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Research Article

A Quasi experimental study to assess the effectiveness of Peppermint aromatherapy upon labour pain and coping during First stage of Labour among the primi parturient mothers in selected Hospitals at Dindigul district

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Abstract:

Introduction: Labour pain is a complex physiological and psychological experience that may affect maternal comfort and coping during childbirth.

Objective: To evaluate the effectiveness of peppermint aromatherapy on labour pain and coping during the first stage of labour among primiparturient mothers. **Methods:** A quantitative quasi-experimental pre-test–post-test control-group design was adopted in selected hospitals in Dindigul District. Sixty primiparturient mothers in the active phase of the first stage of labour were selected using convenience sampling and allocated to experimental (n = 30) and control (n = 30) groups. Labour pain was assessed using the Visual Analogue Scale, coping using the Pain Coping Scale, and fetal-maternal parameters using a modified WHO partograph. The experimental group received peppermint aromatherapy. The control group received routine care. Paired t test and Chi-square test were used for analysis. **Results:** In the experimental group, the mean labour pain score significantly decreased from 6.9 ± 0.76 to 4.1 ± 1.44 ($t = 10.29$, $p < 0.001$), whereas no change was observed in the control group. The mean coping score in the experimental group significantly increased from 3.9 ± 1.50 to 8.1 ± 1.33 ($t = 10.49$, $p < 0.001$). In the control group, the change in coping was not statistically significant. Following the intervention, 50% of mothers in the experimental group had mild pain and 50% had moderate pain, while none had severe pain. Most mothers in the experimental group (70%) reported high satisfaction with peppermint aromatherapy. **Conclusion:** Peppermint aromatherapy was effective in reducing labour pain and improving coping during the first stage of labour among primiparturient mothers. It may be considered as a complementary, non-invasive nursing intervention during normal labour.

Keywords: Peppermint aromatherapy, labour pain, coping, primiparturient mothers, first stage of labour, complementary therapy.

INTRODUCTION

Labour is a significant physiological and psychological experience in a woman's life. The first stage of labour is characterized by progressive cervical dilatation and uterine contractions, with pain intensity generally increasing as labour advances. The perception of labour pain varies among women and may be influenced by physiological, psychological, and environmental factors.

Effective management of labour pain is an important component of intrapartum nursing care. Although pharmacological methods are available, non-pharmacological interventions may provide additional comfort and support without invasive procedures. Aromatherapy involves the therapeutic use of aromatic essential oils to promote physical and psychological well-being. In the present study, peppermint aromatherapy was administered during the active phase of labour.

Previous research cited in the dissertation has reported beneficial effects of aromatherapy on labour pain. A meta-analysis of 17 randomized controlled trials reported that aromatherapy reduced labour pain during the transitional phase and may reduce the duration of some stages of labour. Other randomized trials also reported lower pain scores among women receiving aromatherapy compared with control groups. Evidence from trials using Boswellia and lavender aromatherapy has also demonstrated reductions in labour pain without significant adverse effects on neonatal outcomes.

METHODOLOGY

A quantitative quasi-experimental pre-test–post-test control-group design was adopted. The study was conducted in the labour rooms of Government Headquarters Hospital and Uma Ramanadhan Hospital in Dindigul District. The sample consisted of 60 primiparturient mothers, with 30 participants in the experimental group and 30 in the control group. Convenience sampling was used. Mothers who were willing to participate, had contractions with cervical dilatation between 4 and 10 cm, were between 37 and 42 weeks of gestation, and could understand Tamil or English were included. High-risk mothers and mothers who were not in labour or unable to communicate in Tamil or English were excluded.

Data collection instruments included a demographic and obstetric variable proforma, Visual Analogue Scale for labour pain, Pain Coping Scale, Modified WHO Partograph for fetal-maternal parameters, and a rating scale for satisfaction with peppermint aromatherapy. For the intervention, 0.2 mL of peppermint essence was mixed with 2 mL of normal saline and impregnated on gauze. The gauze was attached to the participant's dress collar, and administration was repeated every 30 minutes from 4 cm cervical dilatation until completion of the first stage of labour.

