# Effect of Parental Presence While Children Undergo Common Invasive Procedures

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***Background:*** *Substantial studies showed the preferences of parents to present while their children undergo common invasive procedures. There is no consensus in Thailand regarding this issue so, this study was generated.*
***Objective:*** *To determine the effect of parental presence on children's pain, parental satisfaction of care, anxiety of parent and physician, and performance of procedure.*
***Material and Method:*** *A prospective study was undertaken in convenience sample of 72 in-patient children age under 4 years old at Phramongkutklao Hospital during 8 months period. 22 parents were present with their children during invasive procedures and given instruction to calm down their children, 22 parents were not allowed to be present and the rest willing not to be present which was recruited as control. The authors assessed parental interaction; pain level, anxiety and the success of procedures.*
***Results:*** *There was no statistical significance in pain response, anxiety levels, and parental satisfaction. There was no statistical difference in proficiency of clinician.*

***Keywords:*** *Parental presence, Common procedures, Anxiety, Pain, Performance*

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The explanation of pain explains by interaction between genetics, temperament, parental reaction, and learning experiences[1]. Pain in children has been decreasing with age and cognitive abilities influence children's perception, remembering and understanding[2,3]. Children with higher level of distress usually have high activity level, intense or negative in mood and the individual dimension of adaptability[4].

Self-report of a child's discomfort is a gold standard of pain assessment. However, in young children behavioral measures such as facial expression and crying have been used as indicator of pain[5].

Parents prefer to be present with their children during invasive procedures[6,7], more importantly, parental active role while being present have been shown the benefits[8,9]. Pediatricians respect to parental presence in common procedure. However, they preferred the absence of parents in invasive procedure[10,11]. Some studies have shown that the presence of parents was able to calm children[9,12], had more distress when parents presence[14,15], or even no effect[16]. Parental factors such as parent's experiences of pain, anxiety and level of education can be influenced on their preference to presence[7,16] but in some studies preference to remain in the room was not related to the age, gender, marital status, and educational level of parent[16]. There were four factors influence on the reluctance of pediatricians regarding parental presence[11]. First, decrease proficiency of procedure because of anxiousness. Second, parental anxiousness created the procedure more difficultly. Third, the explanation of procedures would be time-consuming. Fourth, the uncertainty of parent was also affected pediatricians' proficiency. There have been recommendations to help and comfort children, parents and medical personnel which were; 1) preparing the child and parent for the procedures, 2) parent presence, 3) utilizing the treatment room, 4) positioning the child in a comforting manner, and 5) provide calm and positive atmosphere[17].

The famous pediatrics organisation have endorsed the recommendation of providing the option to be remain during invasive and/or resuscitation of their child[18-20].

In Thailand, there is no recommendation about parents remain with their children during procedure. Physicians have the major role in making decision about parental presence during their children undergoing procedures.

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**Objective**

The objective is to evaluate the effect of parent's presence on child's pain and physicians' proficiency.

**Material and Method**

This prospective study has been reviewed and approved by the Institutional Review Board of The Royal Thai Army Medical Department to be operated convenience sampling of 72 pediatric patients, age under 4 years, whose were performed venipuncture or intravenous cannulation. The authors excluded patients who had chronic illness, who must receive emergency medical attention. Parent had informed consent before recruited in the study. The authors divided them into three groups. First, the intervention group, parent present and received instructions of calming their children. Second, parent absent, the parent wished to be present but not allowed. Parents who preferred to stay but not allowed may be anxious about their children and may affect to a child's reaction (Absent A). The last group parent absent and did not wish to be present and not allowed (Absent B). For the intervention group, the parents were explained how to comfort their children including talking to, touching and maintaining eye contact with their children. Research assistant assessed the reaction of parents to their children which categorized into five levels. Most successful: parents talked to, touched and maintained eye contact with their children. Very successful: parents talked to and touched their children. Successful: parent maintains eye contact and talked to or touched their children. Somewhat successful; parent talked to or touched or maintains eye contact. Not successful is parents neither talked nor touched nor maintain eye contact. Pain assessment of a child was performed by research assistant and parents. The authors used Face Pain Scale[22] to assess pain which categorized into 5 levels from 5 to 1; laugh, smile, emotionless, unhappy and crying respectively. Proficiency of procedure were evaluated by number of needles used, number of procedures performed until completed, length of time since the procedures start until succeed. The number of needle used was categorized in to 3 groups; 1 needle, 2 needles and more than 2 needles. The numbers of procedure were once, twice and more than 2 times. The length of time of the procedure was divided into; less than 5 minutes, 5-10 minutes and more than 10 minutes. The authors assessed anxiety of parents and clinician assessed by using visual analog scale and also used to assess parental satisfaction of care.

