Manipal Journal of Nursing and Health Sciences

Volume 2 | Issue 1 Article 9

1-1-2016

Impact of multimodal pre-operative preparation program on children undergoing surgery – A pilot project

Priya Reshma Aranha Ms
Yenepoya University Managaluru, Karnataka, India, priyaresh.menezes@gmail.com

Larissa Martha Sams Dr
Laxmi Memorial College of Nursing Mangaluru, Karnataka

Prakash Saldanha Mr
Yenepoya Medical College, Mangaluru, Karnataka

Follow this and additional works at: https://impressions.manipal.edu/mjnhs

 Part of the Nursing Commons

Recommended Citation

Aranha, Priya Reshma Ms; Sams, Larissa Martha Dr; and Saldanha, Prakash Mr (2016) "Impact of multimodal pre-operative preparation program on children undergoing surgery – A pilot project," *Manipal Journal of Nursing and Health Sciences*: Vol. 2: Iss. 1, .
Available at: https://impressions.manipal.edu/mjnhs/vol2/iss1/9

This Original Research is brought to you for free and open access by the MAHE Journals at Impressions@MAHE. It has been accepted for inclusion in Manipal Journal of Nursing and Health Sciences by an authorized editor of Impressions@MAHE. For more information, please contact impressions@manipal.edu.

Impact of multimodal pre-operative preparation program on children undergoing surgery – A pilot project

Cover Page Footnote

The authors express sincere gratitude to the administrators, doctors, nurses and other hospital staff of Yenepoya Medical College Hospital Mangaluru, Karnataka, for all the support rendered during the study and the children for being a part of the study.

This original research is available in Manipal Journal of Nursing and Health Sciences:
https://impressions.manipal.edu/mjnhs/vol2/iss1/9

Original article

Impact of multimodal pre-operative preparation program on children undergoing surgery – A pilot project

Priya Reshma Aranha*, Larissa Martha Sams, Prakash Saldanha

Email: priyaresh.menezes@gmail.com

Abstract

Introduction: It has been observed that children undergo a considerable amount of fear and anxiety when waiting for an upcoming surgery. Many non-pharmacological strategies are being used to manage the pre-operative fear and anxiety in children. This study evaluates the effectiveness of multimodal pre-operative preparation program on fear and anxiety of children undergoing surgery. **Methods:** It was a quasi-experimental study conducted in selected paediatric surgical units. Using purposive sampling technique, 12 children aged 8-12 years undergoing surgery were selected as study participants. They were divided into experimental and control groups — with six participants in each group. The experimental group received multimodal pre-operative preparation program, whereas the control group received routine care. Childs' fear was measured using FACES fear scale for children and anxiety was measured using Numerical Anxiety Scale, on admission, prior to shifting the child to the operation theatre (OT), 24 hours, and 48 hours after the surgery. **Result:** The mean fear and anxiety score of children was less in the experimental group compared to the control group after the intervention. A significant change was observed in the experimental group for the mean fear score (Friedman $_{(3)}$ =17.74, p=0.001) and anxiety score (Friedman $_{(3)}$ =17.08, p=0.001) of children. The calculated Mann-Whitney test value was significant at the time points between the groups for fear and anxiety score ($p<0.05$). **Conclusion:** The multimodal pre-operative preparation program has shown to be effective in reducing the fear and anxiety of children undergoing surgery and can be used effectively in paediatric surgical units to support children.

Keywords: Children, Fear, anxiety, multimodal pre-operative preparation program.

