THE EFFECT OF THE PROVIDING CONCRETE OBJECTIVE INFORMATION PLUS COLD ALCOHOL COMPRESSION ON FEAR OF PRESCHOOLERS RECEIVING INTRAVENOUS FLUID INFUSION

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A Dissertation Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy Program in Nursing Science
Faculty of Nursing
Chulalongkorn University
Academic Year 2016

ผลของการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็น ต่อความกลัวในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ

นางอัจฉริยา วงษ์อินทร์จันทร์

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาพยาบาลศาสตรดุษฎีบัณฑิต
สาขาวิชาพยาบาลศาสตร์
คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2559

Thesis Title	THE EFFECT OF THE PROVIDING CONCRETE OBJECTIVE INFORMATION PLUS COLD ALCOHOL COMPRESSION ON FEAR OF PRESCHOOLERS RECEIVING INTRAVENOUS FLUID INFUSION
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อัจฉริยา วงษ์อินทร์จันทร์ : ผลของการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็น ต่อความกลัวในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ (THE EFFECT OF THE PROVIDING CONCRETE OBJECTIVE INFORMATION PLUS COLD ALCOHOL COMPRESSION ON FEAR OF PRESCHOOLERS RECEIVING INTRAVENOUS FLUID INFUSION) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: รศ. ดร.สุรีพร ธนศิลป์, อ.ที่ปรึกษาวิทยานิพนธ์ร่วม: ผศ. ดร. ประนอม รอดคำดี, 214 หน้า.

การศึกษาวิจัยนี้มีวัตถุประสงค์เพื่อประเมินผลของการให้ข้อมูลรูปธรรมปรนัยและประคบด้วยแอลกอฮอล์เย็นต่อความกลัวในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ ออกแบบการวิจัยแบบกึ่งทดลอง กลุ่มตัวอย่างคือ ผู้ป่วยเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำเป็นครั้งแรก จำนวน 80 ราย แบ่งเป็น 4 กลุ่ม โดยการจับคู่ด้วยเพศ กลุ่มทดลองที่ 1 ได้รับการพยาบาลด้วยการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็น กลุ่มทดลองที่ 2 ได้รับการพยาบาลด้วยการให้ข้อมูลรูปธรรมปรนัย กลุ่มทดลองที่ 3 ได้รับการพยาบาลด้วยการประคบด้วยแอลกอฮอล์เย็น กลุ่มที่ 4 ได้รับการพยาบาลตามปกติ ประเมินความกลัวการได้รับสารน้ำทางหลอดเลือดดำจาก แบบบันทึกการสังเกตพฤติกรรมความกลัวการได้รับสารน้ำทางหลอดเลือดดำของเด็กวัยก่อนเรียน มีค่าดัชนีความตรงตามเนื้อหา 0.94 และค่าความเที่ยงของการสังเกตเท่ากับ 0.89 วิเคราะห์ข้อมูลโดยใช้สถิติค่าเฉลี่ย ร้อยละ X^2, Krukal-Wallis Test, Mann-Whitney Test, One-way ANOVA กำหนดระดับนัยสำคัญที่ระดับ .05

ผลการวิจัยสรุปได้ว่า เด็กวัยก่อนเรียนกลุ่มทดลองที่ 1 มีคะแนนความกลัวน้อยกว่ากลุ่มควบคุมและกลุ่มทดลองที่ 3 อย่างมีนัยสำคัญทางสถิติ ($p<.05$) แต่มีคะแนนความกลัวรวมไม่แตกต่างจากกลุ่มทดลองที่ 2 และกลุ่มทดลองที่ 1 มีคะแนนความกลัวระยะที่ 3 น้อยกว่ากลุ่มทดลองที่ 2 อย่างมีนัยสำคัญทางสถิติ ($p<.05$) ผลการศึกษาบ่งชี้ว่าการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็นเป็นวิธีที่สามารถลดความกลัวในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำได้ดี

สาขาวิชา พยาบาลศาสตร์ ลายมือชื่อนิสิต .....

ปีการศึกษา 2559 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

ลายมือชื่อ อ.ที่ปรึกษาร่วม .....

5477407336 : MAJOR NURSING SCIENCE

KEYWORDS: CONCRETE OBJECTIVE INFORMATION / COLD ALCOHOL COMPRESSION / FEAR / PRESCHOOLERS / INTRAVENOUS FLUID INFUSION

ATCHARIYA WONGINCHAN: THE EFFECT OF THE PROVIDING CONCRETE OBJECTIVE INFORMATION PLUS COLD ALCOHOL COMPRESSION ON FEAR OF PRESCHOOLERS RECEIVING INTRAVENOUS FLUID INFUSION. ADVISOR: ASSOC. PROF. SUREEPORN THANASILP, D.N.S., CO-ADVISOR: ASST. PROF. BRANOM RODCUMDEE, Ph.D., 214 pp.

The purpose of this study was to determine the effect of providing concrete objective information plus cold alcohol compression on fear of preschooler receiving intravenous fluid infusion. This was quasi-experimental design with post-test only. Participants were 80 preschoolers received intravenous fluid for the first time. The participants were allocated to 4 groups by matched pair by gender. Experimental group 1 received providing concrete objective information plus cold alcohol compression. Experimental group 2 received providing concrete objective information. Experimental group 3 received cold alcohol compression. Control group received conventional care. The fear of preschoolers were measured by Fear of Intravenous Fluid Procedure Observation Scale for Preschool Children that content validity index was 0.94, reliability was 0.89. Mean, %, X^2, Krukal-Wallis Test, Mann-Whitney Test, and One-way ANOVA were used for data analysis at .05 statistical significance.

The findings revealed that participants in experimental group 1 had lower fear score than control group and experimental group 3 ($p<.05$). But fear total score in experimental group 1 did not different with experimental group 2. In occasion 3, participants in experimental group 1 had lower fear than experimental group 2 ($p<.05$). The result indicated that the providing concrete objective information plus cold alcohol compression is effective method to reduce fear.

Field of Study: Nursing Science
Academic Year: 2016

Student's Signature .....
Advisor's Signature .....
Co-Advisor's Signature .....

ACKNOWLEDGEMENTS

I would like to gratefully and sincerely thank Associate Professor Dr. Sureeporn Thanasilp, my advisor, and Assistant Professor Dr.Branom Rodcumdee, my co-advisor, for their guidance, understanding, patience, warm support throughout my study. They are my model of inspiring nursing instructor and researcher.

I would like to express my sincere gratitude to my dissertation committee members for their support, valuable suggestions, sharing experience to me. I would like to thank all of my Ph.D. curriculum committees for their suggestions, support, and guidance. I am also thankful to experts who provide valuable suggestions for refining my instruments.

I would also like to thank my beloved colleague from faculty of nursing, Khon Kaen University for all of their support. Completion of this doctoral dissertation was possible with the support of head nurse from Srinakarind and Khon Kaen hospital to allow me to collect data. Most importantly, I would like to thank my research assistant and all clients and their caregivers who participated in my study.

My sincere thanks go to all doctoral classmates for their sharing knowledge experience, and friendship.

Lastly, I would like to express my deeply thank to my beloved family to their tremendous support. Thanks for my mom, my husband, my sister, and my kids who take care me and my family along my Ph.D. journey.

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CHAPTER I
INTRODUCTION

Background and significance of the study

Intravenous fluid infusion (IVI) is a standard method used to balance body fluid and electrolyte and to administer medications (James, 2013; Jennifer, 2009; Lily, 2010; Wong, 2007). At the first experience of receiving intravenous fluid infusion, preschool clients appraised it as a threat and fearful event more than those of other age groups (Inal, 2012; James, 2013, Karlsson, Englund, Enskär, Nyström, & Rydström, 2016). The factors influencing preschooler's fear including age, previous procedure experience, and gender (Luhmann, & Zempsky, 2008; Papalia, Olds, & Feldman, 2004)

Fear mostly comes from the interpretation of the threat events and their decision to deal with the situation (Lazarus, & Folkman, 1984). Perception of the threat comes from unknown (lack of knowledge, preschoolers client don't know what IVI is and what will happen to them when they get IVI) (Rosdahl & Kowalski, 2012). Preschooler clients fear of the unknown in each occasion of IVI. Next, preschoolers feel the loss of control because they have to hold still for nurses to be able to insert a needle into their veins. They can not do anything that they want to. They feel that IVI procedure threat them (Rosdahl & Kowalski, 2012). Last, pain is one of three principal causes of fear for preschoolers clients receiving IVI (Salmela, Salantela & Aronen, 2010; Kyle & Carman, 2013). When preschoolers fear of IVI, most of them express their refusing to intravenous set by avoidance and escape. Fear may lead to failure in giving intravenous fluid or medications on time. According to Wong (2015)

the negative appraisal of acute pain evokes pain-related fear leading to avoidance and/or escape behaviors. Children who refused intravenous fluid infusion might receive insufficient nutrients, and fluid resulting in worse symptoms (Jenifer, 2009). The fearful experiences suffered by children continue to have affected in the adult (Karlsson, et al., 2016). It may cause an increasing fear reaction fear and avoidance of medical procedures in later life (Jones, 2008; Kennedy, et al., 2008; Mahoney, 2010). Hence, reducing the fear that preschoolers experience in this procedure is imperative (Kennedy et al., 2008; Ignatavicius & Workman, 2016).

For the conventional care, before giving the intravenous infusion to children, nurses would inform parents and children about the objectives of receiving IVI, and the place to perform the IVI. The information was provided by describing activities which preschoolers would see in the treatment room. However, due to limitation of speech understanding clearly, preschoolers clients were lack of understanding. A preschooler didn't has the mental image of IVI for controlling themselves when they appraise with the situation. Moreover, for pain reduction, the nurse used distraction to encourage children to attend another object (Karlsson, et al., 2016). All above showed standard care for fear reduction. However, preschoolers were fear–before, during, and after insertion in moderate and severe level (Pakorn, Renu, & Autchareeya, 2014). Therefore, nursing innovation for fear reduction in preschoolers receiving IVI should be developed.

A literature review of fear reduction by providing concrete objective information in preschoolers receiving IVI in abroad was limited. A study showed that providing concrete-objective information could reduce fear in 3-17 years old children with IV insertion (Johnson and Thompson, 1985). In Thailand, Interestingly that

providing concrete-objective information combined with parental participation could reduce fear in before IV insertion stage (Kanyawee Kerdmongkhol, 2011). The parental participation and cold alcohol compression could reduce fear in applying alcohol to strapped stage (Termsook Ruksrithong, 2011).

However, the previous study could not conclude whether providing concrete objective information could reduce fear since client come-in and leave the treatment room. The results of the study come from both of providing information and parental participation. The conventional group does not allow mother to stay with preschoolers client. The result may affect by allowing parent stay in treatment room more than providing information. Moreover, there is the argument of the effect of providing concrete objective information on fear of preschoolers are presented. The providing information by cartoon video could not reduce fear in preschoolers receive IVI (Chuenjitr Somjitr, 2002). On the contrary, in other previous study showed the different effectiveness of providing concrete-objective information (Johnson, 1999), fear of preschoolers who are hospitalized (Wipada Sangnimitchaikul, 2007), aerosol therapy (Chirawachr Kasemsook, 2009). Furthermore, there is limited evident support for the nursing care that can deal with all causes at all stages of intravenous fluid infusion process.

Hence, the method of providing information for preschoolers via cartoon animation which is innovation that congruent with the strategic plan for being service excellence and governance excellence by develop health information and technology system in the Ministry of Public Health's (2017 – 2021), the twelfth national economic and social development plan (2017-2021) and the country's Sustainable

Development Goals (SDGs), the Thailand 4.0 Policy (Office of the national Economic and Social Development Board, 2017) should be considered in this study.

Nursing care for fear reduction should consist of management of all causes of fear because fear at the previous stage will result in fear of the next stage. This nursing intervention should be highly effective, convenient, save time and cost. Regarding of Lazarus and Folkman (1984), threatening reduction affects fear level. The providing information plus cold alcohol compression might change client appraisal to be less threatening by leading clients to understand the real situation and lead to control their behavior appropriately in that situation. Moreover, pain reduction affects severity threatening. According to the nursing practical theory of Johnson's theory of self-regulation (1999) and the Gate control theory of pain (Melzack & Wall, 1965). The effect of concrete objective information on the cause of unknown and loss of control might present as preschoolers clients will perceive the IVI process, induce mental image. Preschoolers clients know what will happen and what they can do at that time. Preschoolers clients pay more attentions to objective events and functional response. They regulate with functional response while abandoning of the subject situations and emotional response. These lead the children to understand the events and be able to plan and confront with the situations appropriately (Johnson, 1999).

The effect of cold alcohol compression on pain reduction stimulate of large A-delta fibers by cold causes substantial gelatinous in the dorsal horn of the spinal cord to "close the gate" and decrease the transmission of pain impulse to the brain (Huether & Defriez, 2006). The literature reveals that nurses still think that pediatric pain management is essential (Bice, Gunther, and Wyatt, 2014). Reduce threatening by reducing pain affect to children's fear. Fear of pain has been described as often

occurring in patients suffering pain (Leeuw et al., 2007). Based on the fear-avoidance model of Wong (2015) and Leeuw et al (2007), the basic tenet of the model is that the way in which pain is interpreted may lead to two different pathways. When acute pain is perceived as non-threatening, patients are likely to maintain engagement in daily activities, through which functional recovery is promoted. In contrast, a vicious circle may be initiated when the pain is catastrophically (mis) interpreted. These dysfunctional interpretations give rise to pain-related fear, and associated safety seeking behaviors such as avoidance/escape and hyper vigilance, that can be adaptive in the acute pain stage, (Leeuw et al., 2007). All above demonstrated that providing concrete objective information plus cold alcohol compression might affect fear by manipulation of unknown, loss of control, and pain.

Therefore, the nursing intervention that deals with all causes of fear at all stages of intravenous fluid infusion is needed. The expected result is that preschoolers who receive providing concrete objective information plus cold alcohol compression will have lower fear than those that receive conventional care. The result of this study is the benefit for further pediatric nursing practice, education research, and administration.

Research Questions

Does the concrete objective information plus cold alcohol compression reduce the fear of preschooler receiving intravenous fluid infusion?

Research objectives

1. To examine the effect of providing concrete objective information plus cold alcohol compression on fear of preschoolers receiving the intravenous fluid infusion.

1.1 To compare the fear of providing concrete objective information plus cold alcohol compression group and conventional care group

1.2 To compare the fear of providing concrete objective information plus cold alcohol compression group and providing concrete objective information group.

1.3 To compare the fear of providing concrete objective information plus cold alcohol compression group and cold alcohol compression group.

Hypotheses with rationales

Fear is the response of a specific stressful appraisal as threatening. Reducing fear help encouraging the person appraises the situation as no or less threatening (Lazarus and Folkman, 1984). Preschoolers appraise threatening from unknown, loss of control, and pain. The nurse might reduce the fear of unknown, loss of control, and pain by providing information, and reduce pain by cold alcohol compression. The information which was verified to reduce fear is concrete objective information by Johnson's theory (1999). The concrete-objective information will be explained as a) physical sensations and symptoms that occur, b) temporal characteristics, c) environment feature, and d) cause of sensations, symptoms, and experience. The words that used were simple, realistic, and no personal opinion (Johnson, 1999). When acute pain is perceived as non-threatening, fear is low, patients are likely to maintain engagement in daily activities, through which functional recovery is promoted (Wong, 2015). Also, reducing pain by cold alcohol compression will be

done by “close the gate” and decrease the transmission of pain impulse to the brain. The Gate control theory of pain (Melzack & Wall, 1965) help explanation why complementary pain management techniques are useful in contributing to control pain. Stimulation of large A-delta fibers by cold causes substantia gelatinosa in the dorsal horn of the spinal cord to "close the gate" and decrease the transmission of pain impulse to the brain (Huether & Defriez, 2006).

Parent is the closest and the most important person who understand preschoolers’ needs. According to the “Family-centered care," mothers could support the child's collaboration (Hutchfield, 1999). Pediatric nurses should encourage mother's role to perceive the expectation of maternal behaviors, i.e. repeating nurses' s keywords, encouraging children to cooperate with nurses, holding children during IVI process. It will help children trust, feel secure, and attend to the information (Ball, Blinder, and Bowen, 2010). The providing concrete objective information plus cold compression is the intervention which manipulates with three causes of fear though the process of IVI. The manipulation starts from the 1st occasion. The client walks into the treatment room to treatment bed. The 2nd occasion from starting to swaddle the cloth until finish swaddling, and the 3rd occasion is from applying alcohol to the IV insertion area, IV insertion, strapping tape on the IV site, and swaddle cloth over the child’s arm for supporting the needle.

Therefore, reducing fear in preschoolers receiving IVI should consider the cause of fear including unknown object, loss of control, and pain, which affect the appraisal of the threatening situation. Providing concrete objective information plus cold alcohol compression should reduce perceive threatening, affect to child’s fear level.

From the above rationale, the research hypotheses are:

1. Fear of preschoolers receiving concrete objective information plus cold alcohol compression group was lower than those receiving conventional care group.

2. Fear of preschoolers receiving concrete objective information plus cold alcohol compression group was lower than those receiving concrete objective information group.

3. Fear of preschoolers receiving concrete objective information plus cold alcohol compression group lower than those receiving cold alcohol compression group.

Scope of the Study

The scope of the study is as follows:

The population were hospitalized preschoolers (3-5 years old) receiving IVI for the first time. Data was collected between June to December 2016.

The independent variable in this study comprised of 4 nursing interventions as follow:

1) The providing concrete-objective information plus cold alcohol compression
2) The providing concrete-objective information
3) The cold alcohol compression
4) The conventional nursing care

The dependent variable was fear of IVI.

Operational definitions

Fear was defined as the preschooler's behavioral expression during the initiation of IVI; consisting of body movement, facial expression, and verbal expression. It was measured by Fear of Intravenous Fluid Procedure Observation Scale for Preschool Children which was modified from the Intravenous infusion Fear Scale (Kanyawee Kerdmongkhol, 2011). Observers recorded the occurrence of a given behavior over three specific occasions. The 1st occasion was from the child was taken into the treatment room to treatment bed. The 2nd occasion was from starting to swaddle the cloth until finish swaddling. The 3rd occasion was from applying alcohol to the IV insertion area, IV insertion, strapping tape on the IV site, and swaddle cloth over the child's arm for supporting the needle. The sum score was 0-60. A higher scores indicated severe fear.

The providing concrete objective information plus cold alcohol compression was defined as nurse's activity to reduce fear in preschoolers receiving IVI for the first time by providing concrete objective information plus cold alcohol compression. The activities were comprised of the following; firstly, the nurse greet, introduced herself and provided the information about the process, necessity of IVI, and what they could do during the procedure to the mother and preschool children by speech. The mothers provided maternal role during IVI included reassuring nurses' advice and activities. **The concrete objective information** was provided via cartoon animation from the researcher's computer tablet. Nurse encourages preschoolers and mother to interest in the information on cartoon animation which is relating to an actual, specific thing, or instance about the IVI procedure. The cartoon explains. **A)** environment feature, **B)** temporal characteristics, **C)** physical sensations and

symptoms that occur, and **D)** cause of sensations, symptoms, and experience. After providing concrete objective information nurse demonstrate IV solution set. Mother repeated nurses' s keywords, encouraging children to cooperate with nurses, holding children. Nurse encouraged children to touch tourniquet, strapping tape. Mother and nurse informed children in the environment equipment in the room. Preschoolers lied on the bed. The nurse swaddled cloth on preschoolers. **The 70% cold alcohol was applying and compressed on the skin for 1 minute** before iv insertion. The providing concrete objective information plus cold alcohol compression group took about 15 minutes.

The providing concrete objective information is defined as nurse's activity to reduce fear in preschoolers receiving IVI for the first experience **The concrete objective information** was provided via cartoon animation from the researcher's computer tablet. The activities were comprised of the following; firstly, the nurse greet, introduced herself and provided the information about the process, necessity of IVI, and what they could do during the procedure to the mother and preschool children by speech. The mothers provided maternal role during IVI included reassuring nurses' advice and activities. **The concrete objective information** was provided via cartoon animation from the researcher's computer tablet. Nurse encourages preschoolers and mother to interest in the information on cartoon animation which is relating to an actual, specific thing, or instance about the IVI procedure. The cartoon explains. **A)** environment feature, **B)** temporal characteristics, **C)** physical sensations and symptoms that occur, and **D)** cause of sensations, symptoms, and experience. After providing concrete objective information nurse demonstrate IV solution set. Mother repeated nurses' s keywords,

encouraging children to cooperate with nurses, holding children. Nurse encouraged children to touch tourniquet, strapping tape. Mother and nurse informed children in the environment equipment in the room. Preschoolers lied on the bed. The nurse swaddled cloth on preschoolers. **The 70% alcohol was on the skin** before iv insertion. The providing concrete objective information plus cold alcohol compression group took about 15 minutes.

The cold alcohol compression was defined as nurse's activity to reduce fear in preschoolers receiving IVI for the first time by cold alcohol compression. 1) The nurse greet, introduces herself and described the process, the necessity of IVI, and what they could do during the procedure to the mother and preschool children by speech. The nurse encouraged the mother to give maternal role during IVI, included giving rapport for her child about nurses' advice and activities. The nurse provided and encouraged the mother to participate during IVI process. 4) Preschoolers laid on the bed. The nurse swaddled cloth on preschoolers. Then, the nurse takes the preschoolers in the supine position. The nurse informed the sense of 70% cold alcohol when it was applying and compressed on the skin for 1 minute. The 70% cold alcohol cotton was refrigerated on -15 ^{0}C for at least 1 hour. It was use for applying skin in 2-inch diameters. Then, the nurse changed cotton to other side and **compression on the skin for 1 minute**. Then the nurse told preschoolers, didn't look at the needle while she inserts the IV catheter. Nurse strapped tape on the IV site, and swaddled cloth over the child's arm for supporting the needle. The providing cold alcohol compression group took about 15 minutes.

Conventional nursing care was defined as nurses' activities performed to preschoolers receiving IVI for the first time. The activities were comprised of the

following; firstly, the nurse greet, introduced herself and provided the information about the process, necessity of IVI, and what they could do during the procedure to the mother and preschool children by speech. The mothers provided maternal role during IVI included reassuring nurses' advice and activities. Preschoolers laid on the bed. The nurse swaddled cloth on preschoolers. Then, the nurse took the preschoolers in the supine position. After that, the nurse told the preschoolers that she would apply a 70% alcohol on the skin. Then the nurse told preschoolers, didn't look at the needle while she inserts the IV catheter. The conventional nursing care group took about 15 minutes.

CHAPTER II
LITERATURE REVIEW

In order to study the effect of the providing concrete objective information plus cold alcohol compression on fear of preschoolers receiving intravenous fluid infusion, this chapter provided and integrative research review of empirical finding with the state of the summarization that related to each concept of interest which will be divided into six parts as follows.

1. Development of preschool children
   1.1 Cognitive development
   1.2 Emotional development
2. Fear in preschoolers receiving IVI
   2.1 Stress, appraisal, and coping theory
   2.2 Definition of fear
   2.3 Fear and anxiety
   2.4 Manifestation of fear in preschoolers
   2.5 Factors related to children's fear
   2.6 Fear of preschoolers receiving IVI
   2.7 Measurement of fear in preschoolers
3. Concrete objective information
   3.1 Self-Regulation theory
   3.2 Reducing fear by concrete objective information
   3.3 Providing concrete objective information for preschoolers receiving IVI
4. Cold alcohol compression

4.1 Gate-Control Theory of pain

4.2 Reducing fear and pain by cold alcohol compression

4.3 The Assessment tool of pain during venipuncture

5. Relationship between pain and fear

6. Intervention for reducing fear in preschoolers receiving IVI

The detail in each part will be presented as follows.

1. Development of preschoolers

Preschool age or early childhood means the child 3-5 years old (Pillitteri, 1999).

Preschool age or early childhood means the child 2-5 years old (Murphy, 2000)

Preschool age or early childhood means the child 3-6 years old (Ball & Bindler, 1995). The development which related with fear in preschoolers is cognitive and emotional development.

In this study, preschool age children or preschoolers mean 3-5 years old. The preschoolers were selected at this age group because of this age group express highest fear level from other. Then, selection of this group will prevent the effect of extraneous variable.

1.1 Cognitive development

The following information of the preoperational stage is a summary from Piaget (1973), Bornstein (2011) and Santrock (2016). Child 2-7 years old are the pre-

operational stage of cognitive development. The preoperational stage comprise of 2 phases as follows:

1.1.1 Preconceptual thought phase (2-7 years). The child in the this phase start to develop and engage to intend play, and they will begin to use symbols to represent things. They are not yet able to think logically. With the acquisition of language, the child is able to represent the world through mental images and symbols, but in this stage, these symbols depend on his own perception. They could perceive concrete object better than abstract one. Therefore, one of the most important cognitive shifts in the preschool years that occur between three- to four-year-olds is the development of symbolic thought. Symbolic thought is the ability to mentally or symbolically represent concrete objects, actions, and events (Piaget, 1952).

Three-year-olds and some young four-year-olds are considered preoperational thinkers, which means that they rely solely on the concrete appearance of objects rather than ideas, they focus on only one relationship at a time, and they often see things from only one point of view—their own (Piaget, 1969). Three-year-old looks at a row of six cups that are spaced about three inches apart. Below the row of cups is a second row of cups with the same number as the row above; however, they are spaced one inch apart. When asked which row has more cups, he says that the top row has more because it is longer. Preschoolers make his decision based on how long the row appears, the physical feature of the line, and doesn't attend to the absolute number of cups in the row. To a three-year-old, longer means more.

The same is true for three and young four-year-olds' understanding of conservation of quantity. At this age, children are concrete thinkers and solve problems based on physical features. Three-year-olds have good memories for things

in their immediate experiences. However, they have not developed effective strategies for recalling information over longer periods of time. Therefore, structure and routines are important in three-year-olds' lives. This allows them to anticipate and predict what they will be doing and what is expected of them. However, children's wonder at this age for things that they have repeatedly experienced is related to their under developed memories. Three-year-olds can repeatedly watch the same puppet or read the same book 40 times and still show the same delight as they did the first time they were engaged in these activities.

1.1.2 Intuitive thought phase (4-6 years). The children in this phase not yet able to think logically and decision making in actual but children show many advances in cognitive skill, basic logical thinking. Children in this phase of development learn by asking question such as why, and how come? Piaget labeled this intuitive thought children in this phase tend to be so certain of their knowledge and understanding that they are un aware of how they gained this knowledge in the first place. The characteristics of cognitive reception in preschoolers on this phase included:

1.1.2.1 Imagination. Preschoolers could imaginary for person, equipment, and event. For example, children will fear with nursing procedure, the cause of fear is not only the occur procedure but also their imaginary which more than it is. Hence, it induce higher fear.

1.1.2.2 The basic logical thinking and egocentric. The cognitive of this age group is more logical. Preschoolers could compare 2 objects. They could think of 2 objects and could link of it but it might be not the truth. For example, they might think that receiving IVI is fearful because of their playful. They

are also easily captured by surface appearance, and often confused about causal relation. Furthermore, preschoolers are egocentric. They will think and talk while they don't concern in others**.**

Therefore, cognitive in preschoolers are able to represent the world through mental images and symbols. Moreover, they are high imaginary. They cannot separate imaginary and truth. Understanding the child's thought will help nurse to explain procedures, conduct health teaching, and communicate more effectively with the preschooler. In this study, the researcher will describe the preschoolers as children 3-5 years old, to control the confounding factor as age different, in preoperational stage (3-4 years), intuitive stage (4-5 years).

1.2 Emotional development

Preschoolers are negativistic phase. They begin to understand the emotions. They still have very little control over them. If he finds something funny, they'll laugh hysterically. If something makes them feel sad or angry, they will burst into tears. Three to four years old children may use hitting, biting, or pushing as a way to solve conflicts. They simply don't understand the different between appropriate and inappropriate interactions yet. Four-year-old is starting to develop a sense of humor, and he loves being silly and making people laugh. Empathy also begins to emerge around age 4. Four-year-olds are starting to understand that others have feelings, too, and they can relate when a friend is feeling sad or hurt.

Preschoolers are negativistic phase which comprise of 5 emotional type as follows:

1.2.1 Fear; preschoolers are afraid of harmful. They are fear when they encounter with sudden, unexpected event. Preschoolers will fear more than other age

groups. They will fear with both of sudden event and their past experience. The important causes of fear in preschoolers are fear of separation, body injury, and unknown object. The manifestations of fear are avoided, fighting, escaping from fear object.

1.2.2 Angry; preschoolers are angry because of their egocentric. Their behavioral will be scream, scrabble, and assault.

1.2.3 Jealous; preschoolers are jealous when they perceive that they are loss of love or own objects. They will express their emotion by more aggressive than angry.

1.2.4 Funny; preschoolers will fun with their object when they are successful with autonomy development.

1.2.5 Curiosity; preschoolers are always questioning and investigating new things.

Therefore, fear in preschoolers is emotional expression of fear objects. The manifestation of fear is showed as behavioral expression.

2. Fear in preschoolers receiving IVI

2.1 Stress, appraisal, and coping theory

Stress, appraisal, and coping, Lazarus and Folkman (1984) emphasized definition of stress as the relationship between person and environment, which take into account characteristics of the person on the one hand, and the nature of environmental event on the other. Cognitive appraisal can be most readily understood as the process of categorizing an encounter, and its various facets, with respect to its significance for well-being. It includes three basic forms as primary appraisal, secondary appraisal, and reappraisal.

In primary appraisal, it can be distinguished in three kinds as 1) irrelevant, 2) benign-positive, and 3) stressful. Stress appraisal includes harm/loss, threat, and challenge. In *harm/loss*, some danger to the person has already been sustained, as in a capacitating injury or illness, recognition of some damage to self or social esteem, loss of love or value person. *Threat* concerns *harm or losses* that have not yet take place but are anticipated. Even when harm or loss has occurred, Threat centers on the potential harms and is characterized by negative emotion such *as fear*, anxiety, and anger. *Challenge,* has much in common with threat in that it too calls for the mobilization of coping effort.

IVI nursing procedure is a threatening situation induce fear for preschoolers (Karlsson, et al., 2016, Wong, 2015). The Stress, appraisal, and coping Theory of Lazarus and Folkman (1984) describe relationship between person and environment. Children appraise that received IVI is the threatening, harmful situation (primary appraisal). They are suffering from strange person, environment, swaddled cloth and procedural material. They appraise harmful from pain of needle insertion. Moreover, past negative experience with immunization made them more suffer.

The strategies to reduce children's fear are important to investigate. As stress theory of Lazarus and Folkman (1984). Nurses' role is decrease threatening. Therefore, nurses's role is providing information and decrease severity of threatening as pain. It could help children understand the situation and could respond in each stage appropriately. The method and characteristics of the information is important. The concrete objective information which explains by Johnson (1999) is the appropriate information for reducing fear. Moreover, decrease severity of pain is one important intervention which could reduce fear level.

Therefore, the stress, appraisal, and coping theory could explain fear in preschoolers appraise receiving IVI. Preschoolers are fear with this situation since they walk in the treatment room to swaddled cloth on her/his arm.

2.2 Definition of fear

Fear is universally experienced emotional reactions that are described as unpleasant subjective feeling of distress accompanied by cognitive, behavioral, and physiological response (Finch & McIntosh, 1990). Fear is the manifestation of a specific stressful appraisal (Lazarus & Folkman, 1984). Threat appraisals can range from minimal, where little stress is experienced, to extreme, characterized by intense negative emotion such as fear (Lazarus & Folkman, 1984).

Fear is a part of normal development in children. Fear can be a positive adaptive force when it teaches children an awareness of potential danger. For example, children crossing a street may experience fear because they have a heightened awareness of potential danger (Nicastro, 1999; Nicastro, & Whetsell, 1999; Robinson & Kobayashi, 1991). Furthermore, fear is a special state of the biological alarm system, preparing the individual for escape (Silverman, LaGreca & Wasserstein, 1995).

However, while there are some similarities that may overlap when interpreting fear, those vague definitions may not apply to fear described in the organizational context. As such, learning how fear is compounded and compared with closely related terms should be useful.