***Statistical analysis***

The data were registered and analyzed anonymously using SPSS, for Windows version 22.

The test of homogeneity of variances was used for assessment the relation and Chi-square test was used to analyze pain levels between each group.

**Table 1.** Demographic characteristics of study participants (n = 72)

| | Intervention (n = 22) (%) | Absent A (n = 22) (%) | Absent B (n = 28) (%) | Total (%) 72 (100) |
|---|---|---|---|---|
| Gender | | | | |
| Male | 12 (60) | 17 (77) | 12 (33) | 41 (57) |
| Female | 10 (40) | 5 (23) | 16 (67) | 31 (53) |
| Age | | | | |
| 0-6 month | 3 (13.6) | 8 (36.4) | 8 (28.6) | 19 (26.4) |
| 7-12 month | 6 (27.3) | 6 (27.3) | 7 (25) | 19 (26.4) |
| 13-24 month | 3 (13.6) | 3 (13.6) | 4 (14.3) | 10 (13.9) |
| 25-36 month | 6 (27.3) | 5 (22.7) | 3 (10.7) | 14 (19.4) |
| 37-48 month | 4 (18.2) | 0 (0) | 6 (21.4) | 10 (13.9) |
| Parental education | | | | |
| <6 years | 4 (18.2) | 7 (31.8) | 6 (21.4) | 17 (23.6) |
| 6-12 years | 9 (40.9) | 8 (36.4) | 11 (39.3) | 28 (38.9) |
| >12 years | 9 (40.9) | 7 (31.8) | 11 (39.3) | 27 (37.7) |
| Individual performed procedure of physicians | | | | |
| First year resident | 10 (45.5) | 17 (77.3) | 24 (85.7) | 51 (70.8) |
| Second year | 7 (36.4) | 5 (22.7) | 4 (14.3) | 13 (18.1) |
| Third year | 8 (18.1) | 0 (0) | 0 (0 ) | 8 (11.1) |

The data was expressed as mean, standard deviation (SD) and percentage. ANOVA was used to compare the satisfaction and anxiety between the three groups.

## Results

There were 72 eligible parents participated in the study: 22 in intervention group; 22 in absent A and 28 in absent B group. The majority of children were male (57%) in infancy period (53%). Parent education less than 7 years, 7-12 years and more than 12 years, were 23.6%, 38.9% and 37.5% respectively. Individual perform procedures of first year (R1), second year (R2) and third year residents (R3) were 70.8%, 18.1% and 11.1% respectively (Table 1).

The causes of admission were pneumonia (51.4%) and acute gastroenteritis (34.7%) and the rest were sepsis, acute bronchitis and febrile convulsion.

There were no differences between interventions groups neither talked to, touched nor maintained eye contact, every child expressed cry only.

Despite of being calm by parents who performed very well in calming their children with talked to, touch and maintain eye contact, all children in intervention group cried. Mean of satisfaction score of intervention group, absent A and absent B was 8.2, 8.5 and 8.9 out of 10 respectively (Table 2). There was no statistical difference between each group.

There was statistical difference of educational level, parents whose education less than 6 years had significant higher satisfaction of care (Table 2).

Mean of the anxiety of group of parents who wished to be present but not allowed was higher than the other groups. However, there was no statistical difference between groups ($p$ = 0.14). Mean of the anxiety of clinicians who performed procedure while the parents presented had higher mean than the other groups but no statistical difference between groups ($p$ = 0.23) (Table 3).

Mean of anxiety levels of R3 was higher than R1 and R2 which can be explained that whose R3 performed were difficult cases while the easy one was in charged by R1. However, there was no difference between groups of residents (R1, R2 and R3) in anxiety scores ($p$ = 0.13) (Table 4).

There were no difference between 3 groups in term of number of procedures until completed by first clinician and number of needles used. There was statistical difference between the lengths of time used which took more time in intervention group (Table 5).