Introduction

Surgery is a stressful and anxiety provoking experience for children. Millions of children undergo surgery every year. It has been shown that 50-75 per cent children undergoing surgery experience fear and anxiety (Debora et al., 2013; Brophy & Erickson, 1990). A child may exhibit symptoms of fright, agitation, fast breathing, trembling, crying, and stopping to play. Others may suddenly urinate; experience increased motor tone or attempt to escape from the medical personnel (Burton, Cameron, Bond & Pointer, 1996). Post operatively child may show behaviours like increased post-operative pain, bad dreams, waking and crying, disobeying parents, separation anxiety and new onset of enuresis (Kain, Mayes, Caldwell, Karas & McClain, 2006). Around 50 to 60per cent children exhibit negative behavioural changes post-operatively including separation anxiety, sleep disturbances, aggression, temper tantrums (Kain, Mayes & O'Connor, 1996). Pre-operative anxiety may bring about physical and physiological changes among children (Li, Lopez & Lee 2006), which can be particularly evident in terms of increased heart rate and blood pressure (Hatava , Olsson & Lagerkranser , 2000).

Priya Reshma Aranha
Research scholar, Yenepoya University Managaluru, Karnataka, India

Larissa Martha Sams
Principal, Laxmi Memorial College of Nursing Mangaluru, Karnataka

Prakash Saldanha
Professor & HoD, Department of Paediatrics, Yenepoya Medical College, Mangaluru, Karnataka

* Corresponding Author

How to cite this article: Aranha, P. R., Sams, L. M., & Saldanha, P. (2016). Impact of multimodal pre-operative preparation program on children undergoing surgery – A pilot project. *Mpl J of Nurs Health Sci*, 2(1), 31-36.

The literature reveals that the following pre-operative preparation programs are effective in reducing the pre-operative anxiety among children. Role rehearsals with dolls (Zahr, 1998), puppet shows (LaMontagne , Hepworth , Salisbury & Cohen, 2003) , the teaching of coping and relaxation skills (Kain , Mayes & O'Connor, 1996), orientation tours of the operating room (Durst, 1990), educational videos (Margolis et al., 1998), books (Felder et al., 2003 & Broome , Lillis & Smith , 1989).

It is essential to prepare children for surgery based on their developmental age. The school-age children are in concrete operational stage of cognitive development where, they are capable of concrete, logical reasoning and gaining an increased understanding of cause and effect. They have an increased awareness of internal body parts and body function. They are also able to understand a series of actions and therefore benefit from hearing about all steps involved in the procedure (Brewer, Gleditsch, Syblik, Tiietjens & Vacik, 2006). Hence, pre-operative preparation should include teaching them regarding the pre, intra and post-operative events.

Thus in this study the researcher has developed a multimodal pre-operative preparation program (MPPP) for school age children and included a video, theatre tour, medical play, an information pamphlet for parents and interactive session where the researcher attempted to find the impact of this on the fear and anxiety of children undergoing surgery.

Methods & Materials

A quasi-experimental study was conducted in a selected hospital at Mangaluru, India. Ethical approval was obtained from the institutional ethics committee. The study population comprised children aged 8 to 12 years undergoing elective surgery. Using purposive sampling technique, 12 children were assigned to control (n=6) and experimental (n=6) group respectively. The intervention in the study was the multimodal pre-operative preparation program (MPPP). It consisted of a video on pre, intra and post-operative events a child faced when undergoing a surgery, which the child watched along with parent. It also had a theatre tour for the child, medical play, an information pamphlet for parents and interactive sessions. The children in the control group received the routine pre-operative preparation whereas the children in the experimental group received multimodal pre-operative preparation program after admission. Child's fear (measured using Faces fear scale for children) and anxiety (measured using Numerical anxiety scale) were assessed on admission, prior to shifting the child to OT, 24 hours and 48 hours after surgery respectively.

Result

The study result showed that majority (83.3%) of children in the experimental group and 66.7 percent in the control group were in the age group of 10 to12 years. Majority (83.3%) were boys. All children in the control group and 66.6 per cent of experimental group underwent general surgery. Majority of the children in the control group (50%) and experimental group (66.7%) was admitted only one day prior to surgery. Majority of the children in the control group (83.3%) and experimental group (66.7%) was not admitted to the hospital prior to current hospitalization.

