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ORIGINAL RESEARCH

Fathers' emotional involvement with the neonate: impact of the umbilical cord cutting experience

Sónia Brandão & Bárbara Figueiredo

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Correspondence to S. Brandão:
e-mail: soniamariabrandao@hotmail.com

Sónia Brandão MSc RN
PhD Candidate
Instituto de Ciências Biomédicas Abel Salazar – University of Porto – Porto, Portugal
Midwifery (Registered Nurse)
Centro Hospitalar do Porto (Hospital Center of Porto, Júlio Dinis Maternity Unity – Porto, Portugal)

Bárbara Figueiredo PhD
Associate Professor
Departamento de Educação e Psicologia – University of Minho – Braga, Portugal

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Abstract

Aims. This paper is a report on a study analysing the effect of the umbilical cord cutting experience on fathers' emotional involvement with their infants.

Background. Participation in childbirth offers an opportunity for father and mother to share the childbirth experience, so it is vital that midwives improve the fathers' participation in this event.

Design. A quasi-experimental study with a quantitative methodology was implemented.

Methods. One hundred and five fathers were recruited as part of a convenience sample in a Maternity Public Hospital in a Metropolitan City in Portugal, between January and May of 2008. The Bonding Scale, the Portuguese version of the 'Mother-to-Infant Bonding Scale' was used to evaluate the fathers' emotional involvement with the neonate at different moments: before childbirth, first day after childbirth and first month after childbirth. After childbirth, the fathers were divided into three separate groups depending on their umbilical cord cutting experience.

Results. The results demonstrate that the emotional involvement between father and child tends to increase during the first days after childbirth and to decrease when evaluated 1 month after birth, for fathers who did not cut the umbilical cord. However, fathers who cut the umbilical cord demonstrate an improvement in emotional involvement 1 month later.

Conclusion. Results suggest that the umbilical cord cutting experience benefits the father's emotional involvement with the neonate, supporting the benefits of his participation and empowerment in childbirth.

Keywords: bonding, evidence-based practice, fathers, involvement, midwifery, parenting, umbilical cord cutting experience

Introduction

In the past, childbirth was considered a feminine action and men were excluded from this process (Leavitt 2003). However, since men entered the delivery room the benefit of this involvement is unquestioned, as their participation enhances both the mothers' well-being (Yim 2000) as well as their own attachment to the child (Pestvenidze & Bohrer 2007). In

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addition, considerable research has indicated that an earlier contact with both parents enhances the child's development (Bronte-Tinkew *et al.* 2008, Wong *et al.* 2009).

Brazelton and Carmer (1999) state that men are like women, affected by pregnancy and the birth of their child. There are several studies showing that parents have an influence on child development (Nyström & Öhrling 2004, Erlandsson *et al.* 2007, Figueiredo *et al.* 2007, Premberg *et al.* 2008), whereas only a few studies show the influence of pregnancy and birth on men, as well as fathers' adjustment to parenthood (Draper 2002, Deave & Johnson 2008).

Men's transition to parenthood is stressful mainly because paternity assigns the recognition of masculinity, and because the addition of a newborn child creates profound changes in the family (Nyström & Öhrling 2004). Men have often considered the moment of childbirth as the beginning of fatherhood and state that they want to be involved in the women's pregnancy (Draper 2002).

Studies state that fathers experienced their presence in the delivery room as positive (David 2009) and exciting, but also demanding (Dellmann 2004); due to their lack of both knowledge and perceived control, they struggle to find a role during childbirth (Longworth & Kingdon 2011). Recognizing and including the father as a participant in the childbirth process is an important task for midwives in order to promote emotional involvement between father and baby.

Background

Emotional involvement with the baby has been described as a process of mutual adaptation between the parents and the baby, gradually established from pregnancy to the first moments after birth, and affected by the biological, psychological, and social context (Figueiredo *et al.* 2007).

Studies show that the emotional involvement between fathers and their children is not always the same (Buist *et al.* 2002, Field *et al.* 2006, Figueiredo *et al.* 2007).

It could be assumed that the emotional involvement between fathers and babies progressively increases during pregnancy, but mainly after birth, following contact with the baby, just as it happens with the mothers (Draper 2002, Figueiredo *et al.* 2007). Some studies demonstrate that maternal bonding increases progressively during pregnancy, with higher bonding scores during the first post-partum days, then the bonding scores decrease during the early weeks, increasing progressively again over the following 3 months (Taylor *et al.* 2005).