The control group received routine care. Labour pain, coping, and fetal-maternal parameters were assessed before and after the intervention in both groups. Data were analysed.

RESULTS

The findings are presented in Tables 1–8. Table 1 shows that the demographic and obstetric characteristics were generally comparable between the groups. The experimental group showed a significant reduction in labour pain (6.9 ± 0.76 to 4.1 ± 1.44 ; $p < 0.001$) and improvement in coping (3.9 ± 1.50 to 8.1 ± 1.33 ; $p < 0.001$), whereas no significant changes were observed in the control group.

Significant improvements in selected feto-maternal parameters were also observed in the experimental group. Most mothers (70%) reported high satisfaction with peppermint aromatherapy. Pre-test labour pain was significantly associated with type of work, while pre-test coping was significantly associated with the number of antenatal visits.

DISCUSSION

The present study demonstrated that peppermint aromatherapy was effective in reducing labour pain and improving coping among primiparous mothers. The findings indicate that aromatherapy may provide a supportive and comforting approach during the first stage of labour.

Improvement in selected feto-maternal parameters was also observed following the intervention. However, these physiological changes should be interpreted along with the normal progression of labour. The intervention was well accepted, with most mothers reporting a high level of satisfaction, indicating its feasibility and acceptability in the labour setting.

Peppermint aromatherapy is a simple, non-invasive, and low-cost intervention that can be easily incorporated into routine supportive care. The findings suggest that it may help promote relaxation, improve the mother's ability to cope with labour, and enhance the overall childbirth experience. The significant associations observed with selected baseline variables indicate that individual maternal characteristics may also influence labour pain perception and coping.

CONCLUSION

The study concluded that peppermint aromatherapy was effective in reducing labour pain and improving coping among primiparous mothers. The intervention was associated with favourable changes in selected feto-maternal parameters and was well accepted by the mothers, with a high level of satisfaction. Therefore, peppermint aromatherapy may be considered a simple, safe, non-invasive, and cost-effective complementary intervention to support mothers during labour.

RECOMMENDATION

Future studies may replicate the study with larger samples and in different settings, include both primiparous and multiparous mothers, and compare peppermint aromatherapy with other non-pharmacological interventions for reducing labour pain and improving coping during labour.

LIMITATION

The study was limited by the small sample size and its conduct in a single setting, which may limit the generalizability of the findings. The short duration of assessment and the nature of the intervention may also have influenced the measurement of labour pain, coping, and feto-maternal outcomes.

REFERENCES

1. Anne Waugh, Allison Grant. (2010). Ross and Wilson Anatomy and Physiology, 11th Edition, London, Churchill Livingstone Elsevier.
2. Carol, Mc Cormick (2003). Myles Textbook for Midwives. Edinburgh: Churchill Livingstone Elsevier.
3. Chalmers, (1989). Effective care in Pregnancy and Childbirth. New York: Oxford University Press Limited.
4. Cooper, C. (1995). Aromatherapy. Edison, NJ: Chartwell Books.
5. Dickason Elizabeth Jean, (2003). Maternal-Infant Nursing Care. Philadelphia: Mosby Publication.
6. Donna, L., & Sharon, (1994). Maternal and Child Nursing Care. Philadelphia: Mosby Publication.
7. Dutta, D.C. (2006). Textbook of Obstetrics including Perinatology and Contraception. Calcutta: New Central Book Agency.
8. Fitz Patrick, R., & Joyce, (1997). Conceptual Models of Nursing- Analysis and Applications. London: Apprentice Hall Publications.
9. Frazer Diane, M. & Cooper Margaret, M. (2009). Myles Textbook for Midwives. Edinburgh: Churchill Livingstone Elsevier.
10. Gunasheela Sulochana, (2004). Practical Management of Obstetric Problems. New Delhi: Jaypee Brothers Medical Publishers.
11. Gurumani, N. (2005). An Introduction to Biostatistics. Chennai: MJP Publications.
12. Hacker Neville, F. (2004). Essentials of Obstetrics and Gynaecology. Noida: Reed Elsevier India Private Limited.
13. Harrison, J. (2008). Aromatherapy. Cengage Learning.
14. Jackson, J. (1991). Aromatherapy. Ringwood, vic: Viking O'Neil.

