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Mothers' satisfaction with distraction as a post-operative pain management intervention for their child: An interventional study

Abstract

Aim: This study aimed to investigate mothers' levels of satisfaction with distraction as a post-operative pain management intervention for their child.

Background: Although the number of studies on paediatric pain management has increased over time, research into non-pharmacological post-operative pain management remains inadequate, indicating that more research is required.

Design: A posttest-only control group design was adopted to measure mothers' levels of satisfaction with distraction as a non-pharmacological post-operative pain management intervention for their child.

Methods: The study included 160 mothers and their children undergoing elective surgery in a paediatric surgical unit. Mothers and children were randomly allocated to intervention and control groups (80 intervention, 80 control). The children in the intervention group received age-appropriate distraction interventions for three post-operative days along with the usual care. Children in the control group received only usual care. Data on parental satisfaction with pain management interventions was assessed on the day of discharge using a parental satisfaction questionnaire.

Results: In the intervention group 48 mothers (60%) were 'very satisfied' and 22 mothers (40%) were 'moderately satisfied' with pain management interventions for their child. In the control group 27 mothers (34%) were 'very satisfied' and 53 (66%) were 'moderately satisfied'. The mean and standard deviation of mother's satisfaction in the intervention group and control group was 42 ± 5.23 and 34 ± 6.64 respectively. The present study identified that there was a significant difference in the level of mother's satisfaction between the intervention and control groups ($p < .05$).

Conclusion: The level of satisfaction with pain management intervention for their child was higher for mothers in the intervention group than the control group. The distraction intervention provided for the children during the post-operative period improved the mothers' satisfaction level.

Keywords: children, distraction, mother, pain, satisfaction

Introduction

Despite the number of studies on paediatric pain management having grown over time, children's post-operative pain management remains poorly understood, indicating that further research is needed.¹ As most younger children are unable to report their pain, caregivers believe that children with developing nervous systems do not experience pain as much as adults.² Research has shown that 20 to 35 per cent of children and adolescents suffer from moderate to severe pain.²⁻⁵ If post-operative pain is left untreated it delays recovery, increases the demand for analgesics,⁶ increases the length of hospital stay and decreases immunity among children.⁷ It is important to include parents in pain management, as they can understand their child's behaviour and may make a significant contribution to their child's pain assessment and non-pharmacological pain management interventions.⁸ If parents are involved in post-operative pain management they may help in managing the child's pain which, in turn, increases their satisfaction with the interventions provided.⁹

It has been observed that most of the time there is a lack of parental involvement in the post-operative care of a child.¹⁰ A combination of pharmacological and non-pharmacological interventions to manage post-operative pain has been identified as highly beneficial for children.¹¹ Non-pharmacological interventions can be provided either by a nurse or parent.¹² In the literature, there is a lack of studies assessing parental satisfaction with pain management interventions for children; hence the need to conduct a study to assess parental satisfaction with pain management interventions in a paediatric surgical unit.

Hospitalisation and paediatric surgery are stressful situations for children and their parents.¹³ The evidence indicates that 64 per cent of children experience moderate to severe pain after surgery, and 29 per cent experience unbearable pain.¹⁴ Some parents find it impossible to support their child during post-surgical pain¹⁵ because of their own pre-and post-operative anxiety. And parental anxiety or stress can cause children having surgery to respond to the unpleasant situation in a variety of ways.¹⁶

Assessment of patient satisfaction is an important part of evaluating health care and improving current practice.¹⁷ Assessment of satisfaction in parents of younger children is a reliable way to measure the effect of any treatment and evaluate the quality of care provided in the hospital setting.¹⁸ A number of studies have looked at how satisfied parents are with their children's medical treatment.¹⁹⁻²² Some studies have concentrated on neonatal treatment^{23,24} while others have looked at emergency departments,²⁵ in-patient wards,²⁶ and outpatient care.²⁷

