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Effects of a Structured Alternative Program on Maternal Satisfaction and Labor Duration in Primiparous Women

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Abstract

This study evaluated the effects of a Structured Alternative Program (SAP) on pain management and maternal satisfaction during childbirth. SAP involved non-pharmacological techniques aimed at reducing labour pain and enhancing the birth experience. A total of 127 primiparous mothers were randomly assigned to either an experimental group (SAP) or a control group (epidural). Findings showed that the experimental group experienced shorter durations in the first and second stages of labour and reported higher satisfaction. A negative correlation was found between labour duration and satisfaction. SAP offers a natural approach to pain relief, improving maternal confidence and overall childbirth experience.

Keywords: Structured Alternative Program (SAP); Primiparous Mothers; Labor; non-pharmacological techniques.

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1.0 Introduction

The childbirth experience for primiparous women those giving birth for the first time is often marked by heightened anxiety, physical discomfort, and emotional vulnerability. Traditional obstetric care, while medically effective, may not fully address these multifaceted needs. In response, structured alternative programs have emerged as holistic interventions aimed at improving maternal satisfaction and labor outcomes. These programs typically include prenatal education, continuous labor support, and complementary therapies such as massage, aromatherapy, and hydrotherapy. Research has shown that such interventions can significantly reduce labor duration and enhance maternal satisfaction. For instance, a study by Elgzar et al. (2020) found that primiparous women who received structured support during labor reported higher satisfaction and experienced shorter labor phases compared to those who received standard care. Similarly, prenatal education has been linked to reduced fear of childbirth and improved coping mechanisms, which in

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turn contribute to more positive birth experiences (Kordi et al., 2017). Continuous emotional and physical support, particularly from trained doulas or midwives, has also been associated with fewer medical interventions and better psychological outcomes (Bohren et al., 2017). These findings underscore the importance of integrating structured alternative programs into maternity care, especially for first-time mothers who may benefit most from enhanced support and preparation. Carvalho, Zheng, Aiono-Le Tagaloa (2014) emphasized that effective pain management during labour significantly contributes to a mother's satisfaction with the childbirth experience. The length of labour, particularly during the first and second stages, remains a major concern in obstetric care. Extended labour can lead to maternal fatigue, fetal distress, and a higher chance of medical interventions such as caesarean deliveries or assisted births. Due to concerns over these complications and the anticipated pain of childbirth, many expectant mothers seek accessible pain management options to help them cope with labour.

In response, healthcare professionals have introduced Structured Alternative Programs (SAPs), comprehensive, evidence-based approaches that offer non-pharmacological pain relief, controlled breathing techniques, movement strategies, and continuous emotional support. These programs are designed to boost maternal satisfaction, shorten labour duration, and enhance overall birth outcomes. Although numerous studies have explored the advantages of alternative labour methods, there is a lack of research specifically targeting their effects on first-time mothers, who may have distinct emotional and physical needs during childbirth. Gaining insight into how SAPs affect maternal satisfaction and labour length is crucial for advancing obstetric practices and improving both maternal and infant health outcomes.

2.0 Literature review

2.1 Intensity and Duration of Labor Pain

Women must explore and discuss various pain relief options with healthcare providers to make informed decisions tailored to their needs. Available pain management techniques include breathing exercises, relaxation methods, hydrotherapy, massage, nitrous oxide, and epidural anesthesia. The known side effects of epidurals, the desire among many women to avoid them (Care Quality Commission, 2013), and the need to enhance satisfaction with the childbirth experience highlight the importance of developing structured alternative pain management programs. Research has also indicated that fear, particularly fear of potential side effects, is a significant reason why some women, such as those in Khobar, choose to avoid epidural analgesia (Al Sulmi et al., 2021). Study by Anbarasi et al. (2024) explored the role of postpartum partner supporting education. Their findings revealed that structured involvement of partners during and after childbirth significantly boosted maternal satisfaction among primiparous mothers. This highlights the importance of emotional and relational support as part of holistic maternity care. Collectively, these studies underscore the value of structured alternative programs in improving both the physiological and psychological dimensions of childbirth. By integrating education, emotional support, and complementary therapies, healthcare providers can offer a more empowering and satisfying birth experience for first-time mothers.