There were no statistical difference between procedural performance of pediatrics resident year 1, 2 and 3. However, number of procedures completed by first clinician and time of used compared with R1 and R2 had statistical difference where as a comparison group of R1 and R2 between R3 had no statistical difference (Table 6).

**Table 2.** Parental Satisfaction of care

| Educational levels | n | Mean | $p$ = 0.05 |
|---|---|---|---|
| <7 years | 19 | 9.6 | 0.01* |
| 7-12 years | 28 | 7.6 | 0.54 |
| >12 years | 25 | 8.5 | 0.54 |

## Discussion

In the intervention group, the presence of parent has no influence on reduction in pain. Furthermore, parental presence had negative effect on both procedural performance and clinician anxiety. Clinicians expressed more anxiety and took longer time to complete the procedures. Parental satisfaction and anxiety were also no statistical difference. However, satisfaction level higher in parent whose education level less than 7 years which was contrasted to the other studies showed the prediction of parental satisfaction were more educated[22]. Parents of less educated may have low expectation; they would be appreciated if they received proper care. Many researches showed that parents presence decreased the anxiety in the child and the parents, however, were affected to the prolongation of the procedures and the anxiousness of the providers[23-26]. Wide variety of factors influenced on parental anxiety such as attitude for medical staff, explanation of disease and procedure[27], clear spoken advice with specific verbal suggestion accompany with supportive counseling[28], empathy and understanding of parent concerns. Anxiety of parent was able to be

**Table 3.** Anxiety of parents and physicians

| | Intervention n = 22 | Absent A n = 22 | Absent B n = 22 | $p$<0.05 |
|---|---|---|---|---|
| Mean anxiety levels of parents | 5.4 | 5.2 | 6.7 | 0.14 |
| Mean anxiety levels of physicians | 3.3 | 2.3 | 2.7 | 0.23 |

decreased by the supportive counseling which leaded to acquisition of knowledge and skills, understanding of disease, how procedure performed, empathy and understanding of parents' feeling[28].

Overall anxiety level of clinicians had no statistical difference between groups. However, mean of anxiety level of clinician who performed procedure with parents' presence higher than the other groups. Procedures with higher level of invasiveness generated anxiety on clinicians[29]. Therefore, clinicians were more reluctant to encourage parents to remain with their children during complex procedures[30]. Parental anxiety may transferred their feeling to children which made the procedures more difficult. There have been factors influencing anxiety of clinicians including the severity of illness and emotional distress of patients. Clinicians expressed negative response to patients with sicker or more emotional distress[31].

Considered procedural proficiency, there was no statistical difference in number of needles used and number of procedures until completed. This implied that parent presence did not affect procedural proficiency of clinicians. However, clinicians took longer time in the intervention group and took less in absent A and B group but it had no statistical difference. The majority of clinicians report that they had less proficiency when parent were present[11].

Comparison with procedural proficiency among pediatrics resident in a difference year of training revealed that number of needles used, number of procedures completed and time used were more in first year residents. This could be explained that first year resident had fewer skills than second and third year residents. However, there was no statistical difference of procedural proficiency in different year of training. The difficulty of performing procedure in different year of trainingwas not different.

The limitations of the present study were convenience sampling may have created bias. It was possible that the parents in absent group who wished to be present but were prohibited had effectiveness of implementing intervention. The limitation of population affected the measurement of pain which was unable to be rated because all children cried. The measurement of anxiety and satisfaction also were in broad range of visual analog scale instead of more detail instrument.

**Table 4.** Anxiety levels of physicians in difference postgraduate year

| | n | Mean | $p<0.05$ |
|---|---|---|---|
| First year resident | 51 | 2.8 | 0.23 |
| Second year | 13 | 2.2 | 0.23 |
| Third year | 8 | 3.1 | 0.59 |

## Conclusion

Majority of parents of children undergoing common procedure wanted to be present with their children. Parental presence had no significance adverse effect on anxiety level of neither parents themselves nor physician and no influence on their procedural proficiency. Parents who wished to accompany with

