Nurses’ Knowledge and Attitudes, and Pain Management Practice of Post-Operative Children in Bangladesh

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ABSTRACT

Immediately after surgery, a high level of pain is expected but pain management appeared to be inadequate, which results in a number of post-operative complications. Nurses with a strong clinical knowledge, attitudes and skills are essential for relieving the suffering of pain in children undergoing surgery. Pain management nursing practice for children in Bangladesh is erratic, inconsistent and deviates from recommended standards. Initiatives are needed to improve this current situation. To do this it is necessary to examine the level of nurses’ knowledge and attitudes as well as their post-operative pain management practice for children in the context of Bangladesh.

A descriptive survey was conducted during November 2009-January 2010. Approval was obtained from the Institutional Review Board (IRB) of PSU, Thailand, and the target hospital directors. Data were collected from 93 pediatric surgical nurses at three medical college hospitals in Bangladesh. A survey questionnaire was used to collect data about nurses’ knowledge and attitudes and their pain management practices for children undergoing surgery. The data were analyzed by frequency, percentage, mean, standard deviation, and Pearson’s product-moment correlation coefficient.

The study revealed that nurses’ knowledge and attitudes in pain management was at the moderate level ($\bar{x} = 66.79\%$) and the pain management practice was also at the moderate level ($\bar{x} = 78.16\%$). No relationship was observed between nurses’ knowledge and attitudes, and their pain management practices ($r = .01$, and $p = .89$). The findings highlight the need to improve nurses’ knowledge and attitudes and their practice in certain areas of pain assessment, pharmacological and non pharmacological pain management. Initiatives are recommended, such as including the pain content in nursing curriculum, and arranging in-service-education and training in pain management for pediatric nurses in Bangladesh.

Key Wards: Child; Pain; Nursing; Knowledge; Practice.
Background and Significance of the Problem

A high level of pain is expected after surgery whereas inadequate pain management practices are reported. For children, in particular who cannot speak when they are in pain, inadequate pain management is deleterious and can lead to a number of post-operative complications. Therefore, it must be relieved completely (Rao, 2006). For effective post-operative pain management in children, a strong clinical knowledge, attitude and skills are essential for pediatric nurses (Smart, 2005; Vincent, 2005).

Several obstacles are identified to this, including nurses’ knowledge deficit on the use of appropriate pain measures for children (Broom, Richsteiner, Maikler, & Alexander, 1996). In particular, there are knowledge deficits and misconceptions on respiratory depression and addiction to pain medication that may lead nurses to withhold medications for pain (Clarke et al., 1996; Vincent & Denyes, 2004). A previous study revealed that pain content in the nursing curriculum may already be included. However, the hours allocated were inconsistent and less than optimal (Ferrell, McGuire, & Donovan, 1993). Thus nursing students may have limited knowledge on post-operative pain management, particularly for children.

Assessment of pain in children is the first priority to manage children’s pain. However, the use of a pain assessment tool or flow sheet to document and evaluate the effectiveness of pain intervention is insufficient (Jacob & Puntillo, 1999). Based on the primary researcher’s experience, the practice of using pain assessment tools has not been observed in Bangladesh. Furthermore, no teaching hours were known to be assigned for this topic in the basic nursing curriculum in Bangladesh (W. Petpichetchian, WHO international consultant, Personal Communication, February 22, 2010). In addition, the literature highlighted a misconception regarding the incidence of respiratory distress and addiction to pain medication that indicated negative attitudes (Ferrell, McGuire & Donovan, 1993). Some nurses still believe that young children have no neurological capacity to deal with pain experience and think it has no long lasting consequences for them (Jacob & Puntillo, 1999). Due to lack of up-to-date knowledge, some myths and false beliefs affect nurses’ attitudes when making decision for pain management for children (Jacob & Puntillo, 1999).

In addition, not only to pain medication, nurses should also have knowledge, good attitudes, and skill in using non pharmacological interventions for pain relief for children. Pharmacological intervention alone may not be sufficient if physicians do not prescribe the pain medication adequately. Alam, Waliwllah and Shamsuddin’s study (2008) found that the use of analgesics alone in relieving pain for children in Bangladesh is erratic, inconsistent,
and deviated from recommended standards during the post-operative period. Thus, the combination of pharmacological and non pharmacological measures for pain management is recommended as it has been reported to reduce pain effectively (Twycross, 2006).

