

Influence of Environmental Setting on Maternal Comfort and Satisfaction

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Abstract. Childbirth is a valuable experience for women. Psychological disorder such as anxiety is often felt by women during labor, it can be solved by physical environmental support in terms of environmental modifications that put women in comfort to reach labor satisfactory. By modifying a home-like labor environment, it boosts women comfort and make easier birth, it leads to maternal satisfaction. Labor environmental setting is conducted by involving stimulus of the senses including sight, hearing, taste, smell and touch. This study aimed to analyze the influence of labor environmental settings on maternal comfort and satisfaction. This study belongs to a quasi-experimental study with a non equivalent control group design. Samples in this study were all women giving birth in Bidan Praktik Mandiri West Bandung regency and Cimahi by involving 60 women. The draft of bivariable analysis by applying Mann Whitney Test and multivariable analysis by using two-proportion test with SPSS assistance. The results show that there is an influence of labor environmental settings on maternal comfort and satisfaction ($p < 0.05$). It indicates that mother in control group have risk 4,25 feel uncomfortable than intervention group, and mother in control group have risk 3,33 feel unsatisfied than intervention group. At last, it concludes that there is an influence environmental settings of labor on maternal comfort and satisfaction.

Keywords: *birth environment, childbirth, comfort, satisfaction*

1. INTRODUCTION

Childbirth is a valuable experience for a woman. Disorders of psychological factors in the form of anxiety and pain often appear in the mother before delivery. The existence of anxiety and pain during childbirth will result in labor outcomes. When labor outcomes are not good, the mother will not feel comfort and satisfaction. Because maternal satisfaction is largely related to labor outcomes, 1 such as maternal and infant welfare. For example, dissatisfaction related to the low postnatal psychological approach, the case for caesarean section, the presence of negative attitudes and feelings related to infant problems and breastfeeding [1]. Overcoming this can be done through the support of a physical environment in the form of a comfortable environment, maintained mother's privacy and the existence of guarantees and reinforcement of various sources power, and emotional support during labor [2][3].

As a built environment, space is a stimulus that can be responded to by the five human senses (sight, hearing, taste, smell and touch) which has the potential to form perceptions that indirectly affect emotional and human behavior [4]. The setting of the delivery environment is one way to support the physical and psychological birth of the mother, because the physical environment affects 94% of the ease or difficulty of giving birth [5][6].

Maternal satisfaction is now a major focus in maternal health services, especially in the Independent Practice Midwife (BPM). One of the efforts made is to make arrangements for the environment. This was done in connection with the expectation of the mother at the time of delivery [7]. Midwives as birth attendants must be able to understand maternal expectations, so that their satisfaction is fulfilled [1].

2. METHOD

This research is a Quasi Experiment with a non-equivalent control group design. The subjects of this study were all women in West Bandung Regency and Cimahi City that were adjusted to the inclusion and exclusion criteria, and were willing to participate in the study by signing the consent sheet after the explanation (PSP). The inclusion criteria are primigravida, normal pregnancy with 37-42 weeks gestation, entry with latent phase, anxiety score <59, desired and planned pregnancy, and accompanied during labor. Exclusion criteria were mothers suffering from visual impairment and / or hearing impairment, premature rupture of membranes, attending yoga classes and pregnancy exercises.

This research was conducted simultaneously with members of the research team in managing the delivery environment. Data collection was performed on the treatment group and the control group. The treatment group was given an intervention in the form of labor environment

settings. The control group uses an existing delivery environment.

Measuring comfort using the Numeric Rating Scale (NRS), and measuring satisfaction using a modified questionnaire from the Office Lighting Survey, Odor Awareness Scale, Thermal Comfort Checklist, and previous research questionnaires by adjusting research objectives. This research seeks to uphold scientific and ethical attitudes in research. Researchers try to minimize losses that may arise and maximize research. This research was conducted at BPM of West Bandung Regency, Cimahi City, and Molecular Genetic Laboratory of the Faculty of Medicine, Padjadjaran University, Bandung. When the study was conducted in July-August 2016.

3. RESULT

Based on table 1, the results show that the analysis of the different characteristics of age and income in the two study groups did not show any significant difference ($p > 0.05$), so the data was worth comparing.