The way fathers become emotionally involved with their children remains unclear, due to lack of studies in this field. Some studies suggest that the emotional involvement between fathers and babies happens approximately the same way as the emotional involvement between mothers and babies: progressively increasing during pregnancy, but mainly after childbirth, through the first contacts with the baby (John *et al.* 2004, Habib & Lancaster 2006, Figueiredo *et al.* 2007).

Participation in childbirth offers an opportunity for both the father and the mother to share the childbirth experience as part of their family life. This can be an important moment in the development of their relationship and in the acceptance of their roles as parents (Vehvilainen-Julkunen & Liukkonen 1998).

The majority of fathers wish to provide support during labour (Wöckel *et al.* 2007, Martin 2008). The father's involvement as a participant promotes positive feelings towards the child's birth and strengthens family ties. For the father, childbirth is an emotionally rich experience since it allows the first direct contact with his child. For some men, being present at childbirth and giving support to their partners encourages them to become more effective parents and child care-givers (Pestvenidze & Bohrer 2007).

Participating in childbirth is a way for men to feel included in the entire pregnancy and parenting process. Fathers who participate in childbirth feel active and avoid feelings of marginalization, feelings which are often explained by the intimacy that is developed between mother and baby. Yet, the father can also share a greater intimacy and proximity with the newborn, when he has witnessed his/her first moments of life. The greater the involvement of the father during childbirth, the better he experiences the event, and the greater his confidence is in his role as a father (Greenhalgh *et al.* 2000). Some men characterize the experience of being present during childbirth and providing support to their partners as a way of encouraging them to a more effective parenthood (Pestvenidze & Bohrer 2007).

Midwives have a very important role when it comes to family assistance, especially by encouraging and supporting fathers to participate in all the care that is provided to the newborn (Deave & Johnson 2008). Helping fathers to feel confident in their ability to take care of their baby is equal to helping them in their transition to parenthood. Therefore, it is important to be sensitive to fathers' needs of external support and encouragement (Finnbogadottir *et al.* 2003), and to know which practices may best meet their needs.

However, the fathers' involvement is often hindered, mostly after childbirth, because the routines are abruptly modified and several adjustments are necessary in order to adapt to the new family situation. Such adaptations include the understanding of different roles of the father and mother, the definition of patterns of child caring, as well as the

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negotiation and definition of their own rules as a couple. This is why the child's first year presents such a challenge for parents (Nyström & Öhrling 2004). For men, participation in childcare depends on their involvement with the baby, and providing care to the newborn is a way to increase the emotional involvement between father and baby (Egeren 2004).

Giving the father the opportunity to cut his child's umbilical cord at birth is a midwives' routine procedure, aiming at promoting fathers' emotional involvement with the newborn. This will appeal to the fathers' involvement during childbirth, not as a passive observer, but as an active participant in the process (Waldenström 1999). However, there have been no studies to date, confirming if this practice truly promotes fathers' emotional involvement, or if it has any real influence in the emotional involvement between father and baby. It is therefore imperative to research this issue, in order to allow midwives' practice to be supported by scientific facts, instead of customary procedures.

The study

Aims

The aim of this study was to examine the effect of fathers' umbilical cord cutting experience on their emotional involvement with their infants.

Design

A quasi-experimental study with a quantitative methodology was implemented.

Participants

A convenience sample of fathers who attended their child's birth in a delivery room at a Maternity Public Hospital in a Metropolitan City in Portugal was recruited. One hundred and forty fathers-to-be were contacted. One refused to participate in the study and 34 were excluded (28 due to the exclusion criteria and six because they did not complete all three stages of evaluation required). The final sample is composed of 105 (75·0%) fathers.

The fathers were recruited when they arrived at the Maternity Public Hospital accompanying their partners in labour. During the admission process, in which the fathers are not present, they were approached, the study was explained, and collaboration solicited.

The recruited sample obeyed the following exclusion criteria: multiple pregnancy, pre-term pregnancy, high-risk pregnancy, instrumented deliveries or caesareans and newborns who were hospitalized in an intensive care unit after birth.