2.3 Fear and anxiety

Some researchers (Basovitx, Persky, Korchin, and Grinker, 1955) do not find any rational justification to differentiate between the terms anxiety and fear

(Lazarus, R.S., 1966). Although the preceding descriptions of fear and anxiety present valid points, the concept of fear and its link to anxiety remain controversial. As a result, research efforts have exploited the use of stimuli as an attempt to discriminate between fear and anxiety. The specificity of the eliciting stimulus can differentiate between fear and anxiety. While anxiety responds to broader or all-encompassing stimulus, fear responds to a specific stimulus. Similarly, Lazarus (1988: 310) sustains anxiety thus a threat reaction when no clear action tendency is generated. Whitley and Tousman (1996) studied definitions of fear and anxiety based on opinion of 233 nurses and 69 adult clients. The result showed that client did not distinguish between anxiety and fear as much as nurse did. These two terms are often used interchangeable as synonyms or as byproducts of one another (Winer, 1982).

Interestingly, the characteristics that can be used to clearly draw the demarcation between fears an anxiety was described in table (Bay & Algase, 1999).

Table 1 Characteristics of fear, anxiety

	Anxiety	**Fear**
Definition	A heightened state of uneasiness to a potential nonspecific threat that is inconsistent with the expected event and results when there is a mismatch between the next likely event and the actual event.	A sufficiently potent, biologically driven, motivated state wherein a single, salient threat guides behavior. It is a defensive response to perceived threat of the result of exposure to a single cue presented in an environment reminiscent of the original fear experience the original fear experience.
Feeling	Vague; uneasiness or increasing tension	Immediate dread; scared and frightened
Source	Unknown object and nonspecific	Known and specific
Response Subjective	Behavioral responses are evident: frightened; apprehensive in order to perform risk assessment	Worried, Jittery, nonspecific fright; rising apprehension
Responses Objective	Restlessness; trembling and voice quivering; cardiovascular excitation to enhance arousal;	Fight, flight, or freeze behaviors present; cardiovascular excitation to enhance cardiac

	Anxiety	Fear
	arousal; focus on self	output; frightened; focus on threat
Antecedents	Perceived threat to homeostasis Presence of impeding change: loss of economic status, source of loss of economic change in career, retirement, change induced by motor of sensory loss.	Sudden threat to biological integrity Change in environment Threatening facial expression Certain innate conditions Neutral event paired with innate fear pathways.
Critical attributes	• Mostly subjective: uneasiness or rising apprehension • Transformation into relief behaviors: restlessness • Anxiety may not be known or identifiable	• Obvious behavioral change: fright, fight, flight, or freeze • Focus on source of threat • Sudden onset of threat • Apprehensive in order to perform risk assessment • Cardiovascular excitation
Consequences	• Physical illness • Acting out behavior	• Avoids danger • Survives • May develop long-lasting fear memory.

From " Fear and Anxiety: A simultaneous Concept Analysis," by E. J. Bay and D. L. Algase, 1999, *Nursing Diagnosis, 10, p.103.* Copyright 1999 by Margo Neal publisher.

Therefore, fear seems to show the actual source as known and specific source. The antecedence of fear is sudden threat which preschoolers will response objective by behaviors present.

2.4 Manifestation of fear in preschoolers

Preschoolers are the age which has many fear objects. They will manifest by physically, behaviorally, and emotionally. The manifestation of behaviorally is the most important part which use for measuring fear in young children. Manifestation of fear in preschoolers received IVI presented as three aspects of behavioral expressions. First aspect is motion aspect such as nurses' adherence, scrabble, scuffle, stay away. Second aspect is facial expression aspect such as

sweating face, wry expression, and tears. Third, speech and crying aspect such as negotiate, don't accept caring, and entreat (Pivara, 2004; Reynold, 2002; Termsook, 2011).

Consequently, nurses could measure preschoolers' fear by observation of fear manifestation.

2.5 Factors related children's fear

The factor influence preschooler's fear including

1. Age, the child's age represent different cognitive development is the most important factors to consider when designing the intervention. Children who received developmentally appropriate health related information exhibited significantly fewer behavioral manifestations of anxiety and fear, and increased cooperation (Hatava, et al., 2000; Huber and Gramer, 1991; Melamed, 1975; Rasnake and Linscheid, 1989; Papalia, Olds, & Feldman, 2004)

2. Previous procedure experience, the previous experience affects to fear in children receive pain procedural treatment (Kolk, van Hoof, & Fiedeldij Dop, 2000; Nicastro, 1999).

3. Gender, studied fear in children showed that gender is impact on fear level. There are reported a higher level of fear in girl than in male (Burnham & Gullone, 1997; Lentz, 1985; Maccoby & Jacklin, 1974; Nicastro, 1999).

Consequently, among these influencing factors, the child's age, experience and gender, were controlled when designing the intervention.

2.6 Fear of preschoolers receiving IVI

Intravenous fluid infusion (IVI) is a common method used to balance body fluid and electrolyte and to administer medications (James, 2013 ; Jennifer, 2009). When getting ill, preschool clients always loss appetite and eat less than their body requirements. They usually have fluid and electrolyte imbalance (Lily, 2010; Wong, 2007). Intravenous fluid infusion is an essential therapeutic method used among the preschool clients (Wong, 2007).

Process of providing IVI: nurse will greet, introduce herself and provide the information about the process, necessity of IVI, and what they can do during procedure to the mother and preschool children by speech. Nurse will provide maternal role during IVI include reassure nurses' advice and activities. Preschoolers will be laid on the bed. Nurse will swaddle cloth on preschoolers. Then, nurse takes the preschoolers in supine position. After that, nurse will tell the preschoolers that she will apply a 70% alcohol on the skin. Then the nurse will tell preschoolers, don't look at the needle while she inserts the IV catheter. This will take about 5 minutes.

Receiving intravenous fluid infusion (IVI) is a fearful situation. It Induces moderate to severe fear in preschoolers (Cavender, Goff, Hollon, & Guzzetta, 2004b; Inal, 2012; James, 2013 ; Jennifer, 2009; Tak & van Bon, 2005).

The study In Thailand, a qualitative study of 8 preschoolers whose were inserted IV, showed all of children fear of IV insertion. Four preschoolers presented severe fear, and four children presented moderate fear (Nonglak, 2002). The quasi experimental study of 20 preschoolers whose received IVI presented moderate fear (X=32, Range=0-48, SD=3.43) (Termsook, 2011). Similarly, the quasi-experimental design to examine the effect of providing concrete objective information combined

with parental participation on fear of preschoolers receiving IVI (Kanyawee Kerdmongkhol, 2011). The result of study showed mean score of fear in 30 preschoolers receiving IVI is 30.45 (Range=0-54, SD=6.60).

Therefore, receiving IVI induce moderate to severe fear for preschoolers since walking in treatment room to secure tape.

2.6.1 The cause of fear in children

Fear in children is depended on their cognitive and learning stage (Lewis & Volkmar, 1990). Preschool-age children are the critical period which induces emotional expression i.e fear.

There are four sources of fear which frequently affect fear in children (Broome et al., 1997).

1. Direct experience: the past threaten situation such as iv insertion or immunization, hospitalization.

2. Modeling: Parents or sibling present their fear in each situation. Children learn for that and modeling that fear response.

3. Negative information: Children got the negative information i.e the fear situation or event. They fear of each situation as they heard.

4. Developmental conflict: The conflict occurs when children could not do as their normal age. The conflict occur because of children was limit the activity by illness and treatment process i.e. fear of family separation, fear of unknown object, fear of body injury and pain, or fear of loss of control in unwanted situation.

Fear in children comes from both external and internal sources.

2.6.2 The cause of fear in preschoolers receiving IVI

According to the threaten situation as receiving IVI in preschoolers, it is the treatment induces children's fear. The cause of fear in preschoolers received IVI are three major causes as follows:

2.6.2.1 Fear of unknown object (Hart & Bossert, 1994; Wong, 2007). The unknown is not only stranger people but also environment, equipment, and the strange events for children. Medical situation is the unknown situation or environments induce severe fear in children (Coyne, 1996; Hart & Bossert, 1994). Preschooler's thinking is egocentric and magic. They may believe that their illness is somehow related to a thought or deed. This believes can lead to increase stress (James, 2013). When preschoolers approach with IVI the don't know what will happen and what they can do in each occasions since taken in treatment room to swaddle cloth over the child's arm for supporting the needle.

2.6.2.2 Fear of loss of control cause by physical restriction or restraining to facilitate the procedure, altered routines, and enforced independency (Algren, 2007; Bowden et al., 1998). The restraining of child's body involves child feeling of the thing that they can do. When preschoolers have to receive IVI they have to restrain before iv insertion because it would help nurse to insert iv more effective. Preschoolers fear of loss of control in unwanted situation (Broome et al., 1997). According to the study in preschoolers receiving IVI showed in the occasion of restraining by swaddled cloth preschoolers showed highest fear level than other occasion (from taken in treatment room to apply alcohol) (Kanyawee Kerdmongkhol, 2011) . It seems to show the important of loss of control by restraining on fear in preschoolers receiving IVI.

2.6.2.3 Fear of body injury and pain. IV insertion is the procedure induce tissue damage and pain (Coyne, 1996; Wong, 2007; Wong, 2015). Children are fear of needle because of their immunization experience pain. Furthermore, they often imagine treatments to be much worse than it is (James, 2013 ; Kayyal & Widen, 2013; Salmela et al., 2010). Consistent with Pivara Thangnoy (2004) presented preschoolers showed highest fear's level within the stage of IV insertion. Moreover, mother rate needle procedures as the most distressing event during hospitalization Caty, Ritchie, and Ellerton (1989). Fear of pain occur in the stage of applying alcohol, iv insertion to occasion is from applying alcohol to the IV insertion area, IV insertion, strapping tape on the IV site. (Termsook Ruksrithong, 2011).

Thereby, causes of fear in preschoolers receiving IVI comprise of three major cause i.e. unknown, loss of control and pain.

2.7 Measurement of fear in preschoolers

There are a variety of established measures and techniques that have been developed to assess pediatric fear within the medical procedures. The measurement can generally divide in to four broad categories including: self-report, proxy or observation report, observational (i.e., behavioral) rating scales, and physiological correlates. Each of these assessment categories is describe below, and a few common examples of each are provided.

2.7.1 Self-report. There are variety of self-report measurement used with pediatric populations including Measures of pain and distress may include various versions of the following

-Visual Analogue Scales (VAS)

-Numerical Rating Scales (NRS)

-Verbal Rating Scales (VRS)

-Faces Scales designed to assess level of pain or distress (e.g., anxiety or fear, or both). Children's Fear Scale (CFS). It is based on the Faces Anxiety Scale Developed by McKinley and colleagues (2003) to measure anxiety and fear in adults in the intensive care unit. The one-item scale consists of a row of five six-neutral face showing extreme fear on the far right.

2.7.2 Proxy (i.e. observer). Parents or other observers (e.g., nurses) are ask to provide proxy rating of the child's fear using the same rang of self-report measurement (i.e., having the parent and /or nurse as well as the child independently complete the same measures). Given that fear are subjective experience, it is desirable to obtain self-reports of pain whenever feasible. However, for young children (i.e., less than 4-5 years), children who are extremely distressed, or children with impairments in their cognitive, verbal, or developmental abilities, self-reports are often not feasible or appropriate (Von Baeyer & Spagrud, 2007). In this case proxy-report can be useful and informative; however, it is important to recognize the potential differences in fear scores that can result when relying on different report rating.

2.7.3 Observational (i.e. behavioral). Although fear is subjective experience, there are various behavioral (i.e., facial expressions, body movements) that have been identified as an reliable indicators of fear including (but not limited to) : crying, limb flaying, moaning, and facial grimacing (e.g., McGrafth, 1998). Observational (i.e. behavioral) rating scales typically involve observing the child and/or parent-child interaction to determine the frequency with which a predetermined set of behaviors are displayed.

2.7.3.1 Observer Rating Scale of Anxiety (ORSA). It was developed by Malamed and Seigal (1975) for measuring behavior of children (4-12 years old) facing hospitalization and surgery. This behavior observation scale was constructed of 29 categories of verbal and skeletal-motor behavior thought to represent behavioral manifestations of anxiety in children. Example of items indicative of anxiety include crying, trembling hands, stutters, talks about hospital fear, separation from mother, or going home. Rater reliability was assessed throughout each phase of experimental procedure. Average inter-rater reliability was .94.

2.7.3.2 The Behavioral Profile Rating Scale (BPRS) (Johnson and Melamed, 1975). BPRS is a modification of the ORSA, specifically for dental settings. It has some useful modifications: the recording intervals are shorter (3 minutes), and each behavior is weighted as to the degree it would disrupt the dentist and the treatment of the child.

2.7.3.3 The Preschool Observation Scale of Anxiety (POSA) (Glennon & Weisz, 1978). It was developed for measuring separation anxiety in children age 32-59 months. Preschoolers were observed and scored on the scale during two test sessions. Session 1, with mothers absent, was expected to provoke relatively high anxiety; Session 2 with mothers present, was expected to provoke minimal anxiety. There are 30 behavior items.

2.7.3.4 Procedure Behavior Rating Scale (PBRS).It was developed by Katz and Siegel (1980) for measuring fear of patient with Bone marrow aspiration. It was measured in 4 stage since Calling name to finish BMA consist of 25 behavior 5-Likert scale 1-no fear to 5-severe anxiety.

2.7.3.5 Procedure Behavior Checklist (PBCL) (LeBaron & Zeltzer,

1984). It was developed from PBRS of (Katz, Kellerman, & Siegel, 1980) by modification from 25 behaviors to 8 behaviors. It was measuring fear of children and adolescent with Bone marrow aspiration. It was measured in 3 states since – calling to finish BMA and walk out of treatment room. The scale was 5-Likert scale --severe level. 1-extremely low to 5-extremely severe.

2.7.3.6 The Observational Scale of Behavioral Distress (OSBD).

It is the most recently revised 'rating scale which was first developed by Jay and Elliott (1981), and first used in 1983 (Jay et al., 1983). It is a revised version of the PBRS and included 11 behaviors initially. Three items were deleted as not being objective enough, by (Elliott, Jay, & Woody, 1987). The behaviors are: information seeking, cry, scream physical restraint, verbal resistance, seeks emotional support, verbal pain and flail. The similarity to the BTDS is obvious. The items that were eliminated were verbal fear, muscular rigidity and nervous behavior. The behaviors were recorded continuously for 15 second intervals, during 4 phases of the BMA (Jay et al., 1983). Interval recording has been found to be the most popular because of its applicability to recording of multiple behaviors. This makes it the most useful method for recording anxiety behaviors (Kazdin, 1984). Intensity scores for each behavior were also generated so that the total distress scores could be compared on the intensity of distress in every child. Jay and Elliott (1984) further extended validity measures, and the latest version of the scale (Elliott et al., 1987) was developed after it was used by (Jay, Elliott, Katz, & Siegel, 1987). In the study of Blount et al. (1995), inter-rater reliability was calculated by using Cohen’s kappa. The obtained kappa reliability for the OSBD total distress score was .86.

2.7.3.7 Child-Adult Medical Procedure Interaction Scale. It was developed by (Blount, et al., 1989). It is an observational measure of child and adult behaviors during medical procedure (BMA and lumbar puncture). Blount used CAMPIS to measure child coping and child distress behaviors calculated as proportions of total child behaviors.

2.7.3.8 Child-Adult Medical Procedure Interaction Scale-Revised (CAMPIE-R). It was developed by (Blount, et al., 1997). It is an observational measure of child and adult behaviors during medical procedure (BMA). Blount used CAMPIS-R to measure child coping and child distress behaviors calculated as proportions of total child behavior. The 35 codes of the CAMPIS were combined into nine broad categories in the CAMPIS-R (Child Coping, Child distress, Child Neutral, Parent Coping Promoting, Parent distress Promoting, Parent Neutral, Staff Coping Promotion, Staff Distress Promoting, and Staff Neutral). Child distress includes 8 behaviors as cry, scream, verbal resistance, request emotional support, verbal fear, verbal pain, verbal emotion, and information seeking. CAMPIS-R was used to test the construct (convergent, discriminant) validity of Children's Fear Scale (CFS) in his study. Validity was calculated by using the formula for Cohen's kappa (1960). Kappa value in child distress was .90.

2.7.3.9 Child-Adult Medical Procedure Interaction Scale-Short Form. (CAMPIE-SF). It was developed by Blount et al. (2001). It is an observational measure of child and adult behaviors during medical procedure (BMA). Blount used CAMPIS-short to measure child coping and child distress behaviors calculated as proportions of total child behavior. The 35 codes of the CAMPIS were combined into nine broad categories in the CAMPIS-R (Child Coping, Child distress, Child Neutral,

Parent Coping Promoting, Parent distress Promoting, Parent Neutral, Staff Coping Promotion, Staff Distress Promoting, and Staff Neutral).

2.7.3.10 Fear observation behavior scale (Weinstein, Getz, Ratener, & Domoto, 1982) was developed to measure in preschoolers-adolescent undergoing dental procedure 3 dimension; body movement, verbal, and happiness.

2.7.3.11 Behavioral Observation Scale of Fear in children receive venipuncture was developed by Nareumol Teerarungsikul (1989). She modified fear behavior observation scale from Yupayong Wongsri (1986). It was measure fear in children receive venipuncture. It consists of 9 subscales. Likert type scale range from 1=low or no fear to 3 = high fear.

2.7.3.12 Behavioral Observation Scale of Fear in preschooler undergoing radiotherapy was developed by Tussnee Uttharot (1995). She developed fear measurement by the concept of child behavioral from pediatric psychologist. It consists of 6 behavioral subscales. Fear was observed in 2 stage including before receive radiotherapy–(waiting in front of the room) and between receive radiotherapy (in the room to finish and walk out). Likert type scale range from 1=low or no fear to 3 = high / extremely fear.

2.7.3.13 Behavioral Observation Scale of Fear in preschoolers with injection was developed by Rapeeporn Thummasarot (1999). She modified fear measurement from Katz et al (1980). The measurement consists of 4 dimension include crying, movement, speech, face. Measurement scale is 3 rating scale 1(no fear)-3 (high fear).

2.7.3.14 Behavioral Observation Scale of Fear in preschoolers who received aerosol therapy. It was developed by Siriwan Baitrakul (2003). It was

developed by concept of Behrman and Vaugham (1983), Hurlock (1978) and Moors (1987). Furthermore, Siriwan Baitrakul was considering the measurement of Nareumol Teerarungsikul (1989) and Tussnee Uttharot (1995). It consists with 6 dimensions include facial expression, crying, catching parent, verbal expression, angry or aggressive expression, and escape or avoid treatment. The measurement scale is 3 rating scale from 1(no fear/low) to 3 (high fear). In her study, the measurement was conduct for assessing fear in 4 stage. Child was informed that they will get medical aerosol to using the mask. Second stage is to 1 minute after aerosol. Third stage is 1 to 5 minutes. The last stage is 5 minutes to finish aerosol therapy.

2.7.3.15 Behavioral Observation Scale of Fear in preschoolers who admit in hospital at In patient department (IPD). It was developed by Wipada Sangnimitchaikul (2003). The measurement was modified from The Preschool Observation Scale of Anxiety: POSA (Glennon and Weiz, 1978) and the instrument measure fear behavior in previous study. It includes 3 dimensions as body movement 5 items, facial expression 7 items, verbal and crying 8 items. Total 20 items. It is checklist with 0(no behavior) -1(show behavior). It was used for measure fear in 5 situation as waiting for venipuncture, weight, vital sign, changing dress, and take a rest. Total score is 0-100. Low score is low fear. High score is high fear. In 2009, Chirawachr Kasemsook modified fear measurement scale from Wipada Sangnimitchaikul (2003) for measuring Fear of aerosol therapy of preschoolers with acute respiratory infection. Furthermore, she observed 6 preschoolers with aerosol therapy. The instrument consist of 3 dimensions include body movement 5 items, facial expression 5 items, verbal and crying 8 items. Total is 18 item. It is behavior checklist with 0(no)-1(have) scale. It was measured in 4 stage as wearing mask, 1

minute after oxygen flow, within 1-5 minute of oxygen flow, within 5 minute to take off oxygen mask. The total score is 0-72.Low score means low fear. High score mean high fear. In 2011, Kanyawee Kerdmongkhol modified fear measurement from Jirawatr Kasemsook (2009) for measuring fear of intravenous fluid infusion of preschoolers with acute respiratory infection. The measurement consist of fear behavior 3 dimension as body movement 6 items, facial and pasture expression, 4 items, verbal and crying 8 items. Total items is 18 items. It is checklist scale with 0(no)-1(have) scale. It was measure in 3 stage as in front of treatment room to treatment bed, lie on bed to swaddle, swaddle to begin iv insertion. Total score is 0-54 (18x3=54). CVI .90, Inter-rater reliability .94. In 2011, Termsook Ruksrithong, (2011) modified Jirawatr Kasemsook (2009) for measuring fear in preschoolers receive intravenous fluid. The measurement consist of fear behavior 3 dimensions as body movement 5 items, การfacial and posture expression 3 items, verbal and crying 8 items. Total item is 16 items. It is checklist scale with 0(no)-1(have) scale. It was measure in 3 stage as before-between-after iv insertion. Total score is 0-48. CVI .82, Interrater reliability .98.

2.7.3.16 von Baeyer & Spangrud (2007) provide developmentally appropriate and empirically-supported recommendation for selecting observational (behavioral) measures of pain-related distress in young children. They conducted systematic review measures in children and adolescents age 3 to 18 years. According to Jay et a1. (1983) used a variety of measures for parents and children above 8, but then only used the Observational Scale for behavioral Distress (OSBD) for the children under the age of 8. The OSBD was the, only assessment device used by Jay et al. (1985).

2.7.4 Physiological outcomes. A variety of physiological outcomes such as heart rate, respiratory rate, cortisol level, blood pressure and oxygen saturation have been use as indicators of fear (pain-related distress), typically with greater levels indicative of greater distress (Sweet & McGrath, 1998). However, while this physiological correlated are often used as outcome measures in assessment of distress, they are limited by the fact that they lack sensitivity and specificity. In other words, they are only loosely correlated with painful events and may occur in response to various other states such as fever or exertion (von Baeyer & Spagurd, 2007). The limitation showed physiological measure in isolation is dependently capable of capturing the pain experience (Sweet & McGraft, 1998).

In this study, the researcher used Fear of Intravenous Fluid Procedure Observation Scale for Preschool Children for assessing fear in preschoolers receiving IVI. The scale was modified from the Intravenous infusion Fear Scale which was developed by Kanyawee Kerdmongkhol (2011). The scale was selected to measure fear in this study because of the similarly of phenomena. But in this study, the stage of observation is different. It started from preschool client take in the treatment room swaddle cloth over the child's arm for supporting the needle. So there are some behaviors which have to be added in the instrument. The two behaviors comprise of "take the hand to remove the equipment of Intravenous fluid" and "close one's eye". The instrument comprise of three dimensions with 20 behavior items.

3. Concrete objective information

3.1 Self-Regulation Theory

Self-Regulation Theory (Johnson, 1999) is the theory describe process to cope with event that occur during physical illness. The theory challenges some traditional thinking about providing patients information and patient emotional response to threatening health care events. Nurses can derive interventions to modify patients' responses to and coping with physical illness from self-regulation theory. The information processing theories describe the cognitive process involved when individual process information from their intervention and external environment, incorporate that information with information stored in memory into a cognitive structure to regulate their responses and behavior.

The process of self-regulation is presented in two function of coping, a) regulation of emotional response, and b) regulation of functional response to threatening or stressful situations. The goal for emotional pathway has been emotional comfort and for the functional partway, minimization of disruption of usual life activities. The process of functional response is facilitated when the representation includes concrete-objective feature of experience. Concrete-objective features of a health care event include: a) physical sensations and symptoms that occur, b) temporal characteristics, c) environment feature, and d) cause of sensations, symptoms, and experience. The concrete-objective feature can reduce ambiguity about what will be experienced which facilitates receive of relevant information from memory, planning for how to deal with the experience, and assembling resources (e.g., cognitive, social, and material).

Therefore, preschoolers are fear when they receive IVI since they are walking in the treatment room to secure tape. They need nursing intervention reducing threatening. Providing concrete-objective information is appropriate to children. Nurses provide concrete objective information by considering preschooler cognitive development. When review the way to teach young children, it shows that play is the way in which young children learn and it lead them to successful in their attempts to solve the problem (Whitebread, 1996).

3.2 Reducing fear by concrete objective information

The nursing innovation for reducing fear in hospitalizes children is very important (Thongbai, Tangvoraphonkchai, & Soomlek, 2007). Providing concrete-objective information for preparation of IVI induces preschoolers easy to understand receiving IVI. Furthermore, it leads preschoolers to reach goal for emotional pathway as emotional comfort or reduce fear. For the functional partway are minimization of disruption of usual life activities and the can go along with the treatment. According to Boyer (2008) preschool children's acquisition of self-regulatory skills is supported by direct adult guidance and instruction, emphasis on importance of the caregiver role, and the use of developmentally appropriate strategies.

Approach to reduce the fear suggests that reducing fear of children mainly focused on providing information or explain what happening to children importantly as providing information to pediatric is important to help them recognize the situations happening to them him and to reduce the fear from their own unknown and imagination (Wong, Hockenberry-eaton,Wilson, Winkelatein, & Schwartz, 2001).

From literature review found that providing information to pediatric can be done in several ways as followings:

1. To describe using words that easy to understand and the details of the information provided depend on age intellectual development are easy ways and able to use with children of all ages. However, providing information to preschool children with words only may not be enough to make them understand completely.

2. To provide children documents for reading using interesting media for them and easy to understand, such as pictures, brochures, flip charts that show the details of the information need to know, or comic books. Due to the nature of children always enjoy the colorful pictures and a cartoon.

3. Watching video is providing information using animation media with music to show patients any events must be faced that presented as providing information in one way. As the ability to recognize and remember of preschool children is not good enough. They have a short attention span and also lack the ability to sequence of events. The story synthesis may cause the child cannot understand whole content in story from watching videos that means they can understand partially. So the importance of providing information through watching a video is nurse or mother have to watch with children and correct the misunderstandings of the child while watching. Providing information without discussion will make more anxiety to the child. From the literature review relating providing the information through video to preschool children with fear on medical treatment found that after providing information, the experimental group is less fear than the control group and from the research shows that after providing information, the fear is not decreased or not different between experimental and control groups significantly (Chuenjitr Somjitr,

2002). So it has not been concluded that this information providing method is appropriate and effective to be applied for providing information to preschool children.

4. Dramatic playing is playing common in children aged 2-7 years, as an age of high fantasy. The children will play an assuming by imitation the role of an adult, others and animals that might be behavior or real event or imaginary. It can reflect the development of emotional, intelligence and ability to solve problems of children and can help children to ventilate. The medical play, seeing and touching the real medical equipment make children get the concrete experience, perception and learning in real help to reduce incorrect understanding of own thought and imagination. It also makes children familiar, reduce the fear of medical devices and control the threatening situations (Eldridge, 1997). Although allowing children to play freely medical devices has not get any information, can help reduce the anxiety of children from getting medical attention (Craft & Denehy, 1990). Thus providing information a child for medical treatment should give children the opportunity to learn from touching or play real equipment. This helps to reduce anxiety or fear of activities from treatment activity. This method is suitable for toddlers up.

3.3 Providing concrete objective information for preschoolers receiving IVI

The nursing intervention for reducing fear in preschoolers is providing information of IVI by considering the child's cognitive development. The reason of this is to support child's perception in the reality, not worse than it is. They could expect and appraise the situation as reality. According various studies the effective of information in reducing fear is depend on the characteristics and content of

information (Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997; Raikes & Thompson, 2006).

Concrete objective features of a IVI in this study include: a) physical sensations and symptoms that occur: e.g. you will feel warm when you are swaddled cloth, or you will feel cold when you was compression by cold alcohol, b) temporal characteristics: since walking into treatment room to secure tape, c) environment feature: environment in treatment room, medical material, and health personnel, and d) cause of sensations, symptoms, and experience: you will tense on your arm because of tourniquet. The concrete-objective feature can reduce ambiguity about what will be experienced which facilitates receive of relevant information from memory, planning for how to deal with the experience, and assembling resources (e.g., cognitive, social, and material).

The existing knowledge of concrete objective information could reduce fear of preschool age children are presented as LaMontage et al. (1997), (Chirawachr Kasemsook, 2009; Kanyawee Kerdmongkhol, 2011; Wipada Sangnimitchaikul, 2007). When review the method to teach young children, it shows that play is the way in which young children learn and it lead them to successful in their attempts to solve the problem (Thanattheerakul & Tangvoraphonkchai, 2012) (Whitebread, 1996). Consequently, provide preschoolers play with IV set before IV insertion is necessary for preschoolers to perceive concrete- objective information.

Cartoon animation is one method for providing concrete-objective information. Although it is not conclude the effective of video on fear of preschoolers, but because of the new evolution of information communication technology (ICT), the media for providing information ought to be considered. Computer tablet is the

most use and convenient information technology in nowadays. Therefore, pediatric nurse should use computer tablet to provide cartoon animation before and during IV insertion. It should help children understand and reduce fear in preschoolers.

Moreover, mother should present when nurse providing information for preschoolers. The first experience of IVI is inducing fear of strange person (Whaley and Wong, 1999). Hence, mother present while providing information will help preschoolers feel secure. In sum, mother that is both emotionally supportive and that structures self-regulation have its effect on child social emotional competence through the child's acquisition of understanding of emotion regulation strategies (Cole, Dennis, Smith-Simon, & Cohen, 2009; Denham, 1997; Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997; Raikes & Thompson, 2006).

Therefore, in this study the researcher will provide concrete objective information plus cold alcohol compression via cartoon animation via computer tablet to providing concrete objective information for 10 minutes and pause in the part which need explanation and let the children play with the procedural material. Amount of time is the important element for providing information. Preschoolers could attend 5-15 minutes. In this study, the information use 10 minutes.

4. Cold alcohol compression

4.1 Gate-Control Theory of pain

The Gate-Control Theory of pain perception was developed by (Melzack & Wall, 1965) who indicated that the spinal cord contains a type of neurological "gate" which opens and closes to either allow or block pain signals to travel to the brain. The Gate control theory of pain explain why complementary pain

management techniques are effective in helping to control pain. Stimulation of large A- delta fibers by ice causes substantia gelatinosa in the dorsal horn of the spinal cord to “close the gate” and decrease the transmission of pain impulse to the brain (Huether & Defriez, 2006). The spinal cord contains a neurological type “gate” which will close to block pain signals to travel to the brain. The gate simply allows pain signals to pass onto the brain when they are traveling on the small nerve. The cold will reduce the potential of receptors, resulting in a reduced pain, reducing the transmission of painful nerve impulses or inhibiting them (Donova, 1990; Bonica, 1990), and transmitting fewer painful nerve impulses to the spinal cord and brain, or none at all. This will bring about the reduction of the pain of IV insertion. The IV insertion needs to be sterilized by wiping the child’s skin with 70% alcohol. Cold alcohol compression could be used to reduce pain in venipuncture (Porhathai Dawan, 2007; Inal, 2012; Termsook Ruksrithong, 2011). Consequently, it will be used to reduce severity of threatening in preschoolers receiving IVI in this study.