TABLE 1. Subject characteristics in both study groups.

No	Characteristic	Groups		P Value
		Intervention (n=30)	Control (n=30)	
1	Age (years old)			1,000^a
	<20	4 (13,3%)	4 (13,3%)	
	20-34	26 (86,7%)	26 (86,7%)	
2	Income			0,559^b
	< Rp2.084.393,00	21 (70,0%)	23 (76,7%)	
	≥ Rp2.084.393,00	9 (30,0%)	7 (23,3%)	

^a *Eksak Fisher Test*

^b *Chi Kuadrat Test*

Based on table 2, the results show that the comfort and satisfaction scores in the two

study groups showed a significant difference ($p < 0.05$).

TABLE 2. Comparison of comfort scores and satisfaction scores in the two study groups.

No	Variabel	Kelompok		Nilai p
		Intervensi (n=30)	Kontrol (n=30)	
1	Skor Kenyamanan			<0,001^a
	Mean (SD)	8,2 (1,3)	6,27 (1,7)	
	Median	9	6	
	Rentang	5-10	3-10	
2	Skor Kepuasan			<0,001^a
	Mean (SD)	96,87 (21,5)	74,62 (22,6)	
	Median	101,1	70,2	
	Rentang	46,07-133,87	42,55-138,71	

^a *Mann-Whitney Test*

From table 3, the p value <0.001 is obtained, so that it shows that there is an effect of the setting of the delivery environment on the comfort of the birth mother, and the magnitude of the influence of the delivery environment on comfort is 4.25, meaning that the mother giving birth at the BPM who did not have the delivery environment has 4.25 times the risk of discomfort compared to women giving birth in a regulated delivery environment.

TABLE 3. The effect of the setting of the delivery environment on the comfort of maternity in the two study groups.

Groups	Comfort				Total	RR (IK 95%)	p ^a
	Uncomfortable		Comfortable				
	n	%	n	%			
Control	17	56,7	13	43,3	30		
Intervention	4	13,3	26	86,7	30	4,25 (1,62–11,15)	<0,001
Total	21	70	39	130			

^a Two Proportion Test

From table 4, the value of p <0.001 is obtained, so that it shows that there is an effect of the setting of the delivery environment on maternal satisfaction, and the magnitude of the influence of the delivery environment on satisfaction is 3.33, meaning that the mother giving birth at the BPM that does not have a delivery setting has 4.25 times the risk of feeling dissatisfied compared to women giving birth in a regulated delivery environment.

TABLE 4. The effect of the setting of the delivery environment on maternal satisfaction in the two study groups.

Groups	Satisfaction				Total	RR (IK 95%)	p ^a
	Unsatisfaction		Satisfaction				
	n	%	n	%			
Control	10	33,3	3	10	30		
Intervention	3	10	27	90	30	3,33 (1,02–10,92)	0,029
Total	13	43,3	30	100			

^a Two Proportion Test

4. DISCUSSION

Comfort is defined as a state that has fulfilled basic human needs that are individual and holistic, with the fulfillment of comfort can cause feelings of well-being in the individual. Comfort is defined as a state that has fulfilled the basic human needs of an individual and holistic, with the fulfillment of comfort can cause feelings of well-being in the individual [8].

Comfort is a comprehensive assessment of someone's environment. Humans assess environmental conditions based on stimuli that enter into themselves through the five senses through the nerves and digested by the brain to be assessed. In this case, not only physical biological problems are involved, but also feelings. Sound, light, smell, temperature and other stimuli are captured at once, then processed by the brain. Then the brain will provide a relative assessment of whether the condition is comfortable or not [9] [10][11][12][13][14][15]. With the existence of a good delivery environment, then the stimulus received will increase, so the assessment of

maternal mothers about their environment will be better [6][16].

Achieving patient comfort is related to improving the patient's condition both physically and mentally in his environment. Comfort resulted from several interventions including environmental, physical, and emotional.12 This is in accordance with table 4.2 which shows that comfort in the intervention group was higher than in the control group (p <0.05). In addition, Table 4.3 also shows that the setting of the delivery environment has an effect on maternal comfort of 4.25, which can be interpreted that mothers who delivered at the BPM who did not have a delivery environment had a 4.25 times more discomfort compared to women who delivered at birth. regulated delivery environment.