The sample size calculation corresponds to more than 10% of all the vaginal births (approximately 1000 vaginal births) that occur in a year in this Maternity Hospital. Based on Cunningham and McCrum-Gardner (2007)the power analysis for this sample size calculation was a large effect size with an effect size f = 0·90, obtained using the GPower 3·1·2 software. According to Cunningham and McCrum-Gardner (2007), for a large effect size of f = 0·90, the sample size calculation by group using this software must be of at least 18 participants for group, as is the case with this research.

Instruments

Two questionnaires were given to the fathers: a Socio-Demographic Questionnaire and a Bonding Scale (Figueiredo & Costa 2009). The Socio-Demographic Questionnaire concerns the father and the infant, and addresses: age, place of birth, ethnicity, nationality, marital status, occupational status, educational level of the father and infant's gender, gestational age, and health state at birth.

The Bonding Scale (Figueiredo & Costa 2009) is a validated and extended Portuguese version of the 'Mother-to-Infant Bonding Scale' (MIBS) (Taylor *et al.* 2005). The Scale aims at evaluating the quality of the emotional involvement between parents and babies. Parents were asked to describe the way they feel about the baby at the specific moment when they fill in the scale.

Validation was achieved in a heterogeneous sample of 456 individuals (315 mothers and 141 fathers), between the second and third day postpartum, of which 151 had already been evaluated in the first day postpartum, in a Public Hospital in a Metropolitan City in Portugal.

This instrument showed reasonable scores of internal consistency (Cronbach alpha = 0·71) and of test-retest reliability (Spearman correlation = 0·49, $P < 0{\cdot}01$) (Figueiredo & Costa 2009). It has the advantage of being easy and quick to administer, and well accepted by the parents.

The original scale was subjected to a process of translation and retroversion not having given rise to divergences for any of the items. To the eight items, four were added (Mad, Aggressive, Sad, and Fearful) so that the emotions considered to be basic were present. The scale is composed by 12 self-report items in a Likert scale from 0–3, according to the emotion towards the newborn's intensity ('very much', 'a lot', 'a little' or 'not at all'). Three subscales were identified as 'Positive bonding', consisting of three items (Loving, Protective and Joyful) and measuring the positive

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emotional involvement; 'Negative bonding' comprising six items (Mad, Aggressive, Sad, Resentful, Dislike, and Disappointed) and evaluating the negative emotional involvement; and a 'Not Clear bonding' containing two items (Fearful and Neutral/Felt Nothing) and signalling the presence of emotions not clearly related to the father's emotional involvement with the child.

In the Bonding Scale, the items are scored in the sense that the more present the positive emotion is towards the newborn, the higher the score is. Consequently, the sub-scales results (corresponding to the sum of the item scores which constitute them) are higher as they are more present in the dimension which evaluates them. Moreover, the Bonding result (obtained from the subtraction of the 'Negative bonding' and 'Not Clear bonding' sub-scales results from the 'Positive bonding' sub-scale result) is higher as the fathers' bonding with the child becomes better.

Data collection

Data were collected during the period between January–May 2008. The two questionnaires (Socio-Demographic Questionnaire and the Bonding Scale) were given to the fathers upon arrival at the Maternity Public Hospital.

Fathers were asked to fill in the Bonding Scale in three consecutive moments:

- Moment 1: Before childbirth, during the mothers' admission to the Maternity Public Hospital. We delivered the questionnaire to the fathers and asked them to fill in the Bonding Scale and the Socio-Demographic Questionnaire.
- Moment 2: First day after childbirth, within the first 24–48 hours after childbirth (the period that mother and baby are still in the Maternity Public Hospital), the fathers were asked to answer the Bonding Scale for the second time.
- Moment 3: First month after childbirth, the Bonding Scale was sent out by mail to the father (including an addressed and stamped envelope), along with a request for it to be returned, once the first month of the baby's life was completed.

After childbirth, fathers were divided into three separate groups depending on their umbilical cord cutting experience, as previously explained. Immediately after childbirth we questioned all the fathers as to whether or not they were asked if they wanted to cut the umbilical cord. Those who gave a positive answer were asked whether or not they had cut it. We then divided the group into three:

- Fathers who responded that they were asked if they wanted to cut the umbilical cord and who accepted were included in group 1.
- Fathers who responded that they were asked if they wanted to cut the umbilical cord but did not accept, and thus did not cut it, were included in group 2.
- Fathers who responded that they were not asked whether or not they wanted to cut the umbilical cord, were included in group 3.