Naturally, pain sensations travel along 4 main components based on The Gate control theory mechanism (Melzack & Wall, 1996) which illustrate as figure

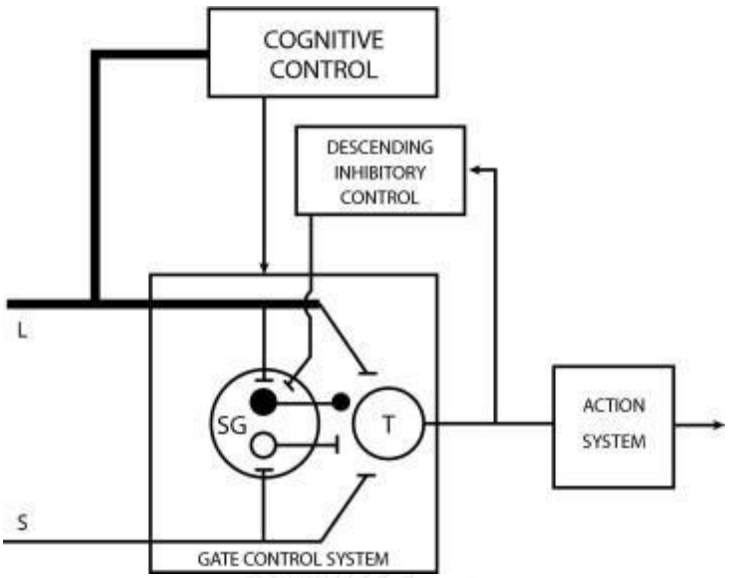

Figure 1 The Gate control theory (Melzack & Wall, 1996)

1. Spinal gate mechanism**:** Spinal gate mechanism includes large-diameter A-delta fibers, small-diameter C-delta fiber, substantia gelatinosa (SG), and transmission cell (T-cell). The SG cells can inhibit or facilitate pain impulses that are transmitted to the T-cell. The impulses from A delta fibers when pass through SG, SG cell's activity will be activated and T-cell's activity will be inhibited. There are no pain impulses to the brain, it is so-called 'the gate is closed". In opposition, the impulses from C delta

2. The central control system: it is activated by afferent from the selective brain process (dorsal horn), which transmit information about the noxious stimulus to the thalamus. The system may be subdivided into three components:*1)Sensory-discriminative component* establishes precisely the characteristic, intensity, and location of pain sensation. *2) Affective-motivate component* causes the emotional stimulus and interprets to discomfort and pain distress and 3) *Cognitive-evaluative component* acts as the cortical processes by analyzing, perceiving, recognizing pain experience, into conscious and unconscious action.

3. Central biasing system: The descending control influences may be exerted through the reticular projections and cortical projections. The brain stem reticular formation exerts a powerful inhibitory control over information projected by spinal gate. This reticular inhibitory projection is also influenced by somatic input and the visual and auditory system. The part of cortical projections is fibers from the cortex, particularly the frontal cortex which sub serves cognitive processes such as past experience, project to the reticular formation, and influences the gate control system.

4. Action system: It response after perception includes the sympathetic or parasympathetic nervous systems, verbal or movement expressions, differential coping and solving problems, or behavioral expressions to avoiding pain.

Therefore, pain is resulted from a neural activity. The pain impulses are moderated by a gating mechanism that opens to allow nerve impulses to reach the brain or close to decrease impulse transmission, depended on the extent to which gate is open and suggests that large-fiber inputs tend to close the gate, whereas small-fiber inputs open it, and the gate is influenced by descending controls from the brain

4.2 Reduce pain by cold alcohol compression

Cold therapy is the important method for reducing pain Whaley and Wong (1990). The mechanism of it does not have the evidence. Some researcher believes that cold effect to neurotransmitter. It may inhibit neurotransmitter. Hence, it could reduce pain. Moreover, cold could decrease metabolic rate, edema, and inflammation. It could decrease blood circulation on compression area. It reduces pain. Bonica (1990) explained the mechanism of cold compression on pain as it effect to vasoconstriction and decrease neurotransmitter. It effect to decrease

neurotransmitter to dorsal horn. It does not open gate of pain. Hence, pain was inhibited.

The evidence showed cold alcohol compression for 1 minute could reduce pain in school-age children receiving venipuncture (Porhathaai Dawan, 2007; Pakorn et al., 2014). The studies used 70% alcohol with -15 ^{0}C compressed on skin for 1 minute. It doesn't have the side effect of burn on the skin (2-7 minutes compression, (Lindsey, 1990; Synder, 1985), vasoconstriction (3-5 minute compression, Raj, 1986). There is study of cold combine with vibration (traditional material: buzzy bee) could reduce pain in children receiving venipuncture (Inal & Kelleci, 2012). Therefore, the previous study showed cold compression could reduce pain in school age children receiving venipuncture.

The evidence seems to conclude that the cold alcohol compression could reduce pain related venipuncture in school-age children. However, the effects of cold alcohol compression on pain level in preschoolers receiving venipuncture is lack of knowledge in this specific age group.

4.3 The Assessment tool of pain during venipuncture

There are many type of pain scale which use to assess pain in children (Jongudomkarn, Aungsupakorn, & Siripul, 2008). For evaluation of perceived pain during venipuncture in this study, the CHEOPS scale was used – Children's Hospital of Eastern Ontario Pain Scale (CHEOPS). CHEOPS was developed by McGrath, Johnson, Goodman, Schillinger, Dunn, & Chapman (1985). It was classified as an observation scale and was primarily developed to evaluate post-operative pain in small children. It can be used, however, to evaluate interventions for reducing pain and discomfort as well as for evaluating short and sharp pains (Van-Cleve, Johnson,

Pothier, 2007). Its inter-rater reliability ranges from 0.90 to 0.99 (King, Ellwas, Frey, 2009). The scale includes six entries with an appropriate point evaluation focused on the character of crying (1-3 points), facial expressions (0-2 points), verbal reaction (0-2 points), position of the body (1-2 points), touch (1-2 points), and position of the legs (1-2 points). Minimum score was 4 (no pain) and maximum was 13 (maximum pain).

In Thailand, Suraseranivongse, Santawat, Kraiprasit, Petcharatana, Prakkamodom, and Muntraporn (2001) translated and test CHEOPS scale. The study was designed to cross-validate a composite measure of the pain scales CHEOPS (Children's Hospital of Eastern Ontario Pain Scale), OPS (Objective Pain Scale, simplified for parent use by replacing blood pressure measurement with observation of body language or posture), TPPPS (Toddler Preschool Postoperative Pain Scale) and FLACC (Face, Legs, Activity, Cry, Consolability) in 167 Thai children aged 1-5.5 yr. It was translated and tested for content, construct and concurrent validity, including inter-rater and intra-rater reliabilities. Discriminative validity in immediate and persistent pain for the age groups < or =3 and >3 yrs. were also studied. The children's behavior was videotaped before and after surgery, before analgesia had been given in the post-anesthesia care unit (PACU), and on the ward. Four observers then rated pain behavior from rearranged videotapes. CHEOPS Scale had acceptable content validity and excellent inter-rater and intra-rater reliabilities (infraclass correlation >0.9 and >0.8 respectively). Construct validity was determined by the ability to differentiate the group with no pain before surgery and a high pain level after surgery, before analgesia ($P<0.01$). The positive correlations among all scales in the PACU and on the ward ($r=0.621-0.827$, $P<0.01$) supported concurrent validity. Use of the kappa statistic indicated that CHEOPS yielded the best agreement with the

routine decision to treat pain. The younger and older age groups both yielded very good agreement in the PACU but only moderate agreement on the ward. On the basis of data from this study, they recommend CHEOPS as a valid, reliable and practical tool. Minimum score was 4 (no pain) and maximum was 13 (the worst pain). The cutoff point is pain score 6. The Scores 4-6 means no pain, 7-8 means mild pain, 9-10 means moderate pain, 11-13 means severe pain (McGrath, Johnson, Goodman, Schillinger, Dunn, & Chapman 1985; Sahatsa Mandee, 2015).

5. Relationship between pain and fear

Fear is the emotional reaction to a specific, identifiable and immediate threat, such as a dangerous animal or an injury. Fear of pain and fear of (re)injury have been described as often occurring in patients suffering pain.(Leeuw et al., 2007)

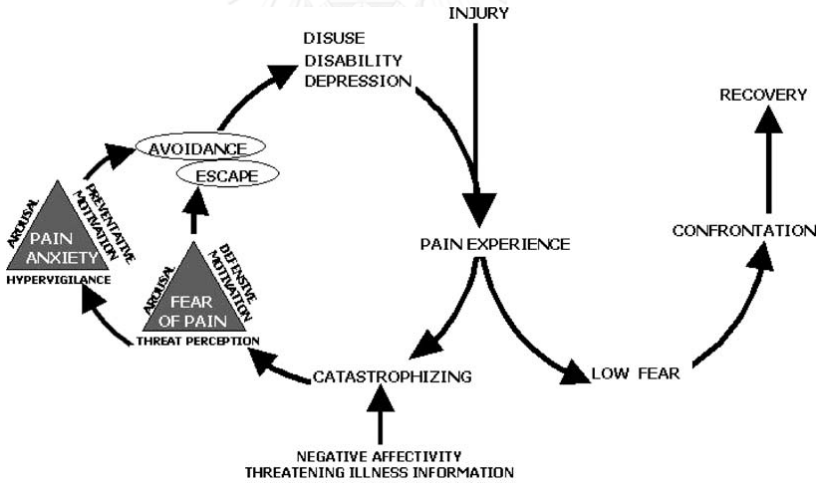

Figure 2 Based on the fear-avoidance model of Wong (2015) and Leeuw et al (2007)

The basic tenet of the model is that the way in which pain is interpreted may lead to two different pathways (Figure 2). When acute pain is perceived as non-threatening, patients are likely to maintain engagement in daily activities, through which functional recovery is promoted. In contrast, a vicious circle may be initiated

when the pain is catastrophically (mis)interpreted. These dysfunctional interpretations give rise to pain-related fear, and associated safety seeking behaviors such as avoidance/escape and hypervigilance, that can be adaptive in the acute pain stage,(Leeuw et al., 2007)

Therefore, receiving IVI is the invasive procedure induce acute pain. When the pain is catastrophically (mis)interpreted. These dysfunctional interpretations give rise to pain-related fear, and associated safety seeking behaviors such as avoidance/escape

6. Intervention for reducing fear in preschoolers receiving IVI

Literature reviews of fear reduction in preschoolers receive IVI in abroad showed that. The providing concrete-objective information could reduce fear in 3-17 years old children with IV insertion Johnson and Thompson (1985). Evidence show distraction technique could reduce child behavioral distress significantly difference in conventional and control group (Fanurik, Koh, & Schmitz, 2000). But in other two studies, distraction coach, and parental positioning and distraction no significant different between two group (Cavender, Goff, Hollon, & Guzzetta, 2004a; Kleiber, Craft-Rosenberg, & Harper, 2001). The studies of quasi-randomized trial showed children positioning could reduce fear of IV insertion (Hsieh, Liu, and Cho, 2012).

In Thailand, Interestingly that providing concrete-objective information combined with parental participation could reduce fear in before IV insertion stage (d=7.8) (Kanyawee Kerdmongkhol, 2011). In this study the control groups don't allow mother stay in treatment room with preschoolers client. The mother in experimental group was allowed to stay in and participate with their child along with the procedure. So the effective of the intervention comes might come from separation

anxiety. It cannot conclude that whether providing concrete objective information could reduce fear in preschoolers receive intravenous fluid infusion. Nursing care to reduce pain by refrigerated alcohol compression combined with parental participation (d=4.89), parental participation (d=2.02), pain reduction by cold alcohol compression (d=1.45) reduce fear in applying alcohol to strapped stage . The study of Pivara Thangnoy (2002) showed maternal participation could reduce fear in before, between, and after IV insertion (d=1.72). However, the previous study could not conclude whether providing concrete objective information could reduce fear since client come-in and leave of the treatment room. The results of study come from both of providing information and parental participation and the period of previous study show in before insertion stage. In addition, there are argument of the effect of providing concrete objective information on fear of preschoolers are presented. The providing information by cartoon video could not reduce fear in preschoolers receive IVI (Chuenjitr Somjitr, 2002). But in other previous study showed the different effectiveness of providing concrete-objective information on (Johnson, 1999), fear of preschoolers who are hospitalized (Wipada, 2007), aerosol therapy (Chirawachr Kasemsook, 2009). However, there is limited evident support for the nursing care that can deal with all causes at all stages of intravenous fluid infusion process.

Although previous study showed effective of providing concrete objective information combined with parental participation could reduce fear. But the previous study could prove only in phase before iv insertion (not prove in procedure and post procedure). Moreover, the control group in previous study did not allow caregiver to stay with the preschoolers in treatment room. While nowadays caregivers were allow to stay with their child in current situation. The previous RCT study showed the

important of pharmacologic topical could reduce behavioral distress. But the limitation of pharmacologic topical is long time absorption (30-60 minute). So, nurse who is the important person to provide comfort for patient have to seeking for non-pharmacologic nursing care which save time to success in this procedure. Moreover, there are the lack of knowledge, the kind of media to provide concrete -objective information. The information technology which is inexpensive, convenient, and exciting should be used. Consequently, seeking for the intervention which more cost-effective is need.

The nursing intervention for providing Intravenous fluid infusion is nurse's activity to reduce fear in preschoolers receiving IVI for the first time by providing concrete objective information plus cold alcohol compression; At the patient's bed: 1) Nurse will greet, introduce herself and describe the process, necessity of IVI, and what they can do during procedure to the mother and preschool children by speech. 2) The nurse will encourage the mother to give maternal role during IVI include giving rapport for her child about nurses' advice and activities. 3) The nurse will provide and encourage a mother to participate during IVI process. 4) The concrete objective information was provided via cartoon animation from the computer tablet. Nurse encourages preschoolers and mother to interest in the information on cartoon animation which is relating to an actual, specific thing, or instance about the IVI procedure. The nurses will encourage the children and mother to interest in content on the cartoon, which will take about 5 minutes. 5) After providing concrete objective information nurse demonstrate IV solution set. Then mother will take their child to treatment room: 6) Mother will repeat nurses' s keywords, encouraging children to cooperate with nurses, holding children. 7) Nurse encourages children to touch

tourniquet, strapping tape. 8) Mother and nurse will inform children in the environment equipment in the room. 9) Preschoolers will be laid on the bed. The nurse will swaddle cloth on preschoolers. Then, the nurse takes the preschoolers in the supine position. 10) The nurse will inform the sense of 70% cold alcohol when it is applying and compressed on the skin for 1 minute. The 70% cold alcohol cotton will be refrigerated on -15^{0}C for at least 1 hour. It will use for applying skin in 2-inch diameters. Then, the nurse will change cotton to other side and compression on the skin for 1 minute. 11) Then the nurse will tell preschoolers, don't look at the needle while she inserts the IV catheter. 12) Nurse strap tape and swaddled cloth on his/her arm. The providing concrete objective information took about 10 minutes. (See in Figure 3)

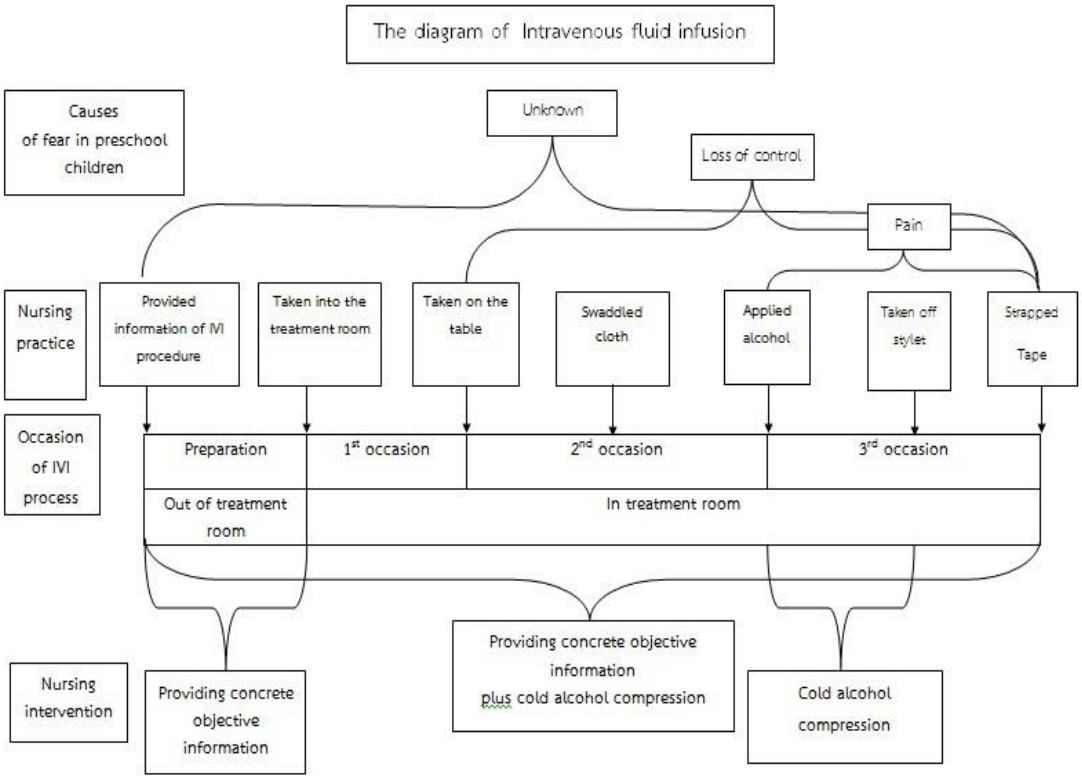

Figure 3 Diagram of nursing intervention for providing Intravenous fluid infusion

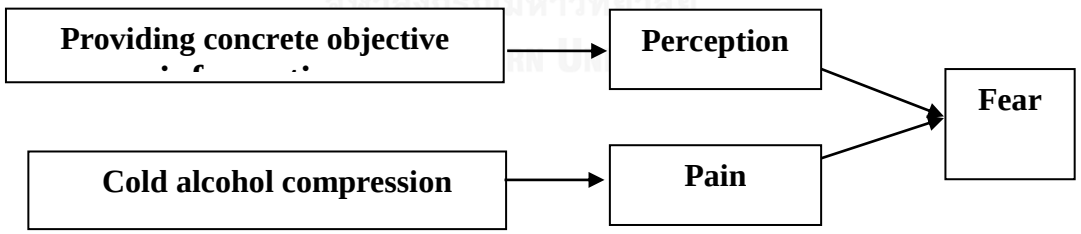

Figure 4 Conceptual framework

CHAPTER III
METHODOLOGY

Research design

The research in this study was quasi-experimental design four group with post-test only design (Polic and Beck, 2016; West, Cham, & Liu, 2015). It aimed to investigate the effects of providing concrete objective information plus cold alcohol compression, providing concrete objective information and, cold alcohol compression in reducing the fear of preschool age children (3-5 years old) receiving IVI. It had manipulation, control, enrollment of the subjects to each control and treatment group by gender, and double-blindness (preschoolers client and research assistant who rate the score). Structurally, it represented as follows:

Experimental group 1 (E1)	X_1	O_1	O_2	X_1	O_3
Experimental group 2 (E2)	X_2	O_4	O_5		O_6
Experimental group 3 (E3)		O_7	O_8	X_3	O_9
Control group (C)		O_{10}	O_{11}		O_{12}

Figure 5 **Four-group post-test only design**

O_1 the fear of experimental groups 1, on the first occasion.

O_2 the fear of experimental groups 1, on the second occasion.

O_3 the fear of experimental group 1, on the third occasion.

O_4 the fear of experimental group 2, on the first occasion.

O_5 the fear of experimental group 2, on the second occasion.

O_6 the fear of experimental group 2, on the third occasion.

O_7 the fear of experimental group 3, on the first occasion.

O_8 the fear of experimental group 3, on the second occasion.

O_9 the fear of experimental group 3, on the third occasion.

O_{10} the fear of control group, on the first occasion.

O_{11} the fear of control group, on the second occasion.

O_{12} the fear of control group, on the third occasion.

X_1 the providing concrete objective information plus cold alcohol compression

X_2 the providing concrete objective information.

X_3 the cold alcohol compression.

1st occasion; from the child taken into the treatment room to treatment bed.

2nd occasion; from starting to swaddle the cloth until finish swaddling.

3rd occasion; from applying alcohol to the IV insertion area, IV insertion. strapping tape on the IV site, and swaddle cloth over the child's arm for supporting the needle.

Population and participants

Population of the study

The target population of the study was hospitalized preschoolers (3-5 years) received the first experience of IVI.

Participants

The participants were all the eligible hospitalized preschoolers (3-5 years) received the first experience of IVI at the pediatric unit, Khon Kaen Hospital.

Participants selection

Participants were included by convenience sampling. Each eligible preschoolers was assessing age group and assign to each experimental or control group with match pair by gender. The first participants was allocated to a control group.

Inclusion criteria: Preschoolers:

1) There was doctor order to provide intravenous fluid infusion for the first experience.

2) No diagnosis of any emergency symptoms which needs emergency care.

3) No diagnosis of mental retardation or delayed development

4) No vision or hearing problems

5) Do not receive any topical anesthetic medication

6) Do not receive opioid or sedatives or analgesic drug during the previous 4 hours.

Exclusion criteria: Preschoolers:

1) Cannot completely attend in cartoon until the end

2) Was not successful in receiving intravenous insertion on the first try.

3) Develop the worse symptom during receiving IVI such as dyspnea, seizure, urinate and vomiting

Eighty participants were included in this study. Six participants were excluded because of two participants in experimental group 2 could not completely pay attention to the cartoon until the end. A participant in experimental group 1

denied to watched cartoon again after she was tested perception's score and could not pass 3 score. The three participants in each experimental were not successful in receiving intravenous insertion on the first try. Hence, there are 80 participants in this study.

Participants assignment

Each of 80 participants was provided with a brief overview of the study and encouraged to ask questions throughout and at the conclusion. The researcher reviewed the consent form with the individual. All of them agree to participate in this study and sign the study consent form. After that, participants were assigned to either the experimental or the control group with match pair by gender.

Due to the possibility of contamination of treatment in experimental and control group, the participants were determined by convenience sampling and match pair by gender. The first participants were allocated to the control group until the number of gender in four groups was almost equal. The researcher reviewed the medication records based on inclusion criteria. When patients whose characteristics met the inclusion criteria were selected, the researcher used a matched pairs technique by gender to assign to control and experimental groups.

The summary of selection and assignment showed as follow.

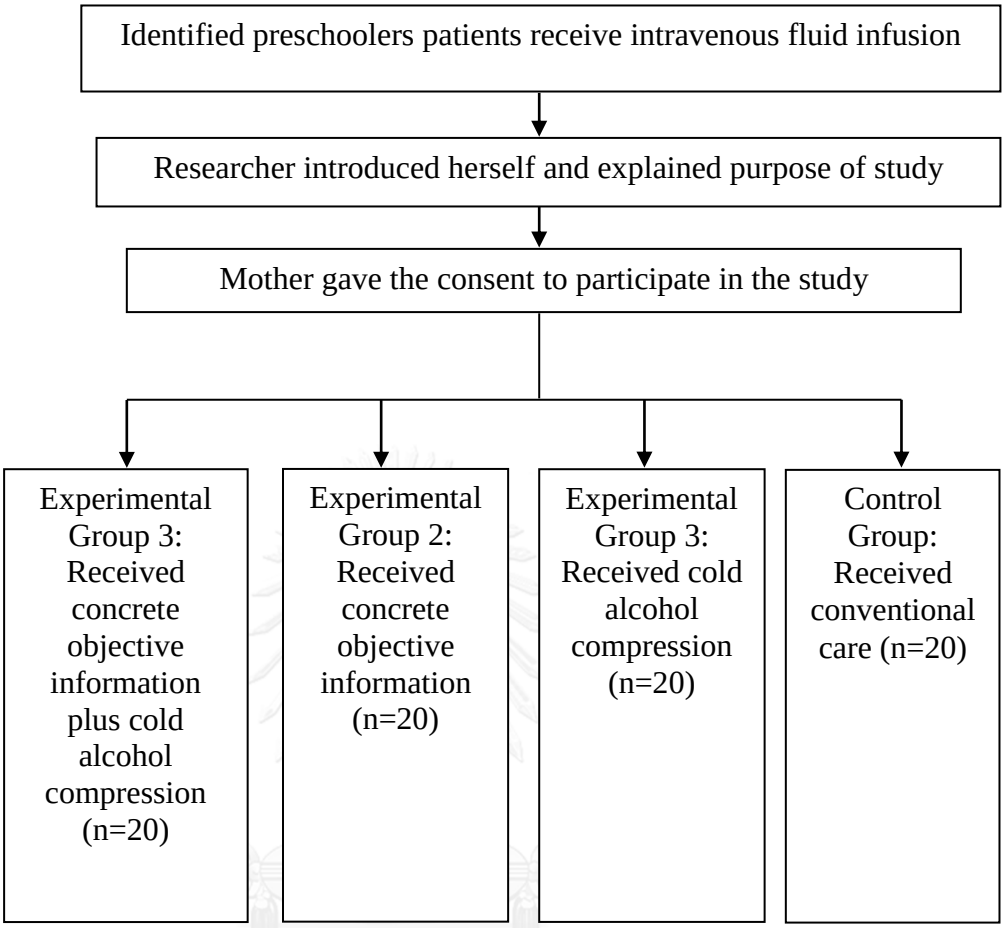

Figure 6 Enrollment of participants

Sample size

The participants recruited were preschool children receiving IVI in IPD. Cohen (1992) detected sample size of ANOVA for four groups with large effect size of previous study (d = >.8) at power = .8, α = .05, was 18 participants per groups. Consequently, the sample size in this study was detected effect size from the study of with d=7.8 (Kanyawee Kerdmongkhol, 2011), A necessary sample size per group was

18 participants. The total sample size needed for this study should be at least 72 participants. Therefore, 80 participants were included in this study.

Setting

The researcher collected data in pediatric units at Khon Kaen Hospital, in the northeastern region of Thailand. The hospital located 449 kilometers outside of Bangkok metropolitan area, was a provincial hospital under the government of Ministry of Public Health, consisting 867 beds. There are 5 Pediatric wards including two NICU (16 beds), one PICU (8 beds) 1 Infants wards (16 beds), and one pediatric ward for 1-15 year-old children (34 beds). The preschool children who receive intravenous fluid were given the procedure at a pediatric ward for 1-15 year-old children. The nurse provided the objective, necessity of IVI, and what they can do during the procedure to the mother and preschool children by speech. Then, preschoolers were taken to the treatment room for giving IVI. A mother was allowed to stay in the treatment room with her child.

Research Instruments

The research instruments used in this study comprised of three instruments: 1. Collecting data instrument, 2. Intervention instrument, 3. Experimental validity check instrument.

1. Instrument for Data Collection

1.1 Demographic Data Sheet

The researcher developed demographic questionnaires specific for preschool age children 3 to 5 years old who received IVI and their mother or mothers. Some demographic data was collected from patient's chart. The subject's and

mother’s demographic and clinical data included gender, age, education level, birth order, diagnoses, history of admission/ hospitalization, and history of receiving IVI. The mother’s or caregiver' demographic and clinical data included age, relationship to the child, academic background, and occupation (See appendix E).

1.2 **The perception of receiving IVI**

The perception of receiving IVI from the concrete objective information plus cold alcohol compression was measured by the knowledge of IVI questionnaire for preschoolers. Developed by the researcher, it was a questionnaire which comprises of assessing preschooler understanding in 4 features of concrete objective information. The researcher used the picture for measuring the thought of preschoolers. It consisted of 4 parts which comprise of 4 items including; the first part asking about the environment when receiving IVI. There are three pictures which present the preschooler's activities including A) Sit in front of OPD. B) Stand in front of medication counter. C) Lied on the bed and received IVI. The nurse asked preschoolers "Please choose the picture which you got when you are sick." The second part was the perception of Temporal characteristic. The nurse asked preschoolers as "Please choose and sort of the picture." There are three pictures of mother taken child in the treatment room- child lied on the bed in the treatment room- child got IVI and laid on the bed. The third part was the assessment of physical sensation and symptom. The nurse asked “How do you feel when you got the tourniquet” The picture was- the child has red face show hot (hot)- child’s face show cool (cool)-picture of child’s arm with the tourniquet (tight). The fourth part assesses the cause of sensation. There are three pictures of alcohol, swaddle cloth and IV insertion. The nurse told preschoolers "Please choose the picture which made you

cold." The total score was 0-4. The participants in the experimental group had to meet the perception at least three scores. If not, that participant would be provided the concrete objective information again and did post-test again. If participants could not pass 3 scores, they would be excluded from the study. There were 3 participants could not meet three scores. The nurse had to provide the information again. Two participants attend the information again and could pass three scores. A participant denied seeing cartoon again. She was excluded from the study. Hence, there were 40 participants in experimental group 1 and 2 pass the post-test. (See appendix R).

Content validity Index (CVI) was evaluated with the content validity index for items (I-CVI) and content validity index for scales (S-CVI) through the opinion of the seven content experts for content validity. The seven experts for content validity include three pediatric nursing instructors who are expert in fear and pain. One pediatric nurse who is expert in a pediatric client with acute care, one nurse instructor expertizing in providing information for preschoolers, one pediatric psychologist, and one lecturer who is expert in preschool age children.

The experts were asked to rate the relevance of each item to the objectives of the measures using 4 point rating scale: (1) not relevant, (2) somewhat relevant, (3) quite relevant, and (4) very relevant. Besides, experts were asked to clarify reasons and suggestion if they did not agree with the item in each instrument. The content validity index for items (I-CVI) was .86-1. The content validity index for scale (S-CVI) was 0.99. Reliability was .8. The CVI and reliability indicates the appropriateness of the scale.

1.3 The Assessment tool of pain during venipuncture

For evaluation of perceived pain during venipuncture in this study, the CHEOPS scale was used – Children's Hospital of Eastern Ontario Pain Scale (CHEOPS). CHEOPS was classified as an observation scale and was primarily developed to evaluate post-operative pain in small children. It can be used, however, to evaluate interventions for reducing pain and discomfort as well as for evaluating short and sharp pains (Van-Cleve, Johnson, Pothier, 2007). Its inter-rater reliability ranges from 0.90 to 0.99 (King, Ellwas, Frey, 2009).

In this study, the researcher used CHEOPS-Thai version which was translated by Suraseranivongse, Santawat, Kraiprasit, Petcharatana, Prakkamodom, and Muntraporn (2001). They recommend CHEOPS as a valid, reliable and practical tool for their study. In the original version of CHEOPS scale (McGath et al., 1985), the scale includes six entries with an appropriate point evaluation focusing on the character of crying (1-3 points), Facial expressions (0-2 points), Verbal reaction (0-2 points), The position of the body (1-2 points), Touch (1-2 points), and position of the legs (1-2 points). Minimum score was 4 (no pain) and the maximum was 13 (the worst pain). Scores 4-6 means no pain, 7-8 means mild pain, 9-10 means moderate pain, 11-13 means severe pain. The cutoff point of pain score is 6. More than 6 scores are considered pain and more than 8 needed treat (Sahatsa, 2015; Suraseranivongse, 2001). The participants in the experimental group 1 and 3 had to meet the pain score $\leq$ 8. If not, those would be excluded from the program. Nobody was excluded. There were 40 participants in experimental group 1 and 3 had the score $\leq$ 8. (See appendix S)

Content validity Index (CVI) was evaluated with the content validity index for items (I-CVI) and content validity index for scales (S-CVI) through the opinion of the same seven content experts for content validity of fear scale. The content validity index for items (I-CVI) was 1. The content validity index for scale (S-CVI) was 1. The CVI indicates the appropriateness of the scale.

Reliability was tested by inter-ratter reliability on every 20 preschoolers receiving IVI who have met the eligibilities criteria as in this study. Inter-rater (or inter-observer) reliability was one trained observer and researcher for measuring pain at three occasions and the result was .83-1. The Inter-rater indicates the appropriateness of the scale.

1.4 Fear of Intravenous Fluid Procedure Observation Scale for Preschool Children

The researcher used Fear of Intravenous Fluid Procedure Observation Scale for Preschool Children for assessing fear in preschoolers receiving IVI. The scale was used from The Intravenous infusion Fear Scale (Kanyawee Kerdmongkhol, 2011). In this study, the stage of observation started from the preschool client come in the treatment room to have swaddled cloth on his/ her arm, strapping tape on the IV site, and swaddle cloth over the child's arm for supporting the needle. So there were some behaviors which had to be added to the instrument. The two behaviors comprise of "take the hand to remove the equipment of Intravenous fluid" and "close one's eye."

The instrument comprises of three dimensions with 20 behavior items. The dimensions comprise seven items for body movement, five items for facial and posture expression, and eight items for verbal and crying, 20 items totally. Observers will record the occurrence of a given behavior over three specific occasions. The 1st

occasion was from the child taken into the treatment room to treatment bed. The 2nd occasion was from starting to swaddle the cloth until finish swaddling. The 3rd occasion; from applying alcohol to the IV insertion area, IV insertion, strapping tape on the IV site, and swaddle cloth over the child's arm for supporting the needle. The sum score consisted of 3 parts, including score of occasion 1 (Range = 0-20), score of occasion 2 (Range = 0-20), and score of occasion 3 (Range = 0-20). A total score is obtained by summing the 20 items in 3 occasions. The sum score was 0-60. A higher scores indicates severe fear (Marques, Chosak, Simon, Phan, Wihelm, & Pollack (2010). (See appendix F).