Mothers who feel high comfort, also have more hope. Increased comfort is correlated with increased expectations and vice versa. Comfort can foster hope and hope can also be fostered by comfort. The concept of comfort in childbirth means that comfort can provide strength and hope for maternity. Creating a condition to support physical and psychological comfort [17]–[19]. One

effort to support physical and psychological maternity is to create a good environment, which stimulates various senses, so that it can support comfort [5]. One can interact with the world through the five senses, such as: touch, sight, hearing, smell, and taste. One of the various five senses can cause an increase or decrease in comfort, both on one of the five senses or because of the combination of various five senses [20][21][21].

Visual comfort is when there is a perception that the maternal brain can operate without interference. When there are no obstacles to perception, the basic functions of the eye, such as vision, speed, and contrast sensitivity are optimal. Optimizing this basic perception function is very important. Some factors that can hinder perception in environmental settings include incorrect distribution of light density, glare, inaccurate color selection, and inaccurate layout of furniture and arrangement of equipment [4][21].

Temperature is the most significant component of environmental comfort. In the process of metabolism, our bodies produce heat, which will dissipate into the surrounding air or surface. When external temperatures are higher than body temperature, this process becomes more difficult and we will feel heat or feel hot. However, when external temperatures are low, heat loss is faster, and we can feel comfortable. Comfort to temperature is influenced by several factors, namely: humidity, air circulation, the role of color, and body metabolism [22][23].

Comfort in hearing can be improved through emphasis on the source of the sound called obfuscating or "masking" which is diverted with a tone of voice, in this study, maternity mothers played classical music Mozart [24][25][24]. The brain plays a role in changing the physical condition of the body in its response to music. In relaxation music, musical rhythm can guide the body to breathe more slowly and deeply, so that it can provide a calming effect. Heart rate and blood pressure can also respond to music that is heard. The variety of psychiatric music allows it to be used to create a calming feeling. Listening to soothing music with the right stimulation of the rhythm allows the body to produce endorphine [25][24][26].

Quality delivery assistance is delivery assistance that not only pays attention to the physical condition of the birth mother, but must also pay attention to the psychological condition of the birth mother. So hopefully the care provided can increase maternal satisfaction [18] [27][28][29].

Improving the physical environment, increasing women's expectations and confidence through antenatal support and delivery preparation, and increasing support and control during labor can make a significant difference in the number of women achieving the type of birth they want, reducing the likelihood of caesarean section [18].

Good physical environment and efficient management including a positive assessment of health facilities and significant health services by mothers. For women who get good facilities, they are significantly more satisfied [1]. This is in accordance with this study, which is shown in table 4.2, which shows that maternal satisfaction in the labor setting group is higher than in women who have given birth there is. Table 4.4 shows that the setting of the delivery environment has an effect on maternal satisfaction by 3.33, which can be interpreted that mothers who delivered at the BPM who did not manage the delivery environment had a risk of 3.33 times feeling dissatisfied compared to mothers who delivered in the delivery environment. regulated.

The comfort and satisfaction of maternity mothers is the highest benchmark for midwives in providing birth assistance. Because satisfaction can be used as a midwife evaluation material in providing delivery services. Comfort and satisfaction of labor can not be separated from several other factors, such as anxiety, pain, labor progress, and delivery outcomes [30][28].

The limitations of this study are: the level of adaptation of each person is different, so the reaction and response of maternity to the stimulus depends on the level of adaptation. physical and social environment affects each other and is needed by maternity in order to feel comfort and satisfaction. However, research only focuses on the influence of the physical environment.

5. CONCLUSIONS

Based on the results of the study, it can be concluded that there is an effect of the setting of the delivery environment on the comfort and satisfaction of maternity as evidenced by the p value <0.05 with an error rate of 10%.

Researchers also gave a special conclusion in the form of maternal in the control group having a risk of 4.25 times experiencing discomfort compared to the intervention group, and maternity in the control group experiencing a risk of 3.33 times experiencing dissatisfaction compared to the intervention group.