In Bangladesh, few studies were found in the field of nursing practice on post-operative pain management of children. An official record reported that 60% of children who came to seek health care underwent operations (Pediatric Surgery Unit, Chittagong Medical College and Hospital in Bangladesh, 2008). In practice, nurses administer pain medication around the clock as prescribed by physicians and they rarely used up-to-date knowledge in this area. In addition, the content of pain is not included in the nursing curriculum. In order to take initiatives to improve this current situation, it is worth to examine the levels of nurses’ knowledge and attitudes as well as their post-operative pain management practice for children.

**Objectives of the Study**

The first is to identify the level of knowledge and attitudes, and the pain management practice of nurses. The second is to compare the relationship between nurses’ knowledge and attitudes, and pain management practice for post-operative children in the context of Bangladesh.

**Technical Terms**

*Nurses’ knowledge and attitudes regarding post-operative pain management in children* refers to nurses’ understanding and beliefs towards pain and pain management for children at the post-operation stage. These include: perceptions and understanding about pain; types of pain; causes of pain; consequences of pain; influencing factors for pain perception; pain pathways; pain assessment; and pain management. It was measured by a modified version of the ‘Survey Questionnaire for Pediatric Nurses’ Knowledge and Attitudes on Pediatric Pain Management’. The higher scores indicated high levels of knowledge and positive attitudes towards pain and its management.

*Nurses’ pain management practice* refers to the set of activities nurses usually perform and should perform in order to manage post-operative pain in children in their nursing practice. The actions that nurses implement in their practice in managing children’s post-operative pain include: the application of age appropriate pain assessment tools; pharmacological and non pharmacological pain relief methods; and preparedness for management of adverse effects of pain medication. It was measured by the modified version
of the ‘Survey Questionnaire for Pediatric Pain Management Practices of Nurses’. The higher scores indicated the greater frequent that nurses have performed pain management practice.

**Conceptual Framework of the Study**

The KAP (Knowledge, Attitudes and Practice) model was used as a conceptual framework in this study. It can provide quantifiable data whereby the researchers can find the gap between knowledge and attitudes and practice (Launiala, 2009). A high level of nurses’ knowledge and attitudes are essential for effective pain management practices. Education is the prerequisite of knowledge. Knowledge will change attitudes and will, in turn, make people change their practice (Smyth, Caamano, & Fernandez-Riveiro, 2007).

**Materials and Methods**

The sample used in this study was all the registered nurses who worked in pediatric surgical units at three government medical college hospitals in Bangladesh. A total of 93 registered nurses participated in the study.

A Survey Questionnaire for Pediatric Nurses’ Knowledge and Attitudes, and Pain Management Practices of Post-Operative Children was used to collect the data. It was developed by the researchers based on the work of Vincent (2005), Broom (1996) and Ferrell (1993). It consisted of: the demographic characteristics of subjects; nurses’ knowledge and attitudes in pain management; the pain management practices of nurses; and four open ended questions for asking about barriers to optimal pain management. For the nurses knowledge and attitudes questionnaire, subjects responded to 45 statements by selecting “T” (true) or “F” (false). The correct answer was scored “1” and the incorrect answer was scored “0”. The possible total score ranged from 0-45. For the pain management practice questionnaire, there were 19 items. Subjects rated the frequency of their practice on a 5-point rating scale, ranging from 1 (never) to 5 (constantly). The total score ranged from 19 - 95. The scores for both knowledge and attitudes, and pain management practices were transformed to percentages. The following cut-off points were used to categorize the levels of knowledge and attitudes, and practices: 80.00-100% = high, 60.00-79.99% = moderate and less than 59.99% = low. The questionnaire was validated by a panel of three experts from Thailand and Bangladesh who were knowledgeable in this area. Reliability was tested with 20 nurses. The internal consistency reliability of Nurses’ Knowledge and Attitudes Questionnaire was .71. The test-retest reliability was conducted with a two week interval for the Pain Management Practice of Nurses Questionnaire and yielded \( r = .93 \). The instruments were developed in an English...
version. After being validated by experts, these were translated to a Bengali version by using the back translation technique.

