Effect of Audio- Visual Distraction among Preschool Children during Vaccination

Thesis submitted in

Partial Fulfilment of the Degree of

Master of Philosophy (M.Phil)

By

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CERTIFICATE

I certify that the dissertation entitled **"Effect of Audio- Visual Distraction among Preschool Children during Vaccination"** submitted for the degree of **Master of Philosophy (M.Phil)** by **Priyanka Das (19MPHDF006)** is the record of original research work carried out by her during the period form 2019-2020 under my guidance and supervision and that this work has not formed the basis for the award of any Degree, Diploma, Associate ship, Fellowship or other Titles in this institution or any other university or institution of Higher Learning.

Arocha Nayachil. 14/9/2020.

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DECLARATION

I declare that the dissertation entitled **"Effect of Audio- Visual Distraction among Preschool Children during Vaccination"** submitted for the degree of **Master of Philosophy (M.Phil.)** is a record of work carried out by me during the period from 2019 to 2020 under the guidance of **Dr.Priya. M, M.Sc., M.Phil., Ph.D.,** Assistant Professor, Department of Human Development, School of Home Science, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore and has not formed the basis for the award of any Degree, Diploma, Associate ship, Fellowship, Titles in this institution or any other university or other similar institution of Higher Learning.

Signature of the Candidate

(Priyanka Das)

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CONTENTS

LIST OF TABLES

LIST OF FIGURERS

LIST OF ANNEXURES

Annexure No.	TITLE
1.	Vaccination Distress Scale-Questionnaire
2.	Key for Vaccination Distress Scale-Questionnaire
3.	Permission from Government Health Officer
4.	Permission from clinic
5.	Data collection photos
6.	Ethical Clearance

1. INTRODUCTION

The first six of life are critical years of human life since the rate of development in these years is more rapid than at any other stage of development. Global brain research also informs us about the significance of early years for brain development. Early Childhood Care and Education (ECCE) makes a positive contribution to children's long term development and learning by facilitating an enabling and stimulating environment in these foundation stages of lifelong learning. Parents as caregivers are critical in providing a stimulating learning environment to the child and the first two and a half to three years need not be in a formal learning environment. The National Curriculum Framework acknowledges the significance of involvement of parents, family and community.

India has a tradition of valuing the early years of a child's life, and a rich heritage of cultural practices for stimulating development and inculcating "sanskaras" or basic values and social skills in children. In the past this was delivered primarily within joint families, through traditional child caring practices which were commonly shared and passed on from one generation to another. However, there have been changes in the family as well as social context in the last few decades.

In India, preschool is sometimes also referred to as playschool or nursery school. It is a place a child goes to before kindergarten/primary school (typically before beginning Kindergarten or Upper KG). However, a preschool may refer to any institution for children too young to go to school. Often, in India, these only apply to children **ages 2–4**. A kindergarten is a specialized institute with educational programs for children **ages 3–6**. It is seen as the first step to formal education. Preschool is an early childhood program in which children join to learning with play in a program run by professionally trained adults. Children are most commonly enrolled in preschool between the ages of three and five, though those as young as two can attend some schools. Preschools are different from traditional day care in that their emphasis is learning and development rather than enabling parents to work or pursue other activities (Barnett, W, 2003).

Families and communities represent vast geographic, social, cultural, linguistic, and economic diversity within the country. Children also differ in their physical, emotional, social, and cognitive capacities. Urban and rural communities offer different types of opportunities and face distinct challenges in providing good quality early care and learning experiences to children. Socio –economic status as well as social and cultural diversity characterize the nature of family life and the context for growing up in India. Each child requires a safe and nurturing environment to develop optimally (ECCE Curriculum Framework, 2012).

In healthy children, physical, social, language, cognitive areas are all important in growth

and development. When you consider a learning environment, these growth areas intersect. For example, social and emotional awareness often rises through language and communication in the preschool years. Or toddlers might problem-solve and make cognitive discoveries through movement and physical growth (cdc gov, 2018).

To maintain healthy life throughout the lifespan it is important to vaccinate children and to respect the immunization schedule in order to protect them from serious infectious diseases. Vaccination is the most effective way to prevent the spread of serious infectious diseases.
Most vaccines are administered with a needle, which may frighten both children and their parents. This fear can lead to some parents delaying their children's vaccination, leaving them unprotected against many serious diseases.

The attitude and behaviour of parents towards vaccination is important to a child. In fact, children observe their parents to know how to act and feel.

The risk of catching many diseases is very high in the first year of a child's life. That's why it is recommended that every child get vaccinated according to the immunization schedule. In respecting this schedule, parent has to ensure that the child is protected at the time they need to be most. Even if they dislike the idea of giving the child an injection by getting them vaccinated, parents are protecting them from catching diseases that can leave after-effects (quebec, 2017).

Vaccination refusal can also put a lot of strain the doctor-patient/parent relationship, "particularly for physicians committed to vaccination as an essential means of disease prevention". As a result, there are networks of parents concerned with vaccine policy that circulate lists of physicians who are not opposed to delaying vaccinations and who are accepting of vaccine refusal. The physicians on these lists are described as 'vaccine-friendly'. But a parent declining vaccines for their child presents a similar opportunity for education that occurs when alternative schedules are requested. Physicians and healthcare providers should engage in respectful dialog with parents, in order to try and understand the reasons why they are declining vaccines for their child (Schwartz, J. L., & Caplan, A. L., 2011).

1.1 Developments during Preschool period and Early Childhood

Children grow and develop in different provinces of development like physical, motor development, spiritual, moral development, social, emotional development, cognitive, language development.

1.1 a) Physical Development

During early childhood period rapid growth and development take place like, expansion of muscles, speed in body actions, changes occur in respiration, blood pressure develops.

Children grow quickly from birth to age two years. The average baby look-alikes their birth weight by five or six months. Development then slows to an average of 2.5 inches in height and five to seven lbs. in weight per year. As their brains develop, gross and fine motor skills develop, approving children to complete more difficult and involved tasks. Usually, in this childhood period activity level is in highest between ages three and five years of age.

1.1 b) Cognitive Development

Child psychologist Jean Piaget developed a theory on cognitive learning to explain about how children learn differently than adults. This theory is divided into different life stages. The initial stage, covering from birth to two years, is called the sensorimotor phase. The preoperational stage happens from about age two to seven years. Children in this stage are very imaginative as well as self-oriented. When a child enters the concrete stage, enduring from about first position to early adolescence, she/ he absorbs that others do not essentially see things the same way they does, and cognitive skills progress.

1.1 c) Linguistic Development

Linguistic development is not only depending on mental development, also on the physical development of speech mechanism, with including the tongue and vocal cords. Acquaintance and communication are critical to language acquisition. Children are frequently spoken to and with secure language quicker and more capably than those who are not. According to the Clearinghouse on Early Education and Parenting, "There is strong suggestion that children may never secure a language if they have not been unprotected to a language before they reach the age of 6 or 7. Understanding progresses faster than speech in a toddler's language development. Between 15 to 18 months, most toddlers know 10 times more words than they can verbally communicate. In the age of two, vocabularies development can span between 50 and 100 words and children begin using two or more words in combination. The age of five, children can use thousands of words to communicate and will speak in sentences.

1.1 d) Psychosocial Development

Psychological and social developments are interconnected. Psychoanalyst Erik Erikson identified various psychosocial stages, serene of basic conflicts, occur in life. In first stage the child develop the trust in their surrounding environment. In the second stage the child learn basic toilet training. Children improve a sense of autonomy with toileting realisation or feelings of shame and doubt with toileting disappointment. Freedom is a critical aspect of the loco motor stage, spanning ages three to six years. During this time, children develop creativity but may experience feelings of guilt if they are too self-confident.

1.1 e) Emotional Development

The child in age two, most children involved in self-conscious emotions including pride

and discomfiture. The toddler years are marked by common temper irritabilities because children at that age do not have full control over their emotions.

1.1 f) Spiritual Development

During early childhood spiritual development is very important for child to know their own religions in different areas of psychology, religion and education, with special emphasis on how spirituality is viewed in regard to young children. Spirituality is defined as an essential skill to show awareness or consciousness of the surrounding environment, a sense of sympathy and love towards the environment and everything, and for some people a relationship with a superior being, who can also be essential for the individual. It's meaning to seem that everyone takes a spiritual characteristic which may or may not have.

1.2 Theories of Early Childhood Development

According to Sigmund Freud that children behaviour and it's develop psychologically based on their parents react to their early childhood experiences and giving toilet training, aggression and sexuality. His "psychosexual" theory suggested that children progress through several diverse stages on their way to adulthood there are four stage: Oral, Anal, Phallic, Latency and Genital. Experiences with sexual satisfaction or pleasure skilled from a particular part of their body during any developmental phases, or interruption of a phase by trauma, can lead to neurosis. The theory also introduces the notion of a subconscious "id," which seeks gratification at all costs, and a dominating "ego," the reasonable mind that assumes control of one's personality. A "superego" also exists, internalizing parental and authoritarian rules for living and providing guidance for the ego and frustration for the id.

According to Erik Erikson's theory early childhood is a behavior it based on the progressive development of a person's cognitive sense of self. Children are inspired by various early stages of development during this period. Trust vs. Mistrust (birth to 18 months), Autonomy vs. Shame or Doubt (18 months to 3 years), Initiative vs. Guilt (3 to 5 years), Industry vs. Inferiority (5 to 12 years) and later cognitive developments will take place.

According to Lawrence Kohlberg's theory of psychology where the levels of moral development, divided into two stages each. The first level, which occurs during early childhood (before the teen years), he called thi**s** stage Preconventional, consequence-driven level, and is characterized by two stages: Obedience and Punishment, where entire rules are always followed by significances; and Individualism and Exchange, where self-interest determines which rules can be negotiated.

According to Jean Piaget theorized all children develop through the four stages: the Sensorimotor stage (birth to 2 years old), Preoperational stage (2 to 7 years), Concrete Operations stage (7 to 11 years), and Formal Operations stage (past 11). During the

Sensorimotor stage, where child regulates knowledge about her environment and they are learn different between the world and herself and categorizes objects according to their basic structures during the Preoperational stage. In the Concrete Operations stage, she develops the ability to think abstractly and to intellectualise ideas to explain their own experiences (Piaget, J., 1977 and Santrock, 2016).

1.3 Childhood vaccination and its importance

Everyone needs vaccines. They are recommended for infants, children, teenagers, and adults. There are widely accepted immunization schedules available. They list what vaccines are needed, and at what age they should be given. Most vaccines are given to children. It's recommended they receive 14 different vaccines by their 6^{th} birthday, that is why early childhood period is most important to fulfill their milestones through proper vaccinations (familydoctor, 2019).

Immunizations are an important part of family and public health. It prevents the spread of contagious, dangerous, and deadly diseases. These include measles, polio, mumps, chicken pox, whooping cough, diphtheria, and HPV.

The first vaccine discovered was the smallpox vaccine. Smallpox was a deadly illness. It killed 300 million to 500 million people around the world in the last century. After the vaccine was given to people, the disease was eventually erased. It's the only disease to be completely destroyed. There are now others close to that point, including polio. A vaccine (or immunization) is a way to build our body's natural immunity to a disease before we get sick. This keeps us from getting and spreading the disease.

Children not vaccinated are more likely than anyone else to catch a contagious disease. Such risk is present even in countries where the vast majority of people are vaccinated.

- 22 to 35 times more likely to have measles than children vaccinated
- 6 times more likely to have whooping cough than children vaccinated

Also, children who are not vaccinated can spread contagious diseases to others.

Depending on their age, your child is likely to receive more than one vaccine in a single visit. Vaccines administered at the same time are called "multiple injections". Only vaccines that are safe and effective when given together can be administered at the same time. This practice has several benefits, including:

- Vaccines given together protect against diseases just as effectively as when administered separately
- Children are protected earlier against a larger number of diseases
- Parents save time and avoid travel and costs related to repeated appointments
- The child experiences less vaccine-related stress because the multiple injections reduce

the number of vaccination appointments. In fact, it is proven that a child in pain after a recent immunization session is likely to be more anxious at the following session

- Symptoms that may occur after a vaccine are felt only once instead of being experienced several times

Injections for vaccinations, the most common source of iatrogenic pain in childhood, (Schechter NL, et al, 2007) are administered repeatedly to almost all Canadian children throughout infancy, childhood and adolescence (Immunization schedules, 2009). The pain associated with such injections is a source of distress for children, their parents and those administering the injections. If not addressed, this pain can lead to preprocedural anxiety in the future, needle fears and health care avoidance behaviours, including nonadherence with vaccination schedules. It is estimated that up to 25% of adults have a fear of needles, with most fears developing in childhood. About 10% of the population avoids vaccination and other needle procedures because of needle fears.

Conversely, minimizing pain during childhood vaccination can help to prevent distress, development of needle fears and subsequent health care avoidance behaviours, such as nonadherence with vaccination schedules. More positive experiences during vaccine injections also maintain and promote trust in health care providers (Taddio A et al, 2009).

The benefits of vaccination prolong beyond avoidance of specific diseases in individuals. They allow to rich, complicated produce for societies and nations. Vaccination makes good economic sense, and meets the need to care for the poor members of societies. Vaccination decreasing global child mortality rate by helping universal access to give safe vaccines of proven effectiveness is a moral responsibility for the global community as it is a human right for every individual to have the chance in live an improved and filled life.

1.4 Emotional Changes During vaccination

Children often experience impulsive and severe procedure-related pain that can be associated with negative emotional and psychological implications (Cummings EA, Reid GJ, 1996). During the vaccination pain in children with serious and chronic diseases is a major public health problem that has been increasing over the last 20 years (Cohen LL, 2008).

In American pain society challenged all health care system, to make pain the fifth vital sign that is pulse, temperature, blood pressure and respiration. Pain associated with medical procedures, they are often a source of anxiety, fear, and behavioural distress for children and their families, which can further intensify their pain and interfere with the procedure (Carr,D B, et al, 1992).

Children have numerous behavioural signs indication to presence pain, including crying,

facial lowering and twisting body movements. Older, verbal children (three years) may express their pain through parallel behaviours but can regularly supplement of behaviours with a verbal report, which is considered the primary source for pain charge. In all age groups, pain may be go together with physiological changes (e.g., increase in heart rate), but these are neither specific to pain nor clinically reasonable and therefore pain are not optional for specialist care pain in practice (Anna Taddio et al, 2010).

Children are visible to handle their various meets with health care. Most commonly, children's first exposure to needles may be when they receive routine health maintenance immunizations. Usually ill means children may require frequent treatments and blood sample for certain techniques, such as joint punctures and intra-articular corticoid injections, causing severe distress to the child. Studies have shown that hospitalized children report needle procedures as one of their most feared and painful experiences (Hart & Bossert, 1994; Kortesluoma & Nikkonen, 2004). Needle procedure-related fear may result in increased avoidance behaviour and attempts to eliminate any possible exposure to needles (Sokolowski, Giovannitti, &Boynes, 2010).