While limited research has looked into parental satisfaction towards pain management interventions for children,^{28,29} there is evidence that increased medical awareness and information contribute to increased parental trust which, in turn, helps the child feel protected and comfortable.³⁰ Parental anxiety, on the other hand, may have the opposite effect and result in fearful and frightened patients.³¹ There is an association between parental fear and how parents rate quality of care.³²

The researchers could not identify any studies into parental satisfaction with non-pharmacological intervention (distraction) provided

by the nurse with mother involvement in the post-operative period. As parental satisfaction is an important factor to assess the implementation of pain management interventions in paediatric surgery the researchers felt the need to conduct this study. This study aimed to investigate levels of parental satisfaction with distraction as a post-operative pain management intervention for their child in a paediatric surgical unit.

Methods

Design and setting

This study used a quantitative research approach with a posttest-only control group design. The study was carried out between May 2019 and February 2021 in a tertiary care hospital in Karnataka, India.

Study participants

The study participants were 160 children, aged between two and seven years, undergoing elective surgery and their accompanying mothers. Mothers who were unable to be with the child for three post-operative days were excluded from the study.

Ethical approval

Before starting the study, ethical approval was obtained from the Institutional Research Committee (IEC: XX/2019).

Data collection procedure

The study was explained to the mothers in the paediatric surgical unit. Informed consent from the mothers and assent from the children was obtained. In this study, the mothers were randomly allocated to the intervention (n = 80) and control (n = 80) groups. The researcher assigned for the data collection was blinded to the

allocation of the mothers into the intervention and control groups. The children in the intervention group received age-appropriate distraction interventions for three days after the surgery. The children were distracted with the help of a distraction kit that was prepared by the researchers based on a literature review. Considering the safety of the children three distraction kits were prepared for the three days and each day a new kit was offered to the children.

Different distraction kits were prepared for different age groups. The distraction kit for children aged two to four years consisted of soft toys of different colors, a book with animal pictures, simple blocks for construction, push and pull toys and breathing activities (blowing colorful feathers and party blowers). The distraction kit for the children aged five to seven years consisted of role-play game cards, matching cards with different colors, coloring books and an interactive app that involved identifying missing items, matching items, counting and identifying similar items.

The children were asked to pick any items from the distraction kit they liked and there was no restriction on choosing items from the kit. The children were distracted for thirty minutes for three post-operative days. Along with the distraction interventions the children received the usual care of pharmacological treatment. Children in the control group received only the usual care of pharmacological treatment. The pharmacological treatment included analgesics (injection or oral paracetamol) in all cases.

To assess the mothers' satisfaction with pain management interventions, a parental satisfaction questionnaire was administered to the mothers on the day of discharge. All the mothers

in both the intervention and control groups completed the questionnaire.

Outcome measures

The outcome of this study was the mother's level of satisfaction with their child's post-operative pain management interventions.

Data collection tools

Demographic proforma

In this study, the mothers' sample characteristics were obtained on the day of admission. The data included the mother's age, annual income, education and occupation.

Parental satisfaction questionnaire

Data on the mother's satisfaction with their child's post-operative pain management interventions were collected on the day of discharge. A questionnaire using the Likert scale was developed by the researchers for the study purpose. The questionnaire consisted of ten items that the mothers rated on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire had a minimum score of 20 and a maximum score of 50. The interpretation of the questionnaire tool was based on two categories: very satisfied (score of 40–50) and moderately satisfied (score of 20–39). Higher scores indicated a higher level of satisfaction. The questionnaire was validated by experts from the departments of paediatric surgery, anaesthesiology, psychology and child health nursing. All the items were clear and no changes were made to the questionnaire. The reliability of the questionnaire was tested by administering it to 20 mothers in the paediatric surgical unit and the questionnaire was found to be reliable ($r = 0.87$). Therefore, the questionnaire was administered to the 160 mothers in this study on the day their child was

discharged. The average time taken by the mothers to complete the tool was between ten and 15 minutes.

Data analysis

Data obtained from the mothers were coded using SPSS 23.0 program. Demographic characteristics were described by frequency and percentage. The independent t-test was calculated to identify statistically significant differences between the groups. The chi-square test was used to assess the association between satisfaction levels and demographic variables.

