Physiological and Psychological Benefits of Therapeutic Storytelling to Inpatient Children

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Abstract— Hospitalization in children was a very stressful experience that makes them really anxious and frightened. That can be seen in change of body response like pulse, respiratory rate, and temperature that known as vital sign response. Many kind of therapeutic play were done by nurse to minimize of children's anxiety during therapeutic and medical procedure what make them strange, scared, pain and uncomfortable. Storytelling play was purposed to solve this problem. This study was done in pre-experimental and one group pretest-posttest design in RSMH Palembang in 2011. We are investigate of 12 (6 boys and 6 girls; aged 3-6 years) inpatient children who have acute disease. Wilcoxon test use to analyze vital sign response of pulse that was measured before and after storytelling play. That shown average of pulse 119.42±5.51 to 115.75±6.52 (P = 0.006, a = 0.05), respiratory rate 28.42±1.62 to 27.42±1.88 (p value = 0.014 a = 0.05); positive behavior 2.08±0.28 to 2.83±0.71 (p value = 0.007 a = 0.05), negative behavior 15.75±2.05 to 12.42±3.34 (p value = 0.003 a = 0.05) have significant different. Only temperature from 37.16±0.46 to 37.16±0.46 (p value = 1.000 a = 0.05) have no significant different. This work show beneficence of storytelling play and suggest applying in clinical practice that considered as scientific evidence and as one alternative to relieve negative response of children who hospitalized.

Keywords— therapeutic play; storytelling; physiological responses; behavior response; vital sign; hospitalization; children

I. INTRODUCTION

Inpatient children often have a physical and mental distress experience. The changed of health status and strange environments habits have been causing it. Hospitalization is a scary experience and has long term effect on psychologically and mentally. Study showed that 61.8% of children had emotional distress experience during hospitalization. Various medical procedures performed by health professionals can make them unhappy show like tantrums and refuse treatment procedure. Investigation with parents of children in the hematology ward at RSMH Palembang at March 2011 showed which 4 from 5 children expressed their distress during nursing procedure determine on crying, scared, holding mother's hand, yelling, refusing, and worrying.

Nurses as nursing care providers have an important role to help children to minimize their problem and provide a sense of secure and comfort when hospitalized [1].

II. MATERIAL AND METHOD

Research design was use pre-experimental and One Group Pretest-posttest without control. Subject group consisted of preschool children who are undergoing inpatient and fit of acceptance criteria. Observation is done twice before and after story telling play. Populations were inpatient children at Dr. Mohammad Hoesin hospital Palembang. From 119 children aged 3-6 years who were hospitalized, investigation was done to Wings A and B ward only at March to July 2011. Sample must fulfill of criteria were:

1) average length of hospital stay 1-7 days,
2) first time admitted to hospitals;
3) with acute disease;
4) parents or other relatives stay with child;
5) easy to communicate or giving assent;
6) children who are not mentally retarded or concentration problems and hyperactivity (GPHH);
7) good level of consciousness.

Physiological and psychological response measured by observation sheet that performed during vital signs procedure. Observation sheet consists of the positive and negative behavioral responses exhibited by the child. Wilcoxon test used to analyze them on before and after the story telling (0.05 alpha).

III. RESULT AND DISCUSSION

A. Result

TABLE I. RESPONDEN CHARACTERISTIC

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>Sum</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>Male</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>b</td>
<td>Female</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>mean ± SD</td>
<td>4.17±1.11</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Minimum</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>Maximum</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>d</td>
<td>95% CI</td>
<td>3.46 -- 4.87</td>
<td></td>
</tr>
</tbody>
</table>
Little number of these subjects because that story telling play takes a long time on each subject. This intervention was done on an individual basis.

Field note, we found girls look more happy, enthusiastic, and attentive to the stories book and the pictures are shown in than boys when given therapeutic storytelling.

Most girls showed a positive response; do not refuse to answer questions by nurse when the child was persuaded to vital sign measurements. They would like to stare at the nurse's face, to do anything that was asked on therapeutic procedure especially after be given therapeutic story telling. So we assume that girls have a higher positive response than boys, but it must need for further assessment of the matters that may affect the child's response of hospitalization related to sex.

These data determine that aged 5 and 6 years old are more cooperative than children aged 3 and 4 years. When we gave the story telling, children age 5 and 6 years were active in asking and answering about the pictures in the story book, and listened attentively to the story. And they also more cooperative during medical examination like persuaded to vital sign measurements, gave a question to nurse, eye contact, and want to do anything that was asked by the nurse as one of the vital signs procedure after administered of therapeutic story telling also.