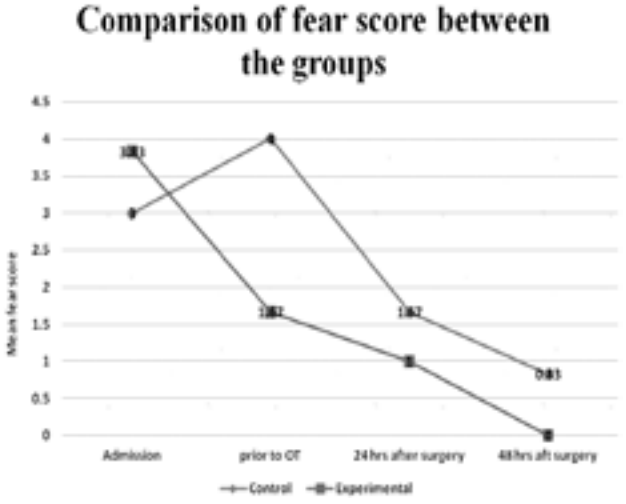

Figure 1: Line diagram showing the comparison of fear score of children between the groups at different time interval

Data in figure 1 shows that the mean score of fear of children in the experimental group was less on shifting to OT (1.67±0.516) than on admission (3.83±0.40) in comparison with the control group.

However, after 48 hours of surgery, the children in the experimental group experienced no fear but in the control group, the mean fear score was 0.83±0.40. The calculated Friedman test value (table 1) was significant in the experimental group (17.08, p=0.001) and in the control group (14.50, p=0.002)

Table 1: Mean, SD and Friedman test value of fear and anxiety score of children in experimental and control groups at different time interval (n=12)

Group	Timing	Fear score			Anxiety score		
		Mean ±SD	Friedman test value	p value	Mean ±SD	Friedman test value	p value
Experimental	On admission	3.83±0.40	17.08*	.001 HS	8.17±1.47	17.74*	0.000 HS
	Prior to shifting to OT	1.67±0.51			3.33±0.51		
	Twenty four hours after surgery	1.00±0.63			1.33±0.81		
	Forty eight hours after surgery	0.00±0.00			0.17±0.40		
Control	On admission	3.00±1.26	14.50*	.002 HS	6.67±3.55	12.53*	0.006 HS
	Prior to shifting to OT	4.00±0.00			7.83±2.04		
	Twenty four hours after surgery	1.67±0.51			3.33±0.81		
	Forty eight hours after surgery	0.83± 0.40			7.83±2.04		

Further, the pair wise comparison done by Wilcoxon signed rank test showed that in the experimental group, reduction of fear score was significant prior to shifting to OT (p=0.020). Subsequently it showed a significant reduction in 24 hours and 48 hours after surgery (p<0.05) respectively. Whereas in the control group reduction of fear score was significant only after 48 hours after surgery (p<0.05). In order to compare the fear score between the groups (Table 2) the computed Mann-Whitney test value was significant at different time points. The different time points were from admission to prior to shifting to OT (p=0.003), from admission to 24 hours after surgery (p=0.016), from prior to shifting the child to OT to 24 hours after surgery (p=0.016) and from prior to shifting to OT to 48 hours after surgery (p=0.002).

Table 2: Comparison of fear score between experimental and control group (n=12)