Results

Description of demographic variables

Table 1 shows the distribution of demographic variables among the 160 study participants. The mean age of the mothers was 30.6 in the intervention group and 31.2 in the control group with 41 mothers (51%) in the intervention group and 34 (42.5%) in the control group being between the age of 29 and 33 years. The parental annual income was more than 15 000 rupees (AUD 284) for 52 (65%) of participants in the intervention group and for 50 (62.5%) in the control group. It was observed that 34 (42.5%) of the mothers in the intervention group and 36 (45%) in the control group had completed tertiary education. The children in the study were aged between two and seven years, with a mean age of 4.2 in both the intervention and the control group. All the children in the study underwent either abdominal or urogenital surgeries.

Satisfaction levels

Data on level of satisfaction with their child's post-operative pain management interventions were collected from 160 mothers on the day of discharge when the

Table 1: Distribution of demographic variables of participants (N = 160)

Demographic characteristics	Variables	Intervention group (n = 80)		Control group (n = 80)		Total	
		f	%	f	%	f	%
Age of mother in years	24–28	20	25.0	20	25.0	40	50.0
	29–33	41	51.2	34	42.5	75	46.8
	34–38	19	23.8	26	32.5	45	28.2
Family income in rupees	5000–10000	10	12.5	3	3.8	13	8.1
	10 000–15 000	18	22.5	27	33.8	45	28.1
	>15 000	52	65.0	50	62.5	102	63.8
Education level of mother	primary	12	15.0	10	12.5	22	13.8
	secondary	34	42.5	34	42.6	68	42.6
	graduate	32	40.0	35	43.7	67	41.8
	postgraduate	2	2.5	1	1.2	3	1.8
Occupation of mother	housewife	47	58.7	50	62.6	97	60.6
	coolie worker	23	28.7	21	26.2	44	27.5
	other*	10	12.5	9	11.2	19	11.8

* teacher, tailor, working in general store

researcher responsible for data collection administered the parental satisfaction questionnaire. A 'very satisfied' level was recorded for 48 mothers (60%) in the intervention group and 27 mothers (34%) in the control group. A 'moderately satisfied' level was recorded for 32 mothers (40%) in the intervention and 53 mothers (66%) in the control group (Figure 1). The mean and standard deviation of maternal satisfaction was 42 ± 5.23 in the intervention group and 34 ± 6.64 in the control group. An independent t-test was performed to determine whether the difference between and within the groups was significant and it was found that there was a significant difference between the intervention and control groups ($t = 8.037$, mean difference = 7.6, degree of freedom 158, $p < 0.05$).

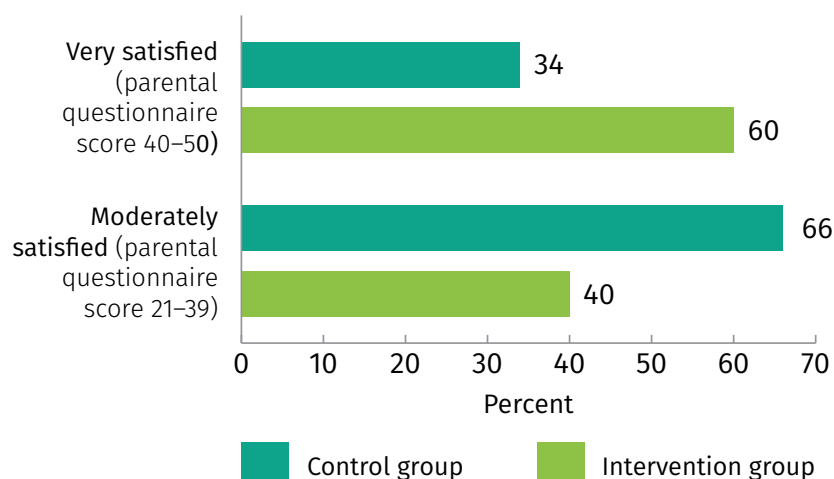


Figure 1: Mothers' levels of satisfaction with their child's post-operative pain management interventions

Table 2 shows the ten items in the parental satisfaction questionnaire and their mean scores and standard deviations. In the intervention group the mean scores were between 3.99 and 4.18 (out of 5), with the item

'I am overall happy with the pain management intervention given to my child' having the lowest mean score and the item 'I was more secure in handling my child during the surgical pain' having the highest.