1.5 Fear of vaccination and its effects on child

The World Health Organisation (WHO) has officially named the reluctance or categorical rejection to vaccinate as one of the top ten greatest health challenges of 2019. The problem is known as **"vaccine hesitancy",** and it's a compound issue that can shoot from a whole variability of barriers, including satisfaction about health care, embarrassment in accessing vaccines and poor self-assurance in the very nature of vaccines themselves.

Vaccinations are most common source of iatrogenic pain in childhood, (Schechter NL, 2007) are administered repeatedly to almost all Canadian children throughout childhood period. The pains connected with such injections are source of distress for children, their parents and those directing the injections. If not communicated, this pain can lead to pre-procedural anxiety in the future, needle fears and health care avoidance behaviours, including no devotion with vaccination schedules National Advisory Committee on Immunization (NACI, 2009). It is assessed that up to twenty five percent of adults have a fear of needles, J Paediatr Child Health (2006) with most fears developing in childhood. Hamilton JG (1995) said around ten percent of the population are escape from vaccination and other needle actions because of needle fears. Similarly, reducing pain during childhood vaccination can help to avoid from distress, development of needle fears and ensuing health care prevention behaviours, such as no devotion with vaccination schedules. More positive experiences during vaccine injections also maintain and help belief in health care workers.

Pain is a disagreeable sensory and emotional experience associated with definite or possible tissue damage. For paediatric patient's medical procedure are often painful, unexpected and sensitive by situational stress and anxiety leading to an overall unpleasant experience. In spite of its incidence, pain in infant, children and adolescent is often under estimated.

1.6 Pain during Vaccination and its Effect on child

Pain in this account was a blockage of natural flows. It pervaded all parts of the body, and not just particular organs. This was a world away from the body-in-pain of nineteenth-century biomedicine or twenty-first-century neurology. Physiological models of the body draw attention to certain things and not others, fundamentally affecting what is *noticed* – and given meaning – and what is regarded as incidental. The physiological body is constituted by the figurative languages that bring the body into the world. Figurative languages 'disclose' our being-in-the-world.

The word pain is derived from the latin word 'poena' which means punishment, which in turn derived from the Sanskrit root 'pu' meaning purification. In international association study of pain defines, "pain is an unfriendly emotional and sensory experience associated with actual or potential tissue damage, are described in terms of such harm". Also this international association study show of pain further states that, "pain is individual. Each individual learns the submission of the word through experiences related to in early life." This definition stresses the individuality of each person's pain response and the importance of pain experiences, especially those in early life, in shaping that response. Thus, a child experience during painful medical procedures likely plays a significant role in shaping that individuals pain response to future events (Kelly D, 2005).

Unfortunately, vaccinations are the most common painful and anxiety producing procedures to take place in the outpatient health care clinic, although health care providers (HCPs) usually consider vaccinations to be a benign procedure (Megel ME, 1998) requiring little intervention (Brady K et al, 2011). Nevertheless, some children experience intense anxiety regarding vaccinations, a reaction that may result in non-adherence to the recommended vaccination schedule (Luthy KE et al, 2010,2013). Vaccination-related pain and anxiety is most often associated with a fear of needles, which continues into adulthood for about 25% of the population. Unfortunately, two out of every three adults with needle phobia are less likely to vaccinate their own children (Wright S et al,2009). Despite the fact that needle-associated pain during vaccinations is a surmountable barrier, it is still a main reason for noncompliance to the vaccination schedule (Taddio A et al, 2009, 2013). Thus, HCPs should be aware of these issues and employ techniques to reduce anxiety and pain during vaccinations, an act that may promote

adherence to the vaccination schedule.

1.7 Vaccination

Vaccination is the medical administration to protect and prevent serious illness or disease. Vaccines are a microorganism or virus in a weakened, live or killed state, or proteins or toxins from the organism. In exciting the body's adaptive immunity they help to prevent the sickness from an infectious disease. When it necessarily large percentage of a population has been vaccinated, herd immunity results. Vaccination is the most operative method to preventing infectious diseases; United States Centers for Disease Control and Prevention (2011) widespread protection due to vaccination is largely accountable for the international abolition of smallpox and the elimination of diseases such as polio and tetanus from much of the world. Vaccine must reach the desired tissue site for optimal immune response to occur. Use of longer needles has been associated with less redness or swelling than occurs with shorter needles because of the injection into deeper muscle mass. Therefore, needle selection should be based on the prescribed route, size of the individual, and injection technique.

Gender – Male	Gender – Female	Needle Length
Less than 130 pounds	Less than 130 pounds	5/8 – 1-inch
130 – 152 pounds	130 – 152 pounds	1-inch
153 – 260 pounds	153 – 200 pounds	1 – 1.5-inches
260+ pounds	200+ pounds	1.5-inches

1.7 a) Vaccination Distress and recommendations by WHO

Pain and distress at the time of vaccine injection is a common concern and contributes to vaccine hesitancy across the lifespan. Evidence-based and feasible interventions are available to mitigate pain and are part of good vaccination clinical practice. Pain has both sensory and emotional mechanisms and appearances of distress can sometimes be difficult to decide from those of pain, especially in young children (Curtis et al., 2012). Tak and Van Bon (2006) suggest that while pain is dependent upon a physical stimulus, distress may occur without any actual pain. As per distress regularly attends pain, it is important that both features receive suitable attention and are well achieved (Curtis et al., 2012).

Parents expect health providers to make vaccination less painful and want advice on how they can help. The World Health Organization recommends that vaccinators are taught pain mitigation strategies and, in turn, teach caregivers and vaccines.

To provide a calm vaccination experience

- Avoid aspiration when injecting vaccines. This reduces pain by less contact time with the needle and less chance for movement.
- Administer the most painful vaccine last, if known. More research is needed forthis recommendation.
- Encourage breastfeeding before and during vaccine injection, if this is culturally acceptable.
- Hold baby during injection (preferably by the parent/caregiver) to help soothe them. Avoid laying baby on his/her back on a bed or table.
- Give the oral RotaTeq® vaccine before the injected vaccines at the 6 week, 3 month and 5 month visits. RotaTeq® has a high sucrose content; over 25 years of research has shown that sweet solutions can provide short-term pain relief.
- Use neutral verbal cues*

  Avoid anxiety provoking language.

  Avoid excessive reassurance.

  Avoid false suggestions about pain.
- Discuss management of discomfort so caregivers can participate – encourage them to think about what may help before the appointment and bring their child's favourite toy, book, game, etc.
- Encourage an anxious parent/caregiver to use relaxation strategies for themselves, such as abdominal breathing, or engage the assistance of another family member.
- Tell a child aged 4 years or older about the vaccination process in advance. On the day sit them upright and use a 'comfort hold', not restraint.
- Provide distraction to suit the child during injection: • Deep abdominal breathing with counting, a stress ball, singing. • Book, tablet, toy. • Bubbles, held by the child during injection
- Consider the use of anesthetic cream for distressed children, if the cost is acceptable to the family (over the counter pharmacy cost varies).
- Ensure those involved are calm and prepared.

  *These strategies are strongly recommended by the World Health Organization.

1.8 Distraction techniques during vaccination

Distraction is suitable to control the pain and anxiety level in individual. Cognitive methods include systems that board negative ideation and insolences to help replace them with more positive beliefs and feelings. In change, interactive methods goal negative behaviours to help and exchange them with more positive behaviours (e.g. Funny movie, informal talking).

Distraction is a cognitive-behavioural method that can be actual in sinking pain and distress for children suffering from vaccinations. (Kleiber & Harper, 1999; Uman et al., 2013). Despite its procedure, there is no commonly the theory are explain about mechanism; but, researchers suggest its effectiveness lies in its ability to use up cognitive ability, leaving less capitals to attend to painful motivations (Koller & Goldman, 2012). Distracter to be effective, the distraction strategy must be age suitable and it must be appealing to the child according to (Wang et al. 2008). In age and developmental level of the child will control how healthy they return to the correct distraction approaches (Duff 2003).

Many healthcare workers use distraction methods to help children cope with immunization pain. Distraction directs attention away from sensations of noxious stimulation. Theoretically, distraction reduces pain by competing for the attention needed to process physical, emotional, and evaluative components of pain perception (Melzac. R, 1987). There are intuitive and theoretical reasons to use distraction to reduce pain and some evidence to validate the use of distraction with children. Distraction with talking and stories (Stark LJ et al,1989, Gonzalez JC, 1993), music (Fowler-Kerry,1987, Arts SE Abu, 1994) cartoons , imagery , kaleidoscope , breathing , blowing , and hypnosis have been used with children undergoing bone marrow aspirations and lumbar punctures , dental procedures , cold-pressor paradigm , immunizations , and venipuncture (Keri-Leigh Cassidy et al, 2002).

The function of distraction is not entirely clear, but from a classical-conditioning perspective it reduces the unconditioned and conditioned distress responses by diverting the child's attention from the unconditioned noxious stimulus (i.e., injection) and the conditioned stimuli previously paired with pain (e.g., bandages, the examining table). In addition, counter conditioning may be in effect; the intervention may introduce a stimulus that evokes behaviors incompatible with distress (e.g., a cartoon movie may produce laughter). Taking an operant approach, the distraction may reinforce non-distress behavior. Physiologically, it has been posited that distraction modifies cognitive pain perceptions by altering nociceptive responses and triggering an internal pain- suppressing system (P. A. McGrath, 1991). Successful distracting stimuli for pediatric pain have included guided imagery, books, video games, cartoons, movies, bubbles, and party blowers (Varni, Blount, Waldron, & Smith, 1995). In

addition to evaluating the efficacy of distraction on children's overall distress experience, researchers studying preschoolers and older children have stressed the importance of evaluating different procedural phases (Blount, Sturges, & Powers, 1990; Manne, Bakeman, Jacobsen, Gorfinkle, & Redd, 1994).

1.8 a) Audio- Visual methods

Audio-visual (AV) is electrical media holding both a sound and a visual element, such as slide-tape presentations, (Barman, 2014) films, television programs, corporate conferencing, church services and live theatre productions. Audio-visual service providers frequently offer web streaming, video conferencing and live broadcast services. Audiovisual distraction includes cartoon movies, nursery rhymes, musical videos, stories, songs etc.

AV distraction did not reduce immunization pain in 5-year-old children. The use of an objective distraction measure revealed that, although the AV intervention was not effective, a distraction analgesic effect was present. Distracting attention away from the needle was related to less behavioral pain in the total sample. This is the first time a relationship between decreased pain and an objective distraction measure has been reported, and provides some support for the distraction analgesia effect (Keri-Leigh Cassidy et al, 2002).

1.8 b) Visual and vocal cues

For all age groups, the immunization environment should be welcoming and relaxing. Suggestions for an ideal space include bright wall art, a comfortable chair, a selection of toys or books, and availability of a private area to administer vaccines.

During the immunization they have focused on various methods of distracting attention to minimize acute pain in a paediatric population, specially toddler and preschool children such as movies, party blowers, nonprocedural talk, interactive robots, virtual reality, bubble blowing, short stories and music. None of these options totally abolishes the pain from injections, but distraction, in general, helps moderately.

For children old adequate to communicate, pharmacists should explain the immunization procedure in a child-friendly manner. Instead of saying "I'm going to give you a shot," you should say, "I need to give you some medicine through a small needle." Avoid using words with negative connotations, such as "pain" or "itch"; in its place use softer words such as "burden" or "infolding. "Do not make any justification for administering the vaccine, because children may interpret this to mean parent/care taker have somehow aggrieved them.

1.8 c) Be ready

It also is suggested to prepare immunizations before the patient enters the room. All materials should be present in the immunization space so the vaccine can be given without any delays. Effective observation of vaccinations results in less time for the child or teenager to become upset about the booster.

The methods defined above can be used in the community immunization setting. Every child is different in how they will react to immunizations, so a variety of these techniques may need to be used. The goal is to make vaccinating younger patients less unapproachable, and a more relaxing, relaxed, and positive experience for the patient, parent or caregiver, and clinician.

1.9 Role of parents during vaccination

Parents cite a variety of reasons for not immunizing their children, among them: religious values, concerns the shots themselves could cause illness and a belief that allowing children to get sick helps them to build a stronger immune system. Parents also should comfort the child at the time of vaccination instead of losing their own emotions.

As more and more states enlarge druggists' ability to vaccinate children, young patients and their parents are coming into local pharmacists for needed immunizations. These patients may be fear to get vaccination, so while giving injection doctor should provide special care to the immunization environment and using distraction techniques during administering of immunizations to young patients could improve the experience for all challenges.

Administering vaccinations to infants can certainly be challenging, but positioning the child in the breastfeeding position may help. During the vaccination the doctor are giving the some sweet or sucrose solution to the children may be a good distraction technique, or applying a local anesthetic (e.g., lidocaine/prilocaine) to the injection site may help and minimize the pain, but the additional cost and time needed for the local anesthetic to work may not be ideal for some children during vaccination.

1.10 Factors that influence children's responses to pain.

Weisman et al. (1998) propose that pain perception results from a number of different factors that affect how a harmful stimulus is taken. These factors include age, sex, ethnicity, temperament, developmental stage and previous experience (McCarthy & Kleiber, 2006).

1.10 a) Age. Several researchers have reported that earlier children usually report greater levels of pain strength and unpleasantness from needles, and outward more distressing behaviours than

older children (Goodenough et al., 1999; Duff, 2003; Young, 2005; Blount et al., 2006; McCarthy & Kleiber, 2006).

1.10 b) Sex: Female children have been found to display more expressive responses such as Crying, and may over estimate their reports of pain (McCarthy &Kleiber, 2006). In contrast, male children use behaviours such as haggling and tend to take too lightly their pain (McCarthy &Kleiber, 2006). Goodenough et al. (1999) also suggests that girls and boys report different pain sensations.

1.10 c) Ethnicity: In young adult studies have suggested that interethnic differences in pain ratings however research describing ethnic and cultural differences among children is limited propose that children of different cultural backgrounds might respond differently in response to acute procedural pain. In addition, children's parents' behavioural expectations might differ from parents of another culture Therefore, culture and background should be careful might influence children's responses (McCarthy &Kleiber, 2006).

1.10 d) Temperament: Children who were rated by their parents as being more active, intense, or negative in mood, displayed higher levels of distress during venepuncture than children who were rated less active, intense, or negative in mood by their parents (Lee & White-Traut. 1996).

1.10 e) Developmental stage: Disparities in cognitive abilities affect the child's ability to understand, recognise, think of, and report pain and distress from a painful experience. Though, age is an associate of developmental stage, correlation is not perfect, it is important to take into consideration the developmental level of the child (Young, 2005).

1.10 f) Previous experience: Previous experience is another factor that might influence the pain experience for the child the more negative the previous experience, the greater the subsequent anxiety, distress and non-cooperation. In higher level of anxiety a child displays in a greater pain response it is the quality not quantity of past medical procedures that is a predictor of pain (Goodenough et al., 1999; Young, 2005).

