

The influence of the systematic birth preparation program on childbirth satisfaction

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Abstract

Purpose The primary purpose of this study was to assess the influence of a systematic multidisciplinary birth preparation program on satisfaction with childbirth experience. A secondary aim was to detect factors that affect the childbirth satisfaction.

Methods In this prospective study, 77 pregnant women who completed the 4-month birth preparation program (Group 1) and 75 women in the control group (Group 2) were asked to fill out two questionnaires with face-to-face interviews within 48 h after labor. One of the questionnaires was the translated form of Salmon's Item List German (SIL-Ger), and SIL-Ger scores ≥ 70 was accepted as a satisfactory experience.

Results There was no statistically significant difference between the groups in terms of sociocultural and intrapartum characteristics, and obstetric outcome parameters. The women who received antenatal education experienced significantly less pain ($p=0.01$), had a better communication with midwife or obstetrician during delivery ($p=0.001$), and participated more actively in decision-making before, during, and after childbirth ($p<0.001$ for all). SIL score was significantly higher in Group 1 (105.7 ± 2.2 vs 80 ± 2.5 , $p<0.01$), and significantly more women had a SIL

score ≥ 70 (96.1 vs 73.3%, $p<0.01$). In multivariate logistic regression model, attending the birth preparation program and the level of pain perceived during labor were found to have a significant effect on the birth satisfaction.

Conclusion Systematic birth preparation program improves satisfaction with childbirth experience by enabling women to communicate better with healthcare providers and to participate in decision-making during labor, as well as by decreasing the perception of labor pain.

Keywords Childbirth satisfaction · Salmon's Item List German score · Birth preparation · Labor pain

Introduction

Giving birth is one of the most special and important experiences in a woman's life. Satisfaction with childbirth experience is not only an indicator of the quality of maternity care, but also has impacts on the health and well-being of a woman and her newborn [1]. Unsatisfactory experience can lead to postpartum depression, post-traumatic stress disorder, lower success in breast-feeding, neglect and abuse of the child, lack of ability to resume sexual intercourse, or the preference for cesarean delivery for subsequent births [1].

The main factors related to childbirth satisfaction are personal control, having expectations for labor and delivery met, the amount of support from caregivers, the quality of the caregiver–patient relationship, participation in decision-making, and the presence of a supportive partner in the delivery suite [1–3]. Also, antenatal education has been reported to improve women's satisfaction by helping women to have realistic expectations for the experience, and teaching to maintain control during labor [1, 4, 5]. In

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contrast to studies revealing positive impact of the antenatal preparation classes [4, 6–8], there are several reports which showed no significant differences in birth experience and satisfaction levels between attenders and non-attenders [9, 10]. Furthermore, in their systematic review, Gagnon et al. stated that the effects of general antenatal education for childbirth or parenthood remain largely unknown [11]. The reason for this inconsistency may be the lack of quality and standardization in the routine antenatal education. It is probable that special attention and systematic approach are needed in order to improve childbirth experience of women.

The aim of this study was to investigate the effect of systematic multidisciplinary birth preparation program on women's assessment of their satisfaction with childbirth experience. A secondary aim was to explore factors that affect the childbirth satisfaction.

Materials and methods

Systematic birth preparation program

A systematic birth preparation program named 'Happy Pregnant School' has been applied since August 2014 in our hospital. The pregnant women between 16 and 20 weeks of gestation are informed about the program, and those who want to attend are enrolled in the program. Each participant undergoes a 3-h education session once in a month for 4 months. The sessions are administered to a group composed of maximum 15 women. In the education room there is a projection system, and there are childbirth models, posters, and gymnastic mats. A psychiatrist, a dietician, an obstetrician and gynecologist, a sports-medicine physician, a neonatologist, and two nurses participate in the program. The main subjects included in each session are summarized in Table 1. In session 2, women actively participate in the lessons and practice yoga and breathinh exercises. The partners are not involved in this program. A certificate is given to the participant at the end of the program. This program is free of charge.

Study design and population

This study was conducted in a tertiary training hospital between August 2014 and March 2016. It was approved by the institutional review board of our hospital, and all participants provided oral informed consent.