Table 2: Mean and standard deviation for questionnaire items (N = 160)

Item	Intervention group		Control group	
	Mean score	SD	Mean score	SD
I was informed regarding my child's pain after surgery.	4.12	0.700	3.78	0.693
The pain intervention took away most of my child's pain after surgery.	4.09	0.508	3.39	1.000
Pain interventions made my child comfortable during the post-surgical period.	4.04	0.702	3.16	1.012
I was more secure in handling my child during the surgical pain.	4.18	0.546	3.44	1.017
Pain intervention helped to improve the child's post-surgical behaviour.	4.16	0.605	3.48	0.900
I managed my child's pain through guidance.	4.12	0.682	3.56	0.898
The pain intervention changed my thoughts and feelings regarding surgical pain.	4.06	0.663	3.58	0.868
Pain management interventions are useful to children after surgery.	4.14	0.347	3.59	0.867
If my child needs to have another surgery I will recommend the same pain management intervention.	4.10	0.686	2.98	1.091
I am overall happy with the pain management intervention given to my child.	3.99	0.646	3.14	1.064

In the control group the mean scores were between 2.98 and 3.78 with the item 'If my child needs to have another surgery I will recommend the same pain management intervention' having the lowest mean score and the item 'I was informed regarding my child's pain after surgery' having the highest.

Association between satisfaction levels and demographic variables

Table 3 shows association between satisfaction levels and demographic variables (age, annual income, education and occupation) using Chi-squared tests. Only two levels of satisfaction were analysed ('very satisfied' and 'moderately satisfied') because no responses fell into the 'not satisfied' level. A significant difference between the satisfaction

level and the mother's age was observed ($\chi^2 = 8.107$, $p = 0.017$).

Discussion

A study by Chng et al.⁸ in Singapore identified that, despite their children experiencing moderate post-operative pain, parents were generally satisfied with the post-operative care they received; however, the study did not identify what contributed to the parents' satisfaction. The current study aimed to investigate mothers' levels of satisfaction with distraction as a post-operative pain management intervention for their child. We found that 48 (60%) of the mothers whose children received the intervention of distraction as well as usual care were very satisfied with their child's pain management interventions, compared to only 27 (34%) of the

mothers whose children receive usual care only. This suggests that the distraction intervention increased the mothers' satisfaction with pain management interventions provided to their child.

We observed that children in the intervention group were easier to handle when experiencing post-operative pain compared to the children in the control group. We also found that distraction is effective and easily implemented in low-resource hospital settings. Furthermore, we found it to be beneficial when mothers participated in providing the distraction intervention with a nurse and we believe this also contributed to the increase in maternal satisfaction level.

Table 3: Association between parental satisfaction and demographic variables (N = 160)

Demographic characteristics	Variables	Intervention group		Control group		χ^2 / Fisher's exact value	df	P-value
		Moderately satisfied	Very satisfied	Moderately satisfied	Very satisfied			
Age of mother in years	24–28	8	30	28	16	8.107	2	0.017*
	29–33	22	17	27	9			
	34–38	2	1	0	0			
Family income in rupees	5000–10000	6	4	3	0	7.015	2	0.143
	10 001–15 000	8	10	15	12			
	>15 000	18	34	37	13			
Education level of mother	primary	7	9	5	5	6.729	2	0.151
	secondary	12	19	30	4			
	graduate	13	20	20	16			
Occupation of mother	housewife	15	32	33	17	2.129	2	0.345
	coolie worker	12	11	18	3			
	other*	5	5	4	5			

* teacher, tailor, working in general store

In addition, we found a significant association between satisfaction levels and the mother's age. The reason could be due to experienced mothers being more comfortable handling their children compared to less experienced mothers.

