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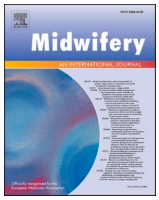

Impact of shared decision-making on women's childbirth preferences: A cluster randomised controlled trial

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ABSTRACT

Background: Midwives provide counselling for birth plans (BPs) to women during prenatal care; however, the impact of individualised BP counselling interventions based on shared decision-making (SDM) regarding women's preferences is unknown.
Methods: This randomised cluster trial included four primary healthcare units. Midwives provided BP counselling based on SDM to women in the intervention group (IG) during prenatal care along with a handout about evidence-based recommendations. Women in the control group (CG) received standard BP counselling from midwives. The main outcome was preference changes concerning BPs.
Results: A total of 461 (95.5 %) pregnant women received BP counselling (IG, $n = 247$; CG, $n = 214$). Women in the IG changed their BP preferences for 13 items compared with those in the CG. These items were: using an unique space during birth (81.1 % vs 51.6 %; $p < 0.001$), option for light graduation (63 % vs 44.7 %; $p < 0.001$), listening to music (57.3 % vs 43.6 %; p = 0.006), drinking fluids during labour (84.6 % vs 93.6 %; p = 0.005), continuous monitoring (59 % vs 37.8 %; $p < 0.001$); desire for natural childbirth (36.6 % vs 25 %; p = 0.014), epidural analgesia (55.1 % vs 43.6 %; p = 0.023); breathing techniques (65.2 % vs 50.5 %; p = 0.003), massage (74.9 % vs 55.3 %; $p < 0.001$); birthing ball use (81.9 % vs 56.9 %; $p < 0.001$), spontaneous pushing (49.3 % vs 28.7 %; $p < 0.001$), choosing birth position (69.6 % vs 41.5 %) and delayed umbilical cord clamping (67.8 % vs 44.1 %; p = 0.001).
Conclusion: SDM counselling, together with a handout about evidence-based recommendations on childbirth and newborn care, produced more changes in women's preferences expressed in the BP than standard counselling.

Statement of Significance

Problem or Issue

There are few studies evaluating the effect of educational interventions in birth plan counselling on women's childbirth preferences.

Whether an individualized birth plan counselling strategy, based on shared decision-making (SDM), influences women's childbirth and newborn preferences its unknown

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What is Already Known

Prenatal group educational intervention influences women's preferences about childbirth.

What this Paper Adds

Individualized counselling based on shared decision making (SDM) about childbirth and newborn care impacts women's preferences expressed in the birth plan.

Introduction

Women define their preferences about childbirth-related issues before and during pregnancy (Edmonds et al., 2015; Stoll et al., 2016). These preferences are modulated by a wide range of elements (Coates et al., 2020) including the information they receive from healthcare professionals (Camacho-Morell and Esparcia., 2020; Hay et al., 2022; Grimes et al., 2014).

Women believe healthcare professionals provide useful and higher quality information and midwives play an important role in this regard (Hay et al., 2022; Grimes et al., 2014).

The birth plan (BP) is a document in which women indicate their preferences regarding childbirth and the newborn to healthcare professionals. The BP was conceived to help pregnant women make decisions about childbirth and improve communication between pregnant women and primary and hospital care professionals (Simkin, 2007; Ministry of Health and Social Affairs and Equality, 2012).

Women and health professionals consider a BP as an educational tool that increases knowledge about the birth process for pregnant women (Aragón et al., 2013). Women also believe that it allows them to be aware of the available options, maintain a sense of control during labour and birth (Divall et al.,2017) and, an essential way to obtain advice from professionals, especially midwives, during their preparations (Aragón et al., 2013).

The BP framework document was introduced in Spain in 2012 (Ministry of Health and Social Affairs and Equality, 2012) and since then, its use by women has increased. In a study conducted by López-Gimeno et al. (2021), half of the women presented BPs to hospital midwives on the day of delivery. In the region of Catalonia (Spain), each maternity hospital has prepared a BP template together with primary healthcare centres that provide sexual and reproductive healthcare services (ASSIR). Pregnant women receive prenatal care from midwives at their ASSIR and birth occurs at the hospital (Department of Health of Catalonia, 2007).

Midwives offer individual advice about BPs during prenatal care visits or childbirth educational classes (Soriano-Vidal et al., 2018; Martínez-Galiano et al., 2014). The Spanish Quality Agency of the National Health System (2012) and the Department of Health of Catalonia. (2018) emphasised that women should receive individualised BP counselling from midwives during their third trimester of pregnancy. In an observational study conducted in the Catalonia region, only 64.5 % of women received individualised educational information for a BP in that trimester (López-Gimeno et al., 2018).

Regarding how a BP counselling should be approached for pregnant women, Asfhar et al. (2016) has proposed that midwives integrate shared decision-making (SDM) during counselling, following Epstein's recommendations (Epstein et al., 2014). The key elements proposed by Epstein et al. (2004) in SDM are: 1. understanding the patient's (and family members') experience and expectations; 2. building partnership; 3. providing evidence, including a balanced discussion of uncertainties; 4. presenting recommendations; and 5. checking for understanding and agreement.