1.11 Scope of the Study

For all age groups, the immunization environment should be welcoming and relaxing. For that, the care taker or the doctor has to provide comfortable space, room, chair, toys or communication and so on to have a relaxed vaccination time. Medical procedures almost always elicit a sense of loss of control, fear, helplessness, and feelings of stress and anxiety. These reactions may leads to distressing experience or feeling to an infant or child who is undergoing vaccination. Many researches carried out to distract child's mind at the time of vaccination, Mohammed Nour (2018) conducted distraction using video shown on tablet device was the best

in relieving dental anxiety and pain among 8-10 year old children than younger patients and gave the children some exciting experiences which may lead to far better behavior in the next dental visits. Baljit Kaur et al (2014) conclude that less pain and distress in children with cartoon distraction at initiation, at five minutes and at termination of administration of intravenous injection. We believe that these results can be an evidence to develop positive attitudes that will benefit both the patient and healthcare provider during vaccination procedure.

1.12 Justification

There are various distraction methods are used for diverting attention to avoid negative emotions and to enhance active participation during vaccination. Numerous studies have focused on various methods of distracting attention to minimize acute pain in a paediatric population, specially toddler and preschool children such as movies, party blowers, nonprocedural talk, interactive robots, virtual reality, goggles, bubble blowing, short stories and music. None of these options totally abolishes the pain from injections, but distraction, in general, helps moderately in preschool age and older children also. Physical interventions and vaccination techniques that minimize pain during vaccination offer an advantage over other techniques because they can be easily incorporated into clinical practice without added cost or time. Their effectiveness, however, has not previously been studied using a systematic approach. Keeping this in view current study aims to provide audio-visual distraction methods to help children to co-operate in pain, anxiety and stress and also to develop a positive attitude that will benefit both the patient and healthcare provider during vaccination procedure. Based on these following objectives were framed:

1.13 Objectives

- To know the distraction techniques used by the doctors/nurses/caretakers during vaccination
- To observe the level of child's distress during vaccination procedure based on age, gender, type of hospital, care giver, type of vaccination, needle size, type of area, number of vaccination and administration of vaccination
- To develop audio-visual distraction method for preschool aged children
- To apply audio-visual distraction method among children during vaccination
- To recognize the effect of audio-visual distraction method and observe the distress level among children based on age, gender, type of hospital, care giver, type of

vaccination, needle size, type of area, number of vaccination and administration of vaccination

1.14 Hypotheses

I. There is no significant difference observed in vaccination distress among preschool children

II. There is no significant exists in vaccination distress among preschool children in control group based on age, gender, type of hospital, care giver, type of vaccination, needle size, type of area, number of vaccination and administration of vaccination

III. There is no significant difference observed in vaccination distress in experimental group after applying audio-visual distraction method based on age, gender, type of hospital, care giver, type of vaccination, needle size, type of area, number of vaccination and administration of vaccination

2. REVIEW OF LITERATURE

A literature review is both a summary and explanation of the complete and current state of knowledge on a limited topic as found in academic book and journal article. Review of literature refers to an extension, exhaustive and systematic examination of publication relevant to the study. It makes the research familiar with the existing study and also provides information, which helps us to focus on a particular problem and lays a foundation upon which the knowledge can be based.

A review of literature pertaining to the research on **"Effect of Audio-Visual Distraction among Pre-school Children during Vaccination"** were classified and presented under the subsequent heads

2.1 Distraction

2.2. Inactive Distraction

2.3. Active Distraction

2.4. International Reviews

2.5. National Reviews

2.1 Distraction

Psychological interventions such as distraction in children have been demonstrated to be effective at reducing stress and the perception of pain during the injection process. Distraction is defined as using tactics which are intended to take the patient's attention away from the procedure. Distraction can be led by the provider, child or parent. Certain types of parental behaviors (e.g., nonprocedural talk, suggestions on how to cope, humor) have been related to decreases in children's distress and pain, whereas others (e.g., reassurances, apologies) have been related to increases in children's distress and pain. Parents should be encouraged to use distraction methods and instructed in appropriate distraction techniques. Distraction can be accomplished through a variety of techniques (e.g., playing music, books, pretending to blow away the pain, deep breathing techniques (CDC,2020).

2.2. Inactive Distraction

During inactive distraction techniques at the time of vaccination, children are necessary to observe an incentive by listening or watching something. Watching age suitable cartoons during painful procedures is an example of inactive type of distraction (Bellieni et al., 2006; Wang et al.2008).

2.3. Active Distraction

Active distraction techniques are some interaction and appointment from the child, often helped by parents and nurses. The reviewed literature exposed the following co-operating with toys that are used including: displays, distraction cards, the inflation of a balloon, and cough trick methods (Gupta et al., 2006).

2.4. International Reviews

Mohadese Babaie (2019) used distraction method in randomized clinical trial included 64 school-age children assigned into intervention and control group in Qods Hospital during 2016. Oucher face pain intensity scale was utilized to evaluate the intensity level of pain. Catheterization duration was also recorded in this study. Data were analysed in SPSS software (Version.18) through descriptive statistics, t-test, Mann-Whitney U test, and Spearman correlation analyses. The result the use of distraction methods could reduce the pain. In addition, they facilitated medical procedures. The role of variables, such as age, gender, and duration of catheterization should be considered in pain intensity.

Hanna Saila (2018) provided an overview of the fear of needles and needle phobia in children and adolescents including characteristics and diagnosis, prevalence and epidemiology, etiological factors, and treatment options. Needle-related fear and needle phobia present as significant needle-related distress and avoidance behaviour. The result concludes that by a psychiatrist is implicated in severe cases of needle-related distress. A correct diagnosis is necessary and enables referral to a psychotherapist with experience in treating children and adolescents with needle phobia. Nurses can play a pivotal role in noting the need for further treatment.

Schmidt (2014) suggested that an iPad is amazing form of distraction and fun for children. At their hospital, iPads were used for minor procedures such as venepuncture and patients were able to watch or play a familiar game that they play on their iPad at home. Further empirical research could be done to explore the use of iPads as distracters for children during venepuncture.

Canbulat et al. (2014) in a Turkish study investigated two distraction methods, both of which have been discussed above in previous work: the use of distraction cards, and a kaleidoscope; in attempt to reduce procedural pain and anxiety during phlebotomy. Children (n = 188) aged between seven and 11 years were randomised into one of three groups: a distraction card group, a kaleidoscope group, and a control group. Relevant data was collected by interviewing children and the parents prior to and after the procedure. The Wong Baker FACES pain rating scale was used by children, their parents and the observer nurse after the procedure.

The Children Fear Scale (CFS) is a validated tool used to assess anxiety, and was rated by parents and observers. According to McMurtry, Noel, Chambers and McGrath (2011) (as cited in Canbulat et al. 2014), the CFS is a 0-4 scale showing five cartoon faces that range from a neutral expression (no anxiety = 0) to a frightened face (severe anxiety = 4). Again, children in the distraction group were coached to attend to the task at hand. Questions such as "how many lady bugs are there in the picture" were asked. Children in the kaleidoscope group were not asked questions by the observer nurse. Prior to the procedure, background demographic information, medical history and use of recent analgesia was collected via self-report forms filled out by parents. Findings revealed self-reported pain was significantly lower among children in the intervention groups when compared to the control ($p = 0.05$). In terms of observer- and parent-reported pain levels, ratings of the distraction card group were significantly lower than that of the kaleidoscope group ($p = 0.001$). Procedural anxiety levels were also significantly lower in the distraction card group than the kaleidoscope and control groups ($p = 0.04$; $p < 0.001$ respectively). Overall, both techniques were effective at reducing procedural pain and anxiety.

Anna Taddio et al (2010) said use of distraction techniques by children without the aid or direction of an adult was effective. Which included three RCTs involving 241 children aged four to six years old, 74–76 concluded that child-led distraction is effective. We believe that these results can be extrapolated to children three years of age and older because of corroborating evidence from other analyses.70,71 The result that to reduce pain at the time of injection, have children three years of age and older engage in slow, deep breathing or blowing during vaccination .

Kline (2009) has reported that distraction strategies that use two senses (visual with audio) appears to be more effective in reducing pain than the use of either one alone; and content, intensity, and combinations of multisensory stimuli are important elements of distraction interventions.

Wang et al. (2008) conducted a study in the paediatric department of a hospital in China, assessed the efficacy of two different methods of pain management for venepuncture. The intervention groups included: (a) an audio-visual distraction, where children were given a choice of ten age appropriate cartoon videos; and (b) a routine psychological intervention, which involved a research nurse who provided explanations as to why the venepuncture was necessary; and also used guided imagery, therapeutic touch and encouragement during the venepuncture procedure. The results concluded thatno significant differences between the two pain

management groups. However there was a significant difference in child's cooperation between the control group and the psychological intervention group.

Neil L Schechter et al (2007) conducted a study on pain reduction during pediatric immunizations. The pain associated with immunizations is a source of anxiety and distress for the children receiving the immunization, their parents, and the providers who must administer them. Longer needles are usually associated with lees pain and less local reaction. During the injection, parental demeanour clearly affects the child's pain behaviors. Excessive parental reassurance, criticism, or apology seems to increase distress, where humour and distraction tend to decrease distress. Immunizations are stressful for many children; until new approaches are developed, systematic use of available technique can significantly reduce the burden of distress associated with these procedures.

Bellieni et al. (2006) conducted a study with children (n=69) aged between seven and 12 years who were scheduled for venepuncture for clinical purposes, at an Italian hospital. Using a computer generated sequence, children were randomly assigned into one of three groups: (1) venepuncture without distraction, control (C); (2) venepuncture performed while the child's mother interacted with them in order to distract them, active distraction (M); and (3) venepuncture performed while the child was watching an age appropriate cartoon on the television, passive distraction (TV) (Bellieni et al., 2006). Mothers of the children were present in all groups, however were asked not to do anything to distract the children for groups C and TV. Following the procedure, children used the Oucher Scale, a validated visual pain scale (Beyer, Denyes, &Villarruel, 1992) scoring from 0 (no pain) to 100 (maximum pain), to rate the pain they experienced (Bellieni et al., 2006). Mothers rated their perception of their child's pain using the same scale. The results concluded that that both mothers' and children's mean pain scores were significantly lower in the TV group than in the control group ($p = 0.045$, $p = 0.037$, respectively). Mothers' and children's mean pain scores (23.04 and 17.39 respectively) of the active distraction.

Noguchi LK (2006) revealed that the effect of music versus non- music on behavioral signs of distress and self- report of pain in pediatric injection patients. Music has been examined as a potential distraction during pediatric medical procedures. Subsequent analysis indicated that children who received more injection tended to benefit more from the music intervention, in terms of their perceived pain.

Lassetter JH (2006) found out the effectiveness of complementary therapies on the pain experience of hospitalized children. Pain is a complex phenomenon for children, and the concepts of hospitalization and pain are often linked in the minds of children. Despite best-

practice guidelines and standard related to pain management, many hospitalized children continue to have unrelieved pain. This suggests that analgesics alone do not sufficiently relieve their discomfort. Complementary therapies may have an important role in holistic pediatric pain management. This review of literature, evaluates available evidence related to the use and effectiveness of complementary therapies on the pain experience of children in hospital settings. Thirteen recent research articles relative to this topic were located and included in this review. A variety of complementary therapies, including relaxation, distraction, hypnosis, art therapies and imagery are included.

Cassidy et al (2002) evaluated the effectiveness of audio-visual distraction compared with a blank TV screen in the reduction of pain associated with intramuscular immunization. Videotapes were coded for pain behaviors and for distraction. The results depicted that watching cartoons did not distract children during needle injection nor reduce their pain. Looking at the TV screen was related to lower behavioral pain scores in the total sample.

Sjoberg I (2002) conducted a study on effect of self- selected distractors (i.e. bubbles, I Spy: super challenges book, music table, virtual reality glasses, or handheld video games) on pain, fear and distress in 50 children and adolescents with cancer, ages 5 to 18, with part access or venipuncture. Using an intervention comparison group design, participants were ramdomized to the comparison group (n=28) to receive standard care or intervention group (n=22) to receive distraction plus standard care. The result showed that distraction has the potential to reduce fear and distress during port access and venipuncture.

Lynnda M. Dahlquist (2005) conducted a study to reveal that, a distraction intervention reduce the distress of preschool children undergoing repeated chemotherapy injections. The results suggest that a developmentally appropriate, multisensory, variable – distracting activity that requires active cognitive processing and active motor responses may be a cost –effective alternative to more time – intensive parent – training programs for preschool- age children.

Sparkes L (2001) assessed whether the use of a protocol for assessing, preparing and distracting children during procedures such as annulation would decrease levels of pain and distress reported by children, parents and nurses. Pain thermometers and ‘scary faces’ were used as tools to assess pain and anxiety levels of 82 children. Nurses have a responsibility to reduce children’s pain and anxiety as much as possible and distraction is one way of doing this.

Powers K S (1999) said that allowing one or both parents during invasive procedures reduces the anxiety that parents experience while their child is in the pediatric intensive care unit; to evaluate if the parents presence helpful to the child and parent; and to determine whether this presence was harmful to the nurses or physicians. The study population consisted of the

parents of 16 children undergoing one or more procedures; Allowing parental presence during procedures decreases procedure-related anxiety.

Cohen L L (1997) used nurse coaching and cartoon distraction: an effective and practical intervention to reduce child, parent and nurse distress during immunization. The intervention consisted of children viewing a popular cartoon movie and being coached by nurses and parents to attend to the movie. Therefore, nurses coaching of children to watch cartoon movies have great potential for dissemination in pediatric setting.

According to Whaley and Wong's, schooler (1999) children easily distracted even though they have different temperaments. In order to decrease the painful experience during procedures diversional activities in the form of play, game, radio, videocassette recorder and television can be used. Cartoon movies are successful diversion for a child who is hospitalized.

2.4. National Reviews

Mohammed Nour (2018) conducted a study to evaluate the effectiveness of two different audiovisual distraction techniques, e.g. audio-visual (AV) eyeglasses – virtual reality box (VR Box) or a Tablet) in the management of anxious pediatric patients during inferior alveolar nerve block (IAN) block. This was carried out on 102 children (60 boys and 42 girls) aged between 6 and 10 years (mean age of 7.4 years) to investigate the effect of using VR eyeglasses 'VR Box' and tablet device with wireless headphone in reducing the dental anxiety of children during IAN administration. The results concluded that distraction using video shown on tablet device was the best in relieving dental anxiety and pain during IAN block. Although using 'VR Box' had no added advantage in a majority of children, 'VR Box' was more acceptable in older patients (8-10 years) than younger patients and gave the children some exciting experiences which may lead to far better behaviour in the next dental visits.