Content validity Index (CVI) was evaluated with the content validity index for items (I-CVI) and content validity index for scales (S-CVI) through the opinion of the seven content experts for content validity.

The content validity index for items (I-CVI) was .86-1. The content validity index for scale (S-CVI) was 0.94. The CVI indicates the appropriateness of the scale.

Reliability was tested by inter-ratter reliability on every 20 preschoolers receiving IVI who have met the eligibilities criteria as in this study. Inter-rater (or inter-observer) reliability was tested by two trained observers and researchers at baseline. Two trained observers and researchers watched the event simultaneously and independently recording the relevant variables according to a predetermined coding system. The resulting record can then be used to compute an index of equivalence or agreement (Polit and Hungler, 1999: 416). The Inter-rater reliability of two trained and researcher for measuring fear at baseline was .85-.9. Moreover, Inter-rater of one trained observer and researcher for measuring fear at three occasions was .88-.95. The Inter-rater indicates the appropriateness of the scale.

2. Intervention Instrument

The intervention instruments in this study were presented as follows.

2.1 The plan for intervention. There are three plans including Plan for providing concrete objective information plus cold alcohol compression, Plan for providing concrete objective information, and Plan for providing alcohol compression. (See appendix G-I)

2.2 Manual for nurse to use intervention instruments. It comprised of a manual for the nurse to provide concrete objective information plus cold alcohol compression, a manual for the nurse to provide concrete objective information, and a manual for the nurse to provide cold alcohol compression to preschoolers receiving an Intravenous fluid infusion. It explains the steps of providing each intervention, plan of interventions, script of cartoon animation, material box. (See appendix J-L)

2.3 Cartoon animation. There are two versions. i.e. the cartoon animation "Noo-Dee knows that what IVI was" (version 1: 70% alcohol applying), and the cartoon animation "Noo-Dee knows that what IVI was" (version 1: 70% cold alcohol compression). (See appendix M, N)

2.4 The IVI material box. It comprised of IVI material as follows: IV solution set, Tourniquet, Tape to secure IV cannula, IV catheter, Splint for limp/cannula site. The IVI material was used for demonstration of IVI process which was done with the doll. (See appendix O)

2.5 Cold alcohol cotton. The 70% alcohol cotton used was on the freeze box of the refrigerator. The temperature was controlled to be -15 ^{0}C by set the lowest set point at least 1 hour. (See appendix M)

2.6 A digital thermometer. An Intsun® High-Quality LCD Screen Display TA218C thermometer with hygrometer was used to measure the temperature of the cold modality. It has the hygrometer probe temperature probe. Dimension was 120 x 96 x 22 mm (H x L x W). Temperature Range was between -50 to 50 Degrees Celsius. Accuracy was +/-1 Degrees Celsius, Battery Type 1 x 1.5V (AAA size). , Resolution ±0.1 Degrees to 50 Degrees Celsius. (See Appendix Q).

The Intervention Instrument Trial

The feasibility of the program was important. The instrument of the plan for providing concrete objective information plus cold alcohol was preliminary try-out on five preschoolers receiving IVI similar characteristics of eligible participants. The objectives for this try-out are, 1) to determine the feasibility of the intervention, and 2) to identify the problem that might occur while providing concrete objective information and cold alcohol compression based on try-out. The reason for achieving the process of intervention, the intervention program was implemented only by the one researcher that had been trained. Also, the researcher used the manual for nurses as a guideline for intervening to ensure the same intensity or dosage of intervention that the participants received. The result of field testing revealed that there was the acceptable delivery of the plan. The researcher assessed by plan's checklist. It found high congruence (100%) between intervention protocol and the actual implementation, indicating high consistency across implementation. Also, the plan was feasible to the application with this patient group.

Experimental procedure

The experimental procedure was 3 phases include preparation, implementation, and evaluation phase

Phase 1: Preparation Phase

1.1. Research assistant preparation

The researcher trained two research assistants for providing intervention and rate fear score at baseline. Another one research assistant was trained for rating fear and pain score in 1st to 3rd occasion from video record. Training consisted of the general orientation to the IVI procedure and practice observations. All behavioral items were defined, and the observer was tested for their familiarity with these items. The training was done for seven days before collecting data. They are pediatric nurses who have experience of providing IVI for children for at least two years. They were willing to be research assistants. The researcher explained the objective of the study, participants, the detail of intervention instruments and collecting data instrument. Moreover, the human subject's protection was explained. Three research assistants used the observation scale for measuring fear of 5 preschoolers who are characterized as the participant's subjects.

1.2 Instrument preparation

All of instruments and materials of the program were verified for content validity by the experts, and permission was obtained from Khon Kaen University and Khon Kaen Hospital Ethical Committee before collecting data.

1.3 Place preparation

After obtaining permission to conduct the research from Khon Kaen University and Khon Kaen Hospital. The researcher collaborated with head nurses and staff nurses of the pediatric ward. The head nurse and staff nurses have informed the objective, procedures, and approximate length of time for data collection.

Phase 2: Implementation Phase

1. The researcher went to pediatric unit, Khon Kaen Hospital since 8am-4pm. on Monday to Friday. When there was an eligible participant, the researcher introduced herself to preschoolers and their mother, invited both of them to the meeting room and describe the objective of the study and provided consent form and ask for permission in participating the study.

2. After the researcher had got the permission in the study, demographic data was completed by mother and patients' chart. Afterward, the researcher assigned the participants for control or experimental group, matched pair by gender.

Procedures in the experimental group (E)

The procedure for the experimental group is explained in three experimental interventions as follows:

Experimental group 1 (E1): The preschoolers received nursing care providing concrete objective information plus cold alcohol compression (15 minutes). The procedure was presented as follows:

1. The research assistant greeted, introduced herself and described the process, necessity, and what mother and preschool children can do during the procedure to the mother and preschool children by speech.

2. The research assistant encouraged the mother to give maternal role during IVI include giving rapport for her child about nurses' advice and activities The concrete objective information was provided via cartoon animation.

3. Demonstration of providing IV fluid infusion.

4. The research assistant encouraged preschoolers and mother to be interested in the information on cartoon animation which was related to an actual,

specific thing, or instance about the IVI procedure. The cartoon explains A) physical sensations and symptoms that occur: e.g. you felt warm when you are swaddled cloth, or you felt cold when you were given compression of cold alcohol. B) temporal characteristics: since walking into the treatment room to secure tape. C) environment feature: the environment in the treatment room, medical material, and health personnel, and D) cause of sensations, symptoms, and experience: you felt tensed on your arm because of a tourniquet. The words that were used in the cartoons were simple, realistic, and no personal opinion. The nurses encouraged the children and mother to be interested in the content on the cartoon, which took about 10 minutes. After providing concrete objective information, nurses demonstrate IV solution set.

5. The research assistant allowed the mother to be inside the room while their child was receiving IVI. During IVI process, mothers repeated nurse's keywords, encouraging children to cooperate with nurses. Research assistant encourages children to take tourniquet, strapping tape.

6. The research assistant informed children in the environment equipment in the room. The preschoolers was laid on the bed. The nurse was swaddle cloth on preschoolers.

7. The research assistant took the preschoolers supine position for the medical procedure. Mother held children in the supine position. The nurse informed the sense of 70% cold alcohol when it was applying and compressed on the skin for 1 minute. The cold alcohol cotton was refrigerated on -15^{0}C for at least 1 hour. It was used for applying skin in 2-inch diameters. Then, nurse changed cotton to other side and compression on the skin for 1 minute.

8. The research assistant inserted needle in vein position. Take off the stylet, connect IV solution set, strapping tape on the IV site, and swaddle cloth over the child's arm for supporting the needle.

Experimental group 2 (E2): The preschoolers received nursing care providing concrete objective information (15 minutes). The procedure was presented as follows:

1. The research assistant greet, introduce herself and describe the process, necessity, and what mother and preschool children can do during the procedure to the mother and preschool children by speech.

2. The researcher assistant provided and encouraged the mother to participate during IVI process. The concrete objective information was provided via cartoon animation.

3. Demonstration of providing IV fluid infusion.

4. The researcher assistant encourages preschoolers and mother to pay attention to the information on cartoon animation which was related to an actual, specific thing, or instance about the IVI procedure. The cartoon explains A) physical sensations and symptoms that occur: e.g. you felt warm when you are swaddled cloth, or you felt cold when you was compression of cold alcohol. B) temporal characteristics: since walking into the treatment room to secure tape. C) environment feature: the environment in the treatment room, medical material, and health personnel, and d) cause of sensations, symptoms, and experience: you felt tensed on your arm because of the tourniquet. The words that were used in the cartoons were simple, realistic, and no personal opinion. The nurses encouraged the children and

mother to be interested in the content on the cartoon, which took about 10 minutes. After providing concrete objective information nurse demonstrate IV solution set.

5. During IVI process, mothers repeated nurse's keywords, encouraging children to cooperate with nurses. Research assistant encourages children to take tourniquet, strapping tape. The nurses allow the mother to be inside the room while their child was receiving IVI.

6. The research assistant informed children in the environment equipment in the room. Preschoolers were laid on the bed. The nurse swaddle cloth on preschoolers.

7. The research assistant took the preschoolers supine position for the medical procedure. Mother will hold children in a supine position. The nurse informed the sense of 70% alcohol when it was applying on the skin. The 70% alcohol cotton was prepared by pouring 70% alcohol on sterile cotton. It was used for applying skin in 1-inch diameters.

8. The research assistant inserted the needle in vein position when the skin was dry. Take off the stylet, connect IV solution set, strapping tape on the IV site, and swaddle cloth over the child's arm for supporting the needle.

Experimental group 3 (E3): The preschoolers received nursing care of cold alcohol compression (10 minutes). The procedure was presented as follows:

1. The research assistant greet, introduce herself and describe the process, necessity, and what mother and preschool children can do during the procedure to the mother and preschool children by speech.

2. The research assistant encouraged the mother to give maternal role during IVI including giving rapport for her child about nurses' advice and activities.

3. During IVI process, mothers repeated nurse's keywords, encouraging children to cooperate with nurses. The research assistant encourages children to take tourniquet, strapping tape. The research assistant allows the mother to be inside the room while their child was receiving IVI.

4. The research assistant informed children in the environment equipment in the room. Preschoolers were laid on the bed. The nurse swaddle cloth on preschoolers.

5. The research assistant took the preschoolers supine position for the medical procedure. Mother held children in the supine position. The nurse informed the sense of 70% cold alcohol when it was applying and compressed on the skin for 1 minute. The cold alcohol cotton was refrigerated on -15^{0}C for at least 1 hour. It was used for applying skin in 2-inch diameters. Then, nurses changed cotton to other side and compression on the skin for 1 minute.

6. The research assistant inserts needle in vein position, takes off the stylet, connect IV solution set, strapping tape on the IV site, and swaddles cloth over the child's arm for supporting the needle.

Procedures in the control group (C)

Preschoolers received conventional nursing care (approximately 10 minutes). The activities were presented as follows:

1. The research assistant greeted, introduced herself and provided the information about the process of and necessity of IVI to the mother and preschool children.

2. The research assistant encouraged the mother to give maternal role during IVI include giving rapport for her child about nurses' advice and activities

3. Preschoolers hold on supine position on the bed for the IVI procedure.

4. The research assistant swaddled cloth on preschoolers clients and ask the mother to hold on their child.

5. The research assistant told the preschoolers that she applied a 70% alcohol on the skin and do not look at the needle while she inserts the IV catheter.

Phase 3: Evaluation phase

All of the participants were recorded video since coming into the treatment room to strapping tape on the IV site, and swaddling cloth over the child's arm for supporting the needle. Evaluations of the nursing program were done by rating the fear score in 3 occasions by the research assistant.

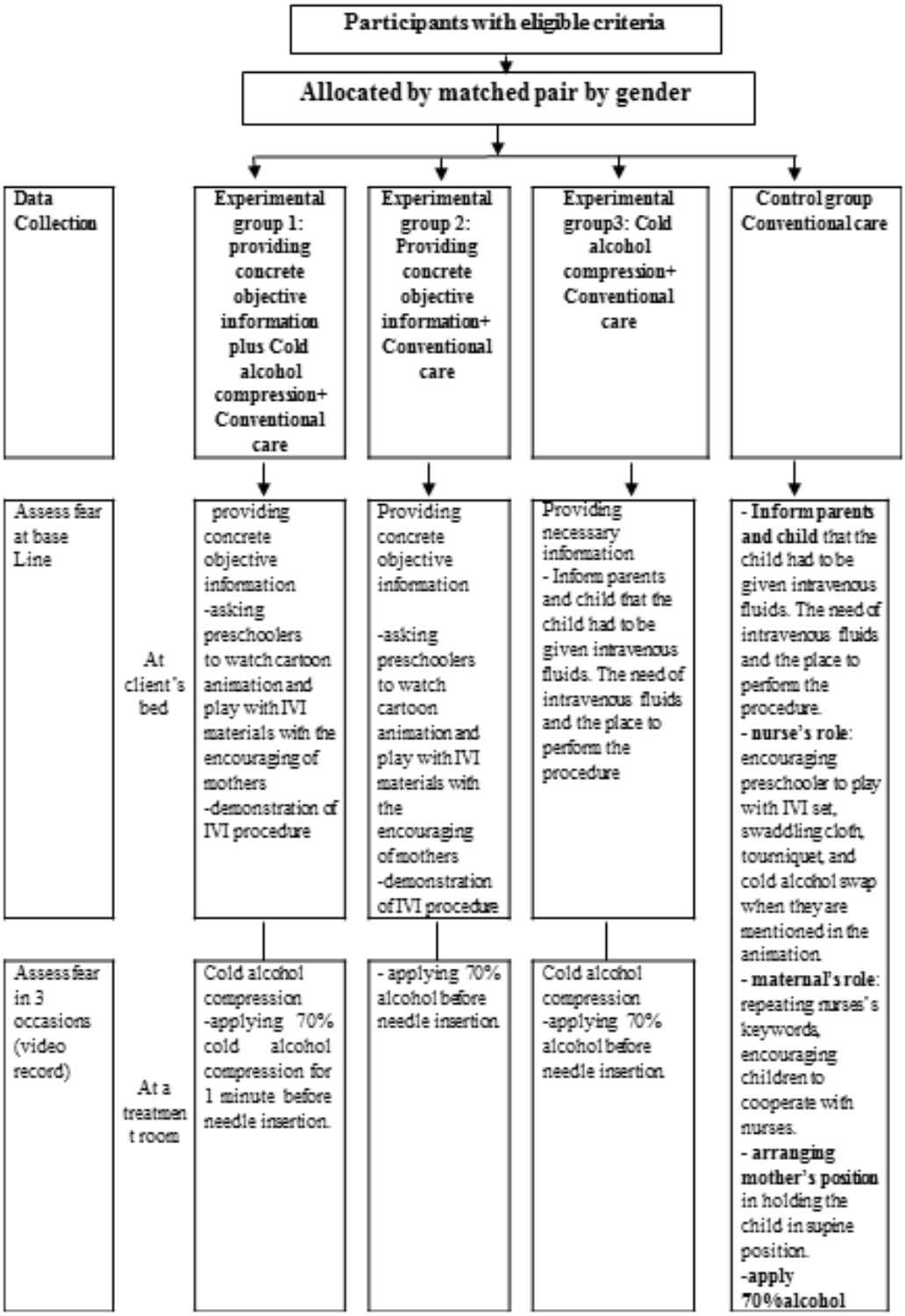

Figure 7 Research study procedure

Data collecting procedure

1. The researcher asked the permission from caregivers and let them complete demographic data sheet.

2. The research assistants assessed preschoolers fear at baseline by Fear of Intravenous Fluid Observation Scale for Preschool Children which was modified from The Intravenous infusion Fear Scale (Kanyawee Kerdmongkhol, 2011).

3. The research assistant measured pre-post tests perception score of providing intravenous fluid infusion scale.

4. Video recorded procedure: All video records were conducted independently by researcher after informed consent was obtained from parents. The researcher waits in front of the door of the treatment room and records the child as they approach.

5. The blind-research assistants rated the occurrence of a given behavior over each specific occasion from the video. The 1st occasion was the child taken into the treatment room to treatment bed. The 2nd occasion from starting swaddle the cloth until finish swaddling. The 3rd occasion was from applying alcohol to the IV insertion area, IV insertion, strapping tape on the IV site, and swaddle cloth over the child's arm for supporting the needle. There are 20 items on each occasion. The sum score ranges from 0-60.

Human Rights Subjects Protection

The permission letter for data collection from the Faculty of Nursing was sent to the Director of Khon Kaen Hospital. Ethical approval for this study was obtained from the Committee on Organization and human rights related to human experimentation of Khon Kaen University and Khon Kaen Hospitals, prior data collection. The potential participants who met the inclusion criteria were informed by the researcher and research assistant of the proposed of the study, procedure, potential, risk/benefits, and the right to confidentiality. The participants understood about providing concrete objective information which helped their child understand the situation in reality and know how to respond in IVI process. The written information declared all the rights the participants had. The participants were informed of their rights to terminate at any time with no consequences at all. They were assured that their willingness to participate in the study had no implication for the health care services that they received. Their decisions to discontinue participating in the study did not affect their relationship with health care providers or their access to any services available at the hospital and the health centers.

This intervention has presented no harm at all to the participants and does not interrupt with the routine nursing care or medical care. It also made the effective nursing care to encourage preschoolers to reduce fear. Then, they were asked for agreement on participate in the study (Appendix C).Throughout the study process, the researcher makes an attempt to avoid any possibility of discomfort, interference on the participants. Confidentiality of data collection ensured both during and after data collection.

Data Analysis

Data from questionnaires was entered into a worksheet of Statistical Analysis. The assigned study number was used for the data of each subject ensured the anonymity of the participants. The analysis met assumptions underlying the statistical testing (Appendix T).

The assumptions for the ANOVA statistical were tested before further analysis. The result showed that the statistic testing of fear score were met all assumption of the ANOVA.

1. Normality distribution

A Kolmogorov-Smimov test ($p<.05$) and Shapiro – Wilk test , Shapiro – Wilk test are the most popular statistic use for testing normality. In this study, Shapiro – Wilk test , Shapiro – Wilk test is more appropriate for small sample sizes (< 50) (Hair, 2010). The result indicated The fear total score and baseline was normally distributes for three experimental groups and control group and, accept perception, and pain (Cramer, 1998; Cramer & Howitt, 2004; Doane & Sewand, 2011, Hair, 2010). Then, a visual inspection of the normal Q-Q plots and box plots. (Show in Table1 and Appendix T)

2. Homoscedasticity

Step1: The Levene test was used to assess whether the variance of a single matric variable are equal across any number of groups. The result showed univariate test (*Levene's Test*) for three variables are no significant(F). It means that accept null hypothesis of homoscedasticity or homogeneity of dependent variables.

Step2: The Box's M test, applicable for equal variance dispersion assess the equality of covariance matric. The result showed a no significant value (.478),

indicating no significant different between the four groups on the three independent variable collectively.

Thus, the assumption of homoscedasticity is met for each individual variable separately and the three dependent variables collectively.

Scatter plot verified the equality of variances in the sample (Homoscedasticity of variance) (p>.05) (Hair, 2010; Martin &Bridgman, 2012). (shown in Appendix T).

3. Correlation of dependent variables

Bartlett's Test of Sphericity was used to determine whether the dependent measures are significantly correlated. It examine the correlation among all dependent variables and assesses whether, collectively, significant intercorrelation exist. The result showed significant degree of intercorrelation does exist**.** Thus, the assumption of correlation is met.

4. Covariate testing

ANOVA was used to determine different variance of fear at baseline. The statistic showed no significantly different of fear a baseline between group (P=.068). The result indicated that variance in four group are equal. Thus, ANOVA is appropriate to use for determine different of fear total score between four group in this study.

Therefore, regarding of assumption testing for ANOVA statistic, fear total score and baseline were met all assumptions. The perception score and pain score were violated assumption of normality distribution. Statistical analyses were performed with a significance level set < .05. The analyses were performed in two parts as follow:

Part I : Parametric statistics was used to determine different of variance of main variable (fear total score) by group.

1. Descriptive statistics were used to describe characteristics of the participants and dependent variables with frequency, range, mean, standard deviation, and percentage

2. X^2 and F-test was used to determine the significant different in the demographic characteristics of the participants

3. One-way ANOVA was used to determine the significant different of variance of dependent variable (fear total score)

4. Post Hoc comparison was used to compare mean different in four group.

Part II : Non-parametric statistic was used to determine the effect of perception and and pain on fear total score.

1. Two-independent sample test (Mann-Whitney Test) was used to determine the significant different of post-test score between experimental group 1 and experimental group 2

2. K-independent sample test (Kruskal-Wallis Test) was used to determine the significant different of pain score between three experimental group and control group

3. Two-independent sample test (Mann-Whitney Test) was used to determine the significant different of pain score between

3.1 Experimental group 1 and Experimental group 2

3.2 Experimental group 1 and Experimental 3

3.3 Experimental group 1 and Control group

CHAPTER IV
RESEARCH RESULTS

This study was a Quasi-experimental research with post-test only and four groups design. Research objectives were to 1) examine the effect of providing concrete objective information plus cold alcohol compression on fear of preschoolers receiving intravenous fluid infusion, 1.1) compare the fear of E1 and C, 1.2) compare the fear of E1 and E2, and 1.3) the fear of E1 and E3. The target populations were preschoolers admitted in patient department. Data was collected during the period from June to December 2016. Preschoolers received intravenous fluid infusion in the first experience. The result of the study presented in 3 parts as follows:

Part 1: Demographic characteristics of the participants

Part 2: Fear, Perception, and Pain score of the participants

Part 3: Hypotheses testing with the descriptive of the participants

Part 1: Demographic characteristics of the participants

Descriptive statistic was used for analyze demographic data of the participants. The average age of the experimental group 1 was 4 years old. One-third of participants studied in kindergarten 1(35%). The majority of birth order was first birth order (65%). Almost a half of diagnosis was pneumonia (40%). The majority has never admitted in the hospital (70%). The average age of caregiver was 34(SD=13) years old. The majority of caregiver' education level was secondary school (65%). Almost a half of caregiver's occupation was house maid and other employee 8(40%).

The average age of the experimental group 2 was 5 years old. The majority of participants studied in kindergarten 1 (55%). The majority of birth order was first birth order (80%). The majority of diagnosis was pneumonia (70%), and never admitted in the hospital (75%). The average age of caregiver was 35 (11%) years old. The majority of caregiver' education level was secondary school (55%). One-third of caregiver's occupation was house maid and other employee 6(30%).

The average age of the experimental group 3 was 4 years old. One-third of participants studied in kindergarten 1(35%). The majority of birth order was first birth order (80%). The majority of diagnosis was pneumonia (70%), and never admitted in the hospital (85%). The average age of caregiver was 36(11) years old. The majority of caregiver' education level (55%) was secondary school. One third of caregiver's occupation was house maid and other employee 7 (35%).

The average age of the control group was 4 years old. The majority of participants studied in kindergarten 1 (35%). The majority of birth order was first birth order (70%). The majority of diagnosis was acute gastroenteritis (70%), and

never admitted in the hospital (75%). The average age of caregiver was 29(3) years old. The majority of caregiver' education level was secondary school (60%). One-third of caregiver's occupation was house maid and other employee 9(45%).

Compare demographic data in each group from did not show the significantly difference between the characteristics at baseline of participants. The demographic characteristics of the participants are show in Table 2

Table 2 Characteristics of participants at baseline

Demographic characteristics	**E1 n (%)**	**E2 n (%)**	**E3 n (%)**	**C n(%)**	**$\chi 2$**	***p*-value**
Gender					.15	.98
Male	10 (50)	10(50)	11(55)	10(50)		
Female	10 (50)	10(50)	9(45)	10(50)		
Age						
$\bar{x}$ (year/month)	3/10	4/9	5/1	4/11	.88*	.46
3 (36-47 mo)	13 (65)	14(70)	11(55)	12(60)		
4 (48-59 mo)	6 (30)	5(15)	6(30)	6(30)		
5 (60 -71 mo)	1 (10)	1(5)	3(15)	2(10)		
Education level					1.32	.72
Child day care center	6(30)	3(15)	4(20)	2(5)		
Kindergarten 1	7(35)	11(55)	7(35)	8(40)		
Kindergarten 2	6(30)	5(25)	5(25)	5(25)		
Kindergarten 3	1(5)	1(5)	4(20)	3(15)		
Birth order					.51	.92
1	13 (65)	16(80)	14(70)	15(75)		
≥2	8(4)	4(20)	6(30)	5(25)		

Demographic characteristics	Experimental group1 n (%)	Experimental group2 n (%)	Experimental group3 n (%)	Control group n(%)	X^2	*p*-value
Diagnosis					2.51	.98
Acute gastroenteritis	8 (40)	7(35)	4(10)	12(60)		
Pneumonia	10 (50)	12(60)	14(70)	3(15)		
Dengue fever	2(10)	1(5)	2(10)	5(25)		
Illness hospitalization history					.19	.97
Ever	6 (20)	5(25)	3(15)	5(25)		
Never	14 (70)	15(75)	17(85)	15(75)		
Age of caregiver (Year)						
$\bar{x}$ (SD)	34(13)	35(11)	36(11)	29(3)	1.8*	.15
Caregiver					3.50	.32
Father	2 (10)	3(15)	1(5)	3(15)		
Mother	14 (70)	16(80)	16(80)	17(85)		
Grand mother	4(20)	2(10)	3(15)	-		
Caregiver' Education level					.49	.92
Primary school	1 (5)	3(15)	1(5)	2(10)		
Secondary school	13(65)	11(55)	11(55)	12(60)		
≥ Graduate	4 (20)	2(10)	6(30)	2(10)		
other	2 (10)	4(20)	2(10)	4(20)		
Occupation					.31	.96
Agriculture	4 (15)	3(15)	4(20)	3(15)		

Demographic characteristics	Experimental group1 n (%)	Experimental group2 n (%)	Experimental group3 n (%)	Control group n(%)	X^2	*p*-value
Maid/ Other employee	8 (40)	6(30)	7(35)	9(45)		
Contractors	4 (20)	5(25)	1(5)	4(20)		
Government officer	1(5)	1(5)	3(15)	1(5)		
Merchant	3 (15)	5(25)	2(10)	3(15)		

* F-test

Part 2: Perception, Pain, and Fear score of the participants

For Experimental group 1; The mean of post-test perception score was 3.1±.31 The pain score was 6.2±1.47. The fear total score was 15.55±5.37. Occasion1; the fear mean score was 3.4±1.18. Occasion 2; the fear mean score was 4.4± 2.90. Occasion3; the fear mean score was 7.75±2.71.

For Experimental group 2; The mean of post-test perception score was 3.15±.36. The pain score was 8.4±1.73. The fear total score was 20±5.20. Occasion1; the fear mean score was 3.35 ±2.75. Occasion2; the fear mean score was 5.75± 3.10.Occasion3 ; the fear mean score was 10.9±3.34.

For Experimental group 3; The mean of pain score was 7.15±1.76. The fear total score was 22.15±5.71. Occasion1; the fear mean score was 5.35±2.27. Occasion2; the fear mean score was 7.80±2.16. Occasion3, the fear mean score was 9.00±1.91.

Control group; The mean of pain score was 10.05±1.28. The fear total score was 33.9 ±7.09. Occasion1 the fear mean score was 6.55± 2.99. Occasion2; the fear mean score 10.25±3.98. Occasion3; the fear mean score was 17.1±1.91.

All of experimental and control group showed fear score were increased in each occasion from occasion 1 to occasion 3. The perception, pain, and fear score of the participants were shown in Table 3.

Table 3 Descriptive analyses of perception score, pain score, and fear score between 4 groups

Group	Perception (Post-test)	Pain	Fear			
			O1	O2	O3	Total
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
E1	3.10(.31)	6.2(1.47)	3.4(1.18)	4.40(2.90)	7.75(2.71)	15.55(5.37)
E2	3.15(.36)	8.4(1.73)	3.35(2.75)	5.75(3.10)	10.9(3.34)	20.00(5.20)
E3	-	7.15(1.76)	5.35(7.8)	7.80(2.16)	9.00(1.91)	22.15(5.71)
C	-	10.05(1.28)	6.55(10.25)	10.25(3.98)	17.1(1.91)	33.9(7.09)

The comparison of post-test perception score

The comparison of post-test perception score between the experimental group 1 and experimental group 2 did not show the significantly different between the experimental group 1 and experimental group 2 ($p<.05$). The comparison of post-test perception score are shown in Table 4.

Table 4 Descriptive analyses of post-test perception score between the experimental group 1 and experimental group 2 (Mann-Whitney Test)

Group	N	Mean Rank	*Sum of Rank*	*Mann-Whitney U*	Wilcoxon W	Z	Asymp. Sig (2-tailed)
E 1	20	20.00	400	190	400	-.472	.637
E 2	20	21.00	420				

The comparison of Pain score between three experimental groups and control group

The comparison of pain score between four groups indicated that there was at least one group that had significantly different mean rank score of pain ($p<.05$). The comparison of pain score were shown in Table 5.

Table 5 The comparison of Pain score between the three experimental groups and control group (Krukal-Wallis Test)

Group	N	Mean Rank	X^2	*df*	Asymp.Sig
E 1	20	21.32	43.614	3	.000
E 2	20	47.18			
E 3	20	28.62			
C	20	64.88			

To investigate the pain different in pairs, the comparisons of E1 and C, E1 and E2, E1 and E3 were performed for testing difference mean rank score of pain. The comparison of pain score are shown in Table 6.

The pain score of E 1 was lower than C and E2 ($p<.05$). The pain score of E1 and E3 did not showed the significantly different.

Table 6 The comparison of Pain score between E1 and C, E2, E3 (Mann-Whitney Test)

Dependent Variable	Group to be compared	Mann-Witney U		
		C (64.88)	E3 (28.62)	E2 (47.18)
Pain				
	E1 (21.32)	6*	143	67.5*

P< .05

Part 3: Hypothesizes testing

The comparison of fear score between four groups indicated that there was at least one group that had significantly different mean score of total fear at p<.05 [F(3,76)=35.32, p<.05]. The comparison of fear score are shown in Table 7.

Table 7 Variance comparison of fear total score between 3 experimental groups and control groups in preschoolers receiving intravenous fluid infusion with one-way ANOVA

Source of variation	**SS**	**DF**	**MS**	**F**	*p*
Between group	3679.90	3	1226.63	35.32	.000
Within group	2639.30	76	34.72		
Total	6319.20	79			

Thus, the comparison of fear of participants in each group that was using Bonferroni method are showing the comparison of mean score in pairs, there were four pairs had statistically significantly different at 0.05 which revealed that fear score of each pair of preschoolers receiving intravenous fluid infusion were different as follows:

In the experimental group 1, the fear mean score was 15.55 while the fear mean score in the control groups, was 33.9. The statistic showed that the fear mean score in the experimental group 1 was significantly lower than that of the control group ($p<.05$).

In the experimental group1, the fear mean score was 15.55 while the fear mean score in the experimental group 3 was 22.15. The statistic showed that the fear mean score in the experimental group 1 was significantly lower than that of the experimental group 3 ($p<.05$).

In the experimental group1, the fear mean score was 15.55 while the fear mean score in the experimental group 2 was 20.00. The statistic showed that the fear mean score in the experimental group 1 and group 2 were not significantly different ($p>.05$).

The comparison of fear of participants in each group that was using Bonferroni method was shown in Table 8.

Table 8 Comparison of fear mean differences between 4 groups (Pairwise comparison)

Dependent Variable	Group to be compared	Mean difference			
		C (33.9)	E3 (22.15)	E2 (20.00)	E1(15.55)
Fear					
	C (33.9)	-	-	-	-
	E3 (22.15)	11.75*	-	-	-
	E2 (20.00)	13.9*	2.15	-	-
	E1 (15.55)	18.35*	6.6*	4.45	-

*p<.05

The further analysis was performed to compare of fear mean differences between the experimental group 1 and group 2 in occasion 3.