Based on the conclusions set, then there are some suggestions that researchers propose, namely in the form of theoretical suggestions and practical suggestions. Theoretical suggestions made are that each person's level of comfort and anxiety is different and is influenced by many factors, such as: ethnicity, culture, residence, and so on. So it is hoped for further researchers to be able to examine these factors. As well as practical advice is that the delivery environment can be used as an alternative to supporting the physical and psychological conditions of maternity mothers, because it has been proven to be able to increase comfort and satisfaction.

REFERENCES

- [1] A. Sawyer, S. Ayers, J. Abbott, G. Gyte, H. Rabe, and L. Duley, "Measures of Satisfaction with Care during Labour and Birth: a Comparative Review," *BMC Pregnancy Childbirth*, vol. 13, no. 1, p. 1, 2013, doi: 10.1186/1471-2393-13-108.
- [2] N. K. Lowe, "The Nature of Labor Pain," *Am J. Obstet. Gynecol.*, vol. 186, no. 5, pp. 16–24, 2002, doi: 10.1067/mob.2002.121427.
- [3] Songporn Chuntharapat, "The Effects of Using a Yoga Program during Pregnancy on Maternal Comfort, Labor Pain, and Birth Outcomes," Prince of Songkla University 2007, 2007.
- [4] S. Oi-Zhen, C. Weng-Wai, and T. Yu-Tian, "Quality of Healing Environment in Healthcare Facilities," *J. Teknol.*, vol. 74, no. 2, pp. 101–108, 2015, doi: 10.11113/jt.v74.4529.
- [5] M. Newburn and D. Singh, "Creating a Better Birth Environment," London, 2003.
- [6] R. Aburas, K. Gaines, N. Gilinsky, and R. Casanova, "Birth in Nature," pp. 98–104, 2014.
- [7] S. Thorstenson, A. Ekstrom, I. Lundgren, and E. H. Wahn, "Exploring Professional Support Offered by Midwives during Labour: An Observation and Interview Study," *Nurs. Res. Pract.*, vol. 2012, 2012, doi: 10.1155/2012/648405.
- [8] S. Chuntharapat, W. Petpichetchian, and U. Hatthakit, "Yoga during Pregnancy: Effects on Maternal Comfort, Labor Pain and Birth Outcomes," *Epub*, vol. 14, no. 2, 2008.
- [9] B. M. . Shamsul, C. C. Sia, Y. . Ng, and K. Karmegan, "Effects of Light's Colour Temperatures on Visual Comfort Level, Task Performances, and Alertness among Students," *Am. J. Public Heal. Res.*, vol. 1, no. 7, pp. 159–165, 2013, doi: 10.12691/ajphr-1-7-3.
- [10] S. Kalia, "Colour and its effects in interior environment: a review," vol. 2, pp. 106–109, 2013.
- [11] N. A. Jalil, R. M. Yunus, and N. S. Said, "Environmental Colour Impact upon Human Behaviour: A Review," *Procedia - Soc. Behav. Sci.*, vol. 35, no. December 2011, pp. 54–62, 2012, doi: 10.1016/j.sbspro.2012.02.062.
- [12] L. J. Labrague, R. A. Rosales, G. L. Rosales, and G. B. Fiel, "Effects of soothing music on labor pain among Filipino mothers," *Clin. Nurs. Stud.*, vol. 1, no. 1, pp. 35–42, 2013, doi: 10.5430/cns.v1n1p35.
- [13] K. J. Lomas and R. Giridharan, "Thermal Comfort Standards , Measured Internal Temperatures and Thermal Resilience to Climate Change of Free-Running Buildings: A Case-Study of Hospital Wards," *Build. Environ.*, vol. 55, no. 2012, pp. 57–72, 2011, doi: 10.1016/j.buildenv.2011.12.006.
- [14] M. Kheirkhah, N. S. Valipour, L. Neisani, and H. Haghani, "A Controlled Trial of the Effect of Aromatherapy on Birth Outcomes Using " Rose Essential Oil " Inhalation and Foot Bath," no. 1, pp. 4–9, 2013.
- [15] M. S. Janula Raju, "Effectiveness of Aromatherapy in Reducing Labour Pain and Duration of Labour among Primigravidas: A Pilot Study.," *Int. J. Heal. Sci. Res.*, vol. 4, no. 2, pp. 124–128, 2014, [Online]. Available: <http://www.scopemed.org/?mno=153746>.
- [16] J. Munro and M. Jokinen, "Birth Environment," *Evid. Based Guidel. Midwifery-Led Care Labour*, pp. 1–4, 2012.
- [17] N. Seyedfatemi, F. Rafei, and M. Rezaei, "Comfort and Hope in the Preanesthesia Stage in Patients Undergoing Surgery," vol. 29, no. 3, pp. 213–220, 2014.
- [18] K. Curtis, A. Weinrib, and J. Katz, "Systematic Review of Yoga for Pregnant Women: Current Status and Future Directions," *Evidence-based Complement. Altern. Med.*, vol. 2012, 2012, doi: 10.1155/2012/715942.
- [19] A. M. Hardin and E. B. Buckner, "Characteristics of a Positive Experience