The study findings highlight the benefit of age-appropriate distraction as a pain management intervention for children in the post-operative period. Nurses need to be educated about paediatric pain assessment and encouraged to provide distraction along with the usual care in the post-operative period.

Limitations

This study measured satisfaction levels of mothers of children undergoing surgery, but it did not measure satisfaction levels of the children.

Conclusion

A comparison of satisfaction levels of mothers in the intervention and control groups of this study found that mothers whose children had received the distraction pain management intervention as well as usual pharmacological care had higher satisfaction levels than mothers whose children had

received only usual pharmacological care. The distraction intervention improved the children's pain management and increased the mothers' satisfaction level.

Declaration of conflict of interest and funding statement

The authors declare that there is no conflict of interest. This study has not received any source of funding.

References

1. Vejzovic V, Bozic J, Panova G, Babajic M, A-C Bramhagen. Children still experience pain during hospital stay: A cross-sectional study from four countries in Europe. *BMC Pediatr*. 2020;20(1):39.
2. Alotaibi K, Higgins I, Day J, Chan S. Paediatric pain management – knowledge, attitudes, barriers, and facilitators among nurses: An integrative review. *Int Nurs Rev*. 2018;65(4):524–33.
3. Groenewald CB, Rabbitts JA, Schroeder DR, Harrison TE. Prevalence of moderate-severe pain in hospitalized children. *Pediatr Anesth*. 2012;22(7):661–8.
4. King S, Chambers CT, Huguet A, MacNevin RC, McGrath PJ, Parker L, et al. The epidemiology of chronic pain in children and adolescents revisited: A systematic review. *Pain*. 2011;152(12):2729–38.
5. Sansone P, Pace MC, Passavanti MB, Pota V, Colella U, Aurilio C. Epidemiology and incidence of acute and chronic. *Ann Ital Chir*. 2015;86(4):285–92.
6. Williams G, Howard RF, Lioffi C. Persistent postsurgical pain in children and young people: Prediction, prevention, and management. *Pain Rep*. 2017;2(5):e616.
7. Mekonnen ZA, Melesse DY, Kassahun HG, Flatie TD, Workie MM, Chekol WB. Prevalence and contributing factors associated with postoperative pain in pediatric patients: A cross-sectional follow-up study. *Perioper Care Oper Room Manag*. 2021;23:100159.
8. Chng HY, He H-G, Chan SW-C, et al. Parents' knowledge, attitudes, use of pain relief methods and satisfaction related to their children's postoperative pain management: A descriptive correlational study. *J Clin Nurs*. 2015;24(11–12):1630–42.
9. Chorney JM, Twycross A, Mifflin K, Archibald K. Can we improve parents' management of their children's postoperative pain at home? *Pain Res Manag*. 2014;19(4):e115–23.
10. Hoon LS, Hong-Gu H, Mackey S. Parental involvement in their school-aged children's post-operative pain management in the hospital setting: A comprehensive systematic review. *JB Lib Syst Rev*. 2011;9(28):1193–225.
11. Riddell RRP, Racine NM, Turcotte K, Uman LS, Horton RE, Osmun LD et al. Non-pharmacological management of infant and young child procedural pain. *Cochrane Database Syst Rev*. 2011;Oct 5(10):CD006275.
12. Thrane SE, Wanless S, Cohen SM, Danford CA. The assessment and non-pharmacologic treatment of procedural pain from infancy to school age through a developmental lens: A synthesis of evidence with recommendations. *J Pediatr Nurs*. 2016;31(1):e23–32.
13. Fronk E, Billick SB. Pre-operative anxiety in pediatric surgery patients: Multiple case study analysis with literature review. *Psychiatr Q*. 2020;91(4):1439–51.