2.2 The positive impact of structured alternative programs

These programs, which often include prenatal education, emotional support, and non-pharmacological pain management techniques, are designed to address both the physical and psychological needs of first-time mothers during childbirth. A notable study by Alizadeh-Dibazari et al. (2023) conducted a systematic review and meta-analysis to assess the effects of prenatal education on fear of childbirth, pain intensity, and overall childbirth experience. The findings revealed that structured prenatal education significantly reduced fear and pain during labor, leading to a more positive birth experience and increased maternal satisfaction. These outcomes suggest that when primiparous women are equipped with knowledge and coping strategies through structured programs, they are more likely to experience shorter labor durations and report higher satisfaction levels. This evidence supports the integration of alternative care models into standard obstetric practice to enhance maternal well-being and optimize labor outcomes.

3.0 Methodology

3.1 Study Design

This study employed a randomized post-test-only control group design. This approach was selected because participants only had to complete the questionnaire after the intervention had taken place. Participants were randomly assigned to either an experimental or a control group. The experimental group received a structured alternative program instead of epidural analgesia. This program focused on equipping participants with essential techniques such as proper breathing and pushing methods, along with strategies for managing labour pain through position changes and movement. Additionally, each participant in the experimental group was supported by a nurse in the delivery room, who offered continuous guidance, reminders to apply the learned techniques, and emotional encouragement throughout the labour process. In contrast, participants in the control group received epidural analgesia but did not take part in the structured alternative program.

3.2 Setting and Sample

The study was conducted at the Obstetrics and Gynecology (O&G) Unit of Putrajaya Hospital in Malaysia. This unit is staffed by 6 specialists, 30 medical officers, and 70 midwifery nurses and handles approximately 7,500 deliveries annually. The hospital's O\&G

unit was chosen due to its availability of specialized anesthetists and nurses with the ability to administer epidural analgesia. Participants were selected using a convenient sampling method. A total of 127 respondents were involved in the study: 66 were in the intervention group, which followed the structured alternative program without epidural use, and 61 were in the comparison group, which received epidural analgesia.

The study targeted all primiparous women who presented at the hospital's O&G unit after 36 weeks of pregnancy. Inclusion criteria were: (i) first-time mothers, (ii) cleared for normal vaginal delivery during a clinic visit after 36 weeks of gestation, (iii) pregnancy reaching at least 37 weeks at the time of delivery, (iv) normal baseline CTG readings, and (v) cervical dilation of less than 5 cm upon admission to the labour room. Exclusion criteria included: (i) mothers weighing over 90 kg, (ii) those with psychiatric conditions, (iii) individuals diagnosed with sexually transmitted infections or retroviral diseases, (iv) cases involving fetal abnormalities, (v) mothers with pre-existing conditions such as hypertension, diabetes, or heart disease, and (vi) those scheduled for elective lower segment cesarean section (LSCS).

3.3 Data collection

The questionnaires used in this study were adapted from the Labor and Delivery Satisfaction Index (LADSI) and the Patient Satisfaction with Nursing Care Quality (PSNCQ) instruments. Permission to use and modify these questionnaires was obtained via email. A panel of experts from the O\&G Unit at Putrajaya Hospital and the Nursing Department of the Faculty of Medicine, National University of Malaysia, reviewed and validated the revised version of the questionnaire. The questionnaire was organized into four sections: A, B, C, and D. Section A included six questions related to the respondent's demographic information and pregnancy details. Section B comprised 25 items assessing patient satisfaction with the labour and delivery experience, while Section C contained 13 questions evaluating satisfaction with the quality of nursing care. Responses for Sections B and C were rated using a 5-point Likert scale: 1 = strongly dissatisfied, 2 = dissatisfied, 3 = slightly satisfied, 4 = satisfied, and 5 = strongly satisfied. Section D gathered information specifically about the delivery itself. To assess overall patient satisfaction, the researcher totaled the scores from the questionnaire. The possible range of scores was from 38 to 190, with higher scores indicating a greater level of satisfaction with both the childbirth experience and the nursing care received.

Primiparous participants were assigned to either the control or experimental group based on their serial number in a table of one million random digits those with odd numbers were placed in one group, and those with even numbers in the other. During the research period, 20 midwifery nurses were trained to assist with the study. All eligible first-time mothers received information about the study, and informed consent was obtained from those who agreed to take part. Participants in the experimental group were taught the structured alternative program, while those in the control group received epidural analgesia during labour. In the experimental group, each patient was supported by a trained nurse throughout the delivery process. After childbirth, both groups completed the questionnaire within six hours.