Most studies have evaluated the impact of group or individual educational interventions that focused on obstetric outcomes (Martínez-Galiano et al., 2014), pain relief (Brixval et al., 2016), breastfeeding (Huang et al., 2019), and fear of childbirth (Toohill et al., 2014).

BP studies have evaluated the relationship between BPs and obstetric outcomes (Hidalgo-Lopezosa et al., 2021; Afshar et al., 2018) such as pain relief methods (Westergren et al,. 2021) compliance with preferences (Hidalgo-Lopezosa et al., 2017) childbirth experience, satisfaction (Jolles et al., 2019; Mirghafourvand et al., 2019) and depression (Ahmadpour et al., 2022). However, few studies have assessed the effects of BP counselling interventions on women's childbirth preferences. In Spain, a quasi-experimental study evaluated the effect of counselling intervention during childbirth educational classes on birth preferences, which reported women changed their previously stated preferences after receiving this intervention (Soriano-Vidal et al., 2018).

To our knowledge, the impact of a specific individualised counselling intervention on women's childbirth and newborn preferences is unknown. Our objective was to determine whether individualised BP counselling interventions based on Epstein's SDM offered by midwives would change women's childbirth preferences. This is the first randomised study that addresses and evaluates a birth plan counselling strategy, from a shared decision-making perspective, and its impact on women's preferences.

This study was part of a larger study that also evaluated the effectiveness of a SDM counselling intervention according to Epstein (Epstein et al.,2004) regarding presentation of the BP to the hospital, obstetric outcomes, and childbirth experience satisfaction (López-Gimeno et al., 2022).

Methods

This multicentre, cluster, randomised, parallel controlled trial included four Primary Care Units of the National Healthcare (NHC) of Catalonia (Spain). The clusters were designed to mask the intervention to the professionals for the control group and avoid contamination of information between the midwives and women participating in the study. ASSIR health centres are located in different cities and each has a different referral hospital, which minimised contact between women and midwives. The study period was from the 1st of November 2017 to the 8th of July 2019.

Participants

Pregnant women with low-to-medium obstetric risk who received prenatal care were recruited from four ASSIR health centres. The required sample size was 266.

Detailed information regarding the selection criteria, randomisation of the four ASSIR study health centres, and sample calculation is specified and detailed in the authors' published paper (López-Gimeno et al., 2022).

Intervention

Intervention characteristics for the intervention group

The intervention comprised three phases. In Phase 0, the research team (RT) reviewed scientific evidence related to childbirth and newborn care. The Cochrane Database of Systematic Reviews, the Clinical Practice Guide on Care for Normal Childbirth by the Spanish Ministry of Health (Ministry of Health and Social Policy, 2010) and the Intrapartum Care for Healthy Women and Her Babies by the National Institute of Health and Care Excellence (NICE) (Health and Excellence, 2014) were checked. A dossier was elaborated for the midwives of the intervention group and a handout about evidence-based recommendations was produced for the pregnant women in the intervention group, after a nominal consensus among experts (López-Gimeno et al., 2022). The appendix shows a general summary of the handout about evidence-based recommendations on birth plan.

In phase 1, the midwives in the health centres of the intervention group were trained in a 4-hour in-person training session for SDM,

according to Epstein's recommendations (Epstein et al., 2004).

In Phase 2, pregnant women in the intervention group during the prenatal visit between 29 and 33 weeks of gestation received midwives' counselling regarding developing a BP based on SDM, along with a handout about recommendations related to childbirth. Fig. 1 presents the intervention developments and BP collections in the ASSIR.

More detailed information on the intervention has been provided in a previous study published by the authors (López-Gimeno et al., 2022).

Intervention characteristics for the control group

The intervention for the control group (CG) consisted of standard counselling by midwives regarding BP elaboration during prenatal care. These midwives did not receive any supplementary training for BPs. Furthermore, they were not informed about the training activity the midwives in the intervention group received or the existence of the handout.

Outcomes measures

The main outcome measure of this study was changes in preferences expressed in the BP after the participants receiving intervention counselling. The number of BP preferences of the four ASSIR health centres range from 43 to 55, and 24 common preferences were compared. These preferences are distributed across different thematic sections, which comprised the following:

Companionship and comfort: companionship during labour and childbirth, using a unique room during the birth process, option for light graduation option in delivery room, listening to music, birthing ball use, and freedom of movement.

Procedures: fluid intake during labour, intermittent or continuous foetal heart monitoring.

Pain relief methods: desire for natural childbirth (vaginal delivery with minimal interventions and without pharmacological methods for pain relief), epidural analgesia, relaxation techniques, breathing techniques, massage, and other non-pharmacological methods.

Second stage of labour: pushing method: spontaneous or directed, use of a mirror, and birthing position choice.

Newborn: early skin-to-skin contact and delayed umbilical cord clamping.

Breastfeeding: breastfeeding initiation in the delivery room, intention for artificial feeding, and asking the mother before giving food to the infant.