Baljit Kaur1 et al (2014) conducted a study with children of 4 to 12 years age who were undergoing intravenous injections to determine the effectiveness of "Cartoon Distraction" as a strategy to reduce the pain perception and distress. The study comprised of 30 children selected through purposive sampling method. In present study the assessment of pain and distress done in morning without cartoon distraction and in evening with cartoon distraction at initiation, at five minutes and at termination of administration of intravenous injection on FACES pain scale and on distress assessment scale respectively on day 1. While on day 2, to understand the diurnal effect of pain and distress, there was assessment of pain and distress in morning with cartoon distraction and in evening without cartoon distraction at initiation, at five minutes and at termination of administration of intravenous injection. The result concludes that less pain and

distress in children with cartoon distraction at initiation, at five minutes and at termination of administration of intravenous injection. The findings also revealed that there is no influence of gender on perception of pain but there was an inverse relation of behaviour pain response with age of the child.

Gedam D, M (2013) evaluated that the distraction techniques are important non pharmacological tools to reduce pain in infants and children. Few data are available regarding their effectiveness in toddlers. The study used a quasi-experimental three group protest post-test design. For all the three groups, the injections were administered by same staff nurse. Group- 1 (120 Patient) was encouraged to see and play with light and sound producing toy. Group- 2 (120 Patient) children were encouraged to see cartoon movie and children of control group- 3 (110 patient) were immunized without any distraction technique. A question form was used to determine the infant's characteristics and the Face, Leg, Activity, Cry, Consolability (FLACC) Pain Scale was used to assess the level of pain. The results concluded that lower pain score in response to vaccination in test group indicates that distraction technique i.e. light & sound producing toys and cartoon movies are practical way to reduce pain during routine medical interventions in toddler.

3. METHODOLOGY

The methodology of the study pertaining to the "Effect of Audio-Visual Distraction among pre-school Children during Vaccination" was presented under the following heads:

3.1 Selection of the area

3.2 Population of the study

3.3 Selection of the sample and criteria

3.4 Variables of the study

3.5 Construction of the tools

3.6 Ethical clearance

3.7 Conduct of the study

3.8 Analysis of Data

3.9 Operational Definitions

3.1 Selection of the area

Coimbatore was the area selected for the present study. It is situated in the west part of the Tamil Nadu. This city is the second largest software producer in Tamil Nadu, next to Chennai. Since the previous research has not concentrated much on audio-visual distraction among preschool children, it was observed by the researcher that because of this, sometimes parents do not get their child vaccinated or postpone the vaccination. Researcher also found very limited national reviews in this area. Hence, there is a need to develop audio-visual distraction methods and the researcher decided to attempt this type of study to find out the level of distress during vaccination to improve their distress and also to assess the effect of audio-visual distraction during vaccination to avoid distress.

3.2 Population of the study

A population is collection of individual or object known to have inter-related the characteristics and a sample is a subgroup of the population. The usual criteria used in defining population are geographical. The populations of the present study were children of preschool age i.e. 2 to 8 years from Coimbatore hospitals, clinics. The preschool age in India would be from 2-6years, however globally the Early childhood period will be considered from 0-8 years of age. Present study covers age upto 8 years.

3.3 Selection of the sample and criteria

Sampling system is more important to understand in esteem to selecting a sampling technique because it finds to variety of sampling are more effective.

Samples were selected for the present study was Purposive method. A Purposive sampling is also called judgemental sampling. It is non probability sampling method and it happens when "based on number of sample were selected by the researchers. Purposive sampling is one of the most cost-effective and time-effective sampling techniques.

The researcher has selected the samples from North Zone of Coimbatore District including rural and urban areas. Initially a pilot study with 70 samples was selected to observe the response and co-operation from parents, staff nurses and doctors. After successful completion and co-operation for the conduct of the pilot study, the investigator has sought permission from government authorities for the final conduct of the study.

3.3 (a) Criteria

Inclusion Criteria:

- Children, aged 2-8 years, scheduled to receive the standard pre-school immunizations as per the immunization schedule.
- Local residents of Coimbatore
- Both gender children
- Accepted parents and children to undergo this study

Exclusion Criteria:

- Acute concurrent illness
- Below 2 years age
- Unaccepted parents and children
- Outstation participants (other than Coimbatore)
- Inability to respond age appropriately with verbal and written answers to questions, to pain scale measures, or to questionnaires

3.4 Variables of the study

Whereas designing a research study it is very important that the researchers know the variables in the order to discover the result to remain effective and significant for the study.

There are two types of variables, when study sources are influence in relationship and clarifying the dependent and independent variable both are essential because they are initiative of the research method. An independent variable is also called an experimental or predictor variable, this variable is actuality an influenced in an experimental order to see the outcome of a dependent variable, sometime they also called a conclusion of variable.

In the present of the study the researcher aimed to assess the "Effect of Audio- Visual Distraction among Pre-School Children during Vaccination", in which the independent variables

are pre-school children (age, gender, type of hospital, type of vaccination, number of vaccination, type of area, administration of vaccination) and dependent variables are Audio-Visual Distraction method.

3.5 Construction of the tools

A self-prepared questionnaire on 'Vaccination Distress Scale' (VDS) was constructed to assess the level of distress among children during vaccination.

A self-constructed questionnaire on Vaccination Distress Scale (VDS) was used to assess the level of distraction among children. This tool consists of 20 statements in three dimensions namely Face, Behaviour and Pain which cover positive and negative statements. Positive statements are 4,7,13,16,18,19,20 and the negative statements are 1,2,3,5,6,8,9,10,11,12,14,15,17. The statement number 1 has facial expressions in which the happy face would be awarded 1 and others as 2.

The positive statements were recorded as 1,2 and negative as 2,1. The tool constructed on two pint Likert Scale i.e. Yes and No options, higher the score high distress level and lower the score low distress level. Maximum score for the tool is 40 and minimum 20.

High Distress	34-40
Moderate Distress	27-33
Low Distress	20-26

The tool was examined for validity and reliability with a sample of 500 preschool aged children at private clinics in different states and districts. The three dimensions of Vaccination Distress Scale (VDS) of 20 items exhibited good content face and construct validity with another measure of behavioural changes during vaccination. The items were analysed to estimate and report reliability Cronbach's Alpha test (0.80657795) was carried out. Split half (odd-even) correlation (0.6891891) procedures to estimate internal consistency. The obtained value indicates good agreement between the items.

This tool was assessed initially in a pilot study with a sample of 100 preschool aged children in government private clinics and divided equally for conducting experiment with one group. In the first group, the scores were recorded at the time of vaccination procedure without any distraction method and were called as 'control group'. Whereas in second group of children (experimental group) 3-D animated video was prepared and was shown to the children who is undergoing vaccination procedure with the help of 3-D glasses, meanwhile the scores were

recorded and tabulated. This audio-visual distraction method showed successful results in the pilot study and then it was used for the large sample after obtaining permission from District Health officer in Coimbatore. A total of 200 preschool children were included in the final study.

3.6 Ethical clearance

The institutional of Human Ethical Committee has permitted to convey by the research proposal No: IHEC/19-20/HD/39 based on the topic "Effect of Audio- Visual Distraction among Pre-School Children during Vaccination" which was given by the investigator. The approval number for the same is **AUW/ IHEC/HD-19-20/XPD/39.**

3.7 Conduct of the study

The study was conducted among preschool children from government and private clinics of Coimbatore through **Quasi-experimental research.** The prefix *quasi* means "resembling." Thus quasi-experimental research is research that resembles experimental research but is not true experimental research. Although the independent variable is manipulated, participants are not randomly assigned to conditions or orders of conditions (Cook & Campbell, 1979). Because the independent variable is manipulated before the dependent variable is measured, quasi-experimental research eliminates the directionality problem. But because participants are not randomly assigned—making it likely that there are other differences between conditions—quasi-experimental research does not eliminate the problem of confounding variables. In terms of internal validity, therefore, quasi-experiments are generally somewhere between correlational studies and true experiments.

Quasi-experiments are most likely to be conducted in field settings in which random assignment is difficult or impossible. They are often conducted to evaluate the effectiveness of a treatment-perhaps a type of psychotherapy or an educational intervention. In present study the samples were categorised under control and experimental group, in which control group was not given intervention where as in experimental group the distraction techniques was applied to check the effectiveness of intervention (Cook, T. D., et al, 1979).

An assurance of confidentiality was given to the parents of selected children to collect required information for the present study. Before conduct of the study, the aim of the research was clearly explained to the hospital authorities, doctors, nurses and parents then after obtaining their willingness to participate; in the research the children were observed their behavioural changes, distress level at the time of vaccination. The study was conducted in three phases.

Phase-I: The researcher identifies the types of distraction methods used by doctors/nurses/caretakers at the time of vaccination and also observed the children's distress level during the vaccination and were recorded. This group of children were named as Control group as these children were not subjected to any distraction techniques.

Phase-II: Developing audio-visual distraction method for children which contains 3-4 minutes of 3D video and this would be shown to the children who undergoing vaccination with the help of 3D glasses.

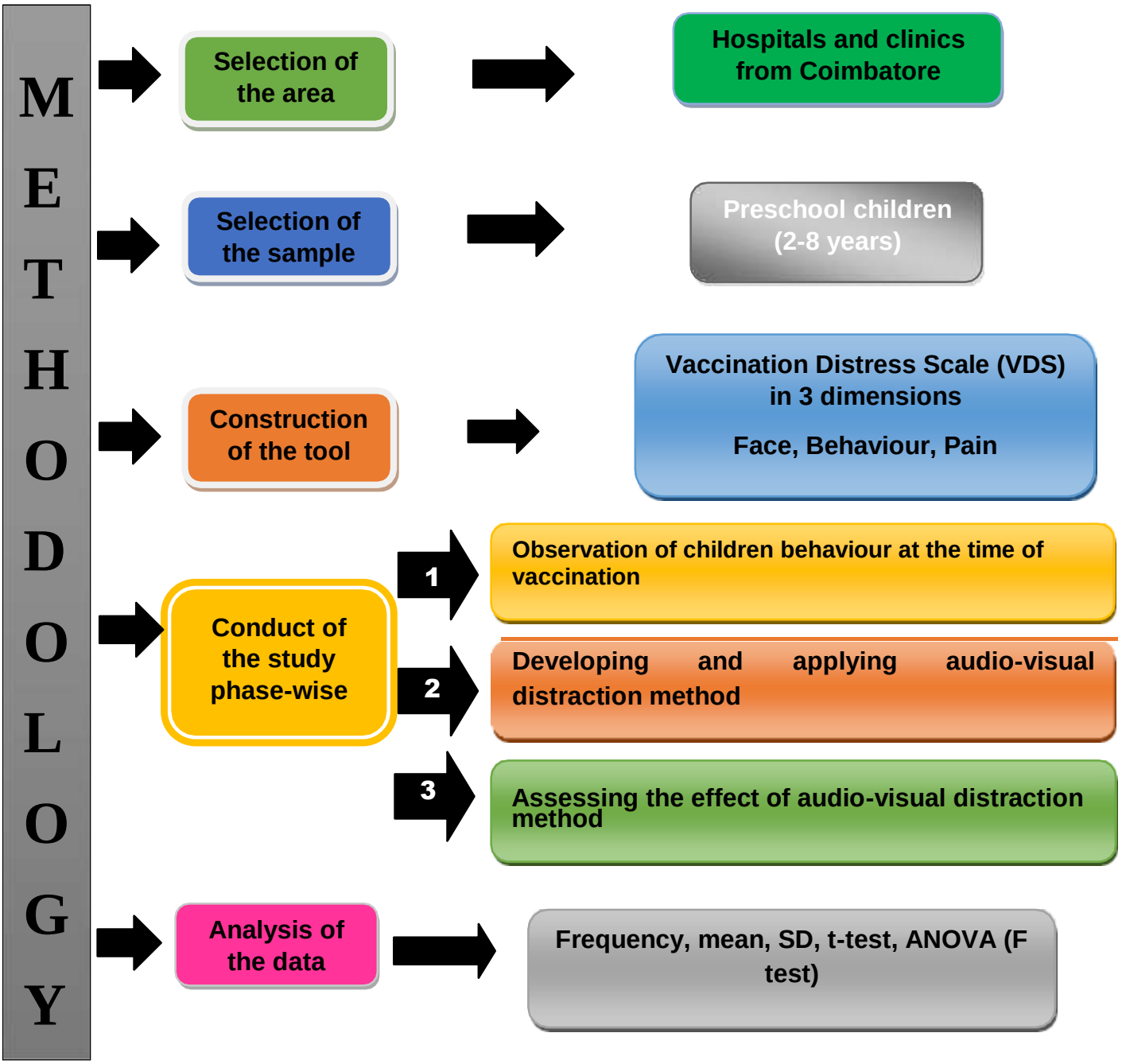
Phase-III: In Experimental group, the child along with caregiver was taken to immunization room. During the vaccination procedure, the parents/caretakers of preschool child were allowed to calm their child by touching and talking to them, but not to do anything that would distract the infant's attention (giving toys, showing any mobiles/pictures, clapping, etc.). The selected samples were given intervention with audio-visual distraction method with the help of 3D video and 3D glasses. The videos were played at the time of vaccination procedure and children were encouraged to watch the video with 3D glasses. This method would be developed to distract their mind against vaccination and the behaviour responses were recorded.

3.8 Analysis of Data

Data analysis is the process of scientifically spread on statistical and rational techniques to label, summarize, outline and also to assess the data. For the present study, following proper statistical techniques are used-

- Frequency
- Mean
- Standard Deviation
- T-test
- ANOVA(F- test)

METHODOLOGY AT GLANCE



3.9 Operational Definitions

3.9 (a) Distraction

Distraction is the process of diverting the attention of an individual or group from a desired area of focus and thereby blocking or diminishing the reception of desired information.

3.9 (b) Vaccination Distress

It is a response to vaccination stress encompasses a range of signs and symptoms which include anxiety, fear, involves a combination of physiological (biological) factors occurring within individuals interacting within their own psychological strengths at the time of vaccination. Psychological factors include an individual's temperament (personality), ability to understand and reason, preparedness for the immunization event, and underlying anxiety which is influenced by previous experience. These all may affect the perception of pain symptoms following the injection of a vaccine.

3.9 (c) Audio-visual distractions

Audio-visual distraction includes music, audio effects and may be played through story on television/ projector/laptop etc. this can be viewed through 3D glasses for effective vision and virtual reality, this acts as a distraction technique at the time of vaccination/ dental procedure/ operations or any medical treatments. Usually used for children under the age group of 10.

3.9 (d) Quasi-experimental research

The prefix *quasi* means "resembling." Thus quasi-experimental research is research that resembles experimental research but is not true experimental research. Although the independent variable is manipulated, participants are not randomly assigned to conditions or orders of conditions (Cook & Campbell, 1979). Because the independent variable is manipulated before the dependent variable is measured, quasi-experimental research eliminates the directionality problem. But because participants are not randomly assigned—making it likely that there are other differences between conditions—quasi-experimental research does not eliminate the problem of confounding variables. In terms of internal validity, therefore, quasi-experiments are generally somewhere between correlational studies and true experiments.