Data analysis

Statistical data treatment was performed using the Statistical Package for Social Sciences (SPSS-16·0) software. Repeated-measures ANOVA were used to verify if there were differences between the emotional involvement of the father with the baby at the different evaluation moments, and if the cutting of the umbilical cord performed by the father immediately after birth had any influence on the emotional involvement of the father with the baby.

Ethical considerations

An ethical authorization was firstly obtained from the Maternity Public Hospital's Ethics Committee. The objectives of the study and its proceedings were presented to the participants and parents were asked to sign an informed consent form.

Results

The study participants ranged in age from 17–57 years old (average age of 30·6 years old). Almost all fathers were Caucasian (95·2%), catholic (82·7%) and were born in Portugal (94·3%). Most fathers were married (65·7%) or cohabiting with a steady partner (22·9%), 10·5% were single and 1% of the fathers were separated/divorced. The educational background of most of the fathers ranged between 9–12 years of school education (55·8%), several had attended university (24·0%), and 19·2% had less than 9 years of school education. A great majority of the fathers were employed (95·2%), the remaining being unemployed.

The 'Chi-square test' was used to test if there were socio-demographic significant differences between the groups. No significant differences were found concerning the father's age [$X^2(2) = 3{\cdot}31$; $P = 0{\cdot}191$], place of birth [$X^2(2) = 4{\cdot}82$; $P = 0{\cdot}090$], ethnicity [$X^2(2) = 0{\cdot}64$; $P = 0{\cdot}727$], religion [$X^2(2) = 0{\cdot}11$; $P = 0{\cdot}947$], school level [$X^2(2) = 0{\cdot}38$; $P = 0{\cdot}829$], time of relationship with the baby's mother [$X^2(2) = 0{\cdot}30$; $P = 0{\cdot}861$], pregnancy planning [$X^2(2) = 0{\cdot}48$; $P = 0{\cdot}787$] and whether the baby was a first child or subsequent [$X^2(2) = 5{\cdot}22$; $P = 0{\cdot}074$].

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Table 1 Comparison of socio-demographic differences between the groups.

	Group 1 (*N* = 45)	Group 2 (*N* = 28)	Group 3 (*N* = 32)	Total
Age, *n* (%)				
≤ 21 years	3 (2·9)	3 (2·9)	0 (0·0)	6 (5·7)
> 21 years	42 (40·0)	25 (23·8)	32 (30·5)	99 (94·3)
Place of birth, *n* (%)				
Portugal	45 (42·9)	25 (23·8)	29 (27·6)	99 (94·3)
Not in Portugal	0 (0·0)	3 (2·9)	3 (2·9)	6 (5·7)
Ethnicity, *n* (%)				
Caucasian	42 (40·0)	27 (25·7)	31 (29·5)	100 (95·2)
Not Caucasian	3 (2·9)	1 (1·0)	1 (1·0)	5 (4·8)
Religion, *n* (%)				
With a religion	39 (37·1)	25 (23·8)	28 (26·7)	92 (87·6)
Without a religion	6 (5·7)	3 (2·9)	4 (3·8)	13 (12·4)
School Level, *n* (%)				
≤ 9 years of school education	35 (33·3)	20 (19·0)	24 (22·9)	79 (75·2)
> 9 years of school education	10 (9·5)	8 (7·6)	8 (7·6)	26 (24·8)
Time of relationship with the babýs mother, *n* (%)				
≤ 5 years	15 (14·3)	11 (10·5)	12 (11·4)	38 (36·2)
> 5 years	30 (28·6)	17 (16·2)	20 (19·0)	67 (63·8)
Pregnancy planning, *n* (%)				
Yes	35 (33·3)	20 (19·0)	25 (23·8)	80 (76·2)
No	10 (9·5)	8 (7·6)	7 (6·7)	25 (23·8)
First child, *n* (%)				
Yes	25 (23·8)	12 (11·4)	23 (21·9)	60 (57·1)
No	20 (19·0)	16 (15·2)	9 (8·6)	45 (42·9)
Infants gender, *n* (%)				
Male	16 (15·2)	14 (13·3)	22 (21·0)	52 (49·5)
Female	29 (27·6)	14 (13·3)	10 (9·5)	53 (50·5)