Data collection

During the recruitment of study participants, demographic and obstetric data were collected by midwives using a data collection form. This form included age, country of origin, level of education, employment, partner, previous childbirth, and whether BP was present in a previous childbirth.

The women's childbirth preferences were obtained from their BPs. These were checklists on which the women chose their preferences.

The first BP was given at 24-28 weeks of gestation. Between 29 and 33 weeks of gestation, pregnant women received advice on BP from midwives, and a second BP was administered after counselling, a copy of which was collected at the next visit (34-40 weeks gestation). No adverse effects were observed. (Fig. 1).

Analysis

The data were analysed using SPSS Version 24. The data were anonymised, and the information was only accessible to the research team. A descriptive analysis of all variables was performed. To compare intragroup preference changes before and after the intervention, McNemar's test for paired data was used. Fisher's exact test was used to perform bivariate analyses to compare the changes in BP preferences between the study groups. Statistical significance was set at $p < 0.05$. The analyses were performed per protocol.

To determine whether the independent variables of the intervention group, age, country of origin, educational level, employment, partner, and previous births were related to the number of changes in BP

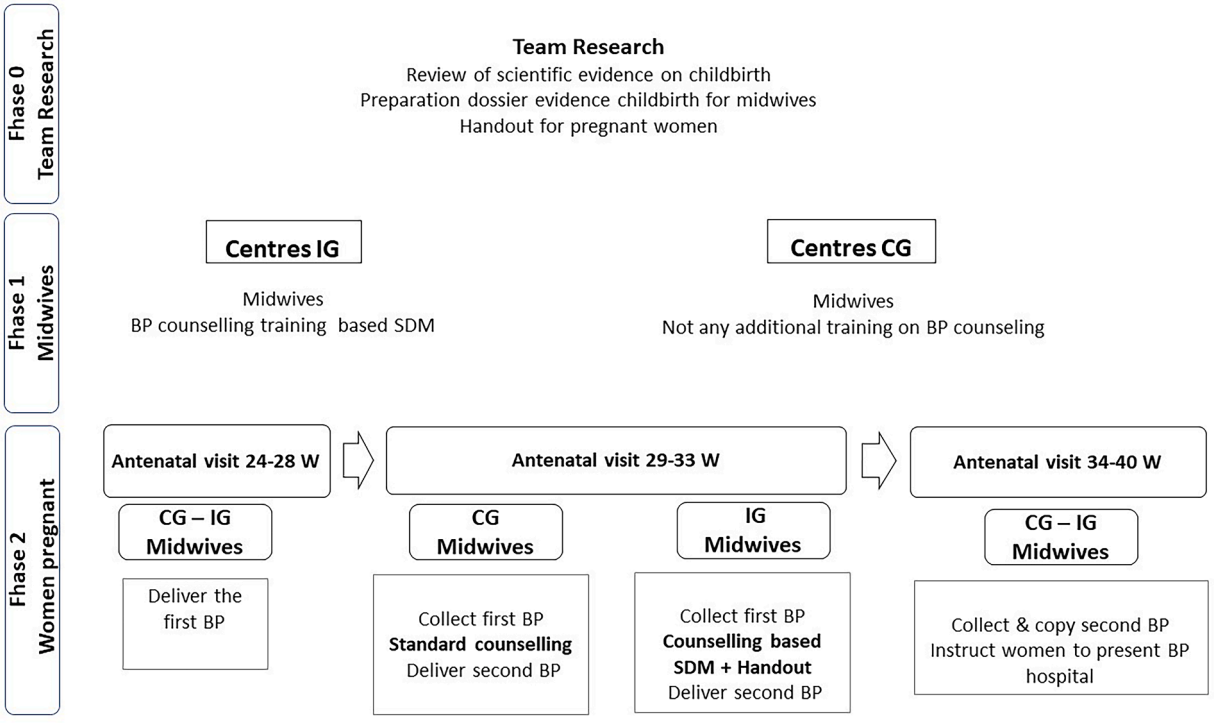

Fig. 1. Development of interventions and birth plan collections in the ASSIR SDM, shared decision-making; BP, birth plan; IG, intervention group; CG, control group; W, weeks.

preferences, a multivariate negative binomial regression model was used because the variable changes in the BPs did not have a normal distribution.

Ethical procedures

This study was approved by the Ethics and Clinical Research Committee of the University Institute for Research in Primary Care (IDIAP) (P16/157) in December 2016. The study was registered at ClinicalTrials.gov under the code NCT03744416.

All participants received oral and written information about the study characteristics. All those who wished to participate provided written informed consent. Anonymity and confidentiality of the participants were maintained, and the data were processed in accordance with the current legislation in Spain.

Results

Of the 482 women who participated in the study, 461 (95.5 %) received BP counselling, 247 received SDM-based counselling, and 214 received standard counselling. A total of 415 (86.1 %) women completed the BPs (before and after intervention counselling): 227 in the intervention group (IG) and 188 in the CG. A flowchart of participant inclusion, exclusion, and losses to follow-up is presented in Fig. 2.