Out of 142 women who completed aforementioned 4-month birth preparation program, those who gave birth in our hospital were included in this study. Exclusion criteria were women who underwent cesarean section on maternal request, gave birth before 34 weeks of gestation,

Table 1 The subjects in the education sessions

Session 1
The anatomy and the function of the reproductive system
Fetal development
Antenatal care and pregnancy
Session 2
Aromatherapy
Massage techniques
Prenatal exercises and yoga
Session 3
The signs of labor
The stages of labor
Breath exercises
Pain relief techniques
The routes of delivery
Operative delivery
Labor and delivery yoga
Session 4
Breast feeding and its benefits
Neonatal care
Care in postpartum period

chromosomal and structural malformations in fetus, intra-uterine demise, severe maternal morbidity such as postpartum hemorrhage, severe preeclampsia, and gestational cholestasis. Also, the women who refused to attend the program or quit before completing it were excluded. Control group consisted of the women who did not receive any type of antenatal education, and was not informed about the 'Happy Pregnant School,' and who gave birth in our hospital. Gestational age was assessed from the last menstrual period, and fetal crown-rump length measurement during the first trimester in those who did not know last menstrual period. Both groups gave birth in the same delivery room. When the cervix was dilated, 5 cm, 50 mg meperidine was applied to all women for pain relief. Episiotomy was routinely used in the delivery of nulliparous women in our hospital, while none of the multiparous underwent episiotomy.

Data collection

Two questionnaire forms were filled out with face-to-face interviews done within 48 h after labor (Tables 2, 3). The first questionnaire included questions about participant's perception of her birth experience and visual analog scale (VAS) for pain [12], while the second was a 20-item questionnaire which was translated from the English version of Salmon's Item List (SIL) [13]. Items were rated on a scale from 1 to 7. To calculate the total score, first, the score ticked by participant for the items 2, 3, 4, 5, 7, 8, 9, 10, 12, 13, 14, 17, 18, and 20 was subtracted from 8, which is the sum of the lowest score: 1, and the highest score: 7. Then,

Table 2 First questionnaire

Communication with midwife or obstetrician ^a	Bad–slight–moderate–good–very good
Participation in decision-making ^b	Bad–slight–moderate–good–very good
Before labor	Bad–slight–moderate–good–very good
During labor	Bad–slight–moderate–good–very good
After labor	Bad–slight–moderate–good–very good
Satisfaction with childbirth ^c	Bad–slight–moderate–good–very good
The intensity of pain during labour	0–1–2–3–4–5–6–7–8–9–10

^a‘Good’ and ‘very good’ responses were accepted as ‘good communication’

^b‘Good’ and ‘very good’ responses were accepted as ‘active participation’

^c‘Good’ and ‘very good’ responses were accepted as ‘satisfied with childbirth’

Table 3 Second questionnaire: Salmon’s Item List

	1	2	3	4	5	6	7
1. Disappointed							Not disappointed
2. Fulfilled							Not fulfilled
3. Enthusiastic							Not enthusiastic
4. Satisfied							Not satisfied
5. Delighted							Not delighted
6. Depressed							Nor depressed
7. Happy							Not happy
8. Excited							Not excited
9. Good experience							Bad experience
10. Coped well							Did not cope well
11. Cheated							Not cheated
12. In control							Not under control
13. Enjoyable							Not enjoyable
14. Relaxed							Not relaxed
15. Anxious							Not anxious
16. Painful							Not painful
17. Easy							Not easy
18. Time going fast							Time going slowly
19. Exhausted							Not exhausted
20. Confident							Not confident

the mean of the items was multiplied by 20, and finally, the resulting product was reduced by 20. The total score ranged from 0 to 120. This method was previously used in the modified version of SIL called Salmon’s Item List German (SIL-Ger) [14, 15]. SIL-Ger scores ≥ 70 suggested satisfactory experience, whereas scores < 70 indicated unsatisfactory experience [14, 15]. Also, demographic and sociocultural characteristics, including age, parity, marital status, income, the presence of living children, the level of education, employment status, the area of residence, and whether the pregnancy was planned were asked to the participants. The route of delivery, the duration of labor, need for labor induction, the type of healthcare provider who delivered baby, gestational age at delivery, birth weight, APGAR scores, and the need for neonatal intensive care unit were recorded.

Data analysis

The two groups were compared in terms of demographic, sociocultural, intrapartum characteristics, obstetric outcome parameters, and perceptions of birth experience using Student’s *t* test, Mann–Whitney *U* test, χ^2 test, or Fisher’s exact test, where appropriate. Participants were stratified as SIL-Ger score of < 70 and ≥ 70 . Univariate comparison tests were used to analyze the demographic and obstetric parameters associated with the SIL-Ger score ≥ 70 . The covariates with $p < 0.20$ were included in multivariate logistic regression model in order to define independent factors. Pearson correlation analysis was used to detect multicollinearity. Post-Hoc Power calculation for comparing rates of 96 and 73% (SIL score ≥ 70) among the two groups revealed a study power of 98%. Data analysis was

performed using the software SPSS 17.0 for Windows. Statistical significance was considered where p was less than 0.05.

