

The effect of prenatal education classes on the birth expectations of Spanish women

1. Introduction

The Spanish public health system offers essential, universal and equitable health care to the population in Spain. The portfolio of services available includes antenatal care at primary health centres as well as specialised hospital-based obstetric care during labour and birth. The Spanish National Health Service (SNHS) introduced the Normal Birth Care Strategy (NBCS, Ministry for Health and Social Policy, 2010) to ensure the highest standard of care during birth. The NBCS aims to provide all the necessary information to pregnant women to encourage their active participation in the birth process, as recommended by guidelines.

Two years after publication of the national guidelines in 2010 thus could be seen as enough time for updating health professional practices in compliance with the guidelines. This was an opportune time to review the childbirth care process, and to improve care components such as the autonomy of the pregnant woman and the translation of evidence into practice (Renfrew et al., 2014; Stapleton et al., 2002). The information provided during prenatal education classes (PECs) builds on the recommendations included in the NBCS (Ministry for Health and Social Policy, 2010). The classes are provided by local midwives and cover the following topics: pregnancy, nutrition, childbirth, puerperium, breastfeeding, communication, newborn care, and contraception. The information is delivered via once-weekly, two-hourly classes, for up to eight weeks. Sessions are available to either primiparous or multiparous women and their partners. The birth plan was firstly introduced in the late 1970s (Pennell et al., 2011), and is included in the pregnancy handheld clinical notes that allow expectant mothers to clearly communicate their wishes and expectations about labour and birth (Bick et al., 2009; Kaufman, 2007).

Whilst the evidence about the effect of birth plans upon the childbirth experience may benefit from further research (Lundgren et al., 2003), some authors have suggested that a birth plan could foster an unfavourable relationship between pregnant women and the healthcare professionals supervising their care (Lothian, 2006). However, the birth plan may still offer advantages, such as promoting communication which could in turn compensate for a lack of continuity of care experienced by some women, easing fear of childbirth, and lessening concerns regarding newborn infant care (Karabulut et al., 2016; Lothian, 2006; Pennell et al., 2011; Penny Simkin, 2007).

In Spain, the regional Health Department committed to boost adoption of the NBCS (Ministry of Health and Consumer Affairs, 2007). As part of this process, the use of the birth plan was introduced for all childbearing women to complete. Accordingly, the birth plan preferences were adapted as maternal handheld notes and divided into four sections comprising several items: first stage of labour, second stage of labour, infant care, and overall delivery process - all of them presented as a tick-box list.

It is known that some women face childbirth with preconceived expectations (Aragon et al., 2013; Gagnon and Sandall, 2007; Hauck et al., 2007), but the influence of antenatal education on such expectations remains to be studied (Bailey et al., 2008). Some authors have focused on antenatal interventions and their influence on postpartum outcomes (Fenwick et al., 2015; Karabulut et al., 2016; Serçekuş and Başkale, 2016); however, the way in which these interventions influence women's anticipation of labour and birth has not been investigated to date. These two aspects, combined with implementation of the birth plan in our health departments, led us to carry out this study. We aimed to determine the possible influence exerted by midwives upon the maternal birth plan through an educational health programme, and investigate any differences in selected items in the birth plan, as a result of participation of the women in the prenatal educational classes.

2. Methods

2.1 Design

A prospective, multicentre, observational study was carried out in the south-east of Spain. Variables prior to and upon receipt of information contained in the birth plan were measured among expectant mothers attending PECs. A convenience sample of 308 women was compiled from January to October 2012 in the La Ribera (March-September) and Xàtiva-Ontinyent (January-September) health departments, during the third trimester of pregnancy. (**Table 1**).

These health departments serve a population of 250,000 and 210,000 people respectively, with an annual average of 2,100 (La Ribera) and 1,100 (Xàtiva-Ontinyent) births in the year the study was carried out. We selected public primary health care centres from La Ribera (13 clinics) and Xàtiva-Ontinyent (10 clinics), and estimated that for 3,200 pregnant women per year attending one of two reference hospitals and roughly 18% of pregnant women attending PECs, a minimum sample of 276 cases would be required (95% CI; 5% precision error), assuming a 30% loss to follow-up.

The inclusion criteria were: participation in at least five of the eight planned PECs (Albiñana Soler et al., 2004) directly related to the birth plan (pregnancy, childbirth, puerperium, newborn care and breastfeeding), and the ability to speak, write and read Spanish. Exclusion criteria were refusal to participate in the study, language barriers, and failure to attend the initial or final class.

In order to minimise inter-professional variability in the educational sessions, a professionally-edited DVD video with the eight sessions recommended according to the national guidelines was provided to each participating midwife.