The Institutional Review Board (IRB) of the Faculty of Nursing, Prince of Songkla University, Thailand, approved the proposal. Data were collected during November 2009 to January 2010 after approval from the directors of three medical college hospitals. The objectives of the study were explained to the nursing superintendent, head nurses and all participants. The primary researcher distributed the questionnaire directly to participants and collected the questionnaires after one week. Participants were reassured about their rights of withdrawal, anonymity, and the confidentiality of all the information they provided.

Data were analyzed and presented using descriptive statistics. The Pearson’s product-moment correlation was used to examine the relationship between nurses’ knowledge and attitudes, and practices. Data relating to barriers to pain management were analyzed by using content analysis.

Results

Initially 96 eligible participants were approached and 93 questionnaires were returned, indicating a high return rate (96.88%). All subjects in this study were female. Nearly half of the nurses were in the age group of 30-39 years. They had been in the nursing service for an average of 16 years (SD=7.87), and 32.2 % had worked in the pediatric area for 6-11 months. The majority had a diploma in nursing education (80.6%). Most of them were senior staff nurses (67.7%). Two-thirds of the nurses never read nursing journal (63.4%). Nearly three quarter of the nurses stated that there was no pain content in the nursing curriculum (69.9%), whereas 21.5% of them stated they were not sure. Most of them stated that there was no pain management standard or protocol in the hospital (59.1%).

Nurses’ knowledge and attitudes

Overall, nurse' knowledge and attitudes was at the moderate level (\( \bar{x} =66.79\% \), SD=9.88, min=46.67%, and max=88.87%). About two-thirds of them had -

Table 1

Frequency, percentage, minimum and maximum score, mean, and standard deviation of nurses classified by the level of their knowledge and attitudes, and pain management practice (N 93)
Nurses’ knowledge and attitudes were at the moderate level (65.6%). Nurses’ pain management practice was found at the moderate level (\(\bar{x} = 78.16\%\), SD=6.51, min=66.32\% and max=98.95\%). About two-thirds of them had practice level at the moderate level (60.2\%). A remarkable number of nurses’ had practice at the high level (39.8\%) (Table 1).

Additional item analysis was undertaken to determine the areas where the subjects might have incorrect knowledge and negative attitudes. The five items with the lowest percentage of correct answers were examined. Out of these five items, three items were knowledge and attitudes related to pain assessment, and the rest were related to pain medication (Table 2).

Table 2

<table>
<thead>
<tr>
<th>No</th>
<th>Five lowest items (correct answer)</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Children who can be distracted from pain usually do not have severe pain</td>
<td>22</td>
<td>23.7</td>
</tr>
<tr>
<td>2</td>
<td>Observable changes of vital signs must be relied upon to verify a child’s statement that he/she has severe pain</td>
<td>25</td>
<td>26.9</td>
</tr>
<tr>
<td>3</td>
<td>After operation, if the child seems to rest in bed, and no body movement is seen it means that the child has no post-operative pain</td>
<td>26</td>
<td>28.0</td>
</tr>
<tr>
<td>4</td>
<td>If the source of pain is unknown, a pain drug should not be used during the pain evaluation period, because this could mask the ability to correctly diagnose the cause of pain</td>
<td>28</td>
<td>30.1</td>
</tr>
<tr>
<td>5</td>
<td>Initially post-operative analgesics should be given around the clock on a fixed schedule</td>
<td>35</td>
<td>37.6</td>
</tr>
</tbody>
</table>

Item analysis was also undertaken to determine the areas in which subjects might never perform their pain management practices. The five items with the lowest percentages for nurses’ pain management practice were examined. Out of these five items, three items were -
Table 3

<table>
<thead>
<tr>
<th>No</th>
<th>Five highest items (never practice)</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>You administer pain medication to children by your own adjustment</td>
<td>70</td>
<td>75.3</td>
</tr>
<tr>
<td>2</td>
<td>You use self-reported pain scale (such as VAS, FACE scale) for assessment of children’s pain in your practice</td>
<td>62</td>
<td>66.6</td>
</tr>
<tr>
<td>3</td>
<td>You use behavioral pain scale (such as FLACC) for assessment of children’s pain in your practice</td>
<td>57</td>
<td>61.3</td>
</tr>
<tr>
<td>4</td>
<td>You administer additional pain medication to relieve pain when needed (PRN or SOS)</td>
<td>25</td>
<td>26.9</td>
</tr>
<tr>
<td>5</td>
<td>You reassess children’s pain after giving pain medication in order to evaluate the effectiveness of the pain medication</td>
<td>13</td>
<td>14.0</td>
</tr>
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Note: PRN or SOS = additional doses of pain medication if necessary

nurses’ practices related to pain assessment. The other two items were nurses’ pain management practices related to pain medication (Table 3).