Quasi-experiments are most likely to be conducted in field settings in which random assignment is difficult or impossible. They are often conducted to evaluate the effectiveness of a treatment-perhaps a type of psychotherapy or an educational intervention. In present study the samples were categorised under control and experimental group, in which control group was not given intervention where as in experimental group the distraction techniques was applied to check the effectiveness of intervention.

4. RESULTS AND DISCUSSION

This chapter presents the findings of the study entitled "Effect of audio visual distraction among preschool children during vaccination". The analysed data and corresponding discussions were given in the subsequent headings.

4.A Descriptive statistics for all variables

4.B Level of vaccination distress among preschool children

4.C Level of vaccination distress among preschool children and their mean, SD, t/F values

4.A Descriptive statistics for all variables

Collecting and analysing the background information of the selected respondents is an important task in every research. General information of the respondents comprises their age, gender, type of hospital, care giver, type of vaccination, needle size, number of vaccine given, type of area and administration of vaccination were categorized and findings were discussed under the following subheads in control and experimental group.

Table 1- Descriptive statistics for all variables

Sl. No.	Variables	Frequency		Percentage (%)
Control Group				
1	**Age**	2-4 years	37	37.0
		4-8 years	63	63.0
		Total	100	100.0
Experimental Group				
	Age	2-4 years	45	45.0
		4-8 years	55	55.0
		Total	100	100.0
Control Group				
2	**Gender**	Male	51	51.0
		Female	49	49.0
		Total	100	100.0
Experimental Group				
	Gender	Male	54	54.0
		Female	46	46.0
		Total	100	100.0

Control Group				
3	**Type of hospital**	Government	63	63.0
		Private	22	22.0
		Clinic	15	15.0
		Total	100	100.0
Experimental Group				
	Type of hospital	Government	46	46.0
		Private	25	25.0
		Clinic	29	29.0
		Total	100	100.0
Control Group				
4	**Caregiver**	Primary	74	74.0
		Secondary	26	26.0
		Total	100	100.0
Experimental Group				
	Caregiver	Primary	74	74.0
		Secondary	26	26.0
		Total	100	100.0
Control Group				
5	**Type of Vaccination**	DPT	51	51.0
		MMR	21	21.0
		Flue	16	16.0
		Varicella	06	6.0
		Biovac A	06	6.0
		Total	100	100.0
Experimental Group				
	Type of Vaccination	DPT	32	32.0
		MMR	22	22.0
		Flue	13	13.0
		Varicella	16	16.0
		Biovac A	17	17.0
		Total	100	100.0

Control Group				
6	**Needle size**	24 number	32	32.0
		25 number	21	21.0
		26 number	47	47.0
		Total	100	100.0
Experimental Group				
	Needle size	24 number	29	29.0
		25 number	35	35.0
		26 number	36	36.0
		Total	100	100.0
Control Group				
7	**Number of Vaccination**	1	69	69.0
		2	31	31.0
		Total	100	100.0
Experimental Group				
	Number of Vaccination	1	68	68.0
		2	32	32.0
		Total	100	100.0
Control Group				
8	**Type of Area**	Rural	11	11.0
		Urban	49	49.0
		Semi-urban	40	40.0
		Total	100	100.0
Experimental Group				
	Type of Area	Rural	32	32.0
		Urban	32	30.0
		Semi-urban	36	36.0
		Total	100	100.0
Control Group				
9	**Administration of vaccination**	Intra muscular	75	75.0
		Subcutaneous	25	25.0

		Total	100	100.0
Experimental Group				
	Administration of vaccination	Intra muscular	64	64.0
		Subcutaneous	36	36.0
		Total	100	100.0

The general profile of the selected respondents is one of the primary criteria of every research study. It was depicted in terms of their age, gender, type of hospital, care giver, type of vaccination, needle size, number of vaccination given, type of area and administration of vaccination.

In control group, majority of preschool children i.e. 63.0% are from 4-8 years age group, the rest 37.0% are from 2-4 years age group.

In experimental group, majority of preschool children i.e. 55.0% are from 4-8 years age group, the rest 45.0% are from 2-4 years age group.

In control group, with respect to gender 51.0% of them were male and 49.0% were female. Here, the male children had the highest representation than female.

In experimental group, 54.0% of them were male and 46.0 % were female. Here, also the male children had the highest representation than female.

In control group, with respect to type of hospital, majority of selected respondent's i.e. 63.0% are from government hospital, 22.0% are from private hospital and the rest 15.0% are from clinic.

In experimental group, majority of selected respondent's i.e. 46.0% are from government hospital, 25.0% are from private hospital and the rest 29.0% are from clinic.

In control group as well as in experimental group, with respect to caregiver, majority of the selected respondent's came with (74.0%) their primary caregiver and the rest 26.0% came with secondary caregiver.

In control group, in case of type of vaccination, majority of the selected respondent's i.e. 51.0% are given DPT , 21.0% are given MMR, 16.0% are given Flue vaccination, and 6.0% of respondents provided with Varicella and Biovac-A vaccination.

In experimental group, majority of the selected respondent's i.e. 32.0% are given DPT vaccination, 22.0% are given MMR vaccination, 17.0% are given biovac-A vaccination, 16.0% are given Varicella vaccination, and the rest 13.0 % are given flue vaccination,

In control group, in case of needle size, majority of selected respondent's i.e. 47.0% are vaccinated by 26 number needle size and the rest (32.0%) were given from 24 number needle size, 21.0% were given from 25 number of needle size.

In experimental group, majority of selected respondent's i.e. 36.0% are vaccinated by 26 number needle size and the rest (36.0%) were given from 25 number needle size, 28.0% were given from 24 number of needle size.

In control group, with respect to number of vaccination, majority of selected respondent's i.e. 69.0% are administered one vaccination and the rest 31.0% are given two vaccinations at a time.

In experimental group, majority of selected respondent's i.e. 68.0% are given one vaccination and the rest 32.0% are administered two vaccinations at a time.

In control group, regarding the type of area, majority of the selected respondent's i.e. 49.0% are from urban area, 40.0% are from semi urban area, and the rest 11.0% are from rural area.

In experimental group, majority of the selected respondent's i.e. 36.0% are from semi urban area and equal numbers of respondents are from (32.0%) rural area as well as urban area.

In control group, with respect to administration of vaccination, majority of selected respondent's i.e. 75.0% are given Intra muscular vaccination and the rest 25.0% are given from subcutaneous mass.

In experimental group, majority of selected respondent's i.e. 64.0% are given Intra muscular and the rest 36.0% are given from subcutaneous mass.

4.B Level of vaccination distress among preschool children in control and Experimental group.

Vaccination distress levels were categorised in control and experimental group irrespective of variable. Following figure-1 and figure-2 shows the distress levels among preschool children.

Figure-1 Level of vaccination distress among preschool children in Control Group

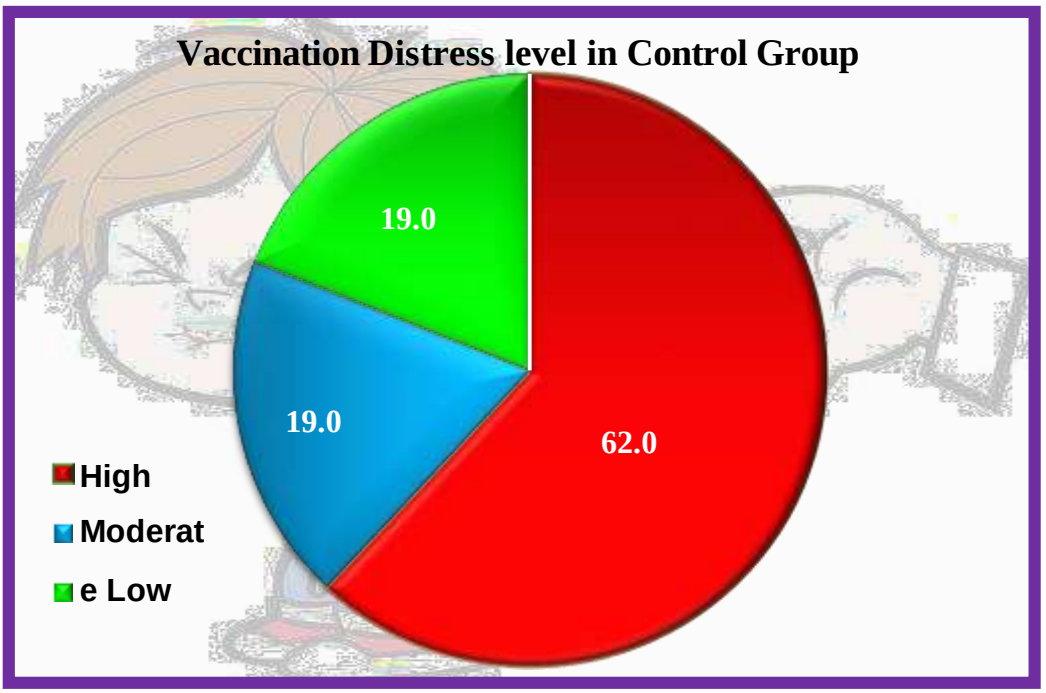


Figure-1 represents level of vaccination distress among preschool children in control group. In this, majority of children are having high distress level (62.0%), at the time of vaccination procedure, and the rest 19.0% are having moderate as well as low distress level during vaccination procedure. This clearly indicates majority of preschool children are under high distress level during vaccination. Thus hypothesis 1 is rejected.

Figure-2 Level of vaccination distress among preschool children in Experimental Group

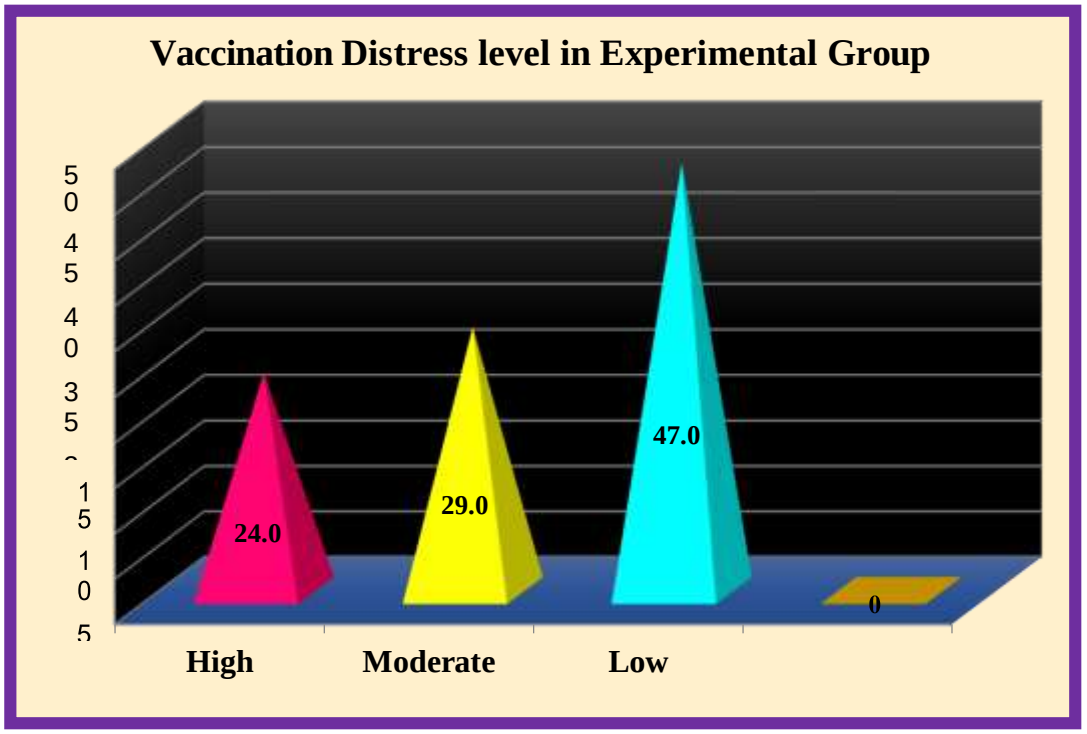


Figure-2 shows level of vaccination distress among preschool children in Experimental group. From this, it was observed that, the majority of children are having low distress (47.0%) after applying audio-visual distraction technique at the time of vaccination, 29.0% are having moderate and only 24.0% are having high distress levels. This results shows that audio-visual distraction techniques for children at the time of vaccination has an effective response. Thus hypothesis 1 is rejected.

Psychological distraction, a form of attentional deployment, diverts the attention away from an emotional stimulus and toward other content (Sheppes, Scheibe, Suri, & Gross, 2011). Research has shown that distraction may be a useful tool for clinicians who work with a variety of pain problems (Malloy & Milling, 2010) and is effective in reducing experiences of unpleasantness in adults by enhancing the processing of emotions (Webb, Miles, & Sheeran, 2012).

4.C Level of vaccination distress among preschool children and their mean, SD, t/F values

The vaccination distress level among preschool children in control and experimental group were depicted in following tables based on age, gender, type of hospital, care giver, type of vaccination, needle size, number of vaccination, type of area and administration of vaccination**.**

Table 2 Level of vaccination distress among preschool children based on age

Control Group							
Sl. No	**Age**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	2-4 years (37)	27	64.8	10	27.0	0	0
2	4-8 years (63)	35	55.5	9	14.2	19	30.0
Experimental Group							
Sl. No	**Age**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	2-4 years (45)	11	24.4	17	37.7	17	37.7
2	4-8 years (55)	13	23.6	12	21.8	30	54.5

Table-2 describes level of vaccination distress among preschool children based on age.

From the above results, in control group the majority of 2-4 years children have high distress i.e. 64.8% and the rest 27.0% felt moderate score and no one found in low distress levels.

With respect to 4-8 years age group, majority i.e. 55.5% are having high distress levels, 14.28% experienced moderate and the rest 30.0% having low distress level during vaccination procedure.

This concludes, 2-4 years children having high distress levels during vaccination compared to 4-8years age group children.

In Experimental group, majority of 2-4 years children showed low as well as moderate distress i.e. 37.7% and the rest 24.4% showed high distress at the time of vaccination procedure.

In case of 4-8 years, majority i.e. 54.5% are having low distress, 21.8% exhibited moderate and the rest 23.6% showed high distress at the time of vaccination procedure.

From this it was observed that 4-8 year age group children showed better improvements than 2-4 years in distress levels after audio-visual distraction technique. This result predicted that in experimental group, use of audio-visual distraction techniques showed better performance in reducing the children distress levels during vaccination.

Table-3 Mean, SD and t-values of vaccination distress among preschool children based on age

Control Group				
Sl. No	**Age**	**Mean**	**SD**	**t-value**
1	2-4 years (37)	34.162	3.4521	t=2.234 p=.028*
2	4-8 years (63)	32.111	4.9125	
Experimental Group				
1	2-4 years (45)	29.73	5.297	t=.447 p=.656 NS
2	4-8 years (55)	29.27	4.975	

***Significant at .05 % level, NS-Not significant**

Table-3Shows mean, SD and t-values of vaccination distress among preschool children based on age.