Results

The demographic, sociocultural and intrapartum characteristics, and obstetric outcome parameters of 77 women in Group 1 (those who completed birth preparation program) and 75 women in Group 2 (control group) were compared (Table 4). There was no statistically significant difference between the groups.

Table 5 demonstrates the comparison of the perceptions of birth experience, VAS, and SIL scores between the two groups. The women in Group 1 experienced significantly less pain ($p=0.01$), and had a better communication with midwife or obstetrician during delivery ($p=0.001$). Furthermore, they participated more actively in decision-making before, during, and after childbirth ($p<0.001$ for all). Good or very good birth experience was stated by 76.6% of participants in Group 1, while the same figure was 49.3% in Group 2 ($p<0.01$). Moreover, SIL score was significantly higher in Group 1 (105.7 ± 2.2 vs 80 ± 2.5 , $p<0.01$), and

Table 4 Demographic, sociocultural and intrapartum characteristics, and obstetric outcome parameters of the two groups

	Group 1 ($n=77$)	Group 2 ($n=75$)	p
Age (mean \pm SD)	27.2 \pm 0.8	16.5 \pm 0.6	0.4
Parity (mean \pm SD)	1.2 \pm 0.1	1.3 \pm 0.2	0.5
Multiparity (n)	52 (62.5%)	47 (62.7%)	0.5
Presence of alive children ($n \pm$ SEM)	1.1 \pm 0.1	1.3 \pm 0.2	0.5
Low income (n)	5 (6.5%)	7 (9.3%)	0.5
Residing in rural area (n)	3 (3.9%)	2 (2.7%)	0.7
Graduated from at least high school (n)	73 (94.8%)	71 (94.7%)	0.97
Intentionally got pregnant (n)	61 (79.2%)	65 (86.7%)	0.22
Cesarean section (n)	9 (11.7%)	11 (14.7%)	0.6
Duration of labor (h \pm SD)	3.6 \pm 0.2	5.7 \pm 0.2	0.3
Induction of labor (n)	43 (55.8%)	34 (45.3%)	0.2
Delivered by an obstetrician (n)	36 (46.8%)	34 (45.3%)	0.9
Gestational age at delivery (week \pm SD)	38.8 \pm 0.2	38.3 \pm 0.2	0.14
Birth weight (g \pm SD)	3285 \pm 49	3224 \pm 62	0.41
5th minute APGAR score (mean \pm SD)	9.3 \pm 0.1	9.2 \pm 0.1	0.5
Need for NICU (n)	8 (10.4%)	10 (13.3)	0.6

SD standard deviation, SEM standard error of mean, APGAR American Pediatric Gross Assessment Record, NICU neonatal intensive care unit

Table 5 The comparison of the perceptions of the birth experience, VAS, and SIL-Ger scores

	Group 1 ($n=77$)	Group 2 ($n=75$)	p
Good communication with midwife or obstetrician	74 (96.1%)	59 (78.7%)	<i>0.001</i>
Active participation in decision-making			
Before labor	70 (91%)	42 (56%)	<i><0.001</i>
During labor	72 (93.5%)	45 (60%)	<i><0.001</i>
After labor	73 (94.8%)	42 (56%)	<i><0.001</i>
Satisfied with childbirth	59 (76.6%)	37 (49.3%)	<i><0.01</i>
VAS score (mean \pm SD)	7.2 \pm 0.24	8.2 \pm 0.29	<i>0.01</i>
SIL-Ger score (mean \pm SD)	105.7 \pm 2.2	80 \pm 2.5	<i><0.01</i>
SIL-Ger score ≥ 70 (n)	74 (96.1%)	55 (73.3%)	<i><0.01</i>

Italic values indicate significant p values

VAS visual analog scale, SIL-Ger Salmon's Item List German, SD standard deviation

significantly more women had a SIL score ≥ 70 (96.1 vs 73.3%, $p<0.01$).