3.4 Ethical clearance

Ethical clearance for this study was obtained from the ethics committees of both the hospital and the Faculty of Medicine, National University of Malaysia. Participants were given a clear explanation of the study's purpose before signing an informed consent form. Confidentiality and anonymity of all respondents were upheld throughout the research process. Additionally, participants were informed of their right to withdraw from the study at any point without any impact on the medical care they received.

3.5 Data analysis

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 24.0. Both descriptive and inferential statistical methods were applied to address the study objectives. Demographic information for the two groups was summarized using frequencies and percentages. To compare the duration of Stage 1, Stage 2, and the overall labour process between the control and experimental groups, an independent sample t-test was utilized. This test was also employed to assess differences in patient satisfaction with the delivery experience between the groups, as well as to explore the relationship between the duration of labour stages and overall satisfaction with childbirth. A p-value of ≤ 0.05 was considered statistically significant for all inferential analyses.

4.0 Findings

4.1 Demographic characteristics

Table 1 indicates that most participants were Malay (n=98, 77.2%), with 54 of them belonging to the experimental group. In terms of age distribution, most respondents in the control group (n=32, 52.5%) were aged between 28 and 38 years, while a larger portion of the experimental group (n=46, 69.7%) fell within the 17 to 27 age range. Regarding educational background, most participants had attained tertiary education, with 65.6% in the control group and 33 participants (50%) in the experimental group.

Table 1 Demographic data of the respondent(N=127)

Demographic data	Total N (%)	Control N (%)	Experimental N (%)	Chi-square, p-value

Race				
Malay	98 (77.2)	44 (72.1)	54 (81.8)	
Chinese	23 (18.1)	14(23.0)	9 (13.6)	3.115,
Indian	1 (0.8)	1(1.6)	0	0.374
Other	5 (3.9)	2 (3.3)	3 (4.5)	
Age				
17 – 27	75 (59.1)	29 (47.5)	46 (69.7)	6.436,
28 – 38	52 (40.9)	32 (52.5)	20 (30.3)	0.09
Education level				
Primary school	4 (3.1)	0	4(6.1)	
Secondary school	50 (39.4)	21(34.4)	29(43.9)	5.763,
Diploma/ Degree	73 (57.5)	40(65.6)	33(50.0)	0.056

4.2 Duration of Stage 1, Stage 2, and overall delivery process

Table 2 presents the data on the duration of Stage 1, Stage 2, and the overall delivery process. In Stage 1, the control group recorded a higher mean and standard deviation (327.54±104.25) compared to the experimental group (276.36±101.98), indicating that labour duration during this stage was shorter among those in the experimental group. Additionally, the mean rank for the experimental group (55.65) was lower than that of the control group, and this difference was statistically significant with a p-value of 0.007. Similarly, in Stage 2, the experimental group had a shorter mean duration (11.50±9.79) than the control group (23.43±15.29). The mean rank for the experimental group was also lower (45.59) compared to 84.02 for the control group, and this difference was statistically significant (p=0.000). Furthermore, the total duration of labour was shorter in the experimental group (287.86±103.86) than in the control group (350.97±104.05). The mean rank was 76.36 for the experimental group and 52.58 for the control group, with a significant difference noted (p=0.000). These findings indicate that participants in the experimental group experienced significantly shorter durations during Stage 1, Stage 2, and the entire labour process.

Table 2. Comparison for duration of Stage 1, Stage 2 and overall delivery process based on groups

Duration	Group	N	Median	Average ± SD	Mean Rank	p-value
Stage 1 (Min)	**Control**	61	300.00	327.54±104.25	73.03	0.007*
	Intervention	66	240.00	276.36±101.98	55.65	
Stage 2 (Min)	**Control**	61	20.00	23.43±15.29	84.02	0.000*
	Intervention	66	9.00	11.50±9.79	45.49	
Overall delivery process (Min)	**Control**	61	328.00	350.97±104.05	76.36	0.000*
	Intervention	66	254.50	287.86±103.86	52.58	