Participant baseline characteristics including employment, occupational situation, having a partner, previous birth history, and elaboration of a BP in a previous pregnancy, were similar between the two groups. However, the mean age of women in the IG was higher than that in the CG (32.5; [standard deviation ED = 5.7] vs 31.2 [ED = 5.2]; p = 0.012. The IG had a higher percentage of foreign women (33.5 % vs 22.9 % (p = 0.022) and women with a university educational background (48

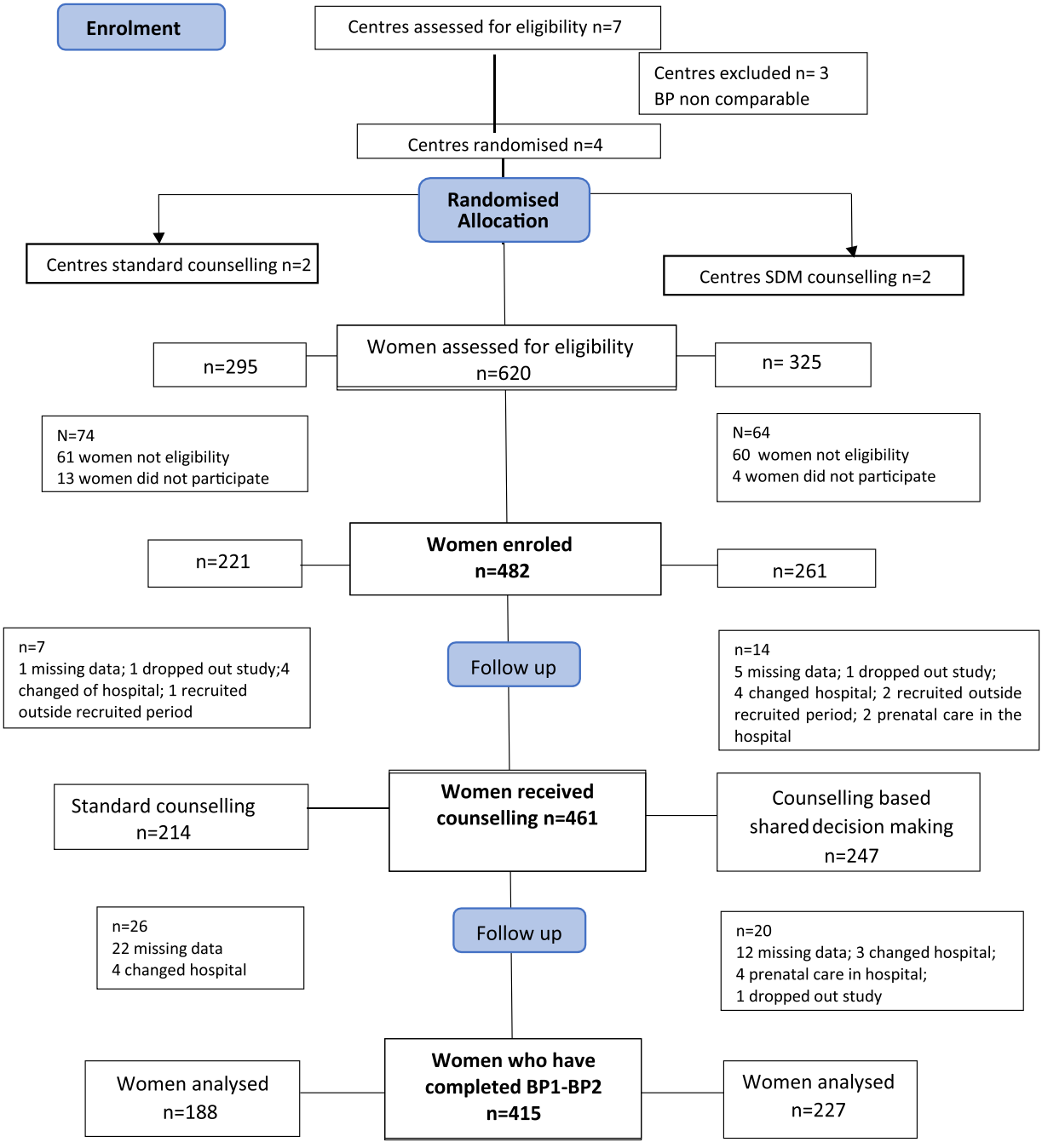

Fig. 2. Flowchart of participants inclusion, exclusion, and losses to follow-up

% vs 28.2 %) than the CG (p = 0.000) (Table 1).

Participant BP preferences before and after counselling within group

Women's preferences before and after counselling in the IG and CG (within group) are presented in Table 2. In the IG, women changed their preferences after receiving SDM-based counselling for 17 (70.8 %) of the 24 preferences ($p < 0.05$). The changes were for the preferences (after vs before) being in the same space during all birth process (81.1 % vs 70 %), listening to music (57.3 % vs 50.2 %), birthing ball use (81.9 % vs 71.8 %), drinking fluids (84.6 % vs 70 %), freedom of movement (78 % vs 65.6 %), intermittent foetal monitoring (48 % vs 27.3 %), desire for natural birth (36.6 % vs 29.1 %), relaxation techniques (60.8 % vs 53.3 %), breathing techniques (65, 2 % vs 54.6 %), massage (74.9 % vs 49.8 %), other non-pharmacological methods (9.3 % vs 4.8 %), spontaneous pushing (49.3 % vs 23.3 %), birth position choice (69.6 % vs 50.2 %), early skin-to-skin contact (96 % vs 89 %), delayed umbilical cord clamping (67.4 % vs 37 %), initiation of breastfeeding in the delivery room (74 % vs 52 %), and asking the mother before giving other foods to the baby (67 % vs 56.8 %).