The result showed that the Fear mean score in occasion 3 of the experimental group 1 was significantly lower than that of the experimental group 2 ($p<.05$). The comparison of fear of participants in occasion 3 are shown in Table 9

Table 9 Comparison of fear mean score in occasion 3 between the experimental group 1 and 2

Fear	Mean	SD	t	df	p-value (2-tailed)
Experimental group 1	7.75	2.71	3.28	36.53	0.002
Experimental group 2	10.9	3.34			

In summary, the result of study shows the effectiveness of the providing concrete objective information plus cold alcohol compression on fear of preschoolers receiving intravenous fluid infusion. It is the most effective method to reduce fear in preschoolers receiving intravenous fluid infusion.

CHAPTER V
DISCUSSION IMPLEMENTATION AND RECOMMENDATION

The research in this study was quasi-experimental design four group with post-test only design. The objective of this study was to examine the effect of providing concrete objective information and cold alcohol compression on fear of preschoolers receive intravenous fluid infusion between three experimental groups and control group. 80 participants in this study were preschoolers (3-5 years old) received intravenous fluid infusion in Khon Kaen Hospital. Data were collected during June to December 2016.

The results indicated that mean score of fear in preschoolers receiving intravenous fluid infusion in experimental group 1 was significantly lower than that of control group and experimental group 3($p<.05$). While fear in experimental group 1 was not different with experimental group 2 ($p<.05$), but fear at occasion 3 in experimental group 1 was significantly lower than that of the experimental group 2 ($p<.05$).

Discussion

Hypothesis

Hypothesis 1: Fear of preschoolers receiving concrete objective information plus cold alcohol compression group was lower than those receiving conventional care group.

As expected, the result of this study supported hypothesis 1, fear of preschoolers receiving concrete objective information plus cold alcohol compression group was lower than those receiving conventional care group ($p < .05$).

The providing concrete objective information plus cold alcohol compression was the method to reduce threat which affects to fear in preschoolers client. It comprises of manipulation of all causes of fear. The concrete objective information manipulates a cause of unknown and loss of control while cold alcohol compressions manipulate pain.

The concrete objective information plus cold alcohol compression gave preschoolers information which was concrete, clear, fact, not emotion of the data into information. The information includes the pain reduction by cold alcohol compression. It comprises of 4 dimensions as information in environmental features, temporal characteristics, physical sensation and symptom, and causes of physical sensations and symptom and experience. When preschoolers received information from cartoon animation and material equipment in 4 dimensions, it led preschoolers to understand the schema of event. When preschoolers approached with the situation in a cartoon and demonstration material, preschoolers interpreted perception on the situation. After that they knew their role during receiving IVI. The result of perceive situation, preschoolers could adapt to the stressful event, and they could control their behavior during IVI procedure (Regulation of functional responses). At the same time, preschoolers could regulate their emotional responses, their fears was reduced (Johnson, 1999).

Giving concrete objective information by letting preschoolers watch animated cartoons with the content of cold alcohol compression and demonstrating the method

of receiving intravenous fluid infusion together with their mothers results in preschoolers having direct experience about receiving an intravenous fluid infusion. From this experience, they correctly perceived or interpreted events which will happen when they received intravenous fluid infusion, thus reduction of fear and imagination on unknown things (Neill, 1996; Wong, Hockenberry-eaton, Wilson, Winkelatein, & Schwartz, 2001). Accordance with the study of Karlsson and other (2016) revealed that supporting younger children during medical procedure consists of guiding them through a shared situation that is mutually beneficial to the child.

Moreover, providing the information by using animated cartoons was an interesting method for preschoolers. Since animated cartoons contained colorful pictures and attention-grabbing voice, they were one of the factors which interest preschoolers to watch and listen more. Providing the information to preschoolers, together with their mothers watching an animated cartoon and a demonstration of providing intravenous fluid infusion stimulates their interest in the cartoon. Also, when the mothers told preschoolers what the nurses were doing, good relationship as well as trust and interest in receiving the information increased (Ball, & Bindler, 2003; Wachiraporn Bornoi, 2008) because of intimate mothers who understand their children's need and communicate well with them, used language that the preschooler can understand (Latasha, Johnson, & Elliot, 2008; Newton, 2000). Besides, preschoolers were not afraid to ask their mothers about what they doubt rather than asking nurses (Opperman & Cassandra, 1998). The mothers helping children to pick up and touch the equipment providing the fluid infusion was the method that allowed children to be familiar with the equipment. That made preschoolers understood the reasons for receiving intravenous fluid infusion correctly without misinterpretation

and release their fear when playing with the equipment. In the cartoon animation concerning the situation of receiving intravenous fluid infusion, the words and expressions used were easy to understand, and the information was clear and accurate. The story began with preschoolers being examined at the outpatient department and treated at the in-patient department; they saw pictures of child patients treated earlier receiving the intravenous fluid infusion. Providing information plus cold alcohol compression to preschoolers through animation and playing the instrument with nurse and their mothers' advice and help was the method confirming that preschoolers would not feel that the treatment was threatening or dangerous as they have imagined

According to Wong (2015) when acute pain is perceived as non-threatening, patients are likely to maintain engagement in daily activities, through which functional recovery is promoted. In contrast, a vicious cycle may be initiated when the pain is catastrophically (mis)interpreted. These dysfunctional interpretations give rise to pain-related fear, and associated safety seeking behaviors such as avoidance/escape and hypervigilance, that can be adaptive in the acute pain stage (Leeuw et al., 2007). Perceived pain as non-threatening is an important method to reduce fear (Wong, 2015).

The results are consistent with previous studies search for the results of providing the concrete objective information according to the self-regulation theory by Johnson (1999) to reduce the fear of treatment of child patients. The findings revealed that preschoolers clients who received the concrete objective information had statistically significantly less fear than those who received conventional information (Nattaya Pungsawang, 2002; Sompratthana Saisamut, 2002; Wipada Sangnimitchaikul & Waraporn Chaiyawat, 2007). In the study conducted in

preschoolers of Wipada Sangnimitchaikul (2003), studying the effect of preparation for medical treatment on fear of preschooler patients by providing the concrete objective information through role-plays, showed that preschoolers who received the information for preparation had less fear in medical treatment than those who received conventional nursing care. Also, the results of the study of the concrete objective information program on fear of aerosol therapy of preschoolers, found that the preschoolers who received the information of having aerosol therapy have less fear than those in the control group (Chirawachr Kasemsook, 2009). For instance, the study of the effect of providing the concrete objective information through animated cartoons on the anxiety of preschoolers receiving cardiac catheterization revealed that the anxiety level of preschoolers drops after they received the information (Nareerat Amonsupharasat, 2010). The study concerning the effect of preparation for appendectomy by providing the concrete objective information through a cartoon model of anxiety and cooperation in operation preparation of school children, demonstrated that the children who were prepared for receiving the concrete objective information through a cartoon model had less anxiety after operation and have more cooperation than those received conventional nursing (Nattaya Pungsawang, 2002).

For the overseas study by Johnson, Kirchhoff, and Endress (1975) which studied school-aged patients receiving cast cutting, it was found that children who were prepared with the information from recorded tapes explaining the feeling while receiving cast cutting could encounter the cast cutting situation better – less expression of sadness – than those who did not get the information before. Moreover, LaMontage, Johnson, Hepworth, and Johnson (1997) found that child patients who received bone surgery and were interested in receiving the concrete objective

information could face the problem and return to normal activity more quickly than those from other groups.

These are considered by child patients as threatening experience since preschoolers have the high level of imagination; they believe in magical and supernatural power (Wong, 1995). Therefore, this nursing intervention could manage the threatening experience and helps reduce the fear of preschoolers clients.

Similarly, in this study, preschoolers considered receiving intravenous fluid infusion as the threat; thus, providing the concrete objective information plus cold alcohol compression reduce an intensity of threat and promotes perception and understanding of the feeling while receiving intravenous fluid infusion correctly. The preschoolers then had less fear than those who received conventional nursing.

The literature reveals that nurses still think that pediatric pain reduction is essential. Cold compression is a common method used for pain reduction (Neil, et al., 2007; Starkey, 1999). When reducing pain by applying cold 70% alcohol at the area of injection which provides coolness, will stimulates large pain fiber nerve conduction so that the transmission of small pain fiber is reduced and the gate will close and results in decreasing pain (Algafly & George, 2007). This is relevant to the study on the topic of nursing to reduce pain by using cold 70% alcohol in school-aged children receiving injection (Koc, 2006; Pakorn, Renu, & Autchareeya, 2014; Porhathai Dawan, 2007). Pain is one of the three important causes of fear for preschooler clients receiving IVI. There is study which pointed to a positive correlation between the pain and fear of children felt during intravenous insertion (Cavender et al., 2004). Preschoolers' fear and pain, generally a feeling that was first experienced in childhood, was one of the most momentous phenomena in a child's life (Young, 2005;

O'Rourke, 2004). Nowadays, pain was indicated as the "fifth vital sign" to monitor in medical care, and health professionals should monitor and manage it when caring pediatric patients (Cohen, 2008). The findings of this study show that providing intravenous fluid infusion was considered as the threat, and using cold 70% alcohol to reduce pain helps reduce threat level. Therefore, preschoolers who received cold alcohol compression to reduce pain by cold 70% alcohol perceived less threat and had less fear than those receiving normal conventional care.

The results of this study and other studies mentioned earlier show that providing the concrete objective information plus cold alcohol compression influences thought and feeling of patients, causing less fear than those with normal information. However, preschooler patients are high imagination on treatment, they need the media suitable for their development, providing with clear and interesting information. In addition to the fact that providing information about medical treatment impacts reduction of fear, reduction of threat level by reducing pain helps children perceive a real situation. Also, when children, together with their mother, learn through the appropriate media and the demonstration of intravenous fluid infusion in preschoolers, they have direct experience of receiving intravenous fluid infusion and know how it feels when facing a real situation accurately, so their fear and imagination of what they do not know reduces (Neill, 1996; Wachiraporn Bornoi, 2008; Wong, Hockenberry-eaton, Wilson, Winkelatein, & Schwartz, 2001) The providing concrete objective information plus cold alcohol compression could reduce fear.

This study revealed that providing the concrete objective information plus cold alcohol compression could help preschoolers' client understood more about medical

treatment and knew that pain were manipulated. Also, it made them feel safe mentally, which was good to both children and their family. Moreover, nurses gained cooperation from children, resulting in the smooth process of nursing. Health care personnel were responsible for taking care of and being close to child patients and their families. They should play an important role in providing the information concerning medical treatment so that children will be ready and able to adjust themselves to medical treatment.

Hypothesis 2: Fear of preschoolers receiving concrete objective information plus cold alcohol compression group was lower than those receiving concrete objective information group.

The results of the study did not supported hypothesis 2, fear of preschoolers receiving concrete objective information plus cold alcohol compression group was not significantly different with receiving concrete objective information group ($p<05$). But fear at occasion 3 in experimental group 1 was lower than that of the experimental group 2 ($p<.05$)

The reason of the total fear score in both group did not significantly different may be because both groups received the concrete objective information which made the mental image in preschoolers. And then they knew what will happen. Consequently preschooler clients perceived as non-threatening situation. Some preschoolers were ready to walk to the bed without waiting for their mothers to take them and did not express excitement, fright, or resistance. The majority of children went to bed for iv insertion themselves and did not resist being covered with the cloth by the nurse. Four of participants did not need swaddle cloth while they received the

intravenous fluid infusion. Three preschoolers in E1 group and five in E2 group talked to the nurse and asked for touching the equipment providing intravenous fluid infusion. Four participants in E1group and three participants in E2 group stretched their arms out waiting for the nurse to apply cold alcohol on their arms before the nurse asking. All participants in E1 group counted number 1 to 60 while compression cold alcohol cotton. Whereas the majority of participants in the E1 and E2 groups walked to bed themselves and did not use the swaddle cloth because they could expect the situation which will happen and behaved properly, the perceived non-threatening, followed by a decrease of fear. Then, the fear in both groups were not significantly different as result.

However, total fear mean score in E1group lower than those E2 group. The reason of this was the information which comprised of the sensation which was pain reduction method. The information affected the way in which pain was interpreted. When participants perceived that pain would be reduced, they interpreted as non-threatening. According to Wong (2015) when acute pain was perceived as non-threatening, patients were likely to maintain engagement in daily activities, through which functional recovery was promoted, the fear reduces. The information given to E1 differ from E2 group in the method to reduce pain. The E1 group had been provided information to reduce pain while E2 was not, result in affected of fear in E1 group less than E2 group.

The further test at occasion 3 showed the fear at occasion 3 in E1 group was lower than that of E2. The reason of this is because E1 could reduce fear by managing two causes of fear include cause of unknown, and pain in occasion 3. While E2 manage pain alone. The result of this study in occasion 3 is supported by the

literature that supporting younger children during needle-related medical procedure consists of guiding them through a shared situation that is mutually beneficial to the child's fear, (Karlsson , et al., 2016). The reason of this explained by pain-related fear model, when acute pain is perceived as non-threatening, patients are likely to maintain engagement in daily activities, through which functional recovery is promoted (Wong , 2015). Interestingly, it can conclude that the concrete objective information plus cold alcohol compression is more effective than that of providing information alone at occasion 3.

Hypothesis 3: Fear of preschoolers receiving concrete objective information plus cold alcohol compression group was lower than those receiving cold alcohol compression group.

As expected, the results of the study supported hypothesis 3, that the fear of preschoolers receiving concrete objective information plus cold alcohol compression group lower than those receiving cold alcohol compression group ($p < .05$).

Fear of receiving intravenous fluid infusion in preschoolers who received concrete objective information plus cold alcohol compression was less than those who receive cold alcohol compression alone. The reason of this was the providing concrete objective information manipulate of all causes of fear since preschools' client was taken to the treatment room to insert needle, strapped tape on the IV site, and swaddled cloth over the child's arm for supporting the needle. The perception of providing concrete objective information plus cold alcohol compression in previous occasion might affect fear level in next occasion. The preschooler's client knew what

would happen. When children, together with their mother, learn through the appropriate media and the demonstration of intravenous fluid infusion in preschoolers, they had directed experience of receiving intravenous fluid infusion and knew how it feels. When facing a situation accurately, so their fear and imagination of what they did not know reduces (Neill, 1996; Wachiraporn Bornoi, 2008). Children were actively participating during procedure. Accordance with the study of Karlsson and other (2016), supporting younger children during medical procedure consisted of guiding them through a shared situation that was mutually beneficial to the child. While, E3 group manage only fear of pain and did not provided concrete objective information. All above seemed to show the effectiveness of providing concrete objective information on fear of preschoolers receiving intravenous fluid infusion.

In summary, the research findings revealed that providing concrete objective information plus cold alcohol compression could reduce fear of preschoolers receiving intravenous fluid infusion in preschoolers. The effectiveness of E1 group is more E3 group (See in appendix U). The findings of this study are accordance with the Lazarus and Folkman (1984) which explained managing threating for reducing emotional response as stress, anxiety, and fear by providing information and reduce threatening. The self-regulation theory (Johnson, 1999) explained the element of information and mechanism to reduce fear, and Gate control theory of pain (Melzack & Wall, 1965) explained reduce threatening pain by close the gate. Hence, the phenomenon of fear in this study could reduce by providing concrete objective information and cold alcohol compression since client walk into the treatment room, IV insertion, and swaddle cloth over the child's arm for supporting the needle.

Limitation

This study could implement with considerations, although there was a limitation of lacking of randomization.

Implications

The findings of this study have implications for scientific knowledge, nursing practice, nursing education, and national health policy. Also, recommendations for future research are presented.

Implications for scientific knowledge

Providing concrete objective information plus cold alcohol compression is the method which could reduce fear in preschoolers receiving the intravenous fluid infusion in all occasion of providing IVI. Since walk in treatment room through strapping tape on the IV site, and swaddle cloth over the child's arm for supporting the needle.

The result of study show reducing pain-related fear by providing concrete objective information plus cold alcohol compression via cartoon animation is the effective method and up-to-date by using information and communication technology. This scientific knowledge could be used to various settings to reduce fear in preschoolers receive invasive procedure.

Implications for nursing practice

The pediatric nurses should provide concrete objective information plus cold alcohol compression via cartoon animation and demonstrate IVI material for preschoolers receiving the intravenous fluid infusion. The content in cartoon

animation which comprises of four dimensions could lead preschoolers to understand a situation and cooperate with a procedure, because of fear reduction.

The cartoon is feasible to be added in nurses'mobile phone for providing information to preschoolers clients. Besides, the material equipment box could be added in the play area for clients, which nurses can used it in role play.

Implications for nursing education

The curriculum of pediatric nursing care should add the knowledge of the method to reduce fear in preschoolers receiving the intravenous fluid infusion. The time, cost saving method as providing concrete objective information plus cold alcohol compression is the effective method which student nurse should use when they are studying in the curriculum of pediatric practicum.

Implications for national health policy

The nurse administrators can use the results of this study to create a policy for improving health care personnel and quality of nursing care. The nurse administrators may create a training program to promote the uses of concrete objective information to the pediatric nurse. It is the effective, time and cost saving method which nurse can use. It does not need time for preparation.

The providing concrete objective information via cartoon animation is nursing innovation via information and communication technology (ICT). The innovation of cartoon animation via tablet computer which was developed in this study is according to support the strategic plan for being service excellence and governance excellence strategies of develop health information and technology system in the Ministry of Public Health's strategic plan (2017 – 2021). The strategies' plan is congruence with the twelfth national economic and social development plan (2017-2021). The

country's Sustainable Development Goals (SDGs), the Thailand 4.0 Policy, as well as other reform agendas. In order to set out development directions and strategies to achieve the objectives of "Security, Prosperity, and Sustainability", the NESDB regards participation by a broad cross-section of society to be a crucial principle in the drafting of this Plan (Office of the national Economic and Social Development Board, 2017).

Recommendations for Future Research

1. The knowledge of the effectiveness of providing concrete objective information plus cold alcohol compression should be used to conduct the research in other pediatric phenomenon. It can be conduct in the various clinical procedure which functional response and emotional response.

2. The providing concrete objective information should be concerned in the instrument or media which appropriate to the appropriate developmental level of children. The research which provides various kinds of media should be tested.

3. The cold compression is the effective method to reduce pain which affects to fear level. The future research should conduct in another kind of pain reduction which affects fear level.

4. The randomized sampling should be concern in further research for generalization.

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APPENDIX

APPENDIX A

Approval of Dissertation Proposal

ประกาศ

คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

เรื่อง การอนุมัติหัวข้อดุษฎีนิพนธ์ ครั้งที่ 2/2558 ประจำปีการศึกษา 2558

ตามที่คณะพยาบาลศาสตร์ ได้มีประกาศ เรื่อง การอนุมัติหัวข้อดุษฎีนิพนธ์ ครั้งที่ 4/2556 ประจำปีการศึกษา 2556 ประกาศ ณ วันที่ 30 พฤษภาคม 2557 แล้วนั้น เนื่องจากมีการปรับแก้บางส่วน จึงขอยกเลิกประกาศหัวข้อวิทยานิพนธ์ ของ **นางอัจฉริยา วงษ์อินทร์จันทร์** ในประกาศฉบับดังกล่าว และใช้ประกาศฉบับนี้แทนดังนี้

นิสิตผู้ทำวิจัยและอาจารย์ที่ปรึกษาดุษฎีนิพนธ์

รหัสนิสิต	5477407336
ชื่อ-นามสกุล	นางอัจฉริยา วงษ์อินทร์จันทร์
สาขาวิชา	พยาบาลศาสตร์ (นานาชาติ)
ประธานกรรมการสอบ	รองศาสตราจารย์ ดร. จินตนา ยูนิพันธุ์
อาจารย์ที่ปรึกษาหลัก	**รองศาสตราจารย์ ดร. สุรีพร ธนศิลป์**
อาจารย์ที่ปรึกษาร่วม	ผู้ช่วยศาสตราจารย์ ดร. ประนอม รอดคำดี
กรรมการ	รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์
กรรมการภายนอก	ผู้ช่วยศาสตราจารย์ ดร. เรณู พุกบุญมี
กรรมการภายนอก	รองศาสตราจารย์ ดร. ศิริเดช สุชีวะ
ชื่อหัวข้อดุษฎีนิพนธ์	ผลของการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็น ต่อความกลัวในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ THE EFFECT OF THE PROVIDING CONCRETE OBJECTIVE INFORMATION PLUS COLD ALCOHOL COMPRESSION ON FEAR OF PRESCHOOLERS RECEIVING INTRAVENOUS FLUID INFUSION
ครั้งที่อนุมัติ	2/2558
ระดับ	ปริญญาเอก

มติคณะกรรมการบริหารคณะพยาบาลศาสตร์ ครั้งที่ 2/2559 วันที่ 9 กุมภาพันธ์ 2559

ประกาศ ณ วันที่ 15 กุมภาพันธ์ พ.ศ. 2559

สุรีพร ธนศิลป์

(รองศาสตราจารย์ ดร. สุรีพร ธนศิลป์)

คณบดีคณะพยาบาลศาสตร์

APPENDIX B

Human Subject Approval Document

KHON KAEN UNIVERSITY

This is to certify that

The Project Entitled: THE EFFECT OF PROVIDING CONCRETE OBJECTIVE INFORMATION PLUS COLD ALCOHOL COMPRESSION ON FEAR OF PRESCHOOLERS RECEIVING INTRAVENOUS FLUID INFUSION

Investigator: Mrs. Atchariya Wonginchan
Faculty of nursing, Chulalongkorn University

Co-Investigator:
1. Associate Professor Dr.Sureeporn Tanasilp
Faculty of nursing, Chulalongkorn University
2. Mrs. Khamyard Pairee
Srinagarind Hospital, Faculty of Medicine, Khon Kaen University
3. Mrs. Wilaiwan Wijitrpan
Khonkaen Hospital

Documents Acceptance:

1. KKUEC Application form, version 1.1, dated 26 May 2016
2. Clinical Trial Protocol, version 1.1, dated 26 May 2016
3. Information Sheet Form, version 1.1, dated 26 May 2016
4. Informed Consent Form, version 1.1, dated 26 May 2016
5. Case Report Form, version 1.0, dated 18 March 2016
6. Investigator's Curriculum Vitae

Record No. 4.2.02: 18/2016

Reference No. HE591154

Office of the Khon Kaen University Ethics Committee in Human Research
Academic and Research Laboratory Building (Wechwichakarn)
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Khon Kaen University, 40002 Thailand
Tel. +66-89-7141913, 67133, 67134

Institutional Review Board Number; IRB00001189
Federal wide Assurance; FWA00003418

Have been reviewed by the Khon Kaen University Ethics Committee for Human Research based on the Declaration of Helsinki and the ICH Good Clinical Practice Guidelines. Please submit the progress report every 12 months

Date of Approval: 30 May 2016
Date of Expire: 10 May 2017

(Professor Polasak Jeeravipoolvarn, MD.)
Chairman of the Khon Kaen University Ethics Committee for Human Research, Panel 1

Record No. 4.2.02: 18/2016
Reference No. HE591154

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Institutional Review Board Number: IRB00001189
Federal wide Assurance: FWA00003418

Khon Kaen Hospital
Institute Review Board in Human Research

F/18-03/02.0

Certificate of Approval

Name of Ethics Committee: Khon Kaen Hospital Institute Review Board in Human Research
Address of Ethics Committee: 54, 56 Sri Chan Road, Naimaung sub-district, Muang district, Khon Kaen, Thailand 40000

Principle Investigator: Mrs. Atchariya Wonginchan — Faculty of nursing, Chulalongkorn University

Co- Investigator: Associate Professor Dr.Sureepom Tanasilp — Faculty of nursing, Chulalongkorn University
Mrs.Wilaiwan Wijitrpan — Pediatric ward, Khon Kaen Hospital
Mrs.Khamyard Pairee — Srinagarind Hospital, Faculty of Medicine, Khon Kaen University

Protocol Title: THE EFFECT OF PROVIDING CONCRETE OBJECTIVE INFORMATION PLUS COLD ALCOHOL COMPRESSION ON FEAR OF PRESCHOOLERS RECEIVING INTRAVENOUS FLUID INFUSION
Approval Number: KE59052
Site where clinical trial would be conduct: Pediatric ward, Khon Kaen Hospital

Documents filed	Document reference
1. Protocol Application form for Khon Kaen Hospital	Thai version 2 dated 4 May 2016
2. Protocol	English version 2 dated 4 May 2016
3. Research Subject information sheet	Thai version 2 dated 4 May 2016
4. Informed Consent Form	Thai version 2 dated 4 May 2016
5. Case report form	Thai version 2 dated 4 May 2016
6. Curriculum Vitae of Investigators	English and Thai version 1 dated 11 March 2016

Decision : [ ] By Expedite review [√] By Full Board

Progress report submit: every ☐ 3 months ☑ 6 months ☐ 1 year

Date of Approval: 16 June 2016 **Expiration Date:** 15 June 2017
Has been reviewed by The Khon Kaen Hospital Institute Review Board in Human Research , based on the declaration of Helsinki

Ussanee.

(Dr.Ussanee Sangkomkamhang, MD.)
Chairman of The Khon Kaen Hospital Institute Review Board in Human Research

APPENDIX C

Participant inform sheet and inform consent form

คำชี้แจงอาสาสมัคร

ชื่อโครงการวิจัย ผลของการพยาบาลให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็นต่อความกลัวของเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ

หัวหน้าโครงการวิจัย นางอัจฉริยา วงษ์อินทร์จันทร์
หัวหน้าโครงการวิจัยร่วม รองศาสตราจารย์ ดร.สุรีพร ธนศิลป์

บทนำ

การให้สารน้ำทางหลอดเลือดดำเป็นการรักษาเพื่อรักษาสมดุลสารน้ำและอิเลคโตรไลท์ อีกทั้งเพื่อให้ยาเพื่อรักษา เป็นการรักษาพยาบาลที่พบบ่อยในเด็กป่วยวัยก่อนเรียน (3-5 ปี) (James, Nelson and Aswill, 2013; Jennifer, 2009) สาเหตุของความกลัวการได้รับสารน้ำทางหลอดเลือดดำในเด็กป่วยวัยก่อนเรียน คือ ความไม่รู้ โดยที่เด็กจะไม่รู้ว่าจะเกิดอะไรขึ้นกับตนจึงเกิดจินตนาการที่เกินจริงและน่ากลัว เด็กจินตนาการว่าการได้รับสารน้ำทางหลอดเลือดดำเป็นการลงโทษและทำให้เลือดออกมาจากร่างกาย (Algen, 2007) การจับยึดแขนเพื่อป้องกันการดิ้น เด็กไม่สามารถทำในสิ่งที่ตนเคยทำได้ และสาเหตุที่ทำให้เด็กกลัวอีกสาเหตุหนึ่งคือ การกลัวความปวดจากการถูกแทงเข็ม ซึ่งความกลัวเกิดขึ้นทุกระยะของการให้สารน้ำทางหลอดเลือดดำ (Ball & Bindler, 2003) เริ่มตั้งแต่เด็กเดินหรือถูกอุ้มเข้าห้องทำหัตถการจนถึงปิดพลาสเตอร์การพยาบาลเพื่อลดความกลัวในเด็กที่ได้รับสารน้ำทางหลอดเลือดดำในปัจจุบัน พยาบาลจะให้ข้อมูลที่จำเป็นสำหรับเด็กและผู้ปกครองด้วยการแจ้งวัตถุประสงค์ของการให้สารน้ำทางหลอดเลือดดำ สถานที่ การเตรียมตัวก่อนได้รับแต่ลักษณะของข้อมูลที่ให้และการแจ้งโดยวาจาอาจทำให้เด็กรับรู้ได้อย่างจำกัดเนื่องจากอยู่ในวัยที่มีจำกัดเรื่องความสามารถในการเรียนรู้

อย่างไรก็ตามยังไม่พบการศึกษาที่สรุปได้ว่าการให้ข้อมูลรูปธรรมปรนัยเพียงอย่างเดียวอันเป็นการจัดการกับสิ่งที่ไม่รู้และการสูญเสียการควบคุมตนเองสามารถลดความกลัวในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำได้หรือไม่ และการลดความกลัวด้วยการลดความปวดร่วมกันน่าจะช่วยให้ความกลัวลดลงเนื่องจากความกลัวในระยะหนึ่งส่งผลต่อความกลัวในระยะต่อมาอีกด้วย

ดังนั้นผู้วิจัยเห็นว่าควรทำการศึกษาผลของการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็นจึงมีความสำคัญเพื่อนำงานวิจัยไปใช้ในการให้การพยาบาลเพื่อลดความกลัว เพื่อการศึกษาทางการพยาบาลและการวิจัยต่อไป

วัตถุประสงค์ของการวิจัย

1. ผลของการให้ข้อมูลรูปธรรมปรนัยต่อความกลัวของเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ
2. ผลของการประคบด้วยแอลกอฮอล์เย็นต่อความกลัวของเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ
3.ผลของการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็นต่อความกลัวของเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ

การเข้าร่วมโครงการวิจัยของท่านเป็นไปด้วยความสมัครใจ หากไม่ยินดีเข้าร่วมการวิจัย จะไม่มีผลกระทบใดๆ ทั้งในปัจจุบันและอนาคตด้านการรักษาพยาบาล และถอนตัวออกจากโครงการได้ทุกเวลาโดยไม่มีผลกระทบเช่นกัน อาสาสมัครจะได้รับการพยาบาลการให้สารน้ำทางหลอดเลือดดำตามแนวปฏิบัติของโรงพยาบาล โดยพยาบาลทักทายและให้ข้อมูล ก่อนการได้รับสารน้ำทางหลอดเลือดดำ และปลอบโยนให้กำลังใจเด็กในระหว่างให้สารน้ำทางหลอดเลือดดำ และปฏิบัติกิจกรรมการพยาบาลด้วยความนุ่มนวล

เอกสารชี้แจงข้อมูลแก่ผู้เข้าร่วมโครงการวิจัย
(สำหรับผู้ปกครอง/ผู้แทนโดยชอบธรรม)
(Research Subject Information sheet)

ชื่อโครงการวิจัย : ผลของการพยาบาลให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็นต่อความกลัวของเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ
เลขที่โครงการ : KE59052
ผู้ให้ทุนวิจัย : จุฬาลงกรณ์ มหาวิทยาลัย

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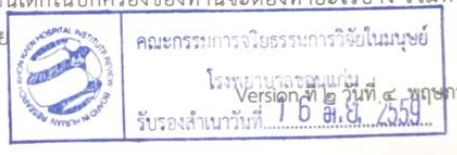
เรียน ผู้ปกครอง/ผู้แทนโดยชอบธรรมของผู้เข้าร่วมโครงการวิจัยทุกท่าน

เด็กในปกครองของท่านได้รับการเชิญชวนให้เข้าร่วมในโครงการวิจัยนี้เนื่องจากเด็กในปกครองของท่านเป็นเด็กป่วยวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ แต่ก่อนที่ท่านจะตกลงใจให้เด็กในปกครองของท่านเข้าร่วมโครงการวิจัยหรือไม่ โปรดอ่านข้อความในเอกสารนี้ทั้งหมด เพื่อให้ทราบว่า เหตุใดเด็กในปกครองของท่านจึงได้รับเชิญให้เข้าร่วมในโครงการวิจัย โครงการวิจัยนี้ทำเพื่ออะไร หากเด็กในปกครองของท่านเข้าร่วมโครงการวิจัยนี้เด็กในปกครองของท่านจะต้องทำอะไรบ้าง รวมทั้งข้อดีและข้อเสียที่อาจจะเกิดขึ้นในระหว่างการวิจัย



AF 05-09 (Thai)

แบบยินยอมอาสาสมัคร

ข้าพเจ้า (นาย, นาง, นางสาว).....นามสกุล.....อายุ.....ปี
อยู่บ้านเลขที่.....หมู่ที่.....ตำบล.....อำเภอ.....จังหวัด.....
เป็นบิดา/มารดา/ผู้ปกครองของ (ด.ญ., ด.ช.).....อายุ.....ปี ได้รับฟังคำอธิบายจากนางอัจฉริยา วงษ์อินทร์จันทร์ เกี่ยวกับการเป็นอาสาสมัครในโครงการวิจัยผลของการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็นต่อความกลัวของเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำได้รับทราบถึงรายละเอียดของโครงการวิจัยเกี่ยวกับ

- วัตถุประสงค์และระยะเวลาที่ทำการวิจัย
- ขั้นตอนและวิธีการปฏิบัติตัวที่ข้าพเจ้าต้องปฏิบัติ
- ผลประโยชน์ที่ข้าพเจ้าจะได้รับ

และข้าพเจ้าสามารถถอนตัวจากการศึกษานี้เมื่อใดก็ได้ถ้าข้าพเจ้าปรารถนา โดยไม่เสียสิทธิ์ใดๆ ในการรับการรักษาพยาบาลที่จะเกิดขึ้นตามมาในโอกาสต่อไปทั้งในปัจจุบันและอนาคต ณ สถานพยาบาลแห่งนี้หรือสถานพยาบาลอื่น และหากเกิดมีอาการข้างเคียงขึ้น ข้าพเจ้าจะรายงานให้แพทย์หรือเจ้าหน้าที่ที่กำลังปฏิบัติงานอยู่ในขณะนั้นทราบทันที)

ข้าพเจ้าได้อ่านและเข้าใจคำอธิบายข้างต้นแล้ว จึงได้ลงนามยินยอมเป็นอาสาสมัครของโครงการวิจัยดังกล่าว

ลายมือชื่ออาสาสมัคร .....
(.....)
วัน/เดือน/ปี .....