Group 1: Fathers who were asked to cut the umbilical cord and agreed to do so.
Group 2: Fathers who were asked agree to cut the umbilical cord but did not agree to do so.
Group 3: Fathers who were not asked to cut the umbilical cord

Significant differences were found [$X^2(2) = 8{\cdot}25$; $P = 0{\cdot}016$] only regarding the infant's gender. In the group of fathers who were given the opportunity of cutting the umbilical cord after childbirth, there was a larger frequency of female babies, and in the group of fathers who were not given this opportunity there was a larger occurrence of male babies. Since the baby's gender presented statistically significant differences, this variable was controlled in the analyses (Table 1).

We also compared the difference between the numbers of deliveries performed by midwives vs. obstetricians. Regarding the group of fathers who were asked to cut the umbilical cord and agreed to do so, the prevalence of deliveries performed by midwives [38 (36·2%)] is significantly higher to those performed by obstetricians [7 (6·7%)]. The same relationship holds for the group of fathers who were asked to cut the umbilical cord but did not agree to do so, as deliveries performed by midwives [21 (20·0%)] were statistically higher than the same situation for deliveries performed by obstetricians [7 (6·7%)]. In the group of fathers who were not asked to cut the umbilical cord it was found that the number of deliveries performed by obstetricians [27 (25·7%)] was significantly higher than the ones performed by midwives [5 (4·8%)], [$X^2 = 40{\cdot}38$, $P < 0{\cdot}001$] (Table 2).

Concerning the aim of examining the effect of fathers' umbilical cord cutting experience on their emotional involvement with their infants, repeated-measures ANOVA were performed. This allowed testing of whether or not there were differences in the Bonding means between the three evaluation moments and if the umbilical cord cutting experience influenced fathers' emotional involvement with the neonate.

The umbilical cord cutting experience has an impact on the father-to-infant bonding across the three evaluation moments [$F(2) = 4{\cdot}76$; $P = 0{\cdot}011$], as well as the interaction between the time factor and the opportunity to cut the umbilical cord [$F(4) = 2{\cdot}91$; $P = 0{\cdot}023$].

Analysing the mean differences between the evaluation moments in the different groups, statistically significant

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Table 2 Comparison between the number of deliveries performed by midwives and obstetricians.

	Group 1 (*N* = 45)	Group 2 (*N* = 28)	Group 3 (*N* = 32)	Total
In charge for the delivery, *n* (%)				
Midwife	38 (36·2%)	21 (20·0%)	5 (4·8%)	64 (61·0%)
Obstetrician	7 (6·7%)	7 (6·7%)	27 (25·7%)	41 (39·0%)

Group 1: Fathers who were asked to cut the umbilical cord and agreed to do so.
Group 2: Fathers who were asked agree to cut the umbilical cord but did not agree to do so.
Group 3: Fathers who were not asked to cut the umbilical cord

differences were found between before childbirth and the first day after childbirth [F(1) = 6·10; *P* = 0·015], and between the first day after childbirth and the first month after childbirth [F(1) = 6·35; *P* = 0·013].

In the association between the time factor and the opportunity to cut the umbilical cord factor, statistically significant differences were observed between first day after childbirth and the first month after childbirth [F(2) = 4·71; *P* = 0·011], as presented in Table 3 and displayed in the Figure 1.

Discussion

The present study was carried out in a group of fathers who mainly present a low socio-economical level. In this Maternity Public Hospital in Portugal, fathers' participation in childbirth and in providing care to the newborn is low when considering others areas of Portugal or other western countries. We recognize that this fact presents some limitations to this study and, therefore, it would undoubtedly be interesting to deepen and develop it by comparing different social contexts.

Table 3 Means and standard deviations of bonding.