In the CG, the preferences changed after the counselling were for 10 (41.7 %) of the 24 preferences ($p < 0.05$). The changes were for the preferences (after vs before) the option for light graduation in the delivery room (44.7 % vs 34 %), being able to drink fluids (93.6 % vs 88.8 %), intermittent monitoring (44.7 % vs 29.3 %), desire for natural childbirth (25 % vs 19.7 %), massage (55.3 % vs 41 %), directed pushing (45.7 % vs 34.6 %), spontaneous pushing (45.7 % vs 34.6 %), delayed umbilical cord clamping (44.1 % vs 31.9 %), initiation of breastfeeding in the delivery room (70.7 % vs 54.3 %), and asking the mother before giving other foods to the baby (61.7 % vs 54.3 %).

Table 1
Participant baseline characteristics.

	Total	Intervention Group	Control Group	p value
	N = 415	*n* = 227 (54.7)	*n* = 188 (45.3)	
Age Media (SD)		32.5 (5.7)	31.2 (5.2)	0.012[a]
Media (SD)	Total (n %)	n (%)	n (%)	
Country of origin				
Spain	296 (71.3)	151 (66.5)	145 (77.1)	
Others	119 (28.7)	76 (33.5)	43 (22.9)	0.022[b]
Education				
Primary school or less	77 (18.6)	31 (13.7)	46 (24.5)	0.000[b]
High school	176 (42.4)	87 (38.3)	89 (47.3)	
University	162 (39)	109 (48)	53 (28.2)	
Employment				
No	101 (24.3)	56 (24.7)	45 (23.9)	0.909[b]
Yes	314 (75.7)	171 (75.3)	143 (76.1)	
Partner				
No	21 (5.1)	11 (4.8)	10 (5.3)	0.826[b]
Yes	394 (94.9)	216 (95.2)	178 (94.7)	
Previous birth				
No	232 (55.9)	133 (58.6)	99 (52.7)	0.235[b]
Si	183 (44.1)	94(41.4)	89 (47.3)	
Previous birth plan elaboration	N = 183	*n* = 94 (51.4)	*n* = 89 (48.6)	0.552[b]
No	102 (55.7)	50 (53.2)	52 (58.4)	
Yes	81 (44.3)	44 (46.8)	37 (41.6)	

n = number; SD = standard deviation; % = percentage.
[a] = Student test.
[b] = Fisher test.

Participant preferences after receiving counselling according to the IG

The IG changed BP preferences for 13 items compared to the CG.

When we compared the selected preferences, by study groups, after receiving SDM-based counselling or standard counselling (Table 3), it was observed women in the intervention group choosing more frequently (p value <0.05): using a unique space during birth (81.1 % vs. 51.6 %), option for light graduation (63 % vs. 44.7 %), listening to music (57.3 % vs. 43, 6 %), use of the ball (81.9 % vs. 56.9 %), continuous monitoring (59 % vs. 37.8 %), desire for natural birth (36.6 % vs. 25 %), epidural analgesia (55.1 % vs. 43.6 %), breathing techniques (65.2 % vs. 50.5 %), massage (74.9 % vs 55.3 %), directed pushing (55.9 % vs 45.7 %), spontaneous pushing (49.3 % vs 28.7 %), choice of birth position (69.6 % vs 41.5 %) and delayed umbilical cord clamping (67.8 % vs 44.1 %). In contrast, the preference for drinking fluids during labour was lower among women who received SDM-based counselling (84.6 % vs. 93.6 %) than among those who received usual counselling.

Comparison of the number of BP preference changes by groups

In total, 1864 (18.7 %) changes occurred in the two groups out of the 9960 possible changes. In the IG 1,206 (22.1 %) changes occurred, and 658 (14.6 %) occurred in the CG, with significant a difference between the groups ($p < 0.001$). The number of BP preference changes for each category is presented in Table 4.

The mean number of preference changes per participant was 4.49 (SD = 3.23), and the median was 4 (interquartile range 2–7) changes.

When a negative binomial regression model was used to determine the relationship between the IG and participants' sociodemographic and clinical characteristics and the number of expressed changes in BP preferences, pregnant women who received SDM-based counselling had a relative risk (RR) of 1.59 compared to the CG ($p < 0.001$). Employed women had a RR of 1.19 (p = 0.40) when compared to the CG. Women with a university education and previous births had a lower RRs (0.72, p = 0.002 and 0.84, p = 0.020, respectively) compared to the control group (Table 5).