N=Frequency
SD=Standard deviation
**p-value ≤0.05 is significant*

5.0 Discussion

Duration of Stage 1, Stage 2, and the overall delivery process

Results show that the duration of stage 1, stage 2, and the overall delivery process is shorter for the experimental group compared to the control group. The usage of epidural among respondents in the control group suggests that this analgesia may prolong the duration of delivery. This finding was similar to the findings reported in a previous study, which highlight that epidural can make the duration of stage 1, stage 2, and the overall delivery process become longer (Anim-Somuah et al. 2011; Connelly, 2007). According to Zhang & Feng (2012), a prospective study involving 328 respondents also conducted shows that the duration of stage 1, stage 2, and the overall delivery process was longer in the epidural group compared to the control group. The women who used epidurals were more likely to undergo a prolonged second stage of labour, require stimulation of their labour contractions, have very low blood pressure, be immobile for some time following the birth, have difficulty passing urine, and develop a fever (Anim-Somuah, Millicent & Smyth, Rebecca & Howell, Charlotte, 2005). The duration of the second stage of labour is extended by epidural analgesia, and the rate of instrumental delivery is raised. Only a few intrapartum problems are found with epidural analgesia, and the neonatal prognosis is good (Anwar et al.2015). Naito, Ida, Yamamoto, et al. (2019) stated that the durations of the first and second stages of labour were prolonged using Lumbar epidural analgesia (LEA) in both primipara and multipara women.

However, a study done by Agrawal et al. (2014), comparing the duration of delivery among respondents receiving epidurals and those who did not, found that the duration of stage 1 among respondents receiving analgesia was shorter (4.83 ± 1.59h) than the control group (5.48 ± 1.56 hour). Meanwhile, the duration of stage 2 for the epidural group is longer (33.13 ± 12.78 min) compared to the control group. Dresner, Brocklesby & Bamber (2006) conducted a study to investigate the mechanism of action for epidurals, revealing that analgesia could block the motor neuron, causing weakening of the pelvic floor muscle. The side effect of analgesia on the physiology of the pelvic muscle floor may be the reason that underlies the longer duration of the delivery process. The study conducted by Hidaka & Callister (2012) revealed that patients who apply good breathing techniques will experience less pain, which eases the process of delivery. In addition to that, it also shortens the duration of the delivery process. This may happen as the breathing technique can help the patient to be calmer and focused during the contraction period. This happens as the level of oxygen in the blood increases, and this helps to disturb the transmission of allogenic signals from the uterus to the brain (Smith, Levett, Collins

& Crowther, 2011). Also, unlike epidurals, which can weaken the pelvic floor muscle, the non-pharmacological techniques such as breathing, right pushing, changing position as well as moving around, did not affect the normal activity of the pelvic floor muscle during delivery. This, in turn, leads to a shorter duration of labour.

6.0 Conclusion& Recommendations

This study provides insight into the benefits of a non-pharmacological structured alternative program in managing pain and increasing the satisfaction of the patient during delivery compared to the usage of epidural analgesia. It's important to note that every woman's pain experience and preferences differ, and the choice between non-pharmacological techniques and epidural analgesia should be based on individual circumstances and medical advice. A Structured Alternative Program (SAP) positively influences mother satisfaction by providing emotional support, pain relief strategies, and a sense of control. It also has the potential to reduce the duration of both the first and second stages of labour, leading to better overall birth experiences. SAP offers a holistic, natural approach to labor pain management. By combining various non-pharmacological techniques, SAP empowers women with greater control over their childbirth experience, fostering a more positive, satisfying, and low-intervention birth process. Implementing such programs in maternity care settings could improve maternal and neonatal outcomes while enhancing the overall childbirth experience for first-time mothers. Some women may still choose epidural analgesia for pain relief, and the availability of options ensures that women can make informed decisions about their own childbirth experience. Further study needs to be conducted to extensively investigate the patient's preference and perception of the strategy to manage childbirth pain and hence increase their satisfaction with labour.

Limitations of the Study

This study was conducted as primary research using convenience sampling at a single site Putrajaya Hospital which may limit the generalizability of the findings. Since the sample was not randomly selected and the research setting was confined to one healthcare facility, the results may not accurately reflect the experiences or outcomes of primiparous women in other hospitals, regions, or healthcare systems. Additionally, the exclusive focus on primiparous women means the findings cannot be extended to multiparous women, who may have different needs, expectations, and labor experiences. Future studies should consider multi-center designs with randomized sampling methods and include a more diverse participant pool to enhance external validity and applicability across broader populations.

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Paper Contribution to Related Field of Study

The study provides empirical evidence that a structured alternative program, which may include techniques such as breathing exercises, massage, music therapy, or movement during labor, can significantly improve maternal satisfaction among first-time mothers. This highlights the importance of addressing emotional and psychological needs during childbirth, not just physical outcomes.

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