Table 6 shows univariate comparison of participants with a score of <70 and ≥ 70 . Attending the birth preparation program, multiparity, duration of labor, VAS, active participation in decision-making before, during, and after childbirth, and good communication with midwife or doctor were significantly associated with a satisfactory birth experience. When the factors with a p value <0.20 were put in multivariate logistic regression model, the factors except attending the birth preparation program and VAS score lost their significance. Table 7 demonstrates the odds ratios, the confidence intervals, and the p values of these factors. We did not include active participation in decision-making and good communication with midwife or obstetrician in the multivariate model in order to single out the effect of the attending the birth preparation program on the SIL-Ger score, since these two parameters were strongly correlated with the latter ($p<0.001$).

Comment

In the present study, the participants of the 4-month multidisciplinary systematic birth preparation program were found to be more satisfied with the childbirth experience in comparison with the other women. More than 90% of these women stated that they had a good communication with their midwives or obstetricians, and had active participation in decision-making. Moreover, this study showed that attending the birth preparation program and lower level of pain perceived during labor are independent factors for satisfaction with childbirth.

Table 6 Univariate analysis of participants with a score <70 and ≥70

	SIL score <70 (n = 23)	SIL score ≥70 (n = 129)	<i>p</i>
Attending the birth preparation program (<i>n</i>)	3 (13%)	74 (57.4%)	<0.001
Age (mean ± SD)	25 ± 1	27.1 ± 0.4	0.07
Multiparity (<i>n</i>)	7 (30.4%)	91 (69.8%)	<0.001
Low income (<i>n</i>)	2 (8.7%)	10 (7.8%)	0.88
Residing in rural area (<i>n</i>)	2 (8.7%)	3 (2.3%)	0.17
Graduated from at least high school (<i>n</i>)	20 (87%)	124 (96.1%)	0.11
Intentionally got pregnant (<i>n</i>)	19 (82.6%)	107 (82.9%)	0.59
Cesarean section (<i>n</i>)	19 (82.6%)	107 (82.9%)	0.74
Duration of labor (h, mean ± SEM)	6.7 ± 0.4	5.7 ± 0.2	0.04
Induction of labor (<i>n</i>)	10 (43.5%)	67 (52%)	0.5
Delivered by an obstetrician (<i>n</i>)	12 (52.2%)	58 (44.9%)	0.65
Gestational age at delivery (weeks, mean ± SEM)	37.9 ± 0.4	38.7 ± 0.2	0.06
Birth weight (g ± SD)	3183 ± 108.3	3270 ± 42.8	0.44
5th minute APGAR score (mean ± SD)	9 ± 0.2	9.3 ± 0.1	0.13
Need for NICU (<i>n</i>)	4 (17.3%)	14 (10.8%)	0.48
VAS score (mean ± SEM)	9.13 ± 0.21	7.41 ± 0.21	<0.001
Active participation in decision-making			
Before labor	7 (30.4%)	105 (81.4%)	<0.001
During labor	10 (43.5%)	107 (82.9%)	<0.001
After labor	11 (47.8%)	104 (80.6%)	<<0.01
Good communication with midwife or obstetrician	11 (47.8%)	122 (94.6%)	<0.001

Italic values indicate significant *p* values

SIL-Ger Salmon's Item List German, *SEM* standard error of mean, *SD* standard deviation, *NICU* neonatal intensive care unit, *VAS* visual analog scale

Table 7 Factors associated with SIL-Ger score ≥70 in multivariate analysis

	OR	95% CI	<i>p</i>
Attending the birth preparation program	5.87	1.37–24.9	<0.01
VAS score above	0.62	0.40–0.94	0.01

Italic values indicate significant *p* values

SIL-Ger Salmon's Item List German, *OR* odds ratio, *CI* confidence interval, *VAS* visual analog scale

The association between childbirth satisfaction and several demographic and obstetric factors, such as age, parity, gestational age, birth weight, and the mode of delivery were investigated in the literature [14, 16, 17]. The results of the studies are contradictory, since some authors reported that satisfaction is associated with lower education level, older age, multiparity, and higher income [16, 17], while the others failed to find any relationship [14]. In our study, however, multiparity and shorter duration of labor were associated with higher SIL-Ger scores in univariate logistic regression model, and none of them was found to be an independent factor affecting the satisfaction with birth experience.