In control group, it was observed that, the mean and SD values of 2-4 years children were 34.162 and 3.4521, in case of 4-8 years it was 32.111 and 4.9125 respectively. The obtained t value was 2.234 and p value .028 which is significant at .05 percent level.

This showed that 2-4 years age preschool children predicted high distress compared to 4-8 years age group children. Thus hypothesis-2 would be rejected.

Driely Barreiros, Daniela Silva Barroso de Oliveira (2018) study evaluated children aged between 4 and 10 years. This was due to the fact that children at this age exhibit the most negative behavior during dental procedures and are difficult to control (Prabhakar et al, 2007). Also, the children in this age group are mature enough to interact with the AD technique, while those under 4 years are in infancy and early childhood and might not have the attention for AD techniques. On the other hand, children over 10 years old are not interested in children's movies, because they are in late childhood and in adolescence.

In experimental group, the observed mean and SD values of 2-4 years children was 29.73 and 5.29, in case of 4-8 years it was 29.27 and 4.97 respectively. The obtained t value was .447 and p value .656 which is not significant. In this result we do not find any significant difference in their distress level at the time of vaccination even after providing audio-visual distraction technique. Thus hypothesis-3 could be accepted in this case.

This results contradictory to the study of Mohammed Nour (2018) who experimented with effectiveness of two different audio visual distraction techniques, e.g. audio-visual (AV) eyeglasses – virtual reality box (VR Box) or a Tablet) in the management of anxious paediatric patients during inferior alveolar nerve block (IAN) block. This was carried out on 102 children (60 boys and 42 girls) aged between 6 and 10 years (mean age of 7.4 years) to investigate the effect of using VR eyeglasses 'VR Box' and tablet device with wireless headphone in reducing the dental anxiety of children during IAN administration. The results concluded that distraction using video shown on tablet device was the best in relieving dental anxiety and pain during IAN block. Although using 'VR Box' had no added advantage in a majority of children, 'VR Box' was more acceptable in older patients (8-10 years) than younger patients and gave the children some exciting experiences which may lead to far better behaviour in the next dental visits.

In another study said that education seems to be effective in reducing procedure anxiety in older children but seems to have a negative effect on younger children's anxiety (Copanitsanou & Valkeapa¨ a¨ , 2014). Older children and adolescents have stronger rational defences, making it possible for the child to think through and rationalize the procedure (Willemsen et al., 2002).

Table-4 Level of vaccination distress among preschool children based on gender

Control group							
Sl. No	**Gender**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	Male (51)	31	60.7	6	11.7	14	27.4

2	Female (49)	31	63.2	13	26.5	5	10.2
Experimental Group							
Sl. No	**Gender**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	Male (54)	15	27.7	9	16.6	30	55.5
2	Female (46)	9	19.5	20	43.4	17	36.9

Table-4 Shows level of vaccination distress among preschool children based on gender.

In control group, it was observed that among male children, majority are (60.78%) having high distress level, 11.76% had moderate and the rest 27.45% showed low distress during vaccination.

In case of female children, majority i.e. 63.2% predicted high distress, 26.5% had moderate and the rest 10.2% are under low distress at the time of vaccination procedure.

In experimental group, majority of male children i.e. 55.5% showed low distress, 16.6% having moderate and the rest 27.7% predicted high distress at the time of vaccination after applying audio-visual distraction.

In case of female children, majority i.e. 43.4% had moderate, 36.9% showed low and the rest 19.5% are under high distress.

In experimental group after showing audio-visual distraction technique, male children showed less distress compared to female children.

Female children have been found to display more expressive responses such as crying, and may over estimate their reports of pain (McCarthy & Kleiber, 2006). In contrast, male children use behaviours such as bargaining and tend to underestimate their pain (McCarthy & Kleiber, 2006). Goodenough et al. (1999) also suggests that girls and boys report different pain sensations.

Table-5 Mean, SD and t-values of vaccination distress among preschool children based on gender

Control group				
Sl. No	**Gender**	**Mean**	**SD**	**t-value**
1	Male (51)	32.45	4.851	t=0.945

2	Female (49)	33.30	4.154	p=.347NS
Experimental Group				
1	Male (54)	29.74	5.630	t=.552 p= .582NS
2	Female (46)	29.17	4.44	

NS-Not significant

Table-5 shows mean, SD and t-values of vaccination distress among preschool children based on gender.

In control group, among male children, the observed mean and SD values are 32.45 and 4.851, in case of female it was 33.30 and 4.154 respectively. The obtained t value was o.945 and p value .347 which is not significant. Thus hypothesis-2 would be accepted.

In experimental group, it was observed that, the mean and SD values of male children were 29.74 and 5.630, whereas for female it was 29.17 and 4.44 respectively. The obtained t value was .552 and p value .582 which is not significant. This proved that even after applying audio-visual distraction method during vaccination procedure, the distress level did not predict ant significant difference in gender. But comparatively female children were better in distress levels than male children. Thus hypothesis-3 could be accepted.

Table-6 Level of vaccination distress among preschool children based on type of hospital

Control group							
Sl. No	**Type of hospital**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	Government (63)	35	55.5	12	19.0	16	25.3
2	Private (22)	19	86.3	03	13.6	0	0.0
3	Clinic (15)	08	53.3	04	26.6	03	20.0
Experimental Group							
Sl. No	**Type of hospital**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	Government(46)	03	6.5	09	19.5	34	73.9
2	Private(25)	16	64.0	03	12.0	06	24.0
3	Clinic(29)	05	17.2	17	58.6	07	24.1

Table-6 Shows the level of vaccination distress among preschool children based on type of hospital.

From the above results, in control group it was observed that among government hospital children, majority i.e. 55.5% had high distress, and 19.0% showed moderate and the rest 25.3% predicted low distress level.

In case of private hospital, majority i.e. 86.3% showed high distress, 13.6% had under moderate distress level and no one was in low distress.

With respect to clinics, majority i.e. 53.3% proved high distress, 26.6% were moderate and the rest 20.0% gave low distress response during vaccination.

In experimental group, it was observed that majority of government hospital children (73.9%) exhibited low distress, and 19.5% showed moderate and the rest 6.5% had high distress level after undergoing audio-visual distraction technique at the time of vaccination procedure.

In case of private hospital, majority i.e. 64.0% had high distress, 24.0% showed low and the rest 12.0% predicted moderate distress.

With respect to clinics, majority i.e. 58.6% had moderate distress, 24.1% performed low and the rest 17.2% had high distress level after undergoing audio-visual distraction technique at the time of vaccination procedure.

In experimental group it was understood that government hospital preschool children who underwent vaccination with audio-visual distraction improved in distress level compared to their counterparts.

Table-7 Mean, SD and F Value of vaccination distress among preschool children based on type of hospital

Control group				
Sl. No	**Hospital**	**Mean**	**SD**	**F Value**
1	Government (63)	32.17	4.784	F=4.769 p=.000**
2	Private (22)	35.00	1.825	
3	Clinic (15)	32.66	5.367	
Experimental Group				
1	Government (46)	26.84	4.016	F=.29.038
2	Private (25)	34.56	4.8311	

3	Clinic (29)	29.27	3.4110	p=.000**

**** Significant at .01% level**

Table-7 represents mean, SD and F Values of vaccination distress among preschool children based on type of hospital.

In control group, the observed mean and SD values of government hospital were 32.7 and 4.784, whereas in private hospital children it was 35.00 and 1.825 respectively. In case of clinics, the observed mean was 32.66 and SD 5.367. The obtained F value was 4.769 and p value .000 which is significant at .01% level.

This represents that the mean value among children who got vaccinated in private hospital without distraction technique was higher and their distress level was high compared to children of government and clinics. Thus hypothesis-2 can be rejected.

In experimental group, the observed mean and SD value of government hospital children were 26.84 and 4.016 respectively. In case of private hospital it was 34.56 and 4.8311. With respect to clinic, the observed mean was 29.27and SD 3.4110. The obtained F value was 29.038 and p value .000 which is highly significant .01% level.

Fig-3 Vaccination distress among preschool children based on type of hospital

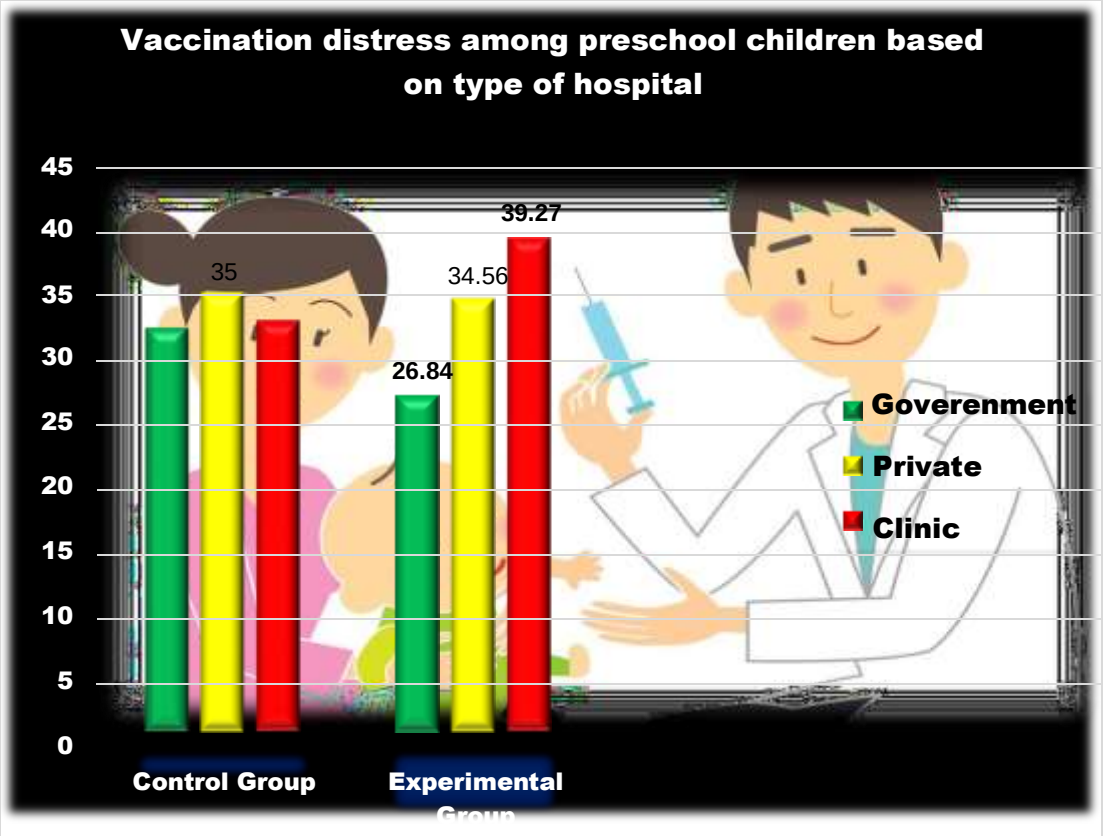


Figure-3 and results from this proved that, the mean value among children who got vaccinated in government hospital with audio-visual distraction facilities provided was lower

and their distress level was low compared to the children of private hospital and clinics. Thus hypothesis-3 could be rejected.

Table-8 Level of vaccination distress among preschool children based on care giver

Control group							
Sl. No	**Care Giver**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	Primary (74)	48	64.8	08	10.8	18	24.3
2	Secondary (26)	14	18.9	11	14.8	01	1.35
Experimental Group							
Sl. No	**Care Giver**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	Primary (74)	22	29.7	16	21.6	36	48.6
2	Secondary (26)	02	7.6	13	50.0	11	42.3

Table-8 Shows level of vaccination distress among preschool children based on care giver.

In control group, it was observed that among primary care giver, majority of children (64.8%) showed high distress, 10.8% had moderate and the rest 24.3% are reported low distress during vaccination procedure.

In case of secondary care giver, majority i.e. 18.9% had high distress, 14.8% under moderate and the rest 1.35% are under low distress at the time of vaccination. This concludes children who accompanied with primary care giver are showing higher distress level compared to children with secondary care giver.

In experimental group, it was observed that majority of children who came with primary care takers showed low distress with audio-visual distraction method during vaccination, 21.6% had moderate and the rest 29.7% had high distress even after the distraction technique.

In case of secondary care giver, majority i.e. 50.0% of children showed moderate distress, 42.3% reported low and only 7.69% had high distress levels during vaccination. This concludes that children who accompanied to hospital with secondary care giver are showing moderate distress level followed by primary care giver with low distress levels. Hence audio-visual distraction proved that it is an effective measure in reducing children distress levels when undergone along with care givers.

Cavender et al. (2004) demonstrated that children who were positioned on the parent's laps during venepuncture demonstrated significantly less fear than children who were not sitting on their parents laps. Additionally, a reduction in self reported pain and observed behavioural distress was also evident among the children who were positioned on their parent's laps.

Table-9 Mean, SD and t-values of vaccination distress among preschool children based on care giver

Control group				
Sl. No	**Care Giver**	**Mean**	**SD**	**t-value**
1	Primary (74)	33.00	5.028	t=0.483
2	Secondary(26)	32.50	2.626	p=.630NS
Experimental Group				
1	Primary (74)	29.58	5.79	t=.333
2	Secondary (26)	29.19	2.20	p=.740

NS Not Significant

Table-9 Mean, SD and t-values of vaccination distress among preschool children based on care giver.

From control group it was observed that, the mean and SD values of children of primary care giver were 33.00 and 5.028, in case of secondary care giver it was 32.50 and 2.626 respectively. The obtained t value was .483 and p value .630 which is not significant.

From this result, it was concluded that there is no significant difference observed among children's vaccination distress levels based on care givers. Thus hypothesis-2 could be accepted.

From experimental group, the observed mean and SD values of children of primary care giver was 29.58and 5.79, in case of secondary care giver it was 29.19 and 2.20 respectively. The obtained t value was .333 and p value .740 which is not significant even after provided audio-visual distraction technique. But comparatively the distress levels reduced than control group with no significant difference. Thus hypothesis-3 could be accepted.

Training children in coping skills, without the inclusion of adult coaching, seems to be insufficient (Cohen, Bernard, Greco, & McClellan, 2002). The additional use of coping strategies by mothers seems to reduce the level of needle-related distress in children (Coyne, 2006). Over half of parents and children have considered taking control to be the optimum coping strategy (Ayers, Muller, Mahoney, & Seddon, 2011). Although children have reported perceiving parents

as worried when they reassure, parents tend to feel more comfortable providing reassurance than distraction, making both themselves and the child feel better (McMurtry, 2013).

Audiovisual distraction would be effective, however, given that parents want to be present and take part in their children's care, they are well suited to implementing and encouraging such strategies (Piira et al., 2002).