	Group 1 (*N* = 45)	Group 2 (*N* = 28)	Group 3 (*N* = 32)
	Mean (SD)	Mean (SD)	Mean (SD)
Bonding			
Moment 1 before childbirth	2·74 (0·17)	2·71 (0·15)	2·74 (0·18)
Moment 2 first day after childbirth	2·77 (0·20)	2·79 (0·14)	2·76 (0·18)
Moment 3 first month after childbirth	2·82 (0·13)	2·66 (0·25)	2·62 (0·40)

Group 1: Fathers who were asked to cut the umbilical cord and agreed to do so.
Group 2: Fathers who were asked agree to cut the umbilical cord but did not agree to do so.
Group 3: Fathers who were not asked to cut the umbilical cord

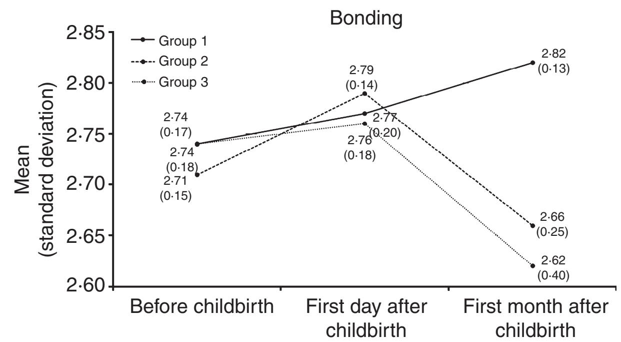

Figure 1 Bonding (mean and standard deviation) interaction between groups and childbirth moments. Group 1: Fathers who were asked to cut the umbilical cord and agreed to do so. Group 2: Fathers who were asked agree to cut the umbilical cord but did not agree to do so. Group 3: Fathers who were not asked to cut the umbilical cord.

Nevertheless, this study points out several key aspects that can contribute to a better understanding of the difficulties concerning the development of the fathers' role, as well as the consequences of the professionals' practices in the development of the relationship between fathers and their babies.

The events and perceptions taking place during the perinatal period have a powerful influence that can be favourable or unfavourable to the relationship between the mother, father, and baby. Consequently, everything occurring during pregnancy, labour, and delivery affects the way the mother and father feel about the baby and these feelings usually endure throughout their entire lifetime. (Gomes-Pedro *et al.* 2002). The fathers' positive involvement in labour and childbirth is beneficial for both parents and is consistent with earlier studies (Lemola *et al.* 2007, Pestvenidze 2007).

Childbirth today is regarded as an experience shared by a couple. However, a specific position of the health professionals to support not only the mothers but also the fathers during labour and childbirth might be helpful for them and for the well-being of the new family (Premberg *et al.* 2008). For midwives, every contribution they may have to make those events during the perinatal period a positive experience, will certainly help to improve the parents' and child's lives (Gomes-Pedro *et al.* 2002).

The increase of the emotional involvement between father and child during the first days after birth can be explained by the opportunity to finally meet the baby, thus receiving positive reinforcement for his involvement. However, some

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What is already known about this topic

- Childbirth is a moment of great emotional vulnerability for mothers, as well as for fathers.
- One supposes that the emotional involvement between fathers and babies progressively increases during pregnancy, but mainly after childbirth, as a result of meeting and interacting with the baby.

What this paper adds

- For fathers who do not cut the umbilical cord, emotional involvement with the neonate increases from before childbirth to the first days after childbirth, and decreases during the first month after childbirth; but, for fathers who do cut the umbilical cord of their babies at childbirth, the emotional involvement increases when evaluated at the first month postpartum.
- Improving fathers' participation in childbirth increases their emotional involvement with the neonate.

Implications for practice and/or policy:

- Involving fathers in childbirth is an important action in order to increase their emotional involvement with the neonate.
- Midwives have an intervening role as a facilitator of the father–baby emotional involvement.
- Midwives are in a privileged position to help and stimulate fathers to perform care-giving, including encouraging them to perform the umbilical cord cutting at the birth of their babies, consequently increasing their emotional involvement.

studies argue that anxiety increases in parents during the first month after the baby's birth, and anxiety levels take between 4–8 weeks after delivery to decrease (Skari *et al.* 2002), which can explain the decrease in the father-to-infant emotional involvement during this period.

Fathers believe that their participation in their children's life is important and consider the interaction between father and baby to be the most important aspect for the establishment of a relationship between them. Nevertheless, it is not always easy to initiate this relationship, as the fathers have to learn new behaviours in order to feel satisfied in their new role (Hudson *et al.* 2001).