ลายมือชื่อผู้ให้ข้อมูล .....
(.....)
วัน/เดือน/ปี .....

ลายมือชื่อผู้วิจัยหลัก .....
(.....)
วัน/เดือน/ปี .....

หนังสือแสดงเจตนายินยอมเข้าร่วมโครงการวิจัยโดยได้รับการบอกกล่าวและเต็มใจ
(สำหรับผู้ปกครอง/ผู้แทนโดยชอบธรรม)

วันที่.....เดือน.....พ.ศ.....

ข้าพเจ้า.....อายุ.....ปี อาศัยอยู่บ้านเลขที่..... ถนน.....
ตำบล..... อำเภอ..... จังหวัด.....รหัสไปรษณีย์.....เบอร์โทรศัพท์.....
เป็นบิดา / มารดา / ผู้ปกครองของ (ด.ช., ด.ญ.)..... อายุ..... ปี

ขอแสดงเจตนายินยอมให้เด็กในปกครองของข้าพเจ้าเข้าร่วมโครงการวิจัย เรื่องผลของการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็นต่อความกลัวของเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ โดยข้าพเจ้าได้รับทราบรายละเอียดเกี่ยวกับที่มาและวัตถุประสงค์ในการทำวิจัย รายละเอียดขั้นตอนต่างๆ ที่จะต้องปฏิบัติหรือได้รับการปฏิบัติ ประโยชน์ที่คาดว่าจะได้รับของโครงการวิจัย และความเสี่ยงที่อาจจะเกิดขึ้นจากการเข้าร่วมโครงการวิจัย รวมทั้งแนวทางป้องกันและแก้ไขหากเกิดอันตรายขึ้น ค่าตอบแทนที่จะได้รับ ค่าใช้จ่ายที่ข้าพเจ้าจะต้องรับผิดชอบจ่ายเอง โดยได้อ่านข้อความที่มีรายละเอียดอยู่ในเอกสารชี้แจงผู้เข้าร่วมโครงการวิจัยโดยตลอด ได้รับคำอธิบาย และตอบข้อสงสัยจากหัวหน้าโครงการวิจัยหรือผู้วิจัยเรียบร้อยแล้ว โดยไม่มีสิ่งใดปิดบังซ่อนเร้น

ข้าพเจ้าจึงสมัครใจให้เด็กในปกครองของข้าพเจ้าเข้าร่วมในโครงการวิจัยนี้

ข้าพเจ้าได้ทราบถึงสิทธิที่ข้าพเจ้าและเด็กในปกครองของข้าพเจ้าจะได้รับข้อมูลเพิ่มเติมทั้งทางด้านประโยชน์และโทษจากการเข้าร่วมโครงการวิจัย และสามารถถอนตัวหรืองดเข้าร่วมโครงการวิจัยได้ทุกเมื่อ โดยจะไม่มีผลกระทบต่อการบริการและการรักษาพยาบาลที่เด็กในปกครองของข้าพเจ้าจะได้รับทั้งในปัจจุบันและต่อไปในอนาคต และยินยอมให้ผู้วิจัยใช้ข้อมูลส่วนตัวที่ได้รับจากการวิจัย โดยจะนำเสนอเป็นข้อมูลโดยรวมจากการวิจัยเท่านั้น

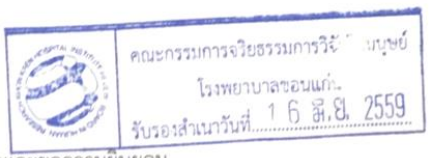
หากมีอาการผิดปกติ รู้สึกไม่สบายกาย หรือมีผลกระทบต่อจิตใจของเด็กในปกครองของข้าพเจ้าที่เกิดขึ้นระหว่างการวิจัย ข้าพเจ้าจะแจ้งผู้วิจัยโดยเร็วที่สุด

หากข้าพเจ้ามีข้อคำถามเกี่ยวกับขั้นตอนของการวิจัย หรือหากเกิดผลข้างเคียงที่ไม่พึงประสงค์จากการเข้าร่วมโครงการวิจัยขึ้นกับเด็กในปกครองของข้าพเจ้า ข้าพเจ้าจะสามารถติดต่อกับนางอัจฉริยา วงษ์อินทร์จันทร์ โทร. 081--9551531

หากเด็กในปกครองของข้าพเจ้า ได้รับการปฏิบัติไม่ตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงผู้เข้าร่วมโครงการวิจัย ข้าพเจ้าจะสามารถติดต่อกับประธานคณะกรรมการจริยธรรมการวิจัยในมนุษย์ ได้ที่ "สำนักงานคณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลขอนแก่น (ชั่วคราว) ชั้น 2 อาคารเฉลิมพระเกียรติ 6 รอบพระชนมพรรษา โรงพยาบาลขอนแก่น ต.ในเมือง อ.เมือง จ.ขอนแก่น 40000 โทร.043-336789 ต่อ 1602/1605 เบอร์โทรสาร 043-336789 ต่อ 1605"

ข้าพเจ้าเข้าใจข้อความเอกสารชี้แจงผู้เข้าร่วมโครงการวิจัย และหนังสือแสดงเจตนายินยอมนี้โดยตลอดแล้ว จึงลงลายมือชื่อไว้

ลงชื่อ.....ผู้ปกครอง
(.....)
วันที่.....



ลงชื่อ.....ผู้ให้ข้อมูลและขอความยินยอม
(.....)
วันที่.....

Version ที่ ๒ วันที่ ๔ พฤษภาคม ๒๕๕๙

APPENDIX D

Permission for using instrument

ที่ ศธ 0512.11/ 0464

คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
อาคารบรมราชชนนีศรีศตพรรษ ชั้น 11
ถนนพระราม 1 แขวงวังใหม่ เขตปทุมวัน
กรุงเทพฯ 10330

๒๖ มีนาคม 2560

เรื่อง ขออนุญาตใช้เครื่องมือในการทำวิทยานิพนธ์

เรียน คณบดีคณะแพทยศาสตร์ศิริราชพยาบาล มหาวิทยาลัยมหิดล

เนื่องด้วย นางอัจฉริยา วงษ์อินทร์จันทร์ นิสิตชั้นปริญญาดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย กำลังดำเนินการพัฒนาดุษฎีนิพนธ์ เรื่อง "ผลของการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็น ต่อความกลัวในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ" โดยมี รองศาสตราจารย์ ดร. สุรีพร ธนศิลป์ เป็นอาจารย์ที่ปรึกษาดุษฎีนิพนธ์ และผู้ช่วยศาสตราจารย์ ดร. ประนอม รอดคำดี เป็นอาจารย์ที่ปรึกษาดุษฎีนิพนธ์ร่วม ในการนี้ใคร่ขออนุญาตใช้เครื่องมือการวิจัย คือ แบบประเมินความปวดในเด็ก (Children's Hospital of Eastern Ontario Pain Scale: CHEOPS) ฉบับภาษาไทย ของศาสตราจารย์ แพทย์หญิง สุวรรณี สุรเศรณีวงศ์ คณะแพทยศาสตร์ศิริราชพยาบาล มหาวิทยาลัยมหิดล

จึงเรียนมาเพื่อโปรดพิจารณาอนุญาตให้นิสิตใช้เครื่องมือการวิจัยดังกล่าว คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย หวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณอย่างสูงมา ณ โอกาสนี้

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร. จิราพร เกศพิชญวัฒนา)
รองคณบดี
ปฏิบัติการแทนคณบดีคณะพยาบาลศาสตร์

ฝ่ายวิชาการ โทร. 0-2218-1131 โทรสาร. 0-2218-1130
อาจารย์ที่ปรึกษา รองศาสตราจารย์ ดร. สุรีพร ธนศิลป์ โทร. 0-2218-1133
อาจารย์ที่ปรึกษาร่วม ผู้ช่วยศาสตราจารย์ ดร. ประนอม รอดคำดี โทร. 0-2218-1153
ชื่อนิสิต นาง อัจฉริยา วงษ์อินทร์จันทร์ โทร. 08-1955-1531

Re: ขออนุญาตใช้เครื่องมือประเมินความปวดในเด็ก

SS Suwannee Suraseranivongse <sisur2@gmail.com>
Sat 3/18, 2:26 PM
You

Reply

You replied on 3/18/2017 2:28 PM.

ยินดีค่ะ
สุวรรณี

On Mar 18, 2017 10:27 AM, "Atchariya Wonginchan" <atchawong@hotmail.com> wrote:

เรียน ท่าน ศ.พญ.สุวรรณี. สุรเศรณีวงศ์

เนื่องด้วย ดิฉัน นางอัจฉริยา วงษ์อินทร์จันทร์ นิสิตหลักสูตรพยาบาลศาสตรดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย มีความประสงค์ใช้เครื่องมือวัดความปวดในเด็ก (Children's Hospital of Eastern Ontario Pain Scale:CHEOPS) ฉบับภาษาไทยที่ได้รับการแปลจากท่าน เพื่อใช้ในงานวิจัยเรื่อง ผลของการให้ข้อมูลรูปธรรมปรนัยและการใช้แอลกอฮอล์เย็นเพื่อลดความกลัวในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ
ดังนั้น ดิฉันจึงใคร่ขออนุญาตใช้เครื่องมือดังกล่าวในงานวิจัย จักเป็นพระคุณยิ่ง
จึงเรียนมาเพื่อโปรดพิจารณา

อัจฉริยา วงษ์อินทร์จันทร์
นิสิตหลักสูตรพยาบาลศาสตรดุษฎีบัณฑิต

APPENDIX E

Demographic data sheet

เครื่องมือที่ใช้ในการเก็บรวบรวมข้อมูล

1 แบบบันทึกข้อมูลส่วนบุคคลของเด็กวัยก่อนเรียนและผู้ปกครอง

1. เพศเด็ก ( ) ชาย ( ) หญิง
2. อายุเด็ก .....ปี .....เดือน
3. ระดับการศึกษา

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11. อาชีพผู้ปกครอง

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APPENDIX F

Fear of Intravenous Fluid Procedure Observation Scale for Preschool Children

จุฬาลงกรณ์มหาวิทยาลัย
Chulalongkorn University

ระยะการสังเกต / พฤติกรรมที่แสดงออก		แรกพบ	ระยะที่1	ระยะที่2	ระยะที่3
ด้านการเคลื่อนไหวร่างกาย					
1.	ใช้มือจับยึดเกาะผู้ปกครอง				
2.	.....				
3.	.....				
4.	.....				
5.	.....				
6.	.....				
7.	.....				
ด้านการแสดงออกทางใบหน้า					
8.	สีหน้าตื่นกลัวตกใจ				
9.	.....				
10.	.....				
11.	.....				
12.	.....				
ด้านการพูดและร้องไห้					
13.	พูดต่อรอง เช่น รอก่อน เดี๋ยวก่อน				
14.	.....				
15.	.....				
16.	.....				
17.	.....				
18.	.....				
19.	.....				
20.	.....				

2 แบบบันทึกการสังเกตพฤติกรรมความกลัวการได้รับสารน้ำทางหลอดเลือดดำของเด็กวัยก่อนเรียน

คำชี้แจงสำหรับผู้สังเกต:

โปรดอ่านข้อความที่แสดงถึงพฤติกรรมความกลัวของเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำให้ละเอียด และทำความเข้าใจก่อนลงมือทำการสังเกต และทำเครื่องหมาย / ลงในช่องว่างตามพฤติกรรมที่สังเกตพบ สำหรับพฤติกรรมด้านการพูด สำหรับพฤติกรรมด้านการพูดและการร้องไห้ขอให้ระบุถ้อยคำที่ผู้ป่วยเด็กพูดลงไปในช่องว่างตามที่ทำเครื่องหมาย / จากการสังเกตเป็น 3 สถานการณ์ ดังนี้

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ค่าคะแนนรวมสูง หมายถึง เด็กมีความกลัวมาก ค่าคะแนนรวมต่ำ หมายถึง เด็กมีความกลัวน้อย

APPENDIX G

Plan for providing Plan for providing concrete objective information plus cold alcohol compression

Structure plan for providing Plan for providing concrete objective information plus cold alcohol compression

Concept	components	Contact	Nursing intervention focus
Providing concrete objective information		***At client's bedroom : 10 min***	-Provide concrete objective information via cartoon animation. ……
	a) environment features		……
	b) ……		……
	c) …… .		……
	d) …… …		……
Nurses's role			……
Maternal's role			……
……		***Cold alcohol compression***	……

APPENDIX H

Plan for providing concrete objective information

Structure of Plan for providing concrete objective information

Concept	components	Contact	Nursing intervention focus
Providing concrete objective information		***At a client's bed: 10 min***	-Provide concrete objective information via cartoon animation .
	a) environment features		…… ……..……
	b) ……		…… …….
	c) ……..		…… ……..……
	d) ……		…… ……..… …
Nurses's role		**Apply alcohol**	…… ……..… …
Maternal's role			…… ……..… …

APPENDIX I

Plan for providing alcohol compression

Structure plan for alcohol compression

Concept	components	Contact	Nursing intervention focus
Cold alcohol compression		***Cold alcohol compression*** (10 minute) (At the treatment bed)	-explain the situation step by step similar to the animation through….
Nurses's role			-encourage mother to ……
Maternal's role			-are repeating nurses' s keywords, ……

APPENDIX J

Manual for nurse to providing concrete objective information plus cold alcohol compression

คู่มือสำหรับพยาบาล

การให้ข้อมูลรูปธรรมปรนัยและประคบด้วยแอลกอฮอล์เย็น
แก่เด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ

THE PROVIDING CONCRETE OBJECTIVE INFORMATION PLUS COLD ALCOHOL COMPRESSION FOR PRESCHOOLERS RECEIVING INTRAVENOUS FLUID INFUSION

จัดทำโดย

บางอุ้ยอุวิมา วงษ์อินทร์จันทร์ รหัสนิสิต 5477404436
นิสิตหลักสูตรพยาบาลศาสตรมหาบัณฑิต สาขาวิชาพยาบาลศาสตร์
คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

คู่มือนี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรพยาบาลศาสตรมหาบัณฑิต

คำนำ

คู่มือเล่มนี้จัดทำขึ้นเพื่อเป็นแนวทางในการพยาบาลเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำด้วยการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็น เนื้อหาประกอบด้วย แนวคิดและทฤษฎีการ นิยามศัพท์ แผนการให้ข้อมูล แนวทางการให้ข้อมูล อุปกรณ์ เอกสารที่ใช้ประกอบ การให้ข้อมูลรูปธรรมปรนัย และการประคบด้วยแอลกอฮอล์เย็น ซึ่งพยาบาลเด็กจำเป็นต้องมีความเข้าใจใน ขั้นตอนการให้การพยาบาลเกี่ยวกับหัตถการ ส่งเสริมให้เด็กเกิดความร่วมมือกับพยาบาล ในการนี้ผู้จัดขอขอบคุณท่านที่ให้ความร่วมมือในการให้การพยาบาลเกี่ยวกับหัตถการในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ

อุ้ยอุวิมา วงษ์อินทร์จันทร์

APPENDIX K

Manual for nurse to providing concrete objective information

คู่มือ

การให้ข้อมูลแบบรูปธรรม-ปรนัย

แก่เด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ

THE PROVIDING CONCRETE OBJECTIVE INFORMATION

FOR PRESCHOOLERS RECEIVING INTRAVENOUS FLUID INFUSION

จัดทำโดย

นางอัจฉรีย์รา วงษ์จันทร์จันทร์ เลขนิสิต 5477404435

นิสิตหลักสูตรพยาบาลศาสตร์ดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์

คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

คู่มือนี้เป็นส่วนหนึ่งของดุษฎีนิพนธ์บริญญาพยาบาลศาสตร์ดุษฎีบัณฑิต

I

คำนำ

คู่มือเล่มนี้จัดทำขึ้นเพื่อเป็นแนวทางในการพยาบาลเพื่อลดความกลัวในเด็กปวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ เนื้อหาประกอบด้วย แนวคิดและหลักการ นิยามศัพท์ ขั้นตอนการให้ข้อมูล แนวทางการให้ข้อมูล อุปกรณ์ เอกสารที่ใช้ประกอบการให้ข้อมูลรูปธรรม-ปรนัย และการประเมินผลลัพธ์ที่ได้ ซึ่งพยาบาลสามารถนำไปเป็นแนวทางเข้าไปในขั้นตอนการให้การพยาบาลเพื่อลดความกลัว ส่งเสริมให้เด็กเกิดความร่วมมือกับพยาบาล

อัจฉรีย์รา วงษ์จันทร์จันทร์

APPENDIX L

Manual for nurse to providing cold alcohol compression

คู่มือสำหรับพยาบาล

การให้การพยาบาลด้วยการประคบด้วยแอลกอฮอล์เย็น
แก่เด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ
THE COLD ALCOHOL COMPRESSION FOR PRESCHOOLERS
RECEIVING INTRAVENOUS FLUID INFUSION

จัดทำโดย

นางสาวนิภา วงษ์อินทร์จันทร์ รหัสนิสิต 5477404436
นิสิตหลักสูตรพยาบาลศาสตรมหาบัณฑิต สาขาวิชาพยาบาลศาสตร์
คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
ศูนย์นี้เป็นส่วนหนึ่งของศูนย์วิจัยและบริการพยาบาลศาสตรมหาบัณฑิต

APPENDIX M

The cartoon animation "Noo-Dee knows that what IVI is"

(Version 1: 70% alcohol applying)

The cartoon animation “Noo-Dee knows that what IVI was” (version 1: 70% alcohol applying)

ต้นฉบับการ์ตูนแอนิเมชั่นการให้ข้อมูลรูปธรรมปรนัยต่อความกลัวในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ

การ์ตูนเรื่อง “หนูดีรู้แล้วว่าให้น้ำเกลือคืออะไร” (Version 1)

วัตถุประสงค์	เนื้อหา	ฉากและสถานที่	บทพูดของตัวละครและกิจกรรมที่ทำ
1.เพื่อให้ข้อมูลเกี่ยวกับสภาพแวดล้อมของสถานการณ์การได้รับน้ำเกลือ เช่น สภาพแวดล้อมของห้องผู้ป่วยเครื่องมือ เครื่องใช้อุปกรณ์ทางการแพทย์และบุคคลากร และเหตุการณ์ที่จะเกิดขึ้นตามลำดับเวลา ตั้งแต่เข้าห้องทำหัตถการจนถึงผ้าพันข้อมือและปิดพลาสเตอร์	-สภาพแวดล้อมของสถานการณ์การได้รับน้ำเกลือ เช่น สภาพแวดล้อมของห้องผู้ป่วยเครื่องมือ เครื่องใช้อุปกรณ์ทางการแพทย์และบุคคลากร -เหตุการณ์ที่จะเกิดขึ้นตามลำดับเวลา ตั้งแต่เข้าห้องทำหัตถการจนถึงพันผ้าที่ข้อมือและปิดพลาสเตอร์	ฉากแรก: ณ แผนกผู้ป่วยนอกโรงพยาบาลแห่งหนึ่ง แม่นังอุ้มลูกป่วยวัย 4 ขวบ เด็กดูหน้าแดง ไม่สดชื่น ไอ มีน้ำมูก	บทพูดคุณหมอ “คุณแม่คะจากที่ได้ตรวจร่างกายน้องแล้ว พบว่าน้องมีไข้สูง ทานอาการได้น้อย คุณหมอจะให้น้องนอนรักษาตัวที่โรงพยาบาลเพื่อให้น้ำเกลือค่ะ เสร็จแล้วคุณพยาบาลจะพาน้องไปที่หอผู้ป่วยเด็กและให้นำเกลือที่นั่นนะคะ”

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APPENDIX N

The cartoon animation "Noo-Dee knows that what IVI is"

(Version 2: 70% cold alcohol compression)

ต้นฉบับการ์ตูนแอนิเมชั่นการให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอฮอล์เย็นต่อความกลัวในเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำ

เรื่อง "หนูดีรู้แล้วว่าให้น้ำเกลือคืออะไร" (Version 2: การให้ข้อมูลรูปธรรมปรนัยและการประคบด้วยแอลกอออล์เย็น)

วัตถุประสงค์	เนื้อหา	ฉากและสถานที่	บทพูดของตัวละครและกิจกรรมที่ทำ
1.เพื่อให้ข้อมูลเกี่ยวกับสภาพแวดล้อมของสถานการณ์การได้รับน้ำเกลือ เช่น สภาพแวดล้อมของห้องผู้ป่วยเครื่องมือ เครื่องใช้อุปกรณ์ทางการแพทย์และบุคคลากร และเหตุการณ์ที่จะเกิดขึ้นตามลำดับเวลา ตั้งแต่เข้าห้องทำหัตถการจนถึงผ้าพันข้อมือและปิดพลาสเตอร์	-สภาพแวดล้อมของสถานการณ์การได้รับน้ำเกลือ เช่น สภาพแวดล้อมของห้องผู้ป่วยเครื่องมือ เครื่องใช้อุปกรณ์ทางการแพทย์และบุคคลากร -เหตุการณ์ที่จะเกิดขึ้นตามลำดับเวลา ตั้งแต่เข้าห้องทำหัตถการจนถึงพันผ้าที่ข้อมือและปิดพลาสเตอร์	<u>ฉากแรก:</u> ณ แผนกผู้ป่วยนอกโรงพยาบาลแห่งหนึ่ง แม่นั่งอุ้มลูกป่วยวัย 4 ขวบ เด็กตูหน้าแดง ไม่สดชื่น ไอ มีน้ำมูก	<u>บทพูดคุณหมอ</u> "คุณแม่ครับจากที่ได้ตรวจร่างกายน้องแล้ว พบว่าน้องมีไข้สูง ทานอาการได้น้อย คุณหมอจะให้น้องนอนรักษาตัวที่โรงพยาบาลเพื่อให้น้ำเกลือต่อ เสร็จแล้วคุณพยาบาลจะพาน้องไปที่หอผู้ป่วยเด็กและให้นำเกลือที่นั่นนะครับ"

1

APPENDIX O

The IVI material box

APPENDIX P

Cold alcohol cotton

APPENDIX Q

Digital thermometer

A Intsun® High Quality LCD Screen Display TA218C thermometer with hygrometer

A Intsun High Quality LCD Screen Display TA218C thermometer with hygrometer was used to measure the temperature of the cold modality. It has hygrometer probe temperature probe. Dimension is 120 x 96 x 22 mm (H x L x W).
Source: http://www.alumigogo.com/product_detail.php

APPENDIX R
The perception of receiving IVI

APPENDIX S

The assessment tool of pain during venipuncture

แบบประเมินความปวดจากการแทงเข็มเพื่อรับสารน้ำทางหลอดเลือดดำของเด็กวัยก่อนเรียน

คำชี้แจงสำหรับผู้สังเกต:

โปรดอ่านข้อความที่แสดงถึงพฤติกรรมความปวดของเด็กวัยก่อนเรียนที่ได้รับสารน้ำทางหลอดเลือดดำให้ละเอียด และทำความเข้าใจก่อนลงมือทำการสังเกต และทำเครื่องหมาย / ลงในช่องคะแนนที่ตรงตามพฤติกรรมที่สังเกตพบ

โดยมีพฤติกรรมที่แสดงออกถึงความปวดที่สังเกต 6 ด้าน

โดยมีเกณฑ์การให้คะแนน ตามปรากฏในแบบประเมิน

คะแนนความปวดในแต่ละระยะ ค่าพิสัยของคะแนนทั้งหมดอยู่ระหว่าง 4-13 ค่าคะแนนรวมสูง หมายถึง เด็กมีความปวดมาก ค่าคะแนนรวมต่ำ หมายถึง เด็กมีความปวดน้อย

หัวข้อ	พฤติกรรม	คะแนน	คำจำกัดความ
ร้องไห้	ไม่ร้อง	1	เด็กไม่ร้อง
	คราง	2	…………………………………………………………
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ขา	ท่าสบาย	1	ขาอยู่ในท่าใดก็ได้ หย่อนสบายๆ รวมทั้งท่าขาตีน้ำเบาๆ หรือแกว่งขาคล้ายท่างูเลื้อย
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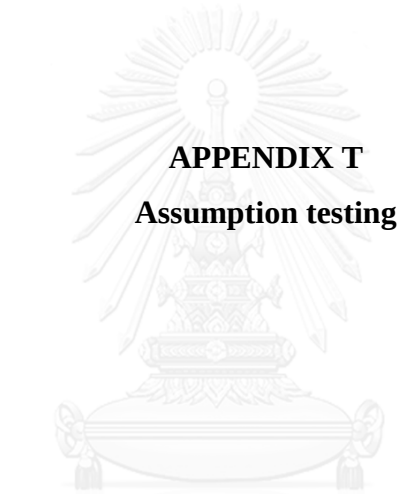


APPENDIX T

Assumption testing

Statistical and graphical testing for assumptions of ANOVA

One-way ANOVA was used to determine the significant difference of variance of dependent variable (fear total score) in 3 experimental and control group

The assumptions for the ANOVA statistical were tested before further analysis. The following assumptions were examined to ensure the validity of statistical calculations.

1. Normality of dependent variables

A Kolmogorov-Smimov test ($p<.05$) and Shapiro – Wilk test , Shapiro – Wilk test are the most popular statistic use for testing normality. In this study, Shapiro – Wilk test , Shapiro – Wilk test is more appropriate for small sample sizes (< 50) (Hair, 2010). The result indicated mostly of the dependent variables were normally distributes for control and three experimental groups, accept dependent variable of perception, and pain in control group (Cramer, 1998; Cramer & Howitt, 2004; Doane & Sewand, 2011, Hair, 2010). Then, a visual inspection of the normal Q-Q plots and box plots. (Show in Table1 and Appendix)

Table 10 Mean, Standard deviation of Fear total score

Time point	Occasion 1		Occasion 2		Occasion 3		Total score in 3 occasions	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Experimental group1	3.4	1.18	4.40	2.90	7.75	2.71	15.55	5.37
Experimental group2	3.35	2.75	5.75	3.1	10.9	3.34	20.00	5.20
Experimental group3	5.35	2.27	7.80	2.16	9.00	1.91	22.15	5.71
Control group	6.55	2.99	10.25	3.98	17.1	1.91	33.9	7.09

Table 11 Statistical analysis for normal distribution of fear, perception and pain in each groups

		Mean	SD	Shapiro – Wilk test	
				Statistic	Sig.
Fear Baseline					
	Experiment1	3.25	2.45	.908	.058
	Experiment2	3.00	2.57	.875	.015
	Experiment3	3.50	2.48	.886	.023
	Control	3.65	2.93	.917	.087
Fear total					
	Experiment1	15.55	5.37	.94	.218
	Experiment2	20.00	5.20	.98	.847
	Experiment3	22.15	5.71	.96	.571
	Control	33.9	7.09	.98	.848
Perception Pre-test					
	Experiment1	0.60	.59	.74	.000
	Experiment2	0.40	.50	.63	.000
	Experiment3	0.40	.82	.57	.000
	Control	0.45	.76	.62	.000
Post-test					
	Experiment1	3.10	.31	.35	.000
	Experiment2	3.15	.36	.43	.000
Pain					
	Experiment1	6.20	1.47	.88	.015
	Experiment2	8.4	1.73	.91	.055
	Experiment3	7.15	1.76	.79	.001
	Control	10.05	1.27	.82	.008

P<.05

Descriptives[a]

	Group_treat			Statistic	Std. Error
Sum Baseline	control group	Mean		3.65	.654
		95% Confidence Interval for Mean	Lower Bound	2.28	
			Upper Bound	5.02	
		5% Trimmed Mean		3.50	
		Median		3.00	
		Variance		8.555	
		Std. Deviation		2.925	
		Minimum		0	
		Maximum		10	
		Range		10	
		Interquartile Range		5	
		Skewness		.427	.512
		Kurtosis		-.791	.992
	treatment coi	Mean		3.00	.576
		95% Confidence Interval for Mean	Lower Bound	1.79	
			Upper Bound	4.21	
		5% Trimmed Mean		2.94	
		Median		2.00	
		Variance		6.632	
		Std. Deviation		2.575	
		Minimum		0	
		Maximum		7	
		Range		7	
		Interquartile Range		5	
		Skewness		.431	.512
		Kurtosis		-1.341	.992
	treatment	Mean		3.50	.555

	alc	95% Confidence Interval for Mean	Lower Bound	2.34	
			Upper Bound	4.66	
		5% Trimmed Mean		3.50	
		Median		3.00	
		Variance		6.158	
		Std. Deviation		2.482	
		Minimum		0	
		Maximum		7	
		Range		7	
		Interquartile Range		5	
		Skewness		.184	.512
		Kurtosis		-1.540	.992
	treatment coi and alc	Mean		3.25	.542
		95% Confidence Interval for Mean	Lower Bound	2.11	
			Upper Bound	4.39	
		5% Trimmed Mean		3.22	
		Median		3.00	
		Variance		5.882	
		Std. Deviation		2.425	
		Minimum		0	
		Maximum		7	
		Range		7	
		Interquartile Range		5	
		Skewness		.143	.512
		Kurtosis		-1.233	.992
TotalOc	control group	Mean		33.90	1.586
		95% Confidence Interval for Mean	Lower Bound	30.58	
			Upper Bound	37.22	
		5% Trimmed Mean		33.89	
		Median		34.00	
		Variance		50.305	

		Std. Deviation	7.093	
		Minimum	21	
		Maximum	47	
		Range	26	
		Interquartile Range	12	
		Skewness	-.153	.512
		Kurtosis	-.629	.992
	treatment coi	Mean	20.00	1.163
		95% Confidence Interval for Mean — Lower Bound	17.57	
		95% Confidence Interval for Mean — Upper Bound	22.43	
		5% Trimmed Mean	20.06	
		Median	20.00	
		Variance	27.053	
		Std. Deviation	5.201	
		Minimum	10	
		Maximum	29	
		Range	19	
		Interquartile Range	8	
		Skewness	.012	.512
		Kurtosis	-.481	.992
	treatment alc	Mean	22.15	1.278
		95% Confidence Interval for Mean — Lower Bound	19.48	
		95% Confidence Interval for Mean — Upper Bound	24.82	
		5% Trimmed Mean	22.11	
		Median	23.00	
		Variance	32.661	
		Std. Deviation	5.715	
		Minimum	12	
		Maximum	33	
		Range	21	
		Interquartile Range	7	
		Skewness	-.088	.512
		Kurtosis	-.409	.992

	treatment coi and alc	Mean		15.55	1.202
		95% Confidence Interval for Mean	Lower Bound	13.03	
			Upper Bound	18.07	
		5% Trimmed Mean		15.56	
		Median		15.50	
		Variance		28.892	
		Std. Deviation		5.375	
		Minimum		7	
		Maximum		24	
		Range		17	
		Interquartile Range		9	
		Skewness		.041	.512
		Kurtosis		-1.202	.992
Sum_Pretest	control group	Mean		.45	.170
		95% Confidence Interval for Mean	Lower Bound	.09	
			Upper Bound	.81	
		5% Trimmed Mean		.39	
		Median		.00	
		Variance		.576	
		Std. Deviation		.759	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		1	
		Skewness		1.389	.512
		Kurtosis		.412	.992
	treatment coi	Mean		.40	.112
		95% Confidence Interval for Mean	Lower Bound	.16	
			Upper Bound	.64	
		5% Trimmed Mean		.39	
		Median		.00	
		Variance		.253	
		Std. Deviation		.503	

		Minimum		0	
		Maximum		1	
		Range		1	
		Interquartile Range		1	
		Skewness		.442	.512
		Kurtosis		-2.018	.992
	treatment alc	Mean		.40	.184
		95% Confidence Interval for Mean	Lower Bound	.02	
			Upper Bound	.78	
		5% Trimmed Mean		.28	
		Median		.00	
		Variance		.674	
		Std. Deviation		.821	
		Minimum		0	
		Maximum		3	
		Range		3	
		Interquartile Range		1	
		Skewness		2.259	.512
		Kurtosis		4.901	.992
	treatment coi and alc	Mean		.60	.134
		95% Confidence Interval for Mean	Lower Bound	.32	
			Upper Bound	.88	
		5% Trimmed Mean		.56	
		Median		1.00	
		Variance		.358	
		Std. Deviation		.598	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		1	
		Skewness		.393	.512
		Kurtosis		-.570	.992
Sum_Posttes	treatment	Mean		3.15	.082

t	coi	95% Confidence Interval for Mean	Lower Bound	2.98	
			Upper Bound	3.32	
		5% Trimmed Mean		3.11	
		Median		3.00	
		Variance		.134	
		Std. Deviation		.366	
		Minimum		3	
		Maximum		4	
		Range		1	
		Interquartile Range		0	
		Skewness		2.123	.512
		Kurtosis		2.776	.992
	treatment coi and alc	Mean		3.10	.069
		95% Confidence Interval for Mean	Lower Bound	2.96	
			Upper Bound	3.24	
		5% Trimmed Mean		3.06	
		Median		3.00	
		Variance		.095	
		Std. Deviation		.308	
		Minimum		3	
		Maximum		4	
		Range		1	
		Interquartile Range		0	
		Skewness		2.888	.512
		Kurtosis		7.037	.992
Sum_Pain	control group	Mean		10.05	.285
		95% Confidence Interval for Mean	Lower Bound	9.45	
			Upper Bound	10.65	
		5% Trimmed Mean		10.06	
		Median		10.50	
		Variance		1.629	
		Std. Deviation		1.274	

		Minimum	8	
		Maximum	12	
		Range	4	
		Interquartile Range	2	
		Skewness	-.103	.512
		Kurtosis	-1.381	.992
	treatment coi	Mean	8.40	.387
		95% Confidence Interval for Mean — Lower Bound	7.59	
		95% Confidence Interval for Mean — Upper Bound	9.21	
		5% Trimmed Mean	8.44	
		Median	9.00	
		Variance	2.989	
		Std. Deviation	1.729	
		Minimum	5	
		Maximum	11	
		Range	6	
		Interquartile Range	3	
		Skewness	-.695	.512
		Kurtosis	-.377	.992
	treatment alc	Mean	7.15	.315
		95% Confidence Interval for Mean — Lower Bound	6.24	
		95% Confidence Interval for Mean — Upper Bound	7.56	
		5% Trimmed Mean	7.06	
		Median	7.50	
		Variance	1.989	
		Std. Deviation	1.760	
		Minimum	3	
		Maximum	8	
		Range	5	
		Interquartile Range	2	
		Skewness	-1.305	.512
		Kurtosis	1.474	.992

	treatment coi and alc	Mean		6.20	.329
		95% Confidence Interval for Mean	Lower Bound	5.51	
			Upper Bound	6.89	
		5% Trimmed Mean		6.22	
		Median		6.00	
		Variance		2.168	
		Std. Deviation		1.473	
		Minimum		4	
		Maximum		8	
		Range		4	
		Interquartile Range		3	
		Skewness		-.053	.512
		Kurtosis		-1.352	.992

a. Sum_Posttest is constant when Group_treat = cotrol group. It has been omitted.