Discussion

Pregnancy is an important period during which women can modulate their birth preferences. This study highlights the influence of midwife counselling on women's childbirth preferences because there were several preference changes in both groups. These results are in line with other studies showing that women consider health professionals, especially midwives, to be those who provide useful and high-quality information and that women take this into consideration when determining their preferences (Hay et al., 2022).

In our study, SDM counselling intervention was effective in changing the preferences of women in the IG because they did so more frequently than those in the CG. These results are in agreement with studies showing that specific educational counselling activities, groups, or individuals can influence women's preferences (Soriano et al.,2018), knowledge (Zarifsanaiey et al., 2020) and attitudes towards childbirth (Andaroon et al., 2020), although they are in disagreement with the study by Hyakutake et al. (2016), in which there was no change in childbirth preferences after counselling.

The most frequently expressed preferences before and after counselling in both groups were companionship and early skin-to-skin contact. These results are similar to those of a study conducted in Spain by

Table 2
Participant birth plan preferences before and after counselling within group.

Preferences	Intervention group $n = 227$			Control group $n = 188$		
	PN1: Pre counselling	PN2: Post counselling		PN1: Pre counselling	PN2: Post counselling	
Companionship/Comfort	n (%)	n (%)	p value [a]	n (%)	n (%)	p value [a]
Companionship during labour and childbirth	220 (96.9)	225 (99.1)	0.063	186 (98.9)	187 (99.5)	1
Using a unique room during childbirth the birth process	159 (70)	184 (81.1)	<0.001	95 (50.5)	97 (51.6)	0.832
Option of light graduation in delivery room	133 (58.6)	143 (63)	0.174	64 (34)	84 (44.7)	0.001
Listening to music	114 (50.2)	130 (57.3)	0.029	74 (39.4)	82 (43.6)	0.134
Birthing ball use	163 (71.8)	186 (81.9)	<0.001	96 (51.1)	107 (56.9)	0.080
Freedom of movement	149 (65.6)	177 (78)	<0.001	128 (68.1)	137 (72.9)	0.093
Procedures						
Fluid intake during labour	159 (70)	192 (84.6)	<0.001	167 (88.8)	176 (93.6)	0.049
Continuous monitoring	142 (62.6)	134 (59)	.312	83 (44.1)	71 (37.8)	0.081
Intermittent monitoring	62 (27.3)	109 (48)	<0.001	55 (29.3)	84 (44.7)	<0.001
Pain relief						
Epidural analgesia	131 (57.7)	125 (55.1)	0.451	91 (48.4)	82 (43.6)	0.122
Desire for natural childbirth	66 (29.1)	83 (36.6)	0.005	37 (19.7)	47 (25)	0.013
Relaxation techniques	121 (53.3)	138 (60.8)	0.046	92 (48.9)	99 (52.7)	0.296
Breathing techniques	124 (54.6)	148 (65.2)	0.003	85 (45.2)	95 (50.5)	0.076
Massage	113 (49.8)	170 (74.9)	<0.001	77 (41)	104 (55.3)	<0.001
Other non-pharmacological methods	11 (4.8)	21 (9.3)	0.013	8 (4.3)	8 (4.3)	1
Second stage of labour						
Directed pushing	137 (60.4)	127 (55.9)	0.314	65 (34.6)	86 (45.7)	0.002
Spontaneous pushing	53 (23.3)	112 (49.3)	<0.001	32 (17)	54 (28.7)	<0.001
Use of a mirror	67 (29.5)	77 (33.9)	0.099	48 (25.5)	58 (30.9)	0.064
Birth position choice	114 (50.2)	158 (69.6)	<0.001	69 (36.7)	78 (41.5)	0.108
Newborn						
Early skin-to-skin contact	202 (89)	218 (96)	0.001	170 (90.4)	176 (93.6)	0.210
Delayed umbilical cord clamping	84 (37)	154 (67.4)	<0.001	60 (31.9)	83 (44.1)	0.001
Breastfeeding						
Initiation of breastfeeding in the delivery room	118 (52)	168 (74)	<0.001	102 (54.3)	133 (70.7)	<0.001
Intention for formula feeding	14 (6.2)	13 (5.7)	1	20 (10.6)	18 (9.6)	0.727
Asking the mother before giving other foods to the baby	129 (56.8)	152 (67)	0.005	102 (54.3)	116 (61.7)	0.016

n = number; % = percentage.
[a] = McNemar test; BF = breastfeeding.

Soriano et al. (2018), and are in line with those of a study conducted in England, that indicated one of the most important attributes for women in the choice of place of childbirth is option of being accompanied by their partner during childbirth (Fletcher et al., 2019).

Childbirth settings can influence women's outcomes and experiences (Sands et al.,2023). In our study, after receiving counselling, the women in the IG prioritised aspects related to space, light, and listening to music, which can improve comfort. In addition, in this group, there was a significant increase in the preference for freedom of movement, although this was not significant compared with the CG. These results show that the women in our area preferred more welcoming spaces in delivery rooms (Newburn and Singh, 2003) better than in hospital wards, in which women assume the role of patients.