Table-10 Level of vaccination distress among preschool children based on type of vaccination

Control group							
Sl. No	**Type of Vaccination**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	DPT (51)	42	82.3	09	17.6	0	0
2	MMR (21)	11	52.3	02	9.52	08	38.0
3	Flue (16)	09	56.2	02	12.5	05	31.2
4	Varicella (6)	0	0	06	100.0	0	0
5	Biovac A (6)	0	0	0	0	06	100
Experimental Group							
Sl. No	**Type of Vaccination**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	DPT (32)	06	16.6	09	25.0	17	47.2
2	MMR (22)	09	40.9	03	13.6	10	45.4
3	Flue (13)	03	23.0	07	53.8	03	23.0
4	Varicella (16)	03	18.7	05	31.2	08	50.0
5	Biovac A (17)	03	18.7	05	31.2	09	52.9

Table-10 represents the level of vaccination distress among preschool children based on type of vaccination.

In control group it was observed that majority of children (82.3%) who received DPT vaccination reported high distress and the rest 17.6% showed moderate distress level during vaccination.

In case of children who received MMR vaccination, majority i.e. 52.3% had high distress, 13.6% moderate and the rest 38.0% proved low distress level.

With respect to children who received flue vaccination, majority i.e.56.2 % showed high distress, 12.5% had moderate and the rest 31.2% reported low distress level.

In case of children who received Varicella vaccination all respondents (100%) underwent moderate distress whereas in case of children who received Biovae A vaccination (100.0%) reported low distress level.

In experimental group it was observed that, majority of children who received DPT vaccination (47.2%) reported low distress during vaccination, 25.0% had moderate and rest 16.6% are under high distress level.

In case of children who received MMR vaccination, majority i.e. 45.4% showed low distress, 40.9% had high and the rest 13.6% are under moderate distress level duringvaccination.

With respect to children who receive flue vaccination, majority i.e. 53.8% had moderate distress, 23.0% showed low and the rest 23.0% are under high distress level.

In case of children who received Varicella vaccination, majority i.e. 50.0% reported low distress, 31.2% had moderate and the rest 18.7% under high distress level after applying audio-visual distraction method.

Also, In case of children who received Biovae A vaccination, majority i.e. 52.9% proved low distress, 31.2% had moderate and only 18.7% under high distress level at the time of vaccination procedure with audio-visual distraction technique.

Table-11 Mean, SD and F Value of vaccination distress among preschool children based on type of vaccination

Control group				
Sl. No	**Type of Vaccination**	**Mean**	**SD**	**F Value**
1	DPT (51)	35.156	2.715	F=6.975 p=.000**
2	MMR (21)	31.333	5.043	
3	Flue (16)	31.500	5.403	
4	Varicella (6)	29.333	.8165	
5	Biovac A (6)	26.000	.0000	
Experimental Group				
1	DPT (32)	28.34	4.209	F=.964 p=.444 **NS**
2	MMR (22)	30.63	7.352	
3	Flue (13)	31.38	3.948	

4	Varicella (16)	28.93	3.889	
5	Biovac A (16)	29.25	4.8511	

****Significant at .01% level, NS-Not significant**

Table-11 depicts the mean, SD and F Values of vaccination distress among preschool children based on type of vaccination.

Figure-4 Vaccination distress among preschool children based on type of vaccination

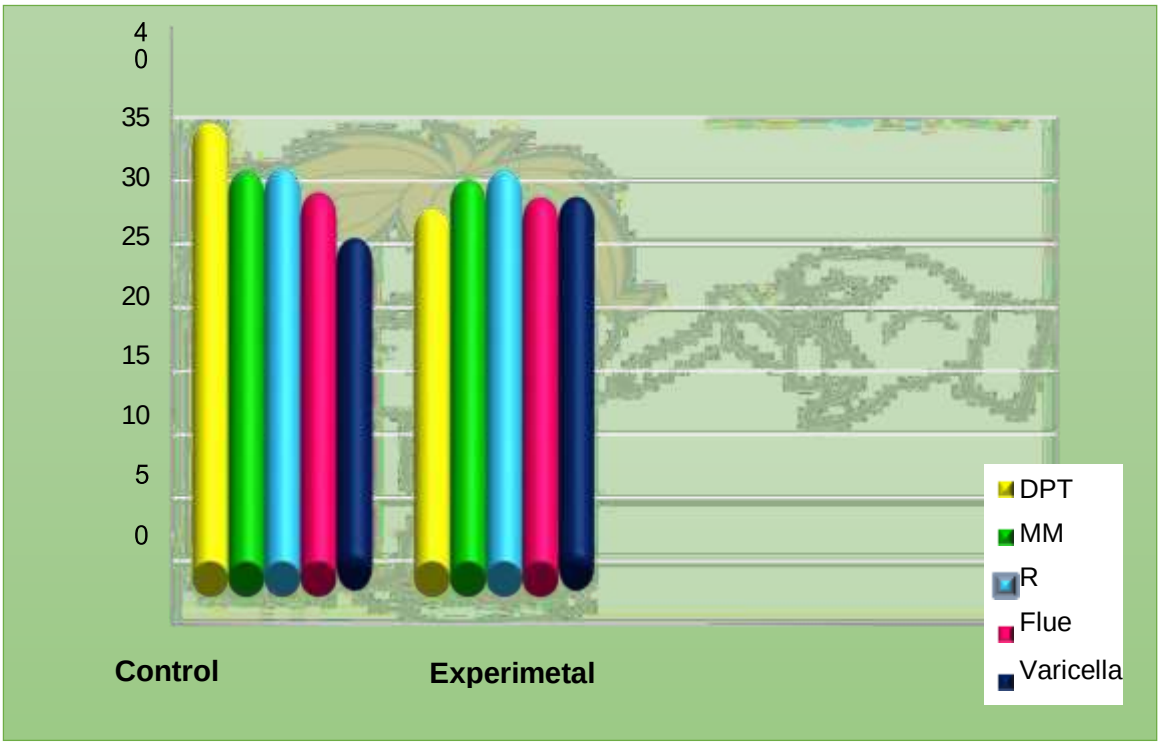


Figure-4 sows the level of vaccination distress among preschoolers based on type of vaccination.

From the tabl-11, In control group, the observed mean and SD value of children who received DPT vaccination were 35.156 and 2.715 respectively. In case of MMR vaccination it was 31.333 and 5.043 respectively. With respect to flue vaccination, the observed mean was 31.500 and SD 5.403, whereas in case of Varicella vaccination, the obtained mean was 29.333and SD value .8165. In case of children who received biovac A vaccination, the obtained mean was 26.000and SD value .0000 The calculated F value was 6.975 and p value .000 which is significant at .01% level. This concludes that children who received DPT vaccination reported high distress levels followed by flue and MMR vaccination. Thus hypothesis-2 could be rejected as we find significant difference in their level of distress with respect to type of vaccination.

In experimental group, the observed mean and SD value of children who received DPT vaccination were 28.34 and 4.209 respectively. In case of children who received MMR

vaccination, the obtained mean was 30.63 and SD value 7.352. With respect to flue vaccination mean was 31.38 and SD value 3.948. In case of Varicella vaccination it was 28.93 and 7.352 respectively. With respect to Biovac A vaccination, the observed mean was 29.25 and SD 4.8511. The obtained F value was .964 and p value .444 which is not significant, which means after provided audio-visual distraction technique for preschool children at the time of vaccination there was no significant difference in their distress levels. Thus hypothesis-3 could be accepted.

This study contradictory to the study of Gedam et al (2013) who conducted research on 162 female babies (46.29%) and 188 male babies (53.71%). Most number of patients came to hospital for DPT booster dose (79.4%). They applied distraction technique i.e. light and sound producing toys and found that are effective to reduce pain in toddler during immunization. There is a significant difference observed in the behavioural score of group-2 and group-3 ($t=9.93$, $p<0.05$). It indicates that distraction technique i.e. cartoon movie is effective to reduce pain in toddler during immunization.

Table-12 Level of vaccination distress among preschool children based on needle size

Control group							
Sl. No	**Needle Size**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	24 number (32)	19	59.3	07	21.8	06	18.7
2	25 number (21)	02	9.52	06	28.5	13	61.9
3	26 number (47)	41	87.2	06	12.7	0	0
Experimental Group							
Sl. No	**Needle Size**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	24 number (29)	08	27.5	15	51.7	06	20.6
2	25 number (35)	08	22.8	02	5.7	25	71.4
3	26 number (36)	08	22.2	12	33.3	16	44.4

Table-12 describes level of vaccination distress among preschool children based on needle size.

In control group, it was observed that majority of children who vaccinated by number 24 needle size (59.3%) had high distress, 21.8% showed moderate and the rest 18.7% reported low distress level during vaccination.

In case of children who got vaccinated by 25 number needle size, majority showed low distress i.e 61.9%, 28.5% showed moderate distress and the rest 9.52% are under high distress level.

In case of children who got vaccinated by 26 number needle size, majority proved (87.2%) high distress and the rest 12.7% had moderate distress level, here no respondents showed low distress levels during vaccination procedure.

In Experimental group it was observed that among children who vaccinated by 24 number needle size, majority 51.7% reported moderate distress, 27.5% showed high distress levels and the rest 20.6% had low distress during vaccination procedure after adopting distraction techniques.

In case of children who got vaccinated by number 25 needle size, majority i.e. 71.4% reported low distress with audiovisual distraction method, 22.8% had high and the rest 5.7% showed moderate distress during vaccination.

In case of children who got vaccinated by 26 number needle size, majority i.e. 44.4% reported low distress, 33.3% had moderate and the rest 22.2% are under high distress level during vaccination with audio-visual distraction technique.

These results showed improvements in distress levels in experimental group after applying 3D audio-visual distraction method.

Table-13 Mean, SD and F Value of vaccination distress among preschool children based on needle size

Control group				
Sl. No	**Needle size**	**Mean**	**SD**	**F Value**
1	24 number (32)	33.06	4.8522	F=4.961 p=.000**
2	25 number (21)	27.23	3.0480	
3	26 number (47)	35.25	1.9389	
Experimental Group				
1	24 number (28)	31.17	3.091	F=5.567 p=.005*
2	25 number (36)	27.36	5.292	
3	26 number (36)	30.27	5.537	

**** Significant at .01% level, * Significant at .05% level**

Table-13 represents mean, SD and F Value of vaccination distress among preschool children based on needle size.

In control group, the observed mean and SD value of children who vaccinated by 24 number needle size were 33.06 and 4.8522 respectively. In case of children who got vaccinated by 25 number needle size was 27.238 and 3.04 respectively. In case of children who vaccinated by number 26 needle size, it was 35.25 and 1.938 respectively. The obtained F value was 4.961 and p value .000 which is highly significant at .01% level. This results says that, obtained mean values differ in each needle size and children who got vaccinated by number 26 needle size had high distress compared to the other sizes. Thus hypothesis-2 could be rejected.

In experimental group, the observed mean and SD value of children who vaccinated by 24 number needle size were 31.17 and 3.091 respectively. In case of children who got vaccinated by 25 number needle size was 27.36 and 5.292 respectively. In case of needle number 26, itwas 30.27 and 5.537 respectively. The obtained F value was 5.567 and p value .005 which is significant at .05% level. This represents that audiovisual distraction technique was effective in reducing children distress level at the time of vaccination procedure and the obtained mean value of needle number 26 was less hence the distress level found to be reduced, however needle number 25 doesn't shows much reduction in distress levels after audio-visual distraction. Thus hypothesis-3 could be rejected.

Figure-5 Vaccination distress among preschool children based on needle size

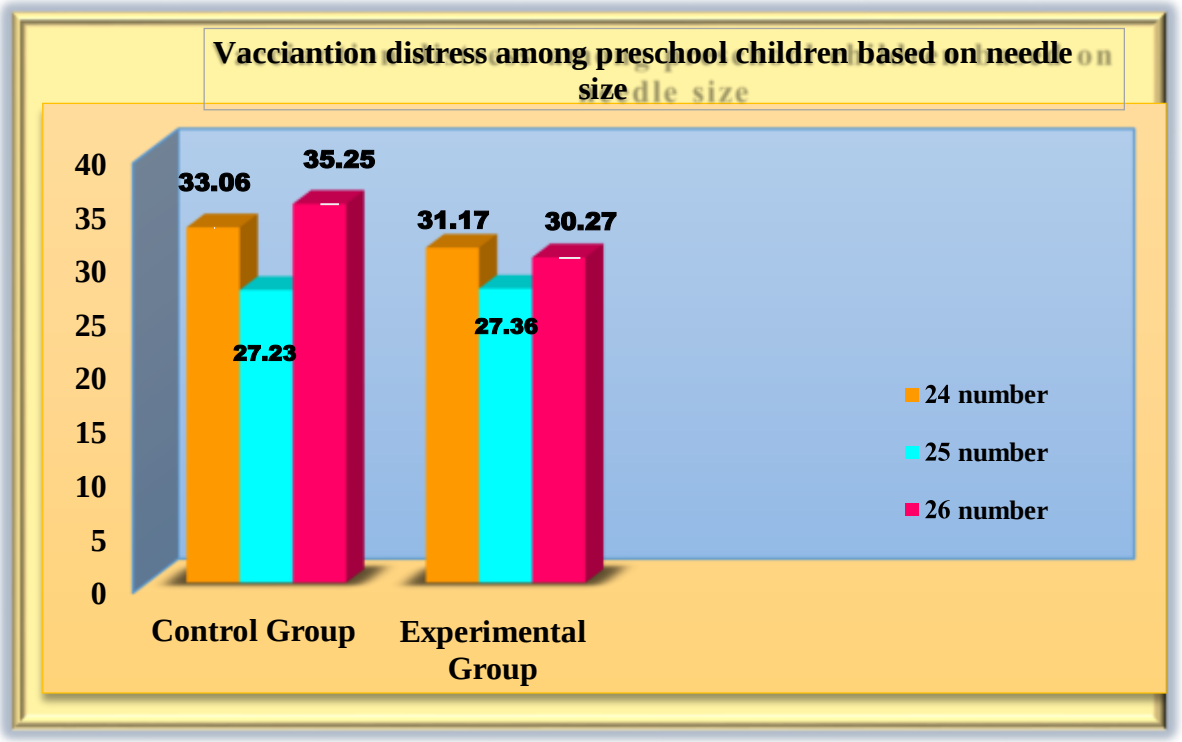


Figure-5 shows vaccination distress among preschool children in control and experimental group and can be seen that needle number 26 showed lower distress level in experimental group.

Table-14 Level of vaccination distress among preschool children based on number of vaccination

Control group							
Sl. No	**Number of vaccination**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	1 (69)	39	56.5	14	20.2	16	23.1
2	2 (31)	23	74.1	05	16.1	03	9.67
Experimental Group							
Sl. No	**Number of vaccination**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	1 (68)	10	14.7	24	35.2	34	50.0
2	2 (32)	14	43.7	05	15.6	13	40.6

Table-14 indicates the level of vaccination distress among preschool children based on number of vaccination.

In control group, it was observed that majority of children who receive 1 vaccination, (56.5%) had high distress level, 20.2% reported moderate and the rest 23.1% showed low distress level.