Another important factor related to satisfaction is pain, since childbirth is considered to be one of the most painful events in a woman's life [18]. In a study, regarding the labor pain, the majority (88%) intended to request some pharmacological pain relief, and 84% of primiparous and 72% of multiparous rated their pain severe or unbearable [19]. Spaich et al. found that a high level of pain perception during childbirth was an independent factor associated with lower SIL-Ger scores [14], which was in concordance with our findings. On the other hand, in some studies, it is not perceived as an entirely negative experience, since coping with pain is a rewarding experience for some women [20]. Furthermore, a systematic review regarding pain and women's satisfaction with the experience of childbirth revealed that pain and pain relief do not generally play a major role in satisfaction, unless expectations are unmet [2]. They concluded that the influences of pain, pain relief, and intrapartum medical interventions on satisfaction are neither as direct nor as powerful as the influences of the attitudes and behaviors of the caregivers [2].

Women may experience fear and anxiety for childbirth due to the lack of knowledge or misinformation about and negative perceptions of the birth process [7]. Serçekuş et al., and Toohill et al., reported that antenatal education

reduced the fear of childbirth, and increased childbirth-related maternal self-efficacy [7, 21]. Similarly, Kızıllırmak et al. reported a significant decrease in fear of childbirth in primigravida women who underwent antenatal education program between the 28th and 34th weeks of gestation [8]. Moreover, in a randomized controlled study, Ip et al. reported that the women who received an educational program between the 33rd and 35th weeks of pregnancy demonstrated higher levels of self-efficacy for childbirth, lower perceived anxiety and pain, and greater performance of coping behavior during labor [4]. In addition, a systematic review emphasized on the importance of expectation–experience gap which creates dissatisfaction [22]. The authors concluded that antenatal education have potential to empower women with accurate and realistic expectations, and enable them to make informed decisions [22]. In the same way, education enabled women to participate more actively in decision-making during childbirth in the present study.

In the literature, antenatal education has been given under various conditions, which is likely to have an influence on its efficacy. In a randomized controlled study, Brixval et al. showed that structured antenatal education program in small classes focusing on strengthening relationships, and improving information and problem-solving skills were much more successful in improving the women's confidence in their ability to handle the birth process, in comparison with the standard auditorium-based antenatal lectures [23]. Also, the duration and the content of birth preparation programs vary broadly. There are examples of one-day courses consisting of general information about labor and delivery, and a discussion on feelings and thoughts about this upcoming event [4, 8]. In contrast, there are examples of training programs which last more than 1 month, and these longer programs include additional general stretching and strengthening exercises, pelvic floor muscle training, breathing techniques, labor positions, massages, and relaxation training useful for coping with the labor pain and maintaining self-control during labor [6, 7]. Similarly, our program included aromatherapy, yoga, breath exercises, and pain relief techniques. As a consequence, those who underwent birth preparation program perceived less pain than the others, supporting the significance of physical exercises in addition to general information and psychological preparation of pregnant women.

There are several limitations in this study. First of all, it was not planned as a randomized controlled trial. Since our program lasted 4 months, we considered that the women reluctant to attend the classes would not complete the program. To overcome the bias, the women who refused to attend the program or quit before completing it were not included in the study group. Second, in our ward, routine analgesic was applied to all patients during

labor. This might have changed the perception of pain in our study group. Third, the study was carried out only at one hospital. This might preclude our findings to be applicable to all patients during labor. Therefore, in the future, multicenter studies should be carried out to offset the effects of differences among institutions. Finally, the small number of participants seems to be a limitation. However, we demonstrated that this investigation was not underpowered as mentioned in the “**Materials and methods**” section. On the other hand, the strength of this study stems from the use of SIL-Ger, which is a multidimensional and validated measure of the maternal perception of childbirth experience [15].

In conclusion, systematic birth preparation programs enable pregnant women to be ready to communicate with healthcare provider and to be a member of the team in the delivery suite. Furthermore, they cause a decrease in the perception of labor pain, and make the birth experience a satisfactory event. Therefore, such programs are needed to improve women's experience with childbirth.

Authors' contribution AA: Project Conceptualization, administration, and supervision. ACE: Data validation, Visualization; writing reviewing, and editing the manuscript. ESO: Data cleaning, formal analysis, and contributing to the methodology. OA: Conceptualizing and supervising the study; and revision of the manuscript. HG: Contributed to conceptualizing of the study and regularly supervised its progress. NK: Contributed to systematic data collection in the study. AA: Performed the antenatal training and applied the postpartum questionnaires.

Compliance with ethical standards

Ethical approval All procedures performed were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflict of interest All of the authors of this study declare that they have no potential or explicit conflicts of interest with any third party related to this study.

Informed consent Informed consent was obtained from all individual participants included in the study.

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