Approximately half of the women in both groups preferred epidural analgesia for pain relief, and this preference was higher in the IG. After receiving standard or SDM-based advice, this preference decreased although remained significantly higher in the IG. This result is similar to studies that have evaluated counselling interventions (Soriano et al., 2018; Munro et al., 2018) and determined they did not influence a change in this preference, and differs from the study by Sitras et al. (2017) who showed a decrease in the intention to receive an epidural.

In our environment, women's desire for a natural childbirth is low. Receiving SDM-based counselling increased the preference for natural childbirth and the use of nonpharmacological methods. Although there was a favourable impact on the preference for natural childbirth, it did not counterbalance their preference for epidural analgesia. The widespread use of epidural analgesia (Espada-Trespalacios et al., 2021; Hernández-Martínez et al., 2019) and medicalised delivery care in Catalonia and Spain (Benet et al., 2020; Mena-Tudela et al., 2020), together with fear of childbirth (Dencker, et al., 2019) and women's desire for alternatives to pain (Larkin et al., 2017) could explain these results. Receiving this counselling may have increased their knowledge of available pain relief options, and women preferred to delay epidural use and to combine non-pharmacological and pharmacological methods (López- Gimeno et al., 2022; Gallo et al., 2018). In addition, they had a greater preference for continuous foetal monitoring, which could be related to their preference for epidural analgesia. This suggests that these women were aware of the implications of epidural analgesia in the foetus and the side effects that may result from it.

In addition, among the IG, there was an increase in preferences supported by recommendations and scientific evidence, such as spontaneous pushing, birth position choice, and delayed umbilical cord clamping (World Health Organization, 2018; Ceriani et al., 2017). These results are consistent with those of a study showing that individualised standardised activities together with written material can lead to changes in intentions and attitudes towards routine practice (Otsuka-Ono et al., 2019).

The rate of changes in preferences expressed in the BPs was higher in the IG. These results differ from Horey's study (2013) that reports interventions based on SDM do not influence changes in preferences. Instead, it is similar to other studies demonstrating that specific individual and/or group counselling interventions have an impact on women's preferences. (Nosratabadi et al., 2018; Soriano et al., 2018).

However, the rate of change in preferences was lower in women with a university education, which could be that these women may have a higher level of health literacy and more health skills (Tavananezhad et al., 2022). Similarly, having a previous birth gives these women more defined preferences.

Strengths and limitations of the study

This study takes a step forward regarding intervention from an SDM perspective and its effectiveness on BPs. To our knowledge, this study was the first study to propose a BP counselling strategy based on SDM. This strategy aligns with the International Confederation of Midwives' Model of Midwifery Care, which is characterised by the participation of

Table 3
Participant preferences after receiving counselling according to the intervention group.

Preferences post counselling	Intervention group	Control group	
Companionship/Comfort	*n* = 227 n (%)	*n* = 188 n (%)	p value[a]
Companionship during labour and childbirth	225 (99.1)	187 (99.5)	1
Unique space during childbirth	184 (81.1)	97 (51.6)	<0.001
Option of light graduation in delivery room	143 (63)	84 (44.7)	<0.001
Listening to music	130 (57.3)	82 (43.6)	0.006
Birthing ball use	186 (81.9)	107 (56.9)	<0.001
Freedom of movement	177 (78)	137 (72.9)	0.251
Procedures			
Fluid intake during labour	192 (84.6)	176 (93.6)	0.005
Continuous monitoring	134 (59)	71 (37.8)	<0.001
Intermittent monitoring	109 (48)	84 (44.7)	0.553
Pain relief			
Desire for natural childbirth	83 (36.6)	47 (25)	0.014
Epidural analgesia	125 (55.1)	82 (43.6)	0.023
Relaxation techniques	138 (60.8)	99 (52.7)	0.111
Breathing techniques	148 (65.2)	95 (50.5)	0.003
Massage	170 (74.9)	104 (55.3)	<0.001
Other non-pharmacological methods	21 (9.3)	8 (4.3)	0.054
Second stage of labour			
Directed pushing	127 (55.9)	86 (45.7)	0.048
Spontaneous pushing	112 (49.3)	54 (28.7)	<0.001
Use of a mirror	77 (33.9)	58 (30.9)	0.529
Birth position choice	158 (69.6)	78 (41.5)	<0.001
Newborn			
Early skin-to-skin contact	218 (96)	176 (93.6)	0.272
Delayed umbilical cord clamping	154 (67.8)	83 (44.1)	0.001
Breastfeeding			
Initiation of breastfeeding in the delivery room	168 (74)	133 (70.7)	0.508
Intention for formula feeding	13 (5,7)	18 (9.6)	0.189
Asking the mother before giving other foods to the baby	152 (67)	116 (61.7)	0.303

n = number; % = percentage.
[a] = Fisher test; BF = breastfeeding.

Table 4
Comparison of the number of birth plan preference changes by groups.