Time change	Groups	Mean Change ± SD	Change (%)	Mann-Whitney Z value	p value	Mean Difference	Std error Difference	95% Confidence Interval of the difference	
								Lower	Upper
Change-Admission to prior to shifting to OT	Experimental	2.16±.40	66.67	3.01*	0.003	3.16	0.54	1.95	4.37
	Control	-1.00±1.26	300.00						
Change-Admission to 24 hours after surgery	Experimental	2.83±.75	100.00	2.41*	0.016	1.50	0.58	0.20	2.79
	Control	1.33±1.21	0.00						
Change-Admission to 48 hours after surgery	Experimental	3.83±.40	100.00	2.33	0.020	1.66	0.62	0.27	3.05
	Control	2.16±1.47	100.00						
Change prior to shifting to OT to 24 hours after surgery	Experimental	0.66±.81	100.00	2.69*	0.007	-1.66	0.39	-2.54	-0.78
	Control	2.33±.51	75.00						
Change prior to shifting to OT to 48 hours after surgery	Experimental	1.66±.51	100.00	3.05*	0.002	-1.50	0.26	-2.09	-0.90
	Control	3.16±.40	100.00						
Change 24 hours after surgery to 48 hours after surgery	Experimental	1.00±.63	0.00	0.45	0.652	0.16	0.40	-0.72	1.06
	Control	0.83±.75	100.00						

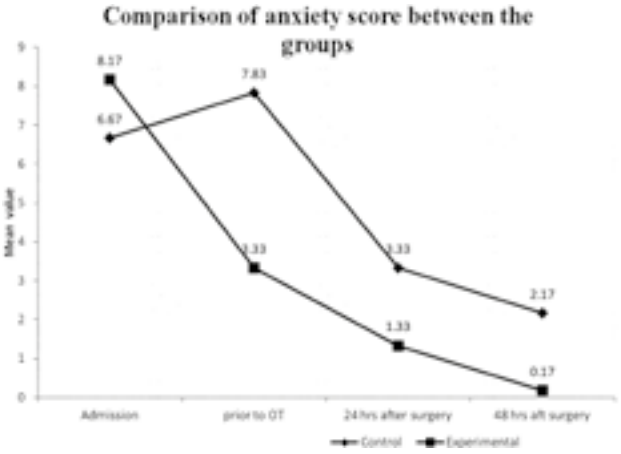

Figure 2: Line diagram showing the comparison of anxiety score of children between the groups at different time intervals

Similarly, data in figure 2 shows that the mean anxiety score of children in the experimental group was less on shifting to OT (3.33±.51) than on admission (8.17±1.47) in comparison with the control group. However, after 48 hours of surgery the mean anxiety score in the experimental group was 0.17±.40 and 2.17±.40 in the control group. The calculated Friedman test value (table 1) was significant in the experimental group (17.74, p=0.001) and in the control group (12.53, p=0.006).

Further, the pair wise comparison done by Wilcoxon signed rank test showed that in the experimental group, reduction of anxiety score was significant prior to shifting to OT (p=.02). Subsequently, it showed significant reduction after 24 and 48 hours after surgery (p<0.05). Whereas in the control group reduction in anxiety score was significant only after 24 and 48 hours after surgery (p<0.05). Further, to compare the anxiety score between the groups (Table 3), the computed Mann-Whitney test value was significant at different time points. The time points were from admission to prior to shifting to OT (p=0.004), from admission to 24 hours after surgery (p=0.034), from prior to shifting the child to OT to 24 hours after surgery (p=0.009) and from prior to shifting to OT to 48 hours after surgery (p=0.026).

Table 3: Mean difference, mean change and Mann-Whitney Z value for anxiety score at different time points between the groups (n=12)

Timings	Group	Mean change ±SD	Change (%)	Mann-Whitney Z value	p value	Mean Difference	Std error Difference	95% CI	
								Lower	Upper
Change-Admission to prior to shifting to OT	Experimental	4.83±1.47	59.18	2.91	0.004	6.00	1.33	3.01	8.98
	Control	-1.16±2.92	17.50						
Change-Admission to 24 hours after surgery	Experimental	6.83±1.32	83.67	2.12	0.034	3.50	1.55	0.04	6.95
	Control	3.33±3.55	50.00						
Change- Admission to 48 hours after surgery	Experimental	8.00±1.26	97.96	1.79	0.074	3.50	1.66	-0.21	7.21
	Control	4.50±3.88	67.50						
Change prior to shifting to OT to 24 hours after surgery	Experimental	2.00±0.89	60.00	2.62	0.009	-2.50	0.76	-4.20	-0.79
	Control	4.50±1.64	57.45						
Change prior to shifting to OT to 48 hours after surgery	Experimental	3.16±0.75	95.00	2.22	0.026	-2.50	0.89	-4.49	-0.50
	Control	5.66±2.06	72.34						
Change 24 hours after surgery to 48 hours after surgery	Experimental	1.16±0.75	87.50	0.00	1.00	0.00	0.43	-0.96	0.96
	Control	1.16±0.75	35.00						