14. Shave K, Ali S, Scott SD, Hartling L. Procedural pain in children: A qualitative study of caregiver experiences and information needs. *BMC Pediatr*. 2018;18(1):324.
15. David Vainberg L, Vardi A, Jacoby R. The experiences of parents of children undergoing surgery for congenital heart defects: A holistic model of care. *Front Psychol*. 2019;10:2666.
16. Hagiwara S-I, Nakayama Y, Tagawa M, Arai K, Ishige T, Murakoshi T et al. Pediatric patient and parental anxiety and impressions related to initial gastrointestinal endoscopy: A Japanese multicenter questionnaire study. *Scientifica (Cairo)*. 2015;2015:797564.
17. Cosma SA, Bota M, Fleşeriu C, Morgovan C, Valeanu M, Cosma D. Measuring patients' perception and satisfaction with the Romanian healthcare system. *Sustainability*. 2020. 12(4):1612.
18. Kim CE, Shin J-S, Lee J, Lee YJ, Kim M-R, Choi A et al. Quality of medical service, patient satisfaction and loyalty with a focus on interpersonal-based medical service encounters and treatment effectiveness: A cross-sectional multicenter study of complementary and alternative medicine (CAM) hospitals. *BMC Complement Altern Med*. 2015;17(1):174.
19. Kaur M, Charan GS, Selvi T. Parents' satisfaction concerning their children's care at a tertiary hospital. *AMEI's Curr Trends Diagn Treat* 2019;3(1):18–22.
20. Johansen A. Persistent post-surgical pain: Prevalence, risk factors, and pain mechanisms. PhD thesis. Tromsø: The Arctic University of Norway. 2015.
21. Simons J. Parents' support and satisfaction with their child's postoperative care. *Br J Nurs*. 2002;11(22):1442–9.
22. Rony RY, Fortier MA, Chorney JM, Perret D, Kain ZN. Parental postoperative pain management: Attitudes, assessment, and management. *Pediatrics*. 2010;125(6):e1372–8. doi:10.1542/peds.2009-2632
23. Hagen IH, Iversen VC, Nesset E, Orner R, Svindseth MF. Parental satisfaction with neonatal intensive care units: a quantitative cross-sectional study. *BMC Health Serv Res*. 2019;19(1):37.
24. Balasundaram M, Porter M, Miller S, Sivakumar D, Fleming A, McCallie K. Increasing parent satisfaction with discharge planning: An improvement project using technology in a level 3 NICU. *Adv Neonatal Care*. 2022;22(2):108–18.
25. Paul RI (Ed). American academy of pediatrics, the section on emergency medicine, scientific abstract presentations, AAP national conference and exhibition October 1, 2010 - San Francisco, CA. *Pediatr Emerg Care*. 2010;26(9):697–707.
26. Tsironi S, Koulierakis G. Factors affecting parents' satisfaction with pediatric wards: Parental satisfaction with hospital care. *Jpn J Nurs Sci*. 2019;16(2):212–20.
27. Bitzer EM, Volkmer S, Petrucci M, Weissenrieder N, Dierks M-L. Patient satisfaction in pediatric outpatient settings from the parents' perspective – the Child ZAP: A psychometrically validated standardized questionnaire. *BMC Health Serv Res*. 2012;12(1):347.
28. Gill M, Drendel AL, Weisman SJ. Parent satisfaction with acute pediatric pain treatment at home. *Clin J Pain*. 2013;29(1):64–9.
29. Foster RL, Varni JW. Measuring the quality of children's postoperative pain management: Initial validation of the child/parent Total Quality Pain Management (TQPM) instruments. *J Pain Symptom Manage*. 2002;23(3):201–10.
30. Chabot B, Ferland CE. Inpatient postoperative undesirable side effects of analgesics management: A pediatric patients and parental perspective. *Pain Rep*. 2020;5(5): e845.
31. Aranha P, Sams L, Saldanha P. Impact of a preoperative education program on parental anxiety: A pilot project. *Arch Med Health Sci*. 2016;4(1):30–4.
32. Wilson AC, Lewandowski AS, Palermo TM. Fear-avoidance beliefs and parental responses to pain in adolescents with chronic pain. *Pain Res Manag*. 2011;16(3):178–82.