	Total	Intervention group Number of changes	Control group Number of changes	
Companionship/ Comfort	N = 1.864 n (%)	*n* = 1.206 n (%)	*n* = 658 n (%)	p value [a]
Companionship during labour and childbirth	6 (.3)	5 (2.2)	1 (.5)	0.228
Unique space during childbirth	69 (3.7)	47 (20.7)	22 (11.7)	0.017
Option of light graduation in delivery room	80 (4.3)	44 (19.4)	36 (19.1)	1
Listening to music	70 (3.8)	48 (21.1)	22 (11.7)	0.012
Birthing ball use	72 (3.9)	39 (17.2)	33 (17.6)	1
Freedom of movement	77 (4.2)	54 (23.8)	23 (12.2)	0.003
Procedures				
Fluid intake during labour	72 (3.9)	55 (24.2)	17 (9)	<0.001
Continuous monitoring	88 (4.7)	48 (21.1)	40 (21.3)	1
Intermittent monitoring	120 (6.4)	79 (34.8)	41 (21.8)	0.005
Pain relief				
Desire for natural childbirth	47 (2.5)	33 (14.5)	14 (7.4)	0.029
Epidural analgesia	71 (3.8)	44 (19.4)	27 (14.4)	0.192
Relaxation techniques	98 (5.3)	65 (28.6)	33 (17.6)	0.010
Breathing techniques	88 (4.7)	62 (27.3)	26 (13.8)	0.001
Massage	110 (5.9)	75 (33)	35 (18.6)	0.001
Other non-pharmacological methods	26 (1.4)	14 (6.2)	12 (6.4)	1
Second stage of labour				
Directed pushing	123 (6.6)	80 (35.2)	43 (22.9)	0.007
Spontaneous pushing	109 (5.8)	77 (33.9)	32 (17)	<0.001
Use of a mirror	54 (2.9)	30 (13.2)	24 (12.8)	1
Birth position choice	92 (4.9)	66 (29.1)	26 (13.8)	<0.001
Newborn				
Early skin-to-skin contact	38(2)	22 (9.7)	16 (8.5)	0,734
Delayed umbilical cord clamping	130 (7)	85 (37.4)	45 (23.9)	0.004
Breastfeeding				
Initiation of breastfeeding in the delivery room	119 (6.4)	68 (30)	51 (27.1)	0.586
Intention for formula feeding	12 (0.6)	3 (1.3)	9 (4.8)	0.042
Asking the mother before giving other foods to the baby	93 (5)	63 (27.8)	30 (16)	0.004

n = number; BF = breastfeeding [a] = Fisher test.

women in decision-making and a collaborative approach between midwives and women (International Confederation Midwives, 2024)

Another strength of the study was the sample size and cluster design adopted to avoid contamination between health professionals and the pregnant women participants in the groups. This study has several limitations: The variability of the BPs in different hospitals means that some preferences could not be compared, and only 24 common preferences were studied. In addition, aspects that could influence the preference choice process, such as previous childbirth experiences, beliefs, and internet use, were not considered (Coates et al., 2020; Preis et al., 2019; Sanders et al.,2018; Bt Mazin and Creedy.,2012).

Implications for practice and research

Systematically identifying women's preferences for childbirth may allow professionals to learn about them and thus help improve the care they provide to these women. In addition, standardised advice based on scientific evidence can help women lower their unrealistic expectations. Further studies can be initiated to evaluate which interventions are the most effective in influencing changes in women's preferences based on scientific evidence.

Conclusions

SDM counselling, together with a handout about evidence-based recommendations on childbirth and newborn care, resulted in more changes in women's preferences expressed in their BPs than standard counselling.

Ethical approval

The study was approved by the Ethics and Clinical Research Committee of the University Institute for Research in Primary Care (IDIAP - *Instituto Universitario de Investigación en Atención Primaria*) (P16/157).

Table 5
Multivariate negative binomial regression model: Relationship between the intervention group and participants' sociodemographic and clinical characteristics and the number of expressed changes in birth plan preferences.

	RR (95 % CI)	p value
Intervention group		
Control group	Ref.	
Intervention group	1.59 (1.38- 1.84)	<0.001
Age	0.99 (0.98-1.01)	0.300
Country of origin		
Spain	Ref.	
Others	1.1 (0.94-1.29)	0.213
Education		
Primary school or less	Ref.	
High school	0.94 (0.78-1.13)	0.499
University	0.72 (0.59-0.89)	0.002
Employment		
No	Ref	
Yes	1.19 (1-1.42)	0.041
Partner		
No	Ref	
Yes	0.81 (0.6-1.1)	0.173
Previous birth plan elaboration		
No	Ref	
Si	0.84 (0.73-0.97)	0.020

RR: Relative risk, CI: confidence interval.

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CRediT authorship contribution statement

Encarnación López-Gimeno: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Gemma Falguera-Puig:** Writing – review & editing, Writing – original draft, Validation, Supervision, Resources, Conceptualization. **Rosa García-Sierra:** Writing – review & editing, Writing – original draft, Formal analysis. **Mª. Mercedes Vicente-Hernández:** Writing – review & editing, Writing – original draft, Investigation. **Lucia Burgos Cubero:** Writing – original draft, Investigation. **Gloria Seguranyes:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Methodology, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors have declared that no competing interests exist.

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Supplementary materials

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