- for Women Who Have Unmedicated Childbirth,” *J. Perinat. Educ.*, vol. 13, no. 4, pp. 10–16, 2004, doi: 10.1624/105812404X6180.
- [20] A. Srivastava, B. I. Avan, P. Rajbangshi, and S. Bhattacharyya, “Determinants of women’s satisfaction with maternal health care: A review of literature from developing countries,” *BMC Pregnancy Childbirth*, vol. 15, no. 1, pp. 1–12, 2015.
- [21] K. Dijkstra, “Understanding Healing Environments: Effects of Physical Environmental Stimuli on Patients’ Health and Well-Being,” University of Twente, Groningen, 2009.
- [22] C. Regnier, “Guide to Setting Thermal Comfort Criteria and Minimizing Energy Use in Delivering Thermal Comfort,” no. August, 2012.
- [23] H. Djamila, C. Chu, and S. Kumaresan, “Effect of Humidity on Thermal Comfort in the Humid Tropics,” no. June, pp. 109–117, 2014.
- [24] S. Phumdoung, M. Good, and F. Payne, “Music Reduces Sensation and Distress of Labor Pain,” *Pain Manag. Nurs.*, vol. 4, no. 2, pp. 54–61, 2003, doi: 10.1016/S1524-9042(02)00003-6.
- [25] “Effects of soothing music on labor pain among Filipino mothers Effects of soothing music on labor pain among Filipino mothers,” no. December 2015, 2013, doi: 10.5430/cns.v1n1p35.
- [26] N. J. Triastuti and I. K. Dewi, “The relationship between listening to religious music and reading al-Qur’an to anxiety levels of medical students,” *Int. J. Res. Med. Sci.*, vol. 7, no. 1, p. 125, 2018, doi: 10.18203/2320-6012.ijrms20185366.
- [27] S. Vedam *et al.*, “The Canadian birth place study: examining maternity care provider attitudes and interprofessional conflict around planned home birth,” *BMC Pregnancy Childbirth*, vol. 14, p. 353, 2014, doi: 10.1186/1471-2393-14-353.
- [28] M. V. Dzomeku, “Maternal Satisfaction with Care during Labour: A Case Study of the Mampong-Ashanti District Hospital Maternity Unit in Ghana,” *Int. J. Nurs. Midwifery*, vol. 3, no. 3, pp. 30–34, 2011, [Online]. Available: <http://www.academicjournals.org/journal/IJNM/article-abstract/154DAFD809>.
- [29] N. Bahri, A. Vafae-najar, H. Ebrahimipour, and F. Askari, “Quality of Labor Support during Labor Article history :,” *Patient Saf. Qual. Improv. J.*, vol. 2, no. 2, pp. 1–7, 2014.
- [30] U. Senarath, D. N. Fernando, and I. Rodrigo, “Factors Determining Client Satisfaction with Hospital-Based Perinatal Care in Sri Lanka,” *Trop. Med. Int. Heal.*, vol. 11, no. 9, pp. 1442–1451, 2006, doi: 10.1111/j.1365-3156.2006.01698.x.