Discussion

It is essential to manage the pre-operative fear and anxiety of children. This study evaluated that the multimodal pre-operative preparation program is effective in reducing the fear and anxiety of children, thereby preparing them effectively for surgery. Similar studies (Ho Cheung, Violeta & Tin, 2007 & Javed et al., 2008) conducted previously also support the current study findings where these studies evaluated that child life intervention, pre-operative therapeutic play and play interventions being effective in reducing the pre-operative anxiety of children. The main component of the

multimodal pre-operative preparation programme was the video film. Studies have tested that video distraction (Kim, Jung, & Yu, Park, 2015), internet preparation program (O'Conner-Von, 2008), Video glass distraction (Beklen et al., 2013) and surgery virtual tour were effective in minimizing the anxiety of children and preparing them well for the surgery. The current study findings are also supported by a study, which showed that orientation tours of the operating room were effective in reducing the pre-operative anxiety among children (Kain, Mayes & O'Connor. 1996 & Hatava, Olsson & Lagerkranser, 2000). Another study which showed that educational videos were effective in preparing children for surgery supports the study findings as well (Durst, 1990). These study findings are also supported by a study where it was shown that the parents who received an educational pamphlet and viewed a video regarding the induction of anaesthesia helped their children in minimizing their anxiety (Ronald & Kimberly, 2001).

Conclusion

Preparing children for surgery is an essential responsibility of health care professionals. The pre-operative fear and anxiety can negatively affect the post-operative recovery of children. The pre-operative preparation of children should be according to their level of understanding. When the children received the multimodal pre-operative preparation program the knowledge gained regarding the pre, intra and post-operative events, enabled the school age children to prepare well for their upcoming surgery. Hence, the multimodal pre-operative preparation programme is effective and can be successively implemented in paediatric surgery units to minimize the pre-operative fear and anxiety of children. Further studies can be done to develop and implement other interventions, which can help children to cope with their surgery. Health care facilities can develop this kind of program within their policy and protocol. It is a onetime investment for the hospital, but admitting all the children to the hospital for surgery can be benefitted a lot. Nurses can use this as an effective tool to prepare the children for surgery as it is an audio-visual device, which will enlighten them in a better manner.

Acknowledgements

The authors express sincere gratitude to the administrators, doctors, nurses and other hospital staff of Yenepoya Medical College Hospital Mangaluru, Karnataka, for all the support rendered during the study and the children for being a part of the study.

Sources of support: Yenepoya University Mangaluru has funded this project
Conflict of interest: None declared