**Table 5.** Performance of Procedure

| | Intervention (n = 22) | Absent A (n = 22) | Absent B (n = 28) | $p<0.05$ |
|---|---|---|---|---|
| Mean of No. of procedures completed by first clinician | 2.83 | 2.68 | 2.61 | 0.27 |
| Mean of No. of needles used | 2.82 | 2.23 | 3.1 | 0.57 |
| Mean of time used in sec | 2.73 | 2.59 | 2.25 | 0.02* |

**Table 6.** Performance of procedures in difference residency year

| | First year resident (R1) | Second year resident (R2) | Third year resident (R3) | $p<0.05$ |
|---|---|---|---|---|
| Mean of No. of procedures completed by first clinician | 2.61 | 3.00 | 2.75 | R1vs2=0.01*<br>R1,2vs3=0.42 |
| Mean of No. of needles used | 2.69 | 3.00 | 2.75 | R1vs2=0.01*<br>R1,2vs3=0.39 |
| Mean of time used in sec | 2.33 | 3.00 | 2.75 | R1vs2=0.01*<br>R1,2vs3=0.14 |

their children during undergoing procedure, should be encouraged. Even though, the instruction which used in order to calm down children was unable to demonstrate any help. Specific strategies should be instructed to guide parent in order to calm themselves and children.

**Clinical implementations**

The endorsement of pediatrician provides an option to parents of being remain with their children during common procedures.

**Acknowledgement**

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**Potential conflicts of interest**

None.

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## *ผลกระทบของการที่บิดามารดาอยู่ในห้องขณะที่เด็กถูกทำหัตถการที่ไม่ซับซ้อน*

*ฉัตรสุมาลย์ ตันติกุล, ชาดริยา ธีรเนตร*

***ภูมิหลัง:*** *จากงานวิจัยที่สำคัญพบว่าบิดามารดาต้องการอยู่กับเด็กขณะที่ได้รับการทำหัตถการ เช่น การเจาะเลือด แต่ยังไม่มีข้อสรุปที่ชัดเจนเกี่ยวกับแนวทางการปฏิบัติดังกล่าวในประเทศไทย*

***วัตถุประสงค์:*** *เพื่อประเมินผลกระทบของการที่บิดามารดาเข้าห้องทำหัตถการต่อความเจ็บปวดของเด็ก ความพึงพอใจของบิดามารดาต่อการทำหัตถการ ประสิทธิผลของการทำหัตถการ ความกังวลของบิดามารดาและของแพทย์*

***วัสดุและวิธีการ:*** *การศึกษาไปข้างหน้าที่รับไว้รักษาในโรงพยาบาลพระมงกุฎเกล้า เลือกกลุ่มตัวอย่าง ตามความสะดวก ศึกษาผู้ป่วยเด็กอายุน้อยกว่า 4 ปี 72 คน ในระยะเวลา 8 เดือน ในกลุ่มผู้ป่วยเด็กที่รับไว้รักษา ในโรงพยาบาลพระมงกุฎเกล้าแบ่งเป็นกลุ่มการศึกษา เป็น 3 กลุ่ม กลุ่มแรกบิดามารดา 22 คน อยู่กับผู้ป่วยขณะทำหัตถการ และได้รับคำแนะนำในการปลอบโยนผู้ป่วย อีก 22 คน บิดามารดาต้องการเข้าไปอยู่ในห้องทำหัตถการแต่ไม่ได้รับการอนุญาต กลุ่มที่ 3 บิดามารดาไม่ต้องการอยู่ด้วยขณะทำหัตถการ เปรียบเทียบความเจ็บปวดของเด็ก การตอบสนองของบิดามารดาได้แก่ ความพึงพอใจต่อการบริการและความกังวลของบิดามารดา ความกังวลรวมถึงประสิทธิผลของการทำหัตถการของแพทย์*

***สถิติ:*** *เปรียบเทียบความพึงพอใจ ความกังวลของบิดามารดา และแพทย์โดยใช้ ANOVA*

***ผลการศึกษา:*** *พบว่าไม่มีความแตกต่างอย่างมีนัยสำคัญทางสถิติของความเจ็บปวดของเด็ก, ความกังวลและความพึงพอใจของบิดามารดา, ความกังวลและความสามารถในการทำหัตถการของแพทย์อย่างมีนัยสำคัญทางสถิติ*

***สรุป:*** *ควรมีข้อเสนอแนะผู้ปกครองเข้าอยู่ในห้องหัตถการกับผู้ป่วยได้*