Table 1: Demographic characteristics (N = 60)

Variable	Category	Control n (%)	Experimental n (%)
Age (years)	Below 20	9 (30.0)	2 (6.7)
	20–25	13 (43.3)	14 (46.7)
	26–30	8 (26.7)	14 (46.7)
Educational status	Primary	4 (13.3)	6 (20.0)
	Secondary	13 (43.3)	6 (20.0)
	Higher secondary	6 (20.0)	7 (23.3)
	Graduate	6 (20.0)	10 (33.3)
	Postgraduate	1 (3.3)	1 (3.3)
Occupation	Employed	7 (23.3)	7 (23.3)
	Unemployed	23 (76.7)	23 (76.7)
Type of work	Heavy workers	7 (23.3)	16 (53.3)
	Moderate workers	12 (40.0)	7 (23.3)
	Sedentary workers	11 (36.7)	7 (23.3)
Religion	Hindu	30 (100.0)	30 (100.0)
	Christian	0 (0.0)	0 (0.0)
	Muslim	0 (0.0)	0 (0.0)
	Others	0 (0.0)	0 (0.0)
Monthly income	Below ₹5,000	5 (16.7)	7 (23.3)
	₹5,001–10,000	6 (20.0)	12 (40.0)
	₹10,001–15,000	10 (33.3)	6 (20.0)
	₹15,001–20,000	9 (30.0)	5 (16.7)
	Above ₹20,000	0 (0.0)	0 (0.0)
Type of family	Nuclear	20 (66.7)	22 (73.3)
	Joint	10 (33.3)	8 (26.7)
	Extended	0 (0.0)	0 (0.0)
Area of residence	Urban	8 (26.7)	4 (13.3)
	Rural	22 (73.3)	26 (86.7)
	Suburban	0 (0.0)	0 (0.0)
Source of information	Health-care worker	11 (36.7)	6 (20.0)
	Television and radio	5 (16.7)	5 (16.7)
	Newspaper	6 (20.0)	10 (33.3)
	Internet	8 (26.7)	9 (30.0)
Gestational age	37–38 weeks	12 (40.0)	17 (56.7)
	39–40 weeks	18 (60.0)	13 (43.3)
	41–42 weeks	0 (0.0)	0 (0.0)
Number of antenatal visits	No visit	0 (0.0)	0 (0.0)
	≤4 visits	10 (33.3)	14 (46.7)
	>4 visits	20 (66.7)	16 (53.3)
Duration of first stage	≤9 hours	0 (0.0)	0 (0.0)
	9–10 hours	13 (43.3)	20 (66.7)
	11–12 hours	17 (56.7)	10 (33.3)
	12–13 hours	0 (0.0)	0 (0.0)
	>13 hours	0 (0.0)	0 (0.0)
Duration of second stage	15–30 minutes	28 (93.3)	30 (100.0)
	30–45 minutes	2 (6.7)	0 (0.0)
	45–60 minutes	0 (0.0)	0 (0.0)
	>1 hour	0 (0.0)	0 (0.0)
Duration of third stage	<10 minutes	30 (100.0)	30 (100.0)
	10–20 minutes	0 (0.0)	0 (0.0)
	>20 minutes	0 (0.0)	0 (0.0)
APGAR score	<3	0 (0.0)	0 (0.0)
	4–6	0 (0.0)	0 (0.0)
	7–10	30 (100.0)	30 (100.0)

Table 2. Comparison of Mean Labour Pain Scores Between Pre-test and Post-test Among Primiparturient Mothers.