2.2 Ethics

The study was conducted in accordance with the basic principles for all medical research (Declaration of Helsinki), respecting the applicable legal precepts regarding the protection of personal data, as well as the rights and obligations referred to health information, healthcare records and documentation. The study was approved by the Research Ethics Committee of La Ribera University Hospital (Reference no. #134-11). Considerations such as confidentiality, voluntary participation, and full information on the nature of the study were extended to all participants. The attending midwives recruited the women after clinical consultations and obtained their informed consent to participate in the study. In this situation, there may be a fine balance between consent and coercion but, as per the protocol approved by the Research Ethics Committee, the women were reassured that their participation –or lack thereof– would have no influence on their clinical care.

2.3 Data collection tools

Women who consented to participate in the study were given a printed version of the birth plan included in the handheld clinical notes at the booking interview. While attending the initial and final educational sessions the women were asked to complete the birth plan using any of the following options.

First stage of labour section

The items at first stage of labour included in the birth plan were: no administration of enema (Reveiz et al., 2007), being able to mobilise to the toilet whenever wished, no pubic shaving (Basevi and Lavender, 2014), no vascular catheterisation (Dawood et al., 2013), being allowed to use personal items, being able to drink fluids (Singata et al., 2013), being able to move freely (Lawrence et al., 2013), intermittent foetal cardiotocographic monitoring (Alfirevic et al., 2006), no artificial rupture of membranes (AROM) (Smyth et al., 2013), no labour stimulation with oxytocin (Kenyon et al., 2013), being able to use alternative therapy for pain relief (Smith et al., 2006), administration of epidural analgesia (Anim-Somuah et al., 2011), administration

of pharmacological sedation (Ullman et al., 2010), and vaginal examination only when strictly necessary (Downe et al., 2013) (see **Table 1**).

Second stage of labour section

The items analysed in the second stage of labour were: being able to choose the most comfortable position (Lawrence et al., 2013), being able to initiate spontaneous pushing (Lemos et al., 2015), avoidance of episiotomy (Jiang et al., 2017), delayed cord clamping (Rabe et al., 2012), cutting of the umbilical cord by the partner or mother personally, and donation of umbilical cord blood (see **Table1**).

Infant care section

The health care items included in this section were: early skin-to-skin contact (Moore et al., 2012), provision of care for the baby immediately after birth without separation from the mother (Jaafar et al., 2016), the desire to breastfeed (Renfrew et al., 2012), the initiation of breastfeeding as early as possible, no feeding other than breast milk for the newborn infant (Haroon et al., 2013), and keeping the infant with the mother at all times (Jaafar et al., 2016) (see **Table1**).

Throughout delivery section

The overall delivery process items were: a calm environment for labour to progress, respect for privacy during labour with the participation of as few staff members as possible, healthcare professionals introducing themselves to the women, being informed about the progress of labour and participation in the decision-making process (National Institute for Health and Care Excellence, 2014), and being able to choose the person accompanying the patient throughout labour and birth (Hodnett et al., 2013) (see **Table1**).

Sociodemographic variables

The following sociodemographic variables were collected on the initial class: maternal age, parity, age at first pregnancy, educational level, marital status, country of origin and occupation (see **Table 1**).

2.4 Statistical analysis

Upon completion of the last PEC, the second birth plan was collected for comparison with the previous plan. In order to track compliance with the initial and final questionnaires and guarantee confidentiality, we combined the participant initials and the last three numbers of the patient health card.

The Epidat 4.2 package (PAHO/WHO, 2016) was used for sample size calculations. Further analyses were performed using the IBM SPSS version 22 statistical package. Descriptive statistics for sociodemographic variables are presented as means and standard deviations (SD) for continuous variables (age and age at first pregnancy), and as numbers and percentages for categorical variables.

The level of significance between the items selected prior to attendance to the educational sessions versus those selected upon completion was determined using the McNemar test (Dietterich, 1998) for paired data (pre/post) - dichotomous variables. A p-value of < 0.05 was considered statistically significant.

We were able to construct a birth plan score summarising all the preferences selected by each participant. A total score of the selected 31 items was used to compare pre- and post- birth plans. In addition, pre- and post-birth scores were obtained from maternal item selection in each of the four individual sections (1st stage of labour, 2nd stage of labour, items for infant care, and through delivery), with a maximum score of 14, 6, 6 and 5, respectively. Differences

in compared pre/post mean values were analysed with the repeated measures general linear model (GLM) (Chen et al., 2014). The method used was the type III sums-of-squares. The purpose of the analysis was to explore statistical differences within-subjects according to sociodemographic and obstetric variables such as parity, country of origin, marital status, education, maternal occupational state, and health department. If Mauchly's test indicated violation of the sphericity assumption, the degrees of freedom (df) were corrected using the Greenhouse–Geisser method.