Consequently, health professionals have an important task to promote and facilitate the fathers' learning process, increasing their awareness to the importance of providing care for their babies, thus developing and strengthening their self-confidence. In addition, fathers' individual needs should also be considered in order to enhance a positive birth experience, for which the midwifery support and presence is essential (Hildingssona *et al.* 2011).

The experiences during the birth process and early contact have consequences in the involvement of father with baby. As the moment of birth is very often the awakening of fatherhood in men, midwives are essential in supporting not only the mothers, but also the fathers (Hudson *et al.* 2001). Midwives are in a privileged position to carry out that task, encouraging the fathers to interact with their babies (Vehvilainen-Julkunen & Liukkonen 1998), allowing them to take an active part in the birth process, and offering them the opportunity to participate in the decision-making.

The participation of the father in the birth process helps creating a good relationship and improves the confidence of the couple in the health team, therefore promoting a better birth experience (Greenhalgh *et al.* 2000, Olin & Faxelid 2003). Consequently, the fathers who take part in the birth process develop a greater intimacy and complicity with their partners and babies, which express itself in the long term, with positive effects during childhood and adolescence (Coleman *et al.* 2004).

Finally, we can infer that the interaction between the health team and the couple facilitates the relationship and strengthens the affective ties between father-mother-baby. A birth environment in which fathers feel involved in the birth process can lead to an increase in their capability to provide care, improving emotional involvement with his child (Waldenström 1999).

Consequently, the umbilical cord cutting experience may be viewed as overcoming an imaginary barrier, the physical separation of the child from the mother. Perhaps, this can represent a way for the father to approach and to be part of the family, which may allow him to feel included in the process, thus increasing his confidence in his ability to take care of his newborn. We consider this hypothesis as a potential explanation for the achieved results. Nonetheless, we recognize not the need for evidence indicating if this increase of emotional involvement between father and baby has long-term implications beyond the studied period. As it was not the focus of the work, it is regarded as relevant future work.

Conclusion

Research plays a key role in establishing a scientific base to guide care practice. In Obstetrics, this fact is fundamental in

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order to explain many of the midwives' practices. Moreover, it is also significant to understand if the performed practices are responding to the families' (mothers/fathers/babies) needs, to whom we provide care.

The emotional involvement between the father and the baby is still a scarcely developed theme, maybe because men are not very valued in their fatherhood experience. Integrating the father in the early care for the newborn is of great importance to the midwives' role as a facilitator of the father-baby emotional involvement.

With this study, we could also understand the importance of involving the father in the first care performed to the newborn and that midwives are in a privileged situation to facilitate the emotional involvement process between them. Midwives' practice has an essential role in supporting mothers and fathers during their transition to parenthood and to make couples become and feel more competent in their roles as parents.

Regardless of this study's limitations, e.g. the fact that the population in this Maternity Public Hospital in a Portuguese Metropolitan City has a low socio-economical level, it can provide ideas about the way fathers become emotionally involved with their babies, and how important professional practices are to future development of emotional involvement. Interesting developments on this study would be to widen the social contexts examined, as well as to include and compare other midwifery practices.

The midwives practice demands from its professionals a constant adaptation to changes in society's priorities. The care in obstetrics has been changing, and increasingly faster, as well as the demand from women/couples for the type of care they obtain during labour. It is no longer possible to consider the existence of only two persons to whom we provide care to, but rather it is necessary to consider the triad, as the father plays a gradually larger and more important role at the labour and birth moments.

Consequently, it is essential that throughout their career path and performance, health professionals invest in their training. Not only the scientific and technical knowledge is relevant, but also care humanization and the application of novel techniques should be matters of concern. Namely, educational and pedagogic techniques, as well as behaviour adjustment and awareness, should be targeted to their users and other team professionals.

While improving the knowledge concerning these topics, and their implications and influence to the families, we can recognize that health professionals in general, and midwives in particular, are in a position to perform an advanced evidence-based practice, critical to the improvement of care delivery.

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Conflict of interest

No conflict of interest has been declared by the authors.

Author contributions

All authors meet at least one of the following criteria [recommended by the ICMJE (http://www.icmje.org/ethical_1author.html)] and have agreed on the final version: (1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; (2) drafting the article or revising it critically for important intellectual content.

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