Reference

1. Beklen, K., Avishai, N., Jonathan, P., Dimitri, G., Stefanov. & Rebecca, T. (2013). Anesthesia Induction Using Video Glasses as a Distraction Tool for the Management of Preoperative Anxiety in Children. *Anesthesia and Analgesia*, 117(6), 1373–1379.
2. Brewer, S., Gleditsch, S.L., Syblik, D., Tiietjens, M.E., & Vacik, H.W. (2006). Paediatric Anxiety: child life intervention in day surgery. *Journal of Paediatric Nursing*, 21(1), 13-22.
3. Broome, M.E., Lillis, P.P., & Smith, M.C. (1989). Pain interventions with children: a meta-analysis of research. *Nursing Research*, 38, 154–158.
4. Brophy, C.J., & Erickson, M.T. (1990). Children's self statements and adjustment to elective outpatient surgery. *Developmental and Behavioural Paediatrics*, 11, 13–16.
5. Burton, L., Cameron, J. A., Bond, M.J., & Pointer, S.C. (1996). Reducing the anxiety of children undergoing surgery: Parental presence during anaesthetic induction. *Journal of Paediatric Child Health*, 32, 51-56.
6. Debora, D.O.C., Guilherme, C., Vinícius, F.Z.G., Denis, S.W., & Lígia, A.D.S.TM. (2013). Impact of preanesthetic information on anxiety of parents and children. *Revista Brasileira de Anestesiologia*, 63(6): 473-482.
7. Durst, L.M. (1990). Preoperative teaching videotape: The effect on children's behavior. *AORN Journal*, 52(3), 576-584.
8. Felder, P.R., Maksys, A., Noestlinger, H.G., Stark, H., Pfluegler, A., & Topf, R. (2003). Using a children's book to prepare children and

parents for elective ENT surgery: Results of a randomized clinical trial. *International Journal of Otorhinolaryngology*, 67, 35–41.

9. Hatava, P., Olsson, G.L., & Lagerkranser, M. (2000). Preoperative psychological preparation for children undergoing ENT operations: A comparison of two methods. *Paediatric Anaesthesia*, 10, 477-486.
10. Ho Cheung, W.L.I., Violeta, L., & Tin, L.I.L. (2007). Effects of Preoperative therapeutic play on outcomes of school age children undergoing surgery. *Research in Nursing and Health*, 30, 320-332.
11. Javed, M., Fatemeh, M., Zahra, S., Bahar, A., Narges, A., & Jaleh, P. (2008). Effect of Preoperative play intervention on post surgery anxiety. *Iran Joural of Psychiatry*, 3, 20-24.
12. Kain, Z.A., Mayes, L.C., & O'Connor, T. (1996). Preoperative anxiety in children. Predictors and outcomes. *Archives Paediatric adolescent Medicine* , 150(12), 1238-45
13. Kain, Z.N., Mayes, L.C., Caldwell, A.A., Karas, D.E., & McClain, B.C. (2006). Preoperative anxiety, postoperative pain and behavioural recovery in young children undergoing surgery. *Paediatrics*, 118 (2), 651-658.
14. Kim, H., Jung, S.M., Yu, H., & Park, S.J. (2015). Video Distraction and Parental Presence for the Management of Preoperative Anxiety and Postoperative Behavioural Disturbance in Children: A Randomized Controlled Trial. *Anaesthesia and Analgesia*, 121(3), 778-784.
15. LaMontagne, L., Hepworth, J.T., Salisbury, M.H., & Cohen, F. (2003). Effects of coping instruction in reducing young adolescents' pain after major spinal surgery. *Orthopaedic Nursing*, 22(6), 398-403.
16. Li, H.C.W., Lopez, V., & Lee, T.L.I. (2007). Psychoeducational preparation of children for surgery: The importance of parental involvement. *Patient Education and Counselling*, 65(1), 34-41.
17. Margolis, J.O., Ginsberg, B., Dear, G.L., Ross, A.K., Goral, J.E., & Bailey, A.G. (1998). Paediatric preoperative teaching: Effects at induction and postoperatively. *Paediatric Anaesthesia*, 8, 17-23.
18. Ronald, Z., & Kimberly, R.B. (2001). Reducing anxiety in parents before and during paediatric anaesthesia induction. *American Association of Nurse Anaesthetists Journal* , 69(1), 21-25
19. O'Conner-Von, S., (2008). Preparation of Adolescents for Outpatient Surgery using internet programme. *AORN journal*, 87(2), 374-398.
20. Zahr, L, K. (1998). Therapeutic play for hospitalized pre-schoolers in Lebanon. *Paediatric Nursing*, 23(5), 449-454.