Barriers for pain management

There were five top barriers to pain management: 1) there was no pain assessment scale in the hospital (93.4%); 2) nurses have poor knowledge in pain assessment, because there is no pain content in the nursing curriculum and no formal education or training for pain management (92.5%); 3) nurses’ have poor knowledge about pain drugs and calculating doses because they have never been given any training or formal education on pain drugs and pharmacology (88.2%); 4) doctors’ orders for pain medication were insufficient and duty doctors were not available in the ward all the time (74.1%); and nurses could not administer any pain drug without a doctors’ prescription, even basic pain medication such as paracetamol (72.2%).

The relationship between nurses’ knowledge and attitudes, and practices

The relationship between nurses’ knowledge and attitudes, and their pain management practices did not correlate ($r=.01$, $p=.89$).

Discussion

The findings of the study revealed that the overall nurses’ knowledge and attitudes level in post-operative pain management in children was at the moderate level ($\bar{x} = 66.79\%$). Only 10% had a high level and 23% were at the low level. These findings were generally similar to a previous study (Clark et al., 1996). They found that the overall nurses’ knowledge and attitudes on pain management was a mean of 62% and this was also similar to other studies (Manworren, 2000; Vincent & Denyes, 2004; Vincent, 2005). Previous studies found that
nurses had moderate level of knowledge and attitudes in post-operative pain management in children because most nurses’ gained bachelor degrees in which the pain area was not taught in the curriculum. Nurses learned and gain knowledge of how to manage pain in children from doctors’ orders.

In an analysis of the ranking of five correct answers, we found that almost all nurses demonstrate high levels of knowledge and attitudes in some areas. These included: behavioral pain expression in children; the effect of pain on psychological and neurological development; and using non-pharmacological pain management to distract children from pain. In contrast, the ranking of the five least correct answers suggested that nurses had poor knowledge and negative attitudes in some parts of pain management in children. This was shown as follows: children who can be distracted from pain usually do not have severe pain; observable changes of vital signs must be relied upon to verify a child’s statement that he/she has severe pain; after an operation, if the child seems to rest in bed, and no body movement is seen it means that the child has no post-operative pain; if the source of pain is unknown, a pain drug should not be used during the pain evaluation period, because this could mask the ability to correctly diagnose the cause of pain; and non-drug interventions (such as heat, music, imagery, touch) are very effective for mild to moderate pain control, but are rarely helpful for more severe pain.

This study clearly points to the fact that certain things are very important for nurses to improve their knowledge and skill in providing care for post-operative children. These include nurses’ knowledge and attitude to pediatric pain management, length of service experience, and being up to date in the management of pediatric pain. In this study, most (38.71%) of the respondents’ service experience was in the range of 11–20 years, but content about pain was not included in their basic nursing curriculum. This indicates extreme deficiencies in nurses’ knowledge and negative attitudes regarding pain assessment and pain management in children in some. Furthermore, these finding were similar to previous studies (Manworren, 2000; Vincent, 2005). These showed pediatric nurses’ deficiencies in knowledge of pain management, and negative attitudes were identified in areas such as pain assessment, and pharmacological and non pharmacological pain management. These areas of nurses’ knowledge and attitudes require a deep concern for theoretical knowledge in post-operative pain, pain assessment, pain medication, and non drug interventions for pain management. This is why participants’ were unable to answer correctly in certain areas. Emphasis should be place on further improvement through continuing nursing education and training in pain management for pediatric nurses.
Overall, nurses’ pain management practices in children’s pain management was at the moderate level ($\bar{x}=78.16$) and 39.8% were at a high level. This result was in accord with previous studies (Alam et al., 2008; Broom et al., 1996; Clark et al.). This study pointed to the fact that nurses managed post-operative pain in children through learning from doctor’s activities involving some knowledge of pain content.