3. Results

All midwives from the health departments were contacted and informed prior to the start of the study. Ten midwives finally showed an interest in participating in the study: seven from La Ribera and three from the Xàtiva-Ontinyent health department. The final study sample comprised 212 expectant mothers of the 308 women initially included in the study (participation 212/308; 68.8%). Reasons for exclusion included preterm birth, threatened preterm labour (4), failure to attend the last session (51), or participation in only four or fewer sessions (34).

In terms of sociodemographic variables, the women were mostly Spanish citizens, married, primiparous, with a middle and higher formal educational level, and with an average age of 31.3 ± 4.0 years (95% CI: 30.8-31.9) (see **Table 1**).

Regarding the items selected in the birth plan, **Table 2** presents and compares the items selected in the initial and final sessions. The items from the birth plan where the study participants experienced the most significant variation (defined as the difference between pre/post comparison groups), as analysed by the McNemar test, were the ability to push spontaneously (17.5%; $p < 0.001$), episiotomy avoidance (15.1%; $p < 0.001$), and the early start of breastfeeding (14.2%; $p < 0.001$).

The results of the McNemar test demonstrated statistically significant differences between the pre/post scores for the following items: ability to go to the bathroom when desired ($p < 0.001$), being allowed to use personal items ($p = 0.048$), freedom of movement ($p = 0.006$), ability to take fluids during labour ($p = 0.013$), the avoidance of AROM ($p = 0.034$), being allowed a comfortable position for labour ($p = 0.011$), ability to push spontaneously ($p < 0.001$), avoidance of episiotomy ($p < 0.001$), delay clamping of the umbilical cord ($p = 0.005$), donation of umbilical cord blood (DUCB) ($p < 0.001$), enjoyment of skin-to-skin contact ($p = 0.013$), breastfeeding ($p = 0.021$) as early as possible ($p < 0.001$), and the avoidance of other fluids or foods for the newborn (apart from breast milk) ($p = 0.023$). There were no statistically significant differences for the remaining items, which are presented in **Table 2**. The items showing significant pre/post increments are presented in **Figure 1**.

The 31 selected items yielded an initial total mean score of 17.04 ± 5.66 and a final mean score of 18.48 ± 5.71 . The resulting mean difference was -1.44 ± 3.72 ($p < 0.001$), where a negative result indicates a higher mean score following PECs.

Statistically significant differences in mean values were detected in the pre/post PEC comparisons in the first (-0.49 ± 2.33 ; $p = 0.003$), second (-0.59 ± 1.24 ; $p < 0.001$) and third sections (-0.41 ± 1.16 ; $p < 0.001$), but not in the fourth section (0.042 ± 1.15 ; $p = 0.594$).

Following data adjustment, a bivariate analysis was performed contrasting the different birth plan items chosen before and upon completion of the PECs in relation to the sociodemographic and obstetric variables. Statistical significance was found only in the second stage of labour section between women of different health departments of the study ($p = 0.02$). Regarding the sociodemographic variables, on examining the items in the infant care section, country of origin was found to be statistically significant ($p = 0.02$) (**Table 3**).

4. Discussion

Our study suggests that the completion of PECs significantly influences maternal preferences as expressed in the birth plan. It is therefore presumed that healthcare professionals can influence the birth expectations of pregnant women. Furthermore, a higher educational level appears to be linked to better use of healthcare resources. Women with a higher educational level were more likely to enrol in educational programmes, as evidenced by previous studies (Gagnon and Sandall, 2007; Jenkins et al., 2014; Pennell et al., 2011; Thompson and Miller, 2014) – this suggesting that women from lower social strata would be less likely to engage in our educational classes.

As shown in **Table 2**, being able to push spontaneously (17.5%; $p < 0.001$), episiotomy avoidance (15.1%; $p < 0.001$), and early breastfeeding (14.2%; $p < 0.001$) were the three items with the greatest differences. Some obstetric procedures are more likely to be considered more important than others, and so it may be possible for such procedures to be more frequently discussed with women (Kotaska, 2007; Thompson and Miller, 2014), thereby inducing their selection by patients (Jenkinson et al., 2015). Some variables such as the routine administration of enema (Reveiz et al., 2007), shaving of pubic hair (Basevi and Lavender, 2014), the use of oxytocin infusion (Kenyon et al., 2013) and amniotomy (Smyth et al., 2013) are no longer supported by current evidence as routine labour care procedures. These variables did not receive much attention from women when the birth plan was discussed either during initial PEC or at the end of the intervention. Such indifference may suggest that those options should either be discussed with caution or disregarded when healthcare professionals go through these items in the birth plan with women. The absence of statistical significance in our study only implies that the PECs did not modify the preferences reported by women between the initial and final educational sessions, and does not therefore suggest disinterest in the preferences subjected to analysis.