Tests of Normality[b]

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group_treat	Statistic	df	Sig.	Statistic	df	Sig.
SumBaseline	control group	.214	20	.017	.917	20	.087
	treatment coi	.201	20	.033	.875	20	.015
	treatment alc	.193	20	.049	.886	20	.023
	treatment coi and alc	.172	20	.125	.908	20	.058
TotalOc	control group	.117	20	.200*	.975	20	.848
	treatment coi	.088	20	.200*	.975	20	.847
	treatment alc	.140	20	.200*	.961	20	.571
	treatment coi and alc	.196	20	.044	.938	20	.218
Sum_Pretest	control group	.423	20	.000	.623	20	.000
	treatment coi	.387	20	.000	.626	20	.000
	treatment alc	.437	20	.000	.568	20	.000
	treatment coi and alc	.298	20	.000	.744	20	.000
Sum_Posttest	treatment coi	.509	20	.000	.433	20	.000
	treatment coi and alc	.527	20	.000	.351	20	.000
Sum_Pain	control group	.272	20	.000	.859	20	.008
	treatment coi	.236	20	.005	.907	20	.055
	treatment alc	.282	20	.000	.786	20	.001
	treatment coi and alc	.189	20	.059	.876	20	.015

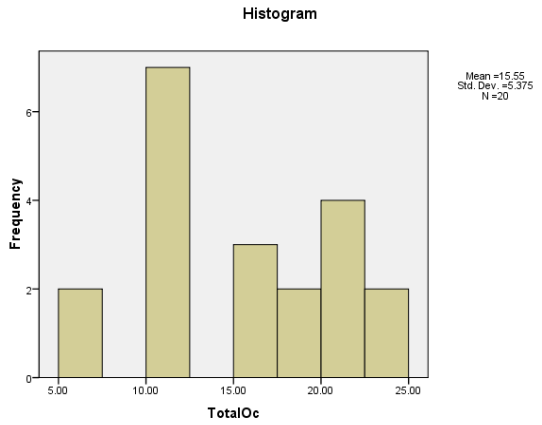
a. Lilliefors Significance Correction

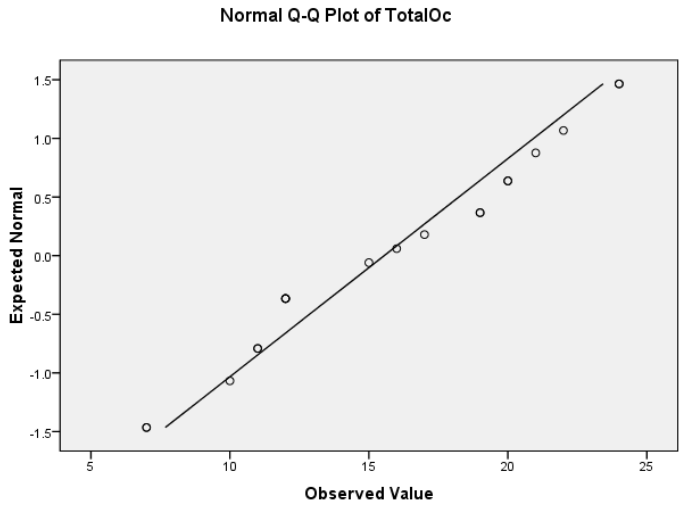
*. This is a lower bound of the true significance.

b. Sum_Posttest is constant when Group_treat = cotrol group. It has been omitted.

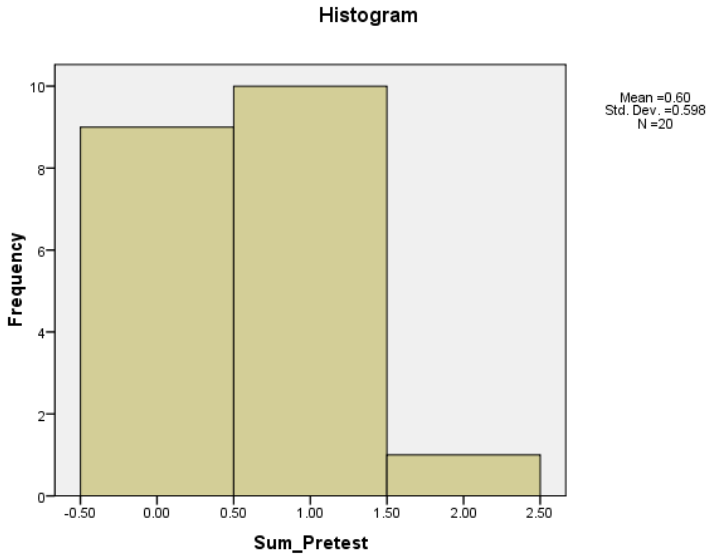
Experimental group 1

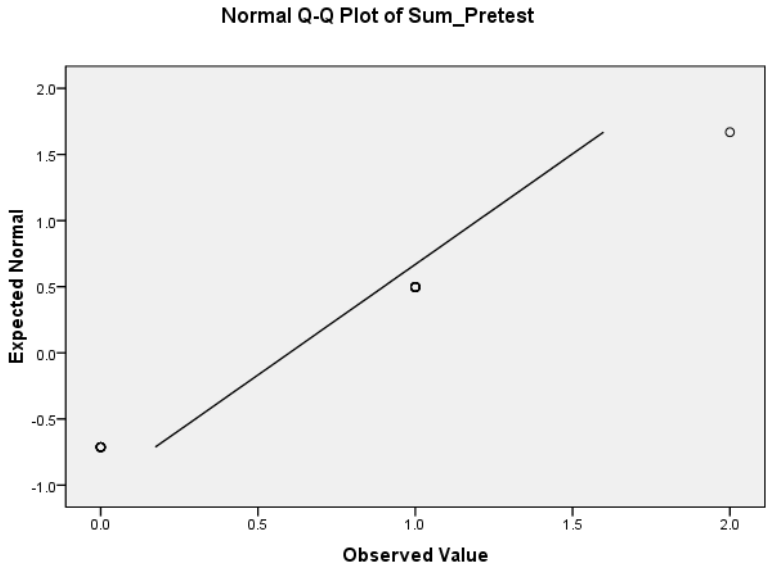
Experimental group 1: Total fear score



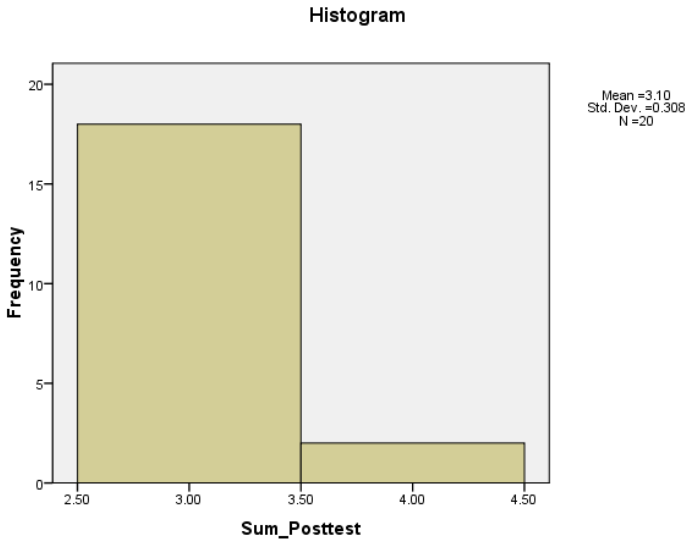


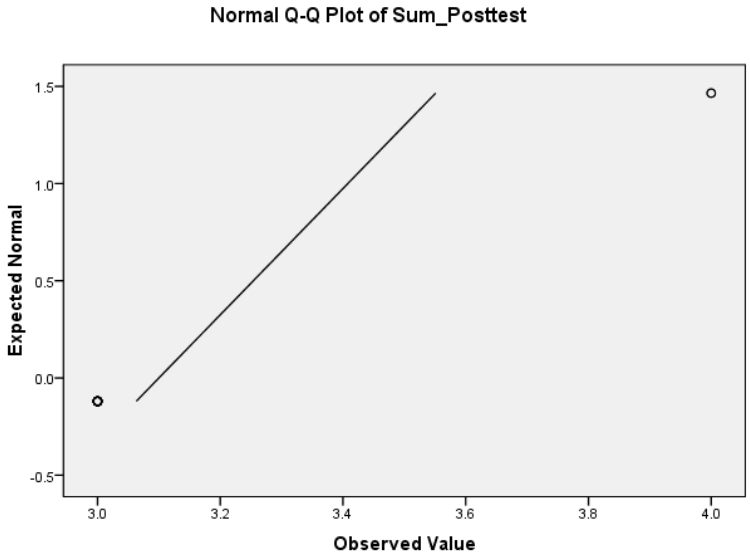
Experimental group 1: Pre- test of perception


Histogram
Mean =0.60
Std. Dev. =0.598
N =20
Frequency
Sum_Pretest

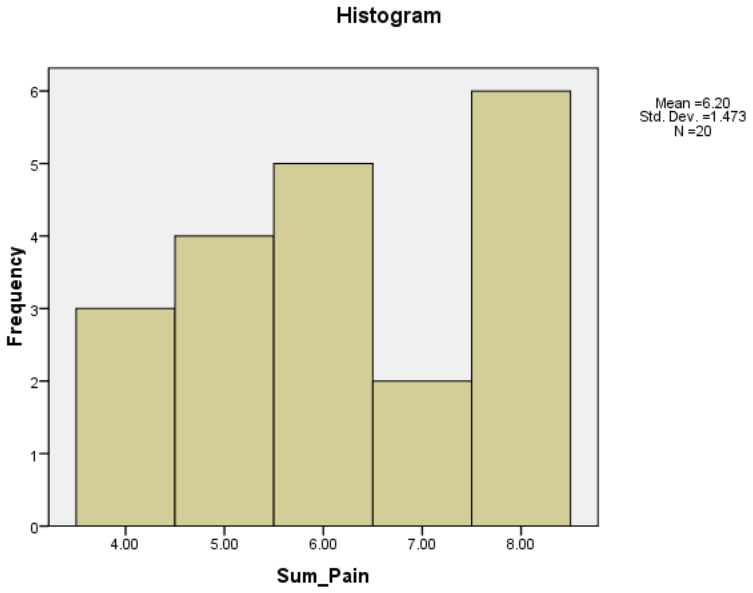

Normal Q-Q Plot of Sum_Pretest
Expected Normal
Observed Value

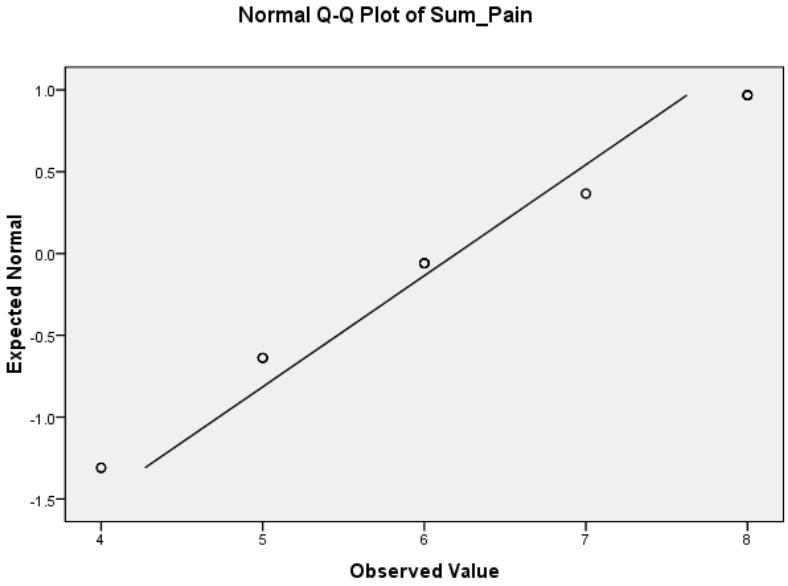
Experimental group 1: Post- test of perception





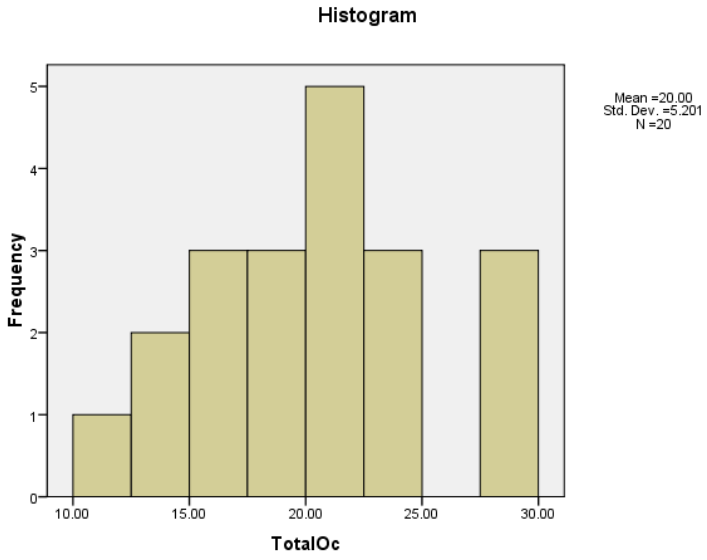
Experimental group 1: Pain score

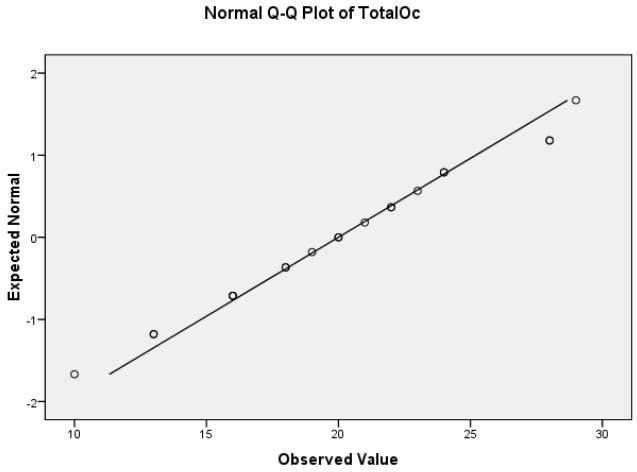




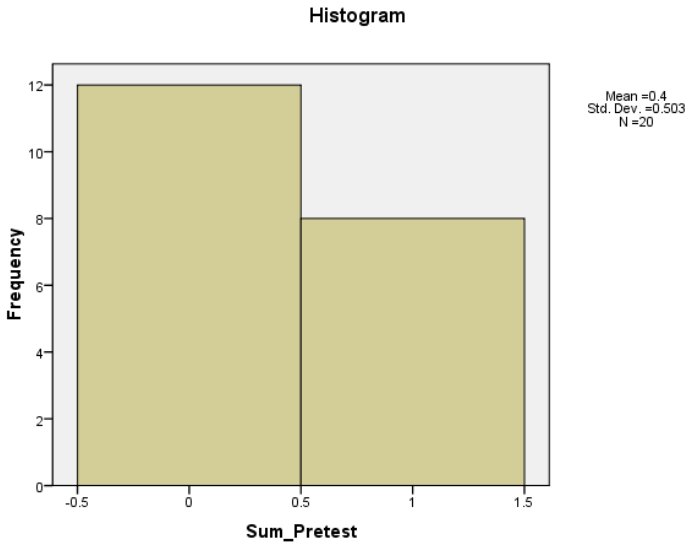
Experimental group 2

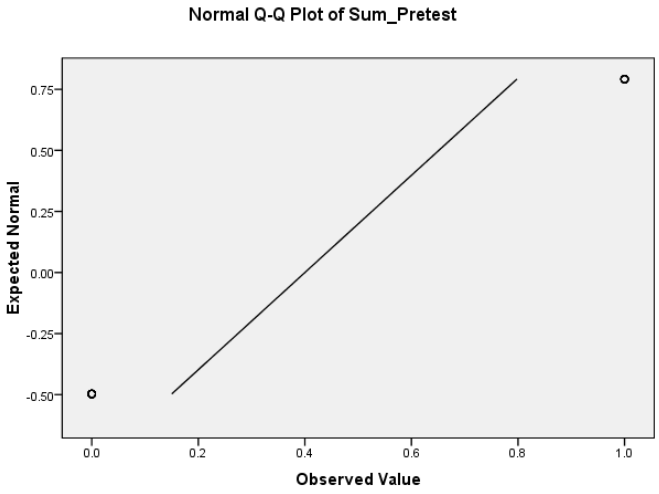
Experimental group 2: Total fear score



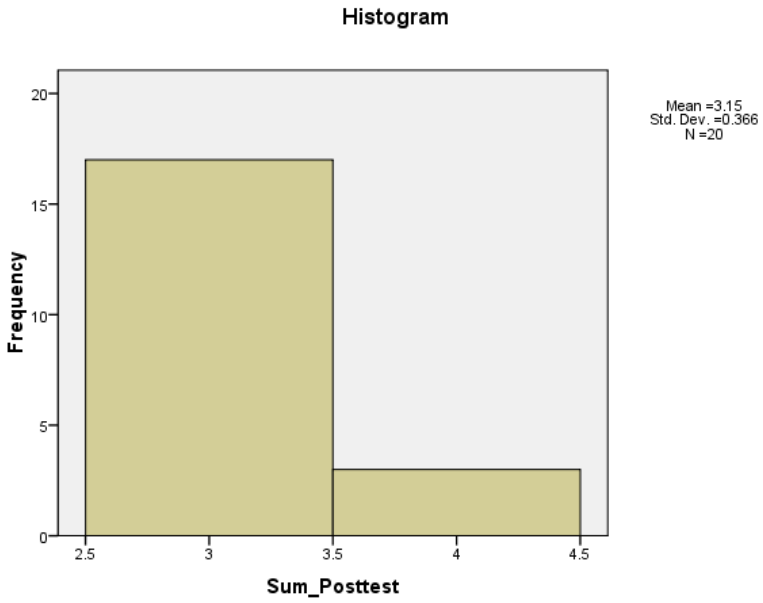


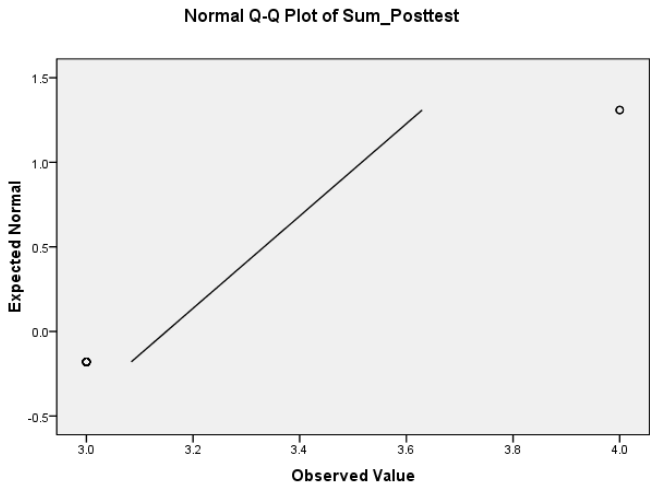
Experimental group 2: Pre- test of perception



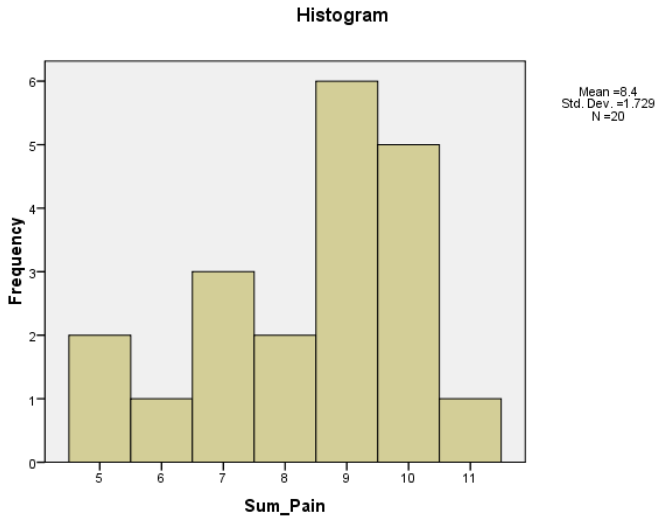


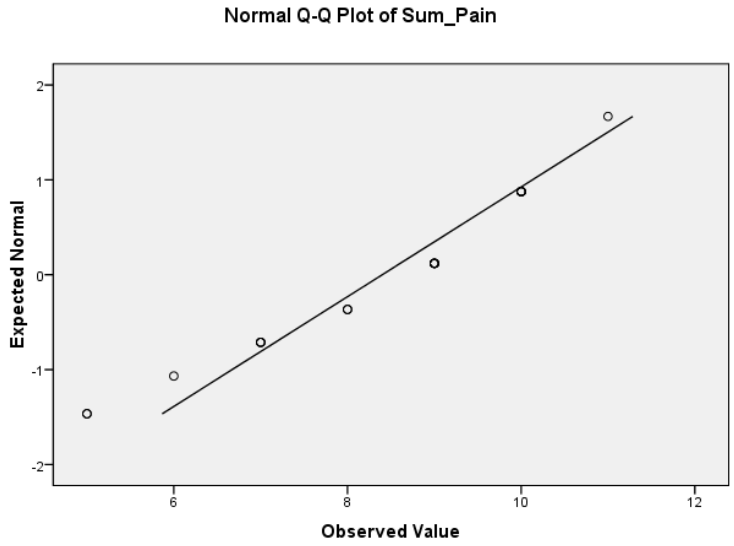
Experimental group 2: Post- test of perception





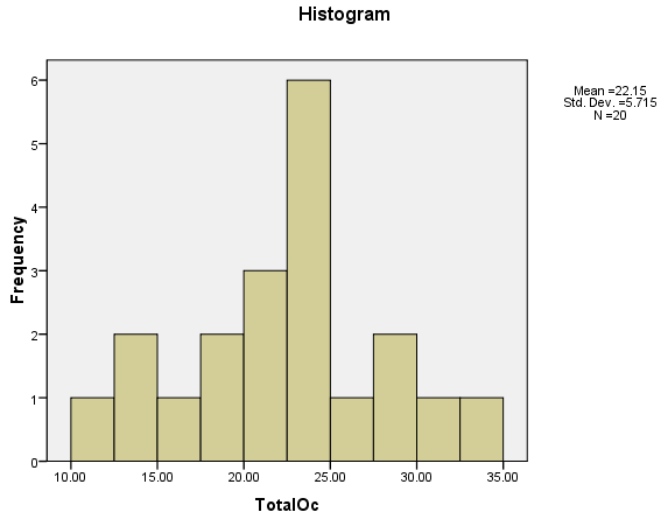
Experimental group 2: Pain score

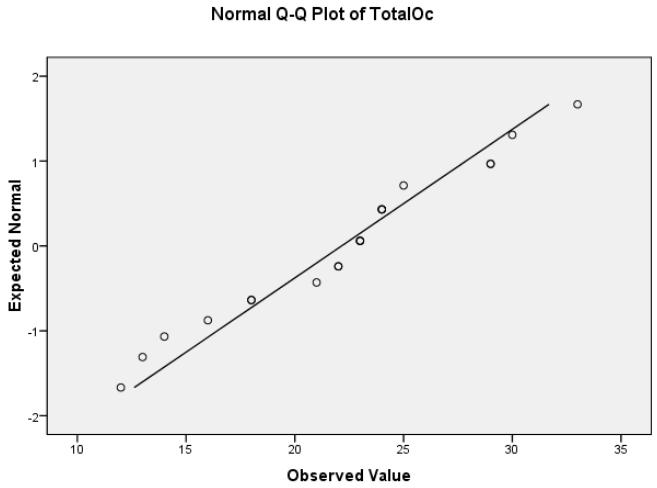




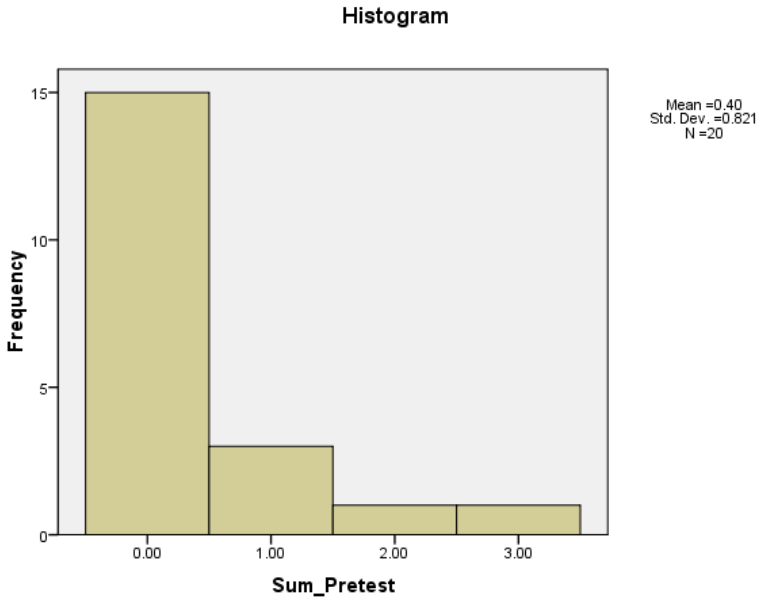
Experimental group3

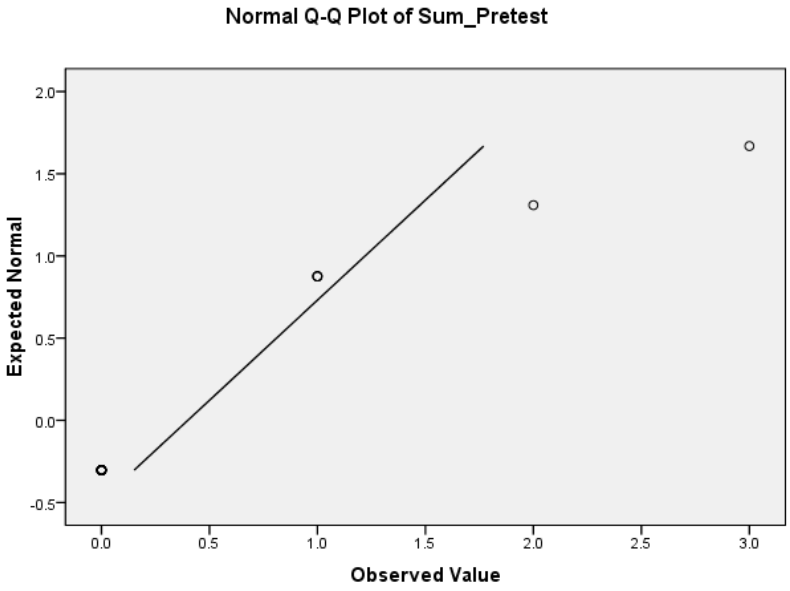
Experimental group 3: Total fear score



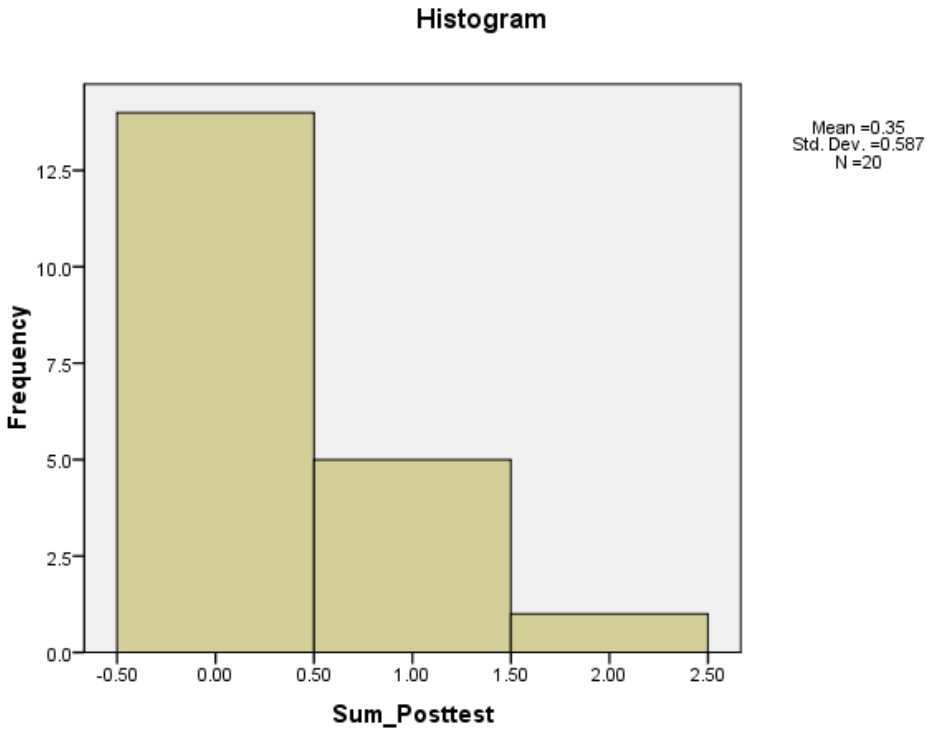


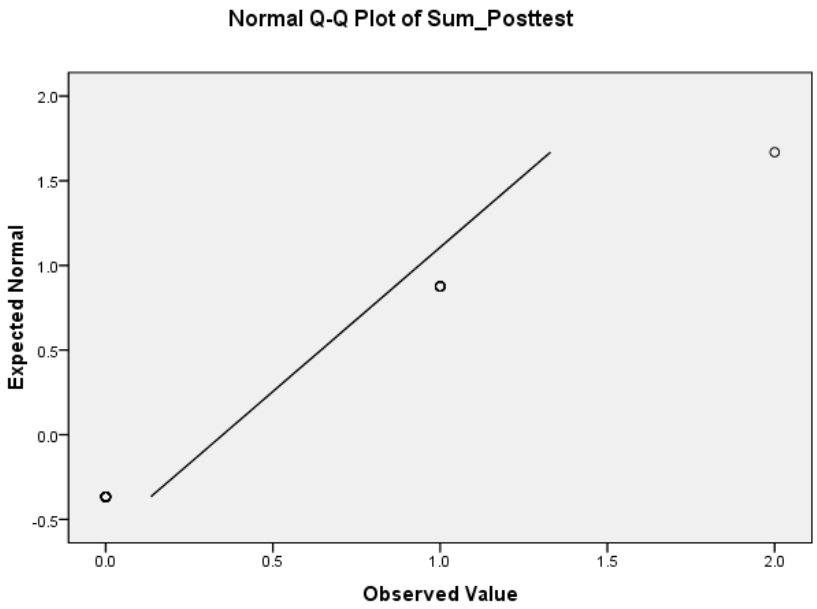
Experimental group 3: Pretest_perception