Group	Assessment	Mean $\pm$ SD	Mean Difference	<i>t</i> value	<i>p</i> value
Control	Pre-test	6.8 $\pm$ 0.81	0.00	0.00	1.000
	Post-test	6.8 $\pm$ 0.90			
Experimental	Pre-test	6.9 $\pm$ 0.76	2.86	10.29	<0.001***
	Post-test	4.1 $\pm$ 1.44			

Table 3. Comparison of Mean Coping Scores Between Pre-test and Post-test Among Primiparturient Mothers in the Control and Experimental Groups

Group	Assessment	Mean $\pm$ SD	Mean Difference	<i>t</i> value	<i>p</i> value
Control	Pre-test	3.7 $\pm$ 1.30	0.10	0.902	0.375
	Post-test	3.6 $\pm$ 1.10			
Experimental	Pre-test	3.9 $\pm$ 1.50	4.10	10.49	<0.001***
	Post-test	8.1 $\pm$ 1.33			

Table 4. Comparison of Feto-Maternal Parameters Between Pre-test and Post-test Among Primiparturient Mothers in the Control Group

Parameter	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Mean Difference	<i>t</i> value	<i>p</i> value
Fetal heart rate	132.10 $\pm$ 3.95	133.13 $\pm$ 4.65	1.03	0.909	0.376
Uterine contraction frequency	2.96 $\pm$ 0.17	2.99 $\pm$ 0.17	0.035	3.33	0.002**
Uterine contraction duration	52.40 $\pm$ 5.42	64.30 $\pm$ 6.07	1.50	1.43	0.166
Cervical dilatation	4.23 $\pm$ 1.10	5.03 $\pm$ 0.85	0.80	3.02	0.005**
Maternal pulse rate	95.50 $\pm$ 3.10	86.90 $\pm$ 4.51	8.70	9.65	<0.001***
Systolic blood pressure	117.90 $\pm$ 4.87	117.93 $\pm$ 4.70	0.03	0.44	0.662
Diastolic blood pressure	77.90 $\pm$ 4.45	78.80 $\pm$ 4.82	1.17	0.99	0.328
Maternal temperature	37.20 $\pm$ 1.47	36.40 $\pm$ 1.54	0.77	1.91	0.067

Table 5. Comparison of Feto-Maternal Parameters Between Pre-test and Post-test Among Primiparturient Mothers in the Experimental Group

Parameter	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Mean Difference	<i>t</i> value	<i>p</i> value
Fetal heart rate	132.30 $\pm$ 3.70	139.60 $\pm$ 8.35	7.26	4.45	<0.001***
Uterine contraction frequency	3.02 $\pm$ 0.15	2.53 $\pm$ 0.16	0.48	13.84	<0.001***
Uterine contraction duration	53.40 $\pm$ 5.42	64.30 $\pm$ 6.07	10.86	6.51	<0.001***
Cervical dilatation	4.57 $\pm$ 0.94	5.87 $\pm$ 0.77	1.30	5.11	<0.001***
Maternal pulse rate	96.10 $\pm$ 2.44	85.20 $\pm$ 6.42	10.90	8.73	<0.001***
Systolic blood pressure	115.50 $\pm$ 4.87	120.70 $\pm$ 7.17	5.20	2.92	0.006**
Diastolic blood pressure	77.40 $\pm$ 4.63	79.36 $\pm$ 3.31	1.97	1.62	0.115
Maternal temperature	36.60 $\pm$ 0.89	38.20 $\pm$ 0.99	1.60	6.86	<0.001***

Table 6. Level of Satisfaction with Peppermint Aromatherapy Among Primiparturient Mothers in the Experimental Group

Level of Satisfaction	Frequency (n)	Percentage (%)
Low	0	0.0
Moderate	9	30.0
High	21	70.0
Total	30	100.0

Table 7. Significant Association Between Pre-test Labour Pain and Selected Demographic and Obstetric Variables

Variable	Group	χ^2 value	df	<i>p</i> value
Type of work	Control	6.98	2	0.030*

Table 8. Significant Association Between Pre-test Coping and Selected Demographic and Obstetric Variables

Variable	Group	χ^2 value	df	<i>p</i> value
Number of antenatal visits	Control	5.40	1	0.020*

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