In an analysis of the ranking of five correct answers, we found that nurses’ pain management practices on post-operative children were: 1) after surgery, you provide comfortable position to help relieve the pain for children; 2) you ask and help children to support the painful area when moving or coughing after surgery; 3) you administer pain medication to children as ordered by doctor around the clock; 4) you observe the side effects of pain medication (such as Morphine) after giving it to the child; and 5) you observe the following side effects such as respiratory distress, urticaria, nausea, and vomiting if the child received opioids drug (such as Morphine). It is clear that nurses used non-pharmacological pain management in helping relieve children of pain. However, nurses still administered pain medication only by following the doctor’s order.

In contrast, nurses reported that they rarely practiced for relieving post-operative pain such as: 1) you administer pain medication to children by your own adjustment; 2) you use self-reported pain scale (such as VAS, FACE scale) for assessment of children’s pain in your nursing practice; 3) you use behavioral pain scales (such as FLACC) for the assessment of children’s pain in your practice; 4) you administer additional pain medication to relieve pain when needed (PRN or SOS); and 5) you reassess children’s pain after giving pain medication in order to evaluate the effectiveness of pain medication. These results supported the fact that nurses provided pain medication to children only in accord with doctor’s order around the clock. Moreover, a few nurses (19.4%) provided addictive pain medication to relieve pain when children needed (PRN or SOS) if the doctor had prescribed it. Thus, children might not get enough addictive pain medication for reducing their post-operative pain.

The barriers reported by nurses in this study are mostly similar to a previous study (Vincent, 2005). In addition, it also supported the nurses’ demographic statements, and the statement of a world health organization international consultant (W. Petpichetchian, WHO international consultant, Personal Communication, February 22, 2010). This was that there were no known teaching hours assigned for pediatric pain management as a topic in the basic nursing curriculum in Bangladesh. This finding indicates that the preparation of nurses is inadequate. Necessary education and training should be provided in order to improve nurses’ knowledge and attitudes that might be put into effect in nurses’ pain management practice.
There was no relationship between nurses’ knowledge and attitudes and pain management practice, and in this study these were not correlated. This was consistent with the study conducted by Foster and Hester (1990) but it was inconsistent with another study (Vincent & Denyes, 2004). Vincent and Denyes found a significant positive relationship between nurses’ analgesics administration and children’s pain, and anticipated that more analgesic administration by nurses might lower the children’s pain. In this study, nurses’ might score on their pain management practice questionnaire because of social desirability. In practice, nurses in Bangladesh, administer pain medication in helping the reducing the child’s pain following the doctor’s orders around the clock. They assess the level of pain through their own judgment and without pain assessment tools, and provide non-pharmacological techniques without reference to standards. In addition, there study had no concepts of pain in the nursing curriculum. Thus, they learn about pain concepts and practices by imitating the doctor’s activities without keeping up to date from published articles, books, or the internet. Therefore, the relationship between knowledge and practice was not correlated. The findings of this study did not fully meet the research hypothesis. This was that there is a positive relationship between nurses’ knowledge and attitudes, and the practices of nurses’ regarding post operative pain management. But this non-significant relationship between nurses’ knowledge and attitudes, and pain management practices, partially supported the KAP model. This holds that attitudes are not always the intermediate variables which can change the knowledge into practice (Cleland, 1973).

**Conclusions and Recommendations**

The findings of the study revealed that nurses had a moderate level of knowledge and attitudes, and also moderate level of practices. Several obstacles were identified by nurses that create barriers to optimal pain management. The findings of the study suggest the need for a comprehensive in-service educational program and training. This should focus particularly on pediatric pain management training for nurses in Bangladesh. Education and training should involve in depth knowledge of pain, pain assessment, pharmacological and non pharmacological pain management for pediatric nurses as well as basic and bachelor nursing students. These are core skills for pediatric nurses. The inclusion of pain content should be prioritized when revising both the basic and bachelor nursing curriculums. In this way the quality of pain management will be improved in the field of nursing practice in Bangladesh.
The Strength and Limitations

The strength of this study lies in the number of subjects in the study and the high return rate of the questionnaire. This indicates the samples were representative of the population.

One limitation of this study was that the subjects were recruited only from government medical college hospitals. Thus this result may not be representative of the pediatric surgical nurses from private medical college hospitals and other non-government hospitals in Bangladesh. Another limitation is that all the study subjects were female. This might limit the findings with respect to represent the male nurses who work in pediatric surgical wards in other medical college hospitals in Bangladesh.

Acknowledgement

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References