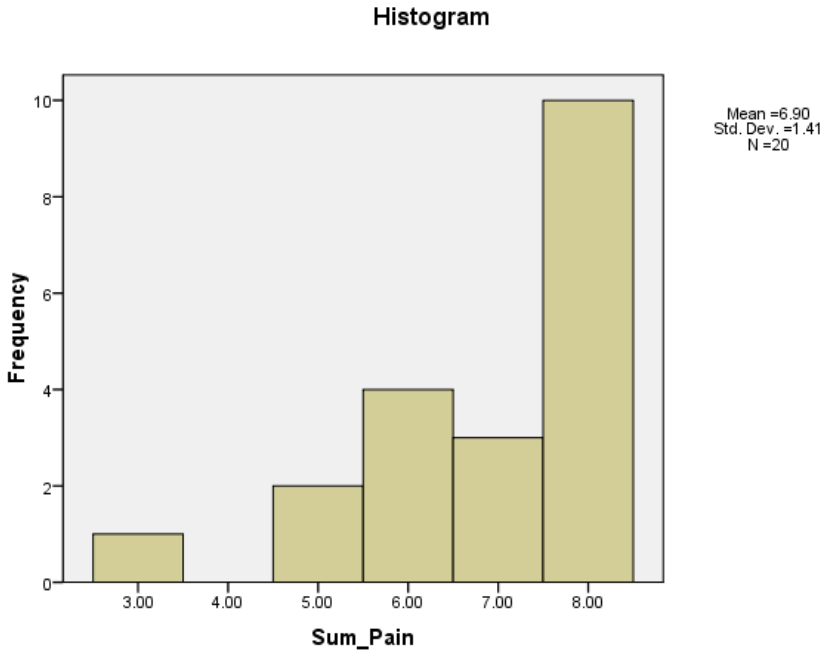


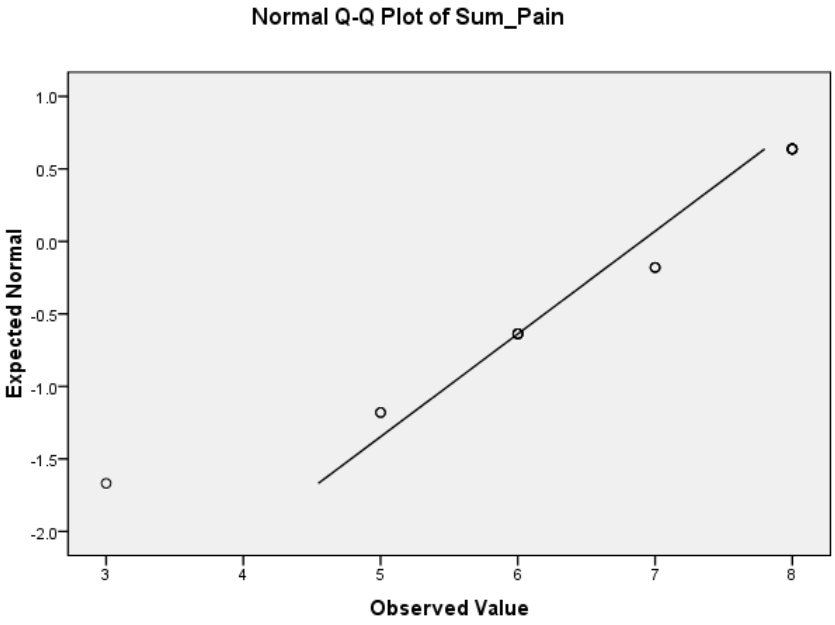
Experimental group 3: Posttest_perception





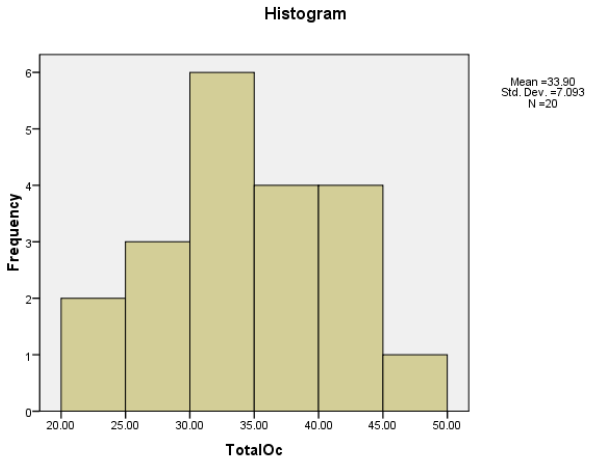
Experimental group 3: Pain score

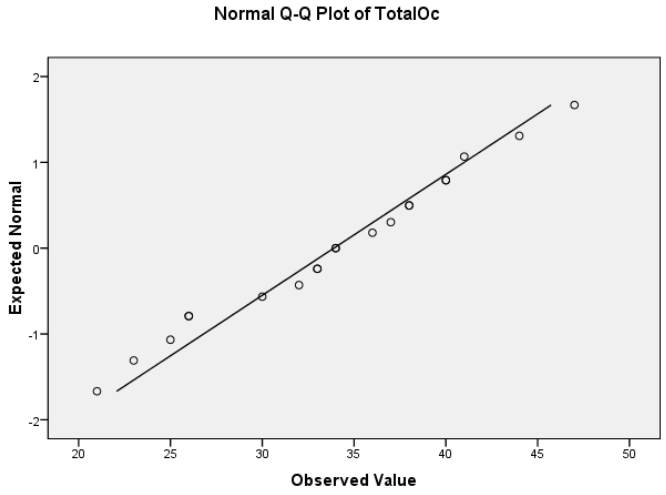




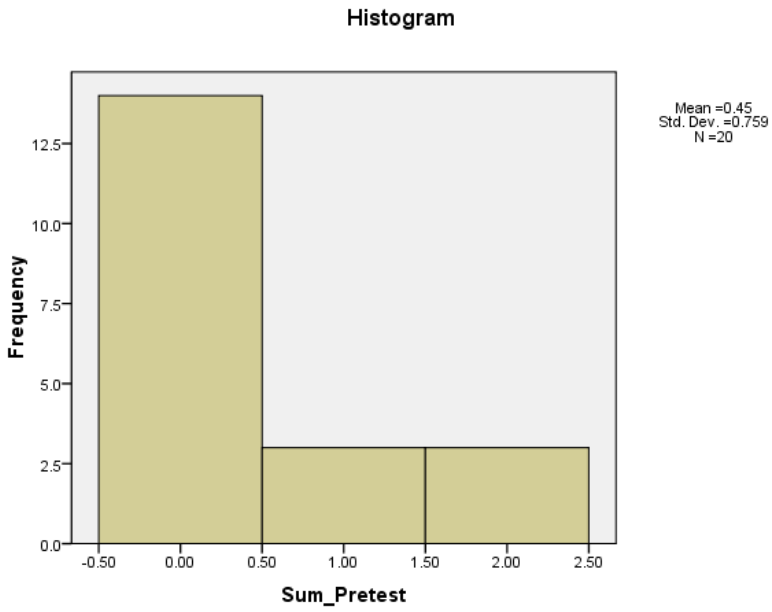
Control group

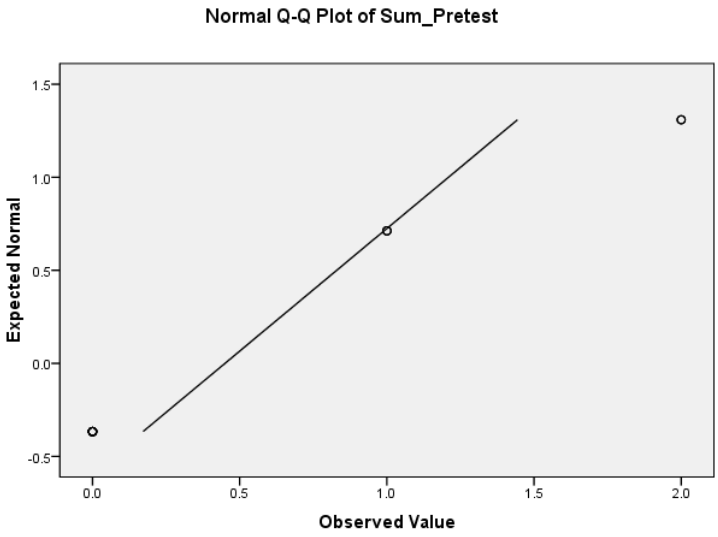
Control group : Total fear score



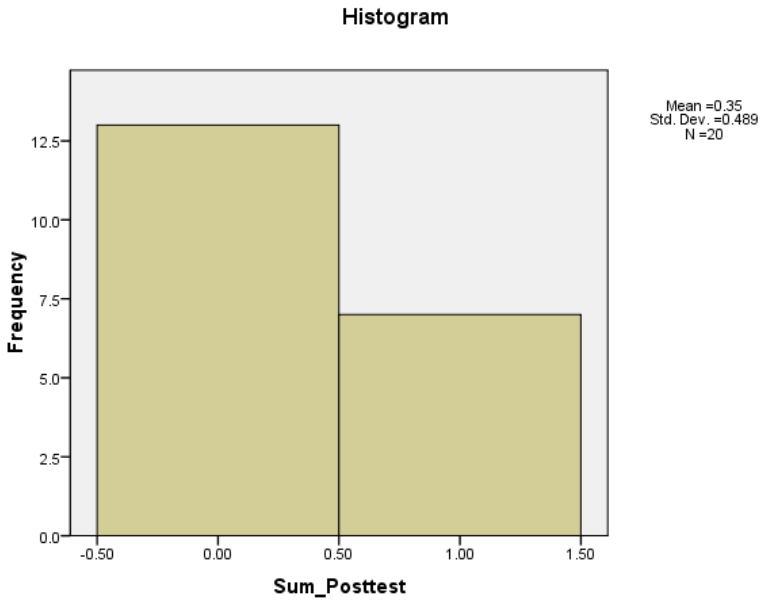


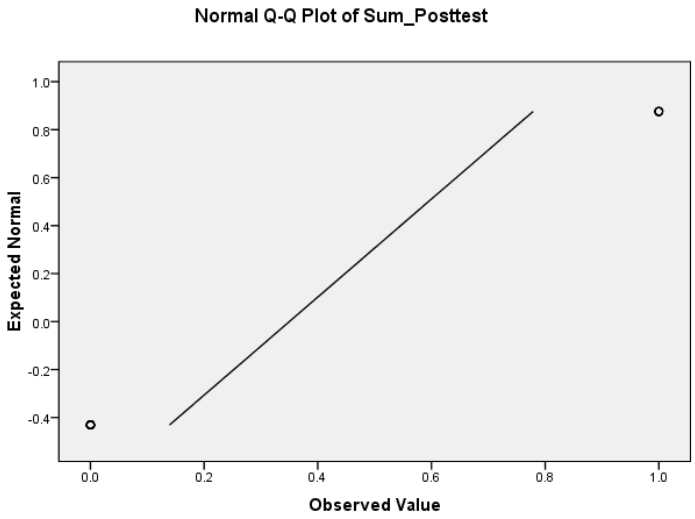
Control group : Pre- test of perception



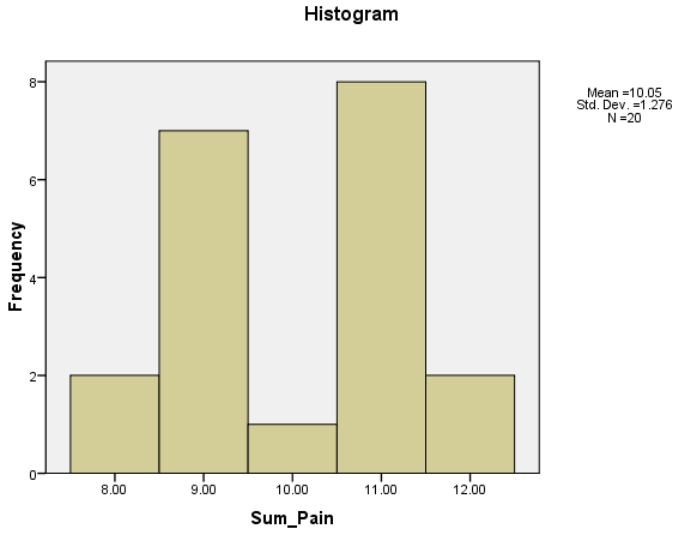


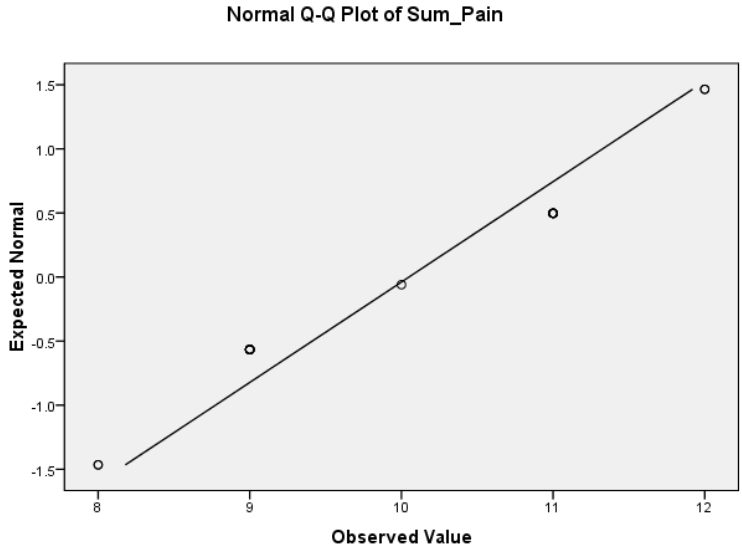
Control group : Post- test of perception





Control group : Pain score





2. Homoscedasticity

Step1: The Levene test was used to assess whether the variance of a single matric variable are equal across any number of groups. The result showed univariate test (*Levene's Test*) for three variables are no significant(F). It means that accept null hypothesis of homoscedasticity or homogeneity of dependent variables.

Step2: The Box's M test, applicable for equal variance dispersion assess the equality of covariance matric. The result showed a no significant value (.478), indicating no significant different between the four groups on the three independent variable collectively.

Thus, the assumption of homoscedasticity is met for each individual variable separately and the three dependent variables collectively.

Scatter plot verified the equality of variances in the sample (Homoscedasticity of variance) (p>.05) (Hair, 2010; Martin &Bridgman, 2012). (shown in Appendix T).

Table 12 Multivariate and Univariate Measures for Assumption Testing of fear in 4 groups

Univariate Test Homoscedasticity				
Levene's Test of Equality of error variances				
Dependent Variable	**F**	***df1***	***df2***	**Sig.**
Fear (baseline)	.773	3	76	.512
Perception (pretest)	1.055	3	76	.373
Multivariate Test Homoscedasticity				
Box's test of Equality of Covariance Matrices				
Box's M	19.042			
F	.982			
df1	18			
df2	2.041			
Sig	.478			

Test the hypothesis that the residual covariance matrices of dependent variables are equal across groups.

a. Design:Intercept + Group_treat

3. Correlation of dependent variables and validity check variable

Bartlett's Test of Sphericity was used to determine whether the dependent measures are significantly correlated. It examine the correlation among all dependent variables and assesses whether, collectively, significant intercorrelation exist. The result showed significant degree of intercorrelation does exist**.** Thus, the assumption of correlation is met.

Table 13 Bartlett's Test of Sphericity

Test of Correlation Among the Dependent Variables	
Bartlett's Test of Sphericity	
Likelyhood ratio	.00
Approx.Chi-Square	274.71
df	5
Sig.	.00

Test the hypothesis that the residual covariance matrix is proportional to an identity matrix

a. Design: Intercept + Group_treat

4. Covariate testing

ANOVA was used to determine different variance of fear at Base line. The statistic showed no significantly different of fear a baseline between group (P=.068). The result indicated that variance in four group are equal. Thus, ANOVA is appropriate to use for determine different of fear total score between four group in this study.

Table 14 Variance comparison of fear score of preschoolers receiving intravenous fluid infusion with one-way ANOVA at baseline

Source of variation	SS	DF	MS	F	Sig.
Between group	4.90	3	1.63	.24	.87
Within group	517.30	76	6.81		
Total	522.20	79			

Summary of assumption testing and statistical used for analysis of fear score between three experimental groups and control group

Regarding of assumption testing for ANOVA statistic, All assumptions were met. Thus, statistic used for determine the effect on independent variable on dependent variables had to be analyzed in 2 part as follow:

Part I : Parametric statistics was used to determine different of variance of main variable (fear total score) by group.

1. Descriptive statistics were used to describe characteristics of the participants and dependent variables with frequency, range, mean, standard deviation, and percentage

2. X^2 and F-test was used to determine the significant different in the demographic characteristics of the participants

3. One-way ANOVA was used to determine the significant different of variance of dependent variable (fear total score)

4. Post Hoc comparison was used to compare mean different in four group.

Part II : Non-parametric statistic was used to determine the effect of perception and and pain on fear total score.

1. Two-independent sample test (Mann-Whitney Test) was used to determine the significant different of post-test score between experimental group 1 and experimental group 2

2. K-independent sample test (Kruskal-Wallis Test) was used to determine the significant different of pain score between three experimental group and control group

3. Two-independent sample test (Mann-Whitney Test) was used to determine the significant different of pain score between

3.1 Experimental group 1 and Experimental group 2

3.2 Experimental group 1 and Experimental 3

3.3 Experimental group 1 and Control group

APPENDIX U

Result of statistical analysis

Analysis of Perception score
Post-test score between experimental group 1 and experimental group 2

Mann-Whitney Test

Ranks

	Group_treat	N	Mean Rank	Sum of Ranks
Sum_Posttest	treatment coi	20	21.00	420.00
	treatment coi and alc	20	20.00	400.00
	Total	40		

Test Statistics[b]

	Sum_Posttest
Mann-Whitney U	190.000
Wilcoxon W	400.000
Z	-.472
Asymp. Sig. (2-tailed)	.637
Exact Sig. [2*(1-tailed Sig.)]	.799[a]

a. Not corrected for ties.

b. Grouping Variable: Group_treat

Analysis of Pain score

Pain score in three experimental group and control group

Kruskal-Wallis Test

Ranks

	Group_treat	N	Mean Rank
Sum_Pain	cotrol group	20	64.88
	treatment coi	20	47.18
	treatment alc	20	28.62
	treatment coi and alc	20	21.32
	Total	80	

Test Statistics[a,b]

	Sum_Pain
Chi-Square	43.614
df	3
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: Group_treat

Comparison in each pair group

Mann-Whitney Test

Experimental group 1 and 2

Ranks

	Group_treat	N	Mean Rank	Sum of Ranks
Sum_Pain	treatment coi	20	27.12	542.50
	treatment coi and alc	20	13.88	277.50
	Total	40		

Test Statistics[b]

	Sum_Pain
Mann-Whitney U	67.500
Wilcoxon W	277.500
Z	-3.624
Asymp. Sig. (2-tailed)	.000
Exact Sig. [2*(1-tailed Sig.)]	.000[a]

a. Not corrected for ties.

b. Grouping Variable: Group_treat

Mann-Whitney Test

Experimental group 1 and 3

Ranks

	Group_treat	N	Mean Rank	Sum of Ranks
Sum_Pain	treatment alc	20	23.35	467.00
	treatment coi and alc	20	17.65	353.00
	Total	40		

Test Statistics[b]

	Sum_Pain
Mann-Whitney U	143.000
Wilcoxon W	353.000
Z	-1.608
Asymp. Sig. (2-tailed)	.108
Exact Sig. [2*(1-tailed Sig.)]	.127[a]

a. Not corrected for ties.

b. Grouping Variable: Group_treat

Mann-Whitney Test

Experimental group 1 and Control group

Ranks

	Group_treat	N	Mean Rank	Sum of Ranks
Sum_Pain	control group	20	30.20	604.00
	treatment coi and alc	20	10.80	216.00
	Total	40		

Test Statistics[b]

	Sum_Pain
Mann-Whitney U	6.000
Wilcoxon W	216.000
Z	-5.313
Asymp. Sig. (2-tailed)	.000
Exact Sig. [2*(1-tailed Sig.)]	.000[a]

a. Not corrected for ties.

b. Grouping Variable: Group_treat

Hypotheses testing
Analysis of Fear score

Oneway of Fear score

ANOVA					
TotalOc	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3679.900	3	1226.633	35.322	.000
Within Groups	2639.300	76	34.728		
Total	6319.200	79			

Post Hoc Tests

Multiple Comparisons

TotalOc
Bonferroni

(I) Group_treat	(J) Group_treat	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
control group	treatment coi	13.900*	1.864	.000	8.85	18.95
	treatment alc	11.750*	1.864	.000	6.70	16.80
	treatment coi and alc	18.350*	1.864	.000	13.30	23.40
treatment coi	control group	-13.900*	1.864	.000	-18.95	-8.85
	treatment alc	-2.150	1.864	1.000	-7.20	2.90
	treatment coi and alc	4.450	1.864	.117	-.60	9.50
treatment alc	control group	-11.750*	1.864	.000	-16.80	-6.70
	treatment coi	2.150	1.864	1.000	-2.90	7.20
	treatment coi and alc	6.600*	1.864	.004	1.55	11.65
treatment coi and alc	control group	-18.350*	1.864	.000	-23.40	-13.30
	treatment coi	-4.450	1.864	.117	-9.50	.60
	treatment alc	-6.600*	1.864	.004	-11.65	-1.55

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

TotalOc
Bonferroni

(I) Group_treat	(J) Group_treat	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
control group	treatment coi	13.900*	1.864	.000	8.85	18.95
	treatment alc	11.750*	1.864	.000	6.70	16.80
	treatment coi and alc	18.350*	1.864	.000	13.30	23.40
treatment coi	control group	-13.900*	1.864	.000	-18.95	-8.85
	treatment alc	-2.150	1.864	1.000	-7.20	2.90
	treatment coi and alc	4.450	1.864	.117	-.60	9.50
treatment alc	control group	-11.750*	1.864	.000	-16.80	-6.70
	treatment coi	2.150	1.864	1.000	-2.90	7.20
	treatment coi and alc	6.600*	1.864	.004	1.55	11.65
treatment coi and alc	control group	-18.350*	1.864	.000	-23.40	-13.30
	treatment coi	-4.450	1.864	.117	-9.50	.60
	treatment alc	-6.600*	1.864	.004	-11.65	-1.55

APPENDIX V
Additional Finding

Additional finding

Fear at baseline

Table 15 Descriptive statistics of fear between the experimental group and control group at baseline (at patient's bed)

Sample	Mean	SD	$\chi 2$	***p*-value**
On Bed (The first approach)			.58	.90
Experimental group1	3.25	2.45		
Experimental group2	3	2.57		
Experimental group3	3.5	2.48		
Control group	3.65	2.93		

Experimental group 1 nursing care with means providing concrete objective information plus cold alcohol compression

Experimental group 2 means nursing care with providing concrete objective information

Experimental group 3 nursing care with means cold alcohol compression

Control group means nursing care with conventional nursing care

For the first approach; the child on bed, In the experimental group 1 which received concrete objective information plus cold alcohol compression, the fear mean score was 3.25(SD =2.42). In the experimental group which received concrete objective information, the fear mean score was 3(SD =2.57). In the experimental group which received cold alcohol compression, the Fear mean score was 3.5(SD =2.4). In the control groups which received conventional nursing care, the fear mean score was 3.65(SD = 2.92).

The main effect of independent variable (Treatment) on fear

Effect Size of the study

The researcher calculated the standardized difference between means (Cohen's d) to determine the effect size, or the magnitude of the treatment effect. This statistic can be used in within-subject designs. The effect size presents the ability to detect an association between a predictor and an outcome variable (Browner, Newman and Cummings, 1998). The effect size is calculated by the following formula:

$$\text{Effect Size} = \frac{\text{Experimental group mean} - \text{Control group mean}}{\text{Control group standard deviation}}$$

Cohen has suggested that *d*'s of 0.20, 0.50, and 0.80 represent small, medium, and large effect sizes, respectively (Cohen 1992). The effect size at post-operative day 1 was small for both intensity and interference subscale (0.10/0.29). After that, at day 2 and day 3, the effect size respectively large for both intensity (1.06/2.28) and interference (0.88/1.36)(Table below). This represents the acceptable treatment effect of the PCP in decreasing acute pain during day 1-3 after cardiac surgery.

Table 16 Effect size of the study

	Experimental group 1	Experimental group 2	Experimental group 3
Effect size	2.06	1.58	1.29

The result showed the main effect of independent variable on fear is providing concrete objective information plus cold alcohol compression.

APPENDIX W

Perception Scores, Pain, and Fear Scores

Table 17 Perception Scores, Pain, and Fear Scores of participants

Group	Cases	Perception Scores		Pain scores	Fear score
		Pretest	Post test		
Experimental group 1	1	1.0	3.0	4.0	19.0
	2	0.0	3.0	8.0	12.0
	3	0.0	3.0	8.0	24.0
	4	1.0	3.0	8.0	16.0
	5	1.0	3.0	8.0	24.0
	6	0.0	3.0	6.0	11.0
	7	0.0	3.0	5.0	15.0
	8	1.0	3.0	8.0	12.0
	9	1.0	3.0	6.0	19.0
	10	2.0	4.0	5.0	20.0
	11	1.0	3.0	6.0	7.0
	12	0.0	3.0	4.0	11.0
	13	1.0	3.0	5.0	12.0
	14	1.0	3.0	5.0	10.0
	15	0.0	3.0	4.0	12.0
	16	0.0	3.0	8.0	7.0
	17	1.0	4.0	6.0	22.0
	18	1.0	3.0	7.0	21.0
	19	0.0	3.0	6.0	20.0
	20	1.0	3.0	4.0	17.0
Experimental group 2	1	0.0	3.0	10.0	19.0
	2	0.0	3.0	9.0	16.0
	3	1.0	3.0	9.0	28.0
	4	0.0	3.0	10.0	28.0
	5	0.0	3.0	10.0	13.0
	6	1.0	3.0	10.0	20.0
Experimental group 2 (con.)	7	1.0	4.0	5.0	16.0
	8	0.0	4.0	5.0	13.0
	9	0.0	3.0	9.0	22.0
	10	0.0	3.0	6.0	23.0
	11	0.0	3.0	8.0	21.0
	12	1.0	3.0	9.0	24.0
	13	1.0	3.0	9.0	22.0
	14	0.0	3.0	7.0	10.0
	15	0.0	3.0	7.0	16.0
	16	1.0	3.0	10.0	24.0
	17	1.0	3.0	11.0	18.0
	18	0.0	3.0	9.0	29.0
	19	1.0	4.0	7.0	18.0
	20	0.0	3.0	8.0	20.0
Experimental group 3	1	0.0	-	8.0	33.0
	2	0.0	-	8.0	16.0
	3	3.0	-	8.0	22.0

	4	0.0	-	8.0	29.0
	5	0.0	-	8.0	30.0
	6	0.0	-	3.0	12.0
	7	0.0	-	8.0	23.0
	8	0.0	-	8.0	23.0
	9	0.0	-	7.0	23.0
	10	2.0	-	6.0	25.0
	11	0.0	-	6.0	24.0
	12	0.0	-	5.0	13.0
	13	0.0	-	6.0	24.0
	14	1.0	-	6.0	14.0
	15	1.0	-	8.0	18.0
	16	0.0	-	8.0	29.0
	17	0.0	-	7.0	21.0
	18	0.0	-	5.0	18.0
	19	1.0	-	7.0	24.0
	20	0.0	-	8.0	22.0
Control group	1	0.0	-	11.0	47.0
	2	0.0	-	9.0	23.0
	3	0.0	-	9.0	32.0
	4	1.0	-	11.0	38.0
	5	0.0	-	9.0	36.0
	6	2.0	-	11.0	21.0
	7	0.0	-	11.0	33.0
	8	0.0	-	9.0	40.0
	9	2.0	-	11.0	34.0
	10	0.0	-	9.0	41.0
	11	0.0	-	9.0	34.0
	12	0.0	-	12.0	25.0
	13	1.0	-	8.0	26.0
	14	0.0	-	10.0	30.0
	15	0.0	-	8.0	26.0
	16	2.0	-	11.0	37.0
Control group (con.)	17	1.0	-	11.0	33.0
	18	0.0	-	9.0	38.0
	19	0.0	-	11.0	44.0
	20	0.0	-	12.0	40.0

APPENDIX X

List of Experts

1.	Assoc. Prof. Dr. Pulsuk Siripul	Faculty of Nursing, Khon Kaen University
2.	Assoc. Prof. Dr. Jintana Tangworapongchai	Faculty of Nursing, Khon Kaen University
3.	Assoc. Prof. Dr. Autchareeya Patoomwan	Faculty of Medicine Ramathibodi Hospital, Mahidol University
4.	Assoc. Prof. Dr. Surapol Virasiri	Faculty of Medicine, Khon Kaen University
5.	Assoc. Prof. Suthisa Lamchang	Faculty of Nursing, Chaing Mai University
6.	Mrs. Sudthiporn Chatathikhoon	Kindergarten demonstration school, Faculty of Education, Khon Kaen University
7.	Mrs. Panukkeaw Klangka	Department of pediatrics, Khon Kaen Hospital

VITA

Mrs.Atchariya Wonginchan was born at July 1, 1973. She received a Bachelor of Nursing Science from Faculty Nursing, Khon Kaen University, Thailand in 1995. She has been a nurse instructor at the Faculty of Nursing Khon Kaen University since 1996. She received a Master of Nursing (Pediatric Nursing) from Faculty Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand in 2003. She had received the scholarship for Ph.D. study from Khon Kaen University, and Faculty of Nursing, Khon Kaen University to study a doctoral program in nursing science at Faculty of Nursing, Chulalongkorn University from 2011 until present.