1) Therapeutic storytelling

Researchers used appropriate media to preschool age that is toys were picture books and storytelling entitled "How nice Princess Purbasa" (Acts Lutung Kasarung). The aims are to enhancing children's cognitive and imagination in picture and story. Each child will be given a therapeutic story telling about 10-20 minutes. The change of their response is noted when receive vital sign measurements procedure and observe and also be evaluated.

Primary data obtained from respondents that was doing by direct observation of children responses while getting vital sign measurements at before and after storytelling play therapy is done. Data of the patient's identity includes the child's name, age, sex, hospitalization, history of child hospitalization, diseases, support systems, and the results of vital sign measurement child (pulse, respiration and temperature child) also recorded.

Some research suggests that storytelling has a positive impact to improving linguistic intelligence in Childhood Kindergarten [2] increasing the quantity and Quality of Sleep on Preschooler (3-6 years) [3] increasing of reading interest in Student [4] increases Creativity on Early Childhood [5].

The story is a universal human need, from children to adults. For children, the story is not only emotive benefits but also help the growth of children in various aspects:

1 ) Assist personal and moral formation of children
2 ) Facilitate imagination and fantasy needs .
3 ) Encourage the child's verbal ability
4 ) Stimulate interest in writing
5 ) Stimulate the child's interest in reading
6 ) Open of children exploration to expand knowledge horizons [6].

Beside storytelling has a relaxing effect on the body, that is also able to facilitate of expression an emotion in order to decrease anxiety, provide comfort, and improve memory [7]. Storytelling has a placebo effect. Effective placebo had effect for the intervention of mind and body, which will make a prosperous [7].

Storytelling was using a fun activity, so provide a relaxing effect, that impact of hormones releasing on the body that make mood or feelings change and improve well-being. Molecules such as nitric oxide, endocannabinoids, endorphin or encephalin role in the placebo response, a feeling of comfort and relaxation as well as have antagonist capacitating to stress[8]. In the state of relaxation that release opiate endogenous encephalin and endorphin which will cause a sense of fun, and happy, so that can improve positive feeling and well-being [8]. Relaxation effect will activate brain structures such as the limbic area, which suggests an important role of emotion [8].

2) Vital sign response

Get sick and be hospitalized are major crisis that experience in children. Psychological and physiological stress of children caused by changes in both of health and environmental status, and limitations in the children's coping.

### TABLE II. PHYSIOLOGICAL AND PSYCHOLOGICAL RESPONSE OF STORY TELLING PLAY

<table>
<thead>
<tr>
<th>Variable</th>
<th>Time</th>
<th>Mean ± SD</th>
<th>Min - Max</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse</td>
<td>Before After</td>
<td>119.42±5.51</td>
<td>115-123</td>
<td>115.91-122.92</td>
<td>0.00</td>
</tr>
<tr>
<td>RR*</td>
<td>Before After</td>
<td>28.42±1.62</td>
<td>26-30</td>
<td>27.39-29.45</td>
<td>0.01</td>
</tr>
<tr>
<td>Temp*</td>
<td>Before After</td>
<td>37.16±0.46</td>
<td>36.5-38</td>
<td>36.86-37.46</td>
<td>0.00</td>
</tr>
<tr>
<td>PR*</td>
<td>Before After</td>
<td>2.08±0.28</td>
<td>2.0-2.4</td>
<td>1.90-2.37</td>
<td>0.00</td>
</tr>
<tr>
<td>NR*</td>
<td>Before After</td>
<td>15.75±2.05</td>
<td>12-19</td>
<td>14.45-17.05</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*RR = respiratory rate
*Temp = temperature
*PR = positive behavioral response
*NR = Negtive behavioral response

Table above shows that there are significant differences in physiology response before and after the storytelling play by pulse and respiratory rate parameters. There is a decrease in frequency of the pulse and respiratory rate after story telling play.

One variable does not change after storytelling play and remains the same level that is temperature.

### B. Discussion
mechanism to solve the problems and events that are pressing. [1] Physiological response of the body to cope stressful experience which related to hospitalization is increase pulse rate [9].

Other Research conducted to compare pulse rate in intervention group by art therapy and control group. In the intervention group, dominated by high pulse rate (pulse rate more than 88 times per minute) as much as 76.7% respondents, and after intervention predominantly low pulse (pulse equal to or less than 88 times per minute) by 80% of respondents. In the control group, pulse rate before intervention is dominated by a high pulse rate (pulse rate more than 88 times per minute) as much as 76.7% of respondents, and the 2nd test dominated the low pulse rate (pulse rate equal to or less than 88 times per minute) by 53.3% of respondents, with significant differences pulse rate [10].

