022) has made recommendations on maternal and newborn care for a positive postnatal experience, in which they suggest that hospital discharge in healthy women and newborns should be at least 24 hours after birth, up to which point postnatal care should be received in the facility; however, nurses and midwives should assess whether women have the skills and confidence necessary for the care of the newborn before they are discharged.

On a general scale, there are no significant differences in maternal self-efficacy in newborn care regarding the variables of childbirth and breastfeeding. The variables that had the most impact on self-efficacy were parity and educational qualifications. Women with lower educational qualifications and multiparous women presented, on average, higher levels of self-efficacy in newborn care.

Some studies have already established a connection between multiparity and self-efficacy. However, in order to create more solid and consistent results, further and larger studies are needed to explore and support how educational levels and certain contexts can influence the level of self-efficacy, as well as the possible correlation between educational levels and subsequent expectations and self-efficacy.

This scale can be used in clinical practice at the discretion of the nursing team in loco, with more emphasis on those identified in this study as risk groups – i.e., primiparous women and women with higher educational level, in order to early identify and target those who present greater need for support and nursing care developed by midwives, who are specialized in this area of intervention. As action strategies, midwives can opt for an individualized approach, so that it is possible to accurately diagnose the real needs of care and, later, develop programs that can incorporate targeted interventions with women and include those relevant to the transition process, such as family members, friends, and even other women who have recently experienced similar situations and have been able to develop skills to overcome the difficulties they have encountered.

It would also be interesting to study these women in the prepartum period and understand what kind of programs should be designed so that self-efficacy in care for the newborn does not become an obstacle to the transition to parenthood.

The results obtained can be considered when new interventions are designed to promote maternal self-efficacy in the contexts explored, both at the postpartum and in the antenatal period, which involve the skills necessary to meet the needs of newborns.

Limitation of study

There were certain limitations to the study. After analyzing the variables, we found that some were close to significancy, which may suggest the possibility of larger-scale studies having different results.

Furthermore, special attention should be paid when extrapolating the results to other contexts, since the data were only collected in hospitals in the Northern region of Portugal. Despite this, the results found were robust and clearly pointed to parity and educational qualifications as variables very capable of influencing Portuguese women's self-efficacy in newborn care.

Conclusion

For clinical practice, the PAE_CF could be a useful tool to assist health professionals during early routine postpartum practices, to screen women with lower self-efficacy for newborn care, and also to provide more personalized interventions and a higher level of support. However, further studies are necessary to explore the possibility of reversing low levels

of maternal self-efficacy and thus empowering women.

The analysis of these variables suggest that midwives should pay special attention to primiparous women and those with higher education qualifications. This could be crucial to the construction of new knowledge to support the development of models of action that promote decision-making based on the best scientific evidence, and to thereby allow at risk women to be discharged from the hospital with confidence in their ability to perform their parental role.

Ethical aspects and conflict of interest

The study was approved by the ethics committee of the three hospitals.

None of the authors have conflicts of interest.

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Author contributions

All authors contributed substantially to conception and design, data analysis and interpretation, manuscript design, critical revision of the manuscript, and approved the final version of the manuscript.

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