In addition, we identified items showing high or virtually complete agreement on the preferences. Our findings therefore need to be viewed with caution, as the birth plan used was not originally conceived as a questionnaire or evaluation tool. In addition, we found that some items that include medical terms need to be rewritten for improved comprehensibility (Rattray and Jones, 2007).

According to the statistically significant pre-post PECs differences observed, the most important components identified in the birth plan were being able to drink during labour (Singata et al., 2013), freedom to move (Lawrence et al., 2013), pushing spontaneously during the second stage of labour (Lemos et al., 2015), avoiding routine episiotomy (Jiang et al., 2017), skin-to-skin contact (Moore et al., 2012) and breastfeeding as early as possible (Haroon et al., 2013). These elements are currently embedded within routine, evidence-based practice. Other selected items, such as the use of personal objects or giving partners the chance to cut the umbilical cord were considered to be related to improvement of personal experience when giving birth.

Increasing the involvement of midwives in the birth plan process may facilitate earlier initiation and on-going discussion of items available to women, since midwives supervise antenatal care at our study sites. Initiating this discussion at an early stage, and particularly when a woman expresses her preferences, would facilitate meeting her needs during pregnancy and prior to labour (**Figure 1**). All the variables that reached statistical significance showed a higher response rate at the post-intervention test, which may support the conclusion by Kotaska that professional participation has a strong impact on patient decision-making and thus favours changes in expressed preferences (Kotaska, 2007). However, it is necessary to ensure that women with preferences for birth care that diverge from standard healthcare views are not made to feel inadequate or are simply marginalised by the health care workers or system (Jenkinson et al., 2015). Although birth plans may be consistent with standard maternity care,

women may nonetheless benefit from more systematic efforts to elicit their preferences. In our study, standardised care was evaluated through a proposed birth plan. Women with alternative or other preferences could not be taken into consideration, as they may prefer to conceal their wishes (Jenkinson et al., 2015). That may be seen as a potential limitation to our study, as some care could not be evaluated properly.

There were some other limitations to our study. Midwives who conducted the prenatal education sessions were also those who gathered the information from the study population. We acknowledge that, in optimal circumstances, the caregivers of participants may not be the ideal recruiters of individuals into a study. The local midwives may have different clinical experience, skills and abilities regarding information giving and teaching, which may have affected the quality of the education provided. Equally, there may have been differences in professional attitudes towards childbirth. In order to reduce such bias, the same educational material was used for all the sessions (Albiñana-Soler et al., 2004).

A further limitation may be related to the parity of the women attending the education sessions. Our study involved fewer women in their second pregnancy than primiparous participants. It is plausible that prior experiences of childbirth and the maternity process could have influenced the choice of birth plan preference - therefore affecting our results. In the present study, the reasons most often cited for missing the education sessions included care commitments to another child, and already being informed or with prior experience of motherhood – these observations being consistent with those of previous studies (Euro-Peristat, 2013).

Another limitation needs to be discussed, since there was a globally limited number of women attending the full PEC program. Sixty-nine percent of the women ultimately completed the program or attended at least four of the total sessions. Educational programs need to be

reconsidered and in-depth analysis needs to be done in order to suit maternal needs. Efforts should be made to engage women at risk of possible social exclusion as well as multiparous women, as their previous birth experience may be relevant to first-time mothers.

A detailed analysis of the birth plan revealed differences in the pre/post selection of items, as seen in **Table 2**. As subsequently identified in the repeated measures GLM (see **Table 3**), these differences could be explained by intervention of the midwives during the PEC, as they assuaged concerns by discussing the evidence available for each procedure. It is possible that such provision of information effectively resulted in the change observed in the selected items in the final birth plan. Another possible explanation for the switch in the final birth plan could be the interest in labour and birth from women on the different preferences, which could have prompted them to undertake their own research.

As previously identified by other authors (Fabian et al., 2006), we also found a lack of knowledge of the Spanish language to limit the participation of foreign-born women in the education sessions. This situation could be seen as a limitation, as only Spanish-speaking woman were enrolled in the study. The findings therefore should be interpreted with caution, and exercising care if extrapolating our findings to a wider or different population.

Future research lines could focus on preferences unfulfilled during labour, and on whether they could improve the childbirth experience (Lundgren et al., 2003). Care measures to be provided in our services, such as birth plans, should be thoughtfully considered prior to their routine introduction in health services, and all this could lead to improvements in maternity care (Moore and Hopper, 1995).

5. Conclusion

Although birth plans are yet to demonstrate clear benefits in terms of birth outcomes, studies like ours could help discern the effectiveness of prenatal educational classes and the influence

of midwives. This could add a further context for the evaluation of childbirth educational interventions and their impact.

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