Similar changes in physiological responses especially on respiratory rate response in inpatient's children. Physiological response of the body to cope stressful situation is an increase frequency of breathing, due to stimulation of the sympathetic nervous system autonomic Nervous adrenal glands that release hormones epinephrine.

In the relaxation condition by storytelling will be issued opiate endogenous hormones such as endorphin and enkephalin [8]. Both of these hormones work as an anti-stress hormones and can reduce sympathetic nerve stimulation, resulting in a decrease in breathing frequency and pulse rate [11].

We found the temperature of children are different to the pulse and the breathing frequency according on statistic result which is changed after a given therapeutic story telling. In our assumption that was depend on the disease process experienced by children when given therapeutic story telling. This is consistent with state that the physiological response of stressful does not influenced by temperature level [9].

Many results of various studies reported physiological reactions mainly due to sympathetic nerve response. Reaction prepares the body to deal with the emergency situation reaction "against - avoidance". The threat will be perceived by the cerebral cortex, which sends signals to the sympathetic nerve fibers. Signal is routed to the autonomic nervous system in the adrenal gland. Adrenal glands release epinephrine hormone that give effect to increasing heart rate, increasing respiratory rate, arterial pressure, and blood sugar levels. Both of above theory has no impact on temperature changes [11].

Our role as a nurse, as a caregiver, to provide nursing care in helping children reduce stressful situation that is manifested by a decrease of pulse and respiratory rate in order to give a sense of safe and comfortable like principle of nursing care as a traumatic care. Story telling is one way to do that. Nurses can facilitate the children's feelings by encouraging to express their feelings, opinions or desires, relax, pleased and happy in order to get a good effect of physiological response.

3) Behavioral response

Other study found that similarity on this result that play therapy can enhance cooperative behavior in hospitalized children [12][13][14]. All of that studies support our findings of an increasing positive responses by therapeutic storytelling. That is happen because of many kind of activity in storytelling play. Creativity in storytelling will increase pleasure, self esteem, self-awareness, and allow reducing anxiety [15].

Storytelling activities work to improve the children's positive response through two mechanisms as psychological pathways and physiological pathways. In the state of relaxation that is issued opiate endogenous endorphin and enkephalin which will cause a sense of fun and happy so that was improve the health of the body [8]. Relaxation effect activates brain structures such as the limbic area, which suggests an important role of emotion [8]. Based on the researchers assume that storytelling therapy can positively affect the increased response in preschool children undergoing inpatient in the hospital.

The effect of therapeutic games against separation anxiety, loss of control and fear of injury in preschool children are being treated in hospitals shown at Abdul Moleoek Lampung hospital. Analysis showed significant difference between the average anxiety (p value = 0.000, alpha= 0.05 level), feelings loss of control (p value = 0.001 , alpha= 0.05 level), and fear of injury (p value = 0.000, alpha= 0.05) scores before and after administration of the therapeutic play [16]. Results of other investigation found how art therapy giving effect to the differences levels of anxiety (p value = 0.031, alpha= 0.05 level) [10]. Storytelling study suggests that play therapy with storytelling have a significant impact in decreasing anxiety preschool children (p = 0.001; alpha= 0.05) [17].

Games activity at hospital gives children opportunity to express their emotional expression [18]. When the child turned his attention to playing activity, they will forget their problems [19]. Play has therapeutic value, which children can communicate a sense of fear and anxiety, and perceived of stress express either verbally or non-verbally [20].

This is accordance with evidence found at this investigation work. We found preschool children are always cry/tense at the time nurse attendance and come to the child, they do not want to be left by parents, hold of a parent's hand, at the time of persuaded to vital signs procedure, be quiet and withdrawn from the nurses, refused, rebellious, and ask parents to beside them, and looked sullen.

At story telling time, they are able to facilitate their feelings on verbally, look happy, enthusiastic, and attentive to the stories, medical device and the pictures are shown. Children's negative response rates were decrease after that time. When the nurse came again to any procedure that boy looks sullen but not crying. When children are not persuaded on high tone/snap from nurse but they willing to answer questions, and of vital sign procedure time they were scream but not rebel.

By playing, the nurse can provide support to children through stories and discussion are used to reduce children's negative responses such as crying, pouting, shouting, rebellious, yelling, and refusing to hospital routine.
IV. CONCLUSION

There is a significant difference on pulse and respiratory rate after therapeutic storytelling. Positive behavior was significant increase and negative children behavior was significant decrease after the therapy story telling. Storytelling has beneficial impact for pediatric patients and be advice to applying storytelling at clinical practice.

REFERENCES