In case of children who receive 2 vaccinations at a time, majority showed (74.1%) high distress, 16.1% had moderate and the rest 9.67% reported low distress levels.

In experimental group, it was observed that majority of children who receive 1 vaccination (50.0%) reported low distress during vaccination, 35.2% had moderate and the rest 14.7% showed high distress at the time of vaccination.

In case of children who receive 2 vaccinations at a time, majority reported (43.7%) high distress levels, 40.6% had low distress and the rest 15.6% showed moderate distress during vaccination procedure with audio-visual distraction.

Table-15 Mean, SD and t-values of vaccination distress among preschool children based on Number of Vaccination

Control group				
Sl. No	**Number of vaccination**	**Mean**	**SD**	**t-value**
1	1 (69)	32.42	4.861	t=1.493

2	2 (31)	33.87	3.518	p=.096**NS**
Experimental Group				
1	1 (68)	28.54	4.158	t=2.762
2	2 (32)	31.46	6.304	p=.007*

*** Significant at .05% level, NS-Not Significant**

Table-15 indicates Mean, SD and t-values of vaccination distress among preschool children based on number of vaccination

From control group it was observed that, the mean and SD values of children who received 1 vaccination was 32.42 and 4.861, in case of who children received 2 vaccinations at a time the values were 33.87and 3.518 respectively. The obtained t value was 1.493 and p value .096 which is not significant. This concludes the distress levels among children who receive one or two vaccinations doesn't reflect any difference in their distress levels. Thus hypothesis-2 could be accepted.

From the experimental group, it was observed that, the mean and SD values of children who received 1 vaccination was 28.54 and 4.158, in case of children who received 2 vaccinations the observed values were 31.46 and 6.30 respectively. The obtained t value was 2.762 and p value .007 which is significant at .05% level. This indicates that children who received one vaccination had lower distress levels with audio-visual distraction method compared to those who receive two vaccinations at the same time. Thus hypothesis-3 could be rejected.

Figure-6 Vaccination distress among preschool children based on number of vaccination

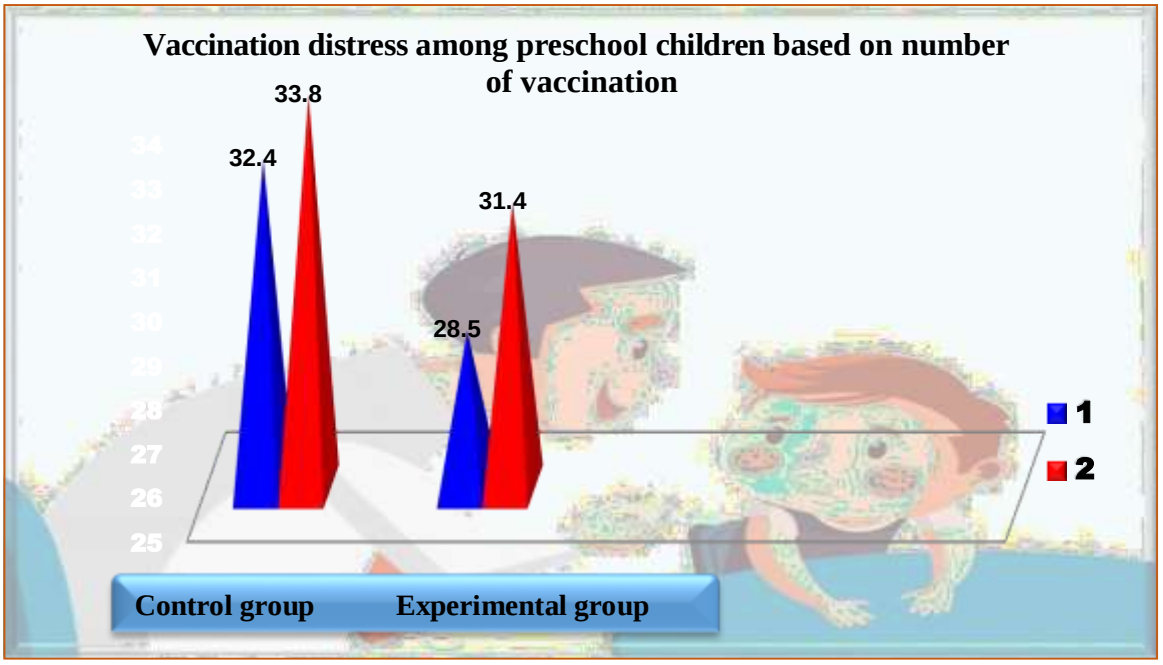


Figure-6 shows vaccination distress among preschool children based on number of vaccination. This picture clearly indicates that distress level among children who receive one vaccination was reduced in experimental group after applying audio-visual distraction technique.

This study supports the study of Doctor, Kahn, & Adamec, (2009) Needle phobia has been described in the literature using interchangeable definitions such as belonephobia (fear of needles and pins), trypanophobia (fear of injections), and aichmophobia (fear of sharp, pointed objects) according to the Encyclopedia of Phobias, Fears, and Anxieties.

In the International Classification of Diseases, Tenth Revision, Clinical Modification, needle phobia is categorized as the fear of injections and transfusions (F40.231; World Health Organization, 2004). The main feature in the condition is such a severe fear of venipuncture that active avoidance of the procedure is practiced (Cook, 2016).

Further, several studies have addressed needle-related distress without distinguishing between a fear of needles and diagnosable needle phobia. In one study, 63% of children (aged 6–17) reported a fear of needles, and significant relations between a fear of needles and the female sex, as well as increasing perceived pain intensity during immunizations (Taddio et al., 2012).

Table-16 Level of vaccination distress among preschool children based on type of area

Control group							
Sl. No	**Type of Area**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	Rural (11)	04	36.3	0	0	07	63.6
2	Urban (49)	31	63.2	12	24.4	06	12.2
3	Semi urban (40)	27	67.5	07	17.5	06	15.0
Experimental Group							
Sl. No	**Type of Area**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	Rural (34)	07	20.5	09	26.4	18	52.9
2	Urban (30)	02	6.6	14	46.6	14	46.6
3	Semi urban (36)	15	41.6	06	16.6	15	41.6

Table-16 Shows level of vaccination distress among preschool children based on type of area.

From the above results, in control group it was observed that among rural area children, majority i.e 63.6% reported low distress, and 36.3% had high distress at the time of vaccination.

In case of urban area children, majority i.e. 63.2%% had high distress, 24.4% showed moderate and the rest 12.2% had low distress level.

With respect to semi urban area children, majority i.e. 67.5% had high distress, 17.5% showed moderate and the rest 15.0% showed low distress level.

In experimental group it was observed that among rural children, majority (52.9%) reported low distress, 26.4% had moderate and the rest 20.5% showed high distress level.

In case of urban area children, majority i.e. 46.6% had low as well as moderate distress and the rest 6.6% showed high distress level after undergoing audio-visual distraction method.

With respect to semi urban area children, majority (41.6%) showed low as well as high distress and the rest 16.6% had moderate distress level at the time of vaccination by using audio-visual distraction method.

Table-17 Mean, SD and F Value of vaccination distress among preschool children based on type of area

Control group				
Sl. No	**Type of Area**	**Mean**	**SD**	**F Value**
1	Rural (11)	29.27	5.551	F=4.525
2	Urban (49)	33.26	4.738	p=.000**
3	Semi-urban (40)	33.37	3.496	
Experimental Group				
1	Rural (34)	28.17	4.789	F=7.425
2	Urban (30)	28.00	3.107	p=.001*
3	Semi-urban (36)	31.94	5.850	

****Significant at .01% level, *Significant at .05% level**

Table- 17 represents mean, SD and F Value of vaccination distress among preschool children based on type of area.

In control group, the observed mean and SD value of rural area children were 29.27 and SD 5.551, whereas in urban area children it was 33.26 and 4.738, in case of semi-urban children the mean was 33.37 and SD 3.496. The obtained F value was 4.525 and p value .000 which is highly significant at .01% level. This means obtained mean values differ among area of living and can be said that children from semi-urban areas had high distress than other area children. Thus hypothesis-2 could be rejected.

In Experimental group, the observed mean and SD value among rural area children were 28.17and 4.789 respectively. In case of urban area children it was 28.00 and 3.107. With respect to semi urban area children, the observed mean was 31.94 and SD .5.850.The obtained F value was 7.425 and p value .001 which is .01% level significant. Thus hypothesis-3 could be rejected. This indicates that the mean value among semi-urban was still remained high and indicates high distress level, where as urban and rural area children distress levels were reduced with audio-visual distraction technique. This proves audio-visual distraction helped in reducing the distress levels of preschool children during vaccination.

Figure 7 Vaccination distress among preschool children based on type of area

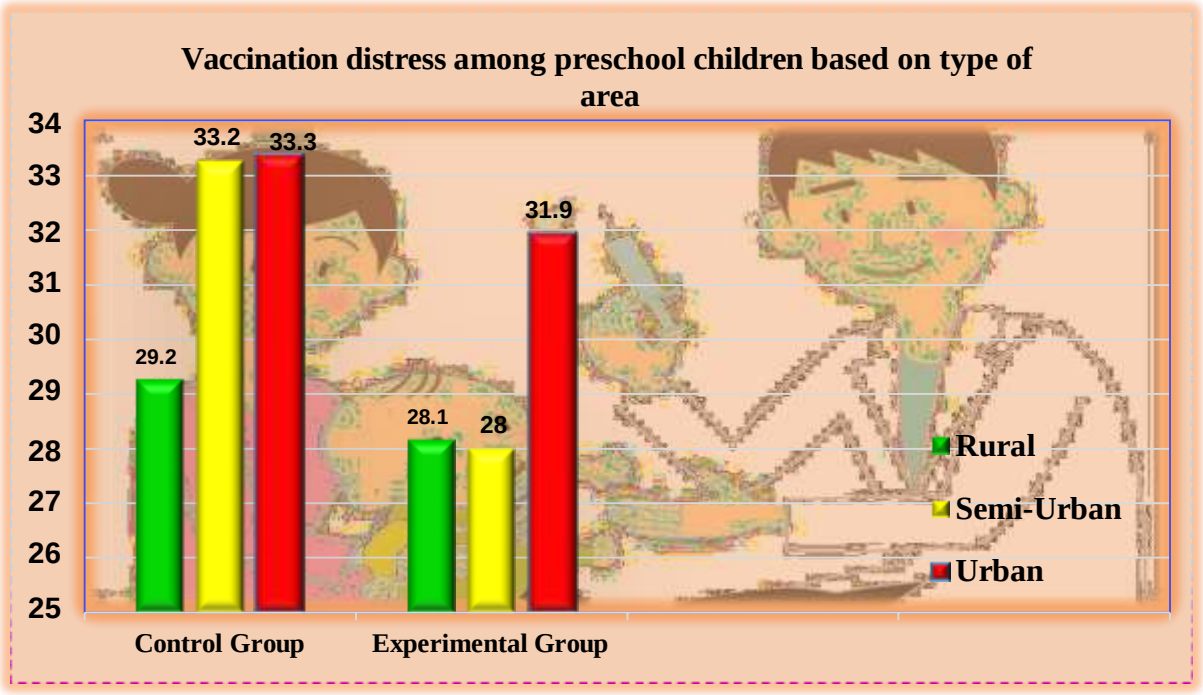


Figure-7 represents vaccination distress among preschool children in control and experimental group with respect to the living area of children. This picture shows there was moderately high distress in control group in all the areas, where as in experimental group there is a reduction in distress levels can be seen among children during vaccination after provided with 3D audio-visual distraction technique.

Table-18 Level of vaccination distress among preschool children based on administration of vaccination

Control group							
Sl. No	**Administration of Vaccination**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	Intra Muscular (75)	43	57.3	18	24.0	14	18.6
2	Subcutaneous Mass (25)	19	76.0	01	4.0	05	20.0
Experimental Group							
Sl. No	**Administration of Vaccination**	**High**		**Moderate**		**Low**	
		No.	**%**	**No.**	**%**	**No.**	**%**
1	Intra Muscular (64)	11	17.1	22	34.3	31	20.3
2	Subcutaneous Mass (36)	13	36.1	07	19.4	16	44.4

Table-18 Shows the level of vaccination distress among preschool children based on administration of vaccination.

In control group, it was observed that, majority of children who got vaccination in Intra muscular vaccination had (57.3%) high distress levels, 24.0% reported moderate and the rest 18.6% are under low distress levels during vaccination.

In case of children who vaccinated in Subcutaneous mass, majority i.e. 76.0 % showed high, 4.0 % had moderate and the rest 20.0% reported low distress levels during vaccination.

In experimental group, it was observed that children who received vaccination through Intra muscular mode majority reported (34.3%) had moderate distress, 20.3% had low and the rest 17.1% showed high distress at the time of vaccination.

In case of Subcutaneous mass vaccination, majority i.e. 44.4% showed low distress, 19.4% had moderate and the rest 36.1% reported high distress during vaccination procedure.

Table-19 Mean, SD and t-values of vaccination distress among preschool children based on administration of vaccination

Control group				
Sl. No	**Administration of vaccination**	**Mean**	**SD**	**t-value**
1	Intra muscular (72)	32.65	4.344	t=0.829

2	Subcutaneous(25)	33.52	5.050	p=.409NS
Experimental Group				
1	Intra muscular (64)	28.93	4.054	t=1.425
2	Subcutaneous(36)	30.44	6.522	p=.157 NS

NS Not Significant

Table-19 Mean, SD and t-values of vaccination distress among preschool children based on administration of vaccination

From control group it was observed that, the mean and SD values of Intra muscular vaccination children were 32.65 and 4.344, in case of subcutaneous vaccination it was 33.52 and 5.050 respectively. The obtained t value was 0.829 and p value .409 which is not significant. This represents there is no significant difference exists among administration of vaccination and children's distress levels. Thus hypothesis-2 could be accepted.

In experimental group, the mean and SD values of Intra muscular vaccination children were 28.93and 4.054, in case of subcutaneous vaccination it was 30.44and 6.522 respectively. The obtained t value was 1.425 and p value .157 which is not significant. This result also says that reduction in distress levels of children was found but no significant among the administration of vaccination in them after providing audio-visual distraction method. Thus hypothesis-3 could be accepted. However children who vaccinated intramuscular had less distress compared to subcutaneous mode.

5. SUMMARY AND CONCLUSION

This chapter summarizes the entire study, done by researcher with methodology key and major findings of the study, conclusion, recommendation, limitation and direction for future research.

Early childhood is defined as a time of "life spans is birth to eight years of age its most important period of brain and psychological development in throughout the lifespan" (WHO & UNICEF, 2012).

Children grow and develop in different scenario of development like physical, motor development, spiritual, moral development, social, emotional development, cognitive, language development.

Immunization is a clinical preventive provision that is suggested for virtually every child in the world. Childhood booster is one of public health's greatest realizations. A basic set of injections it help infants survive so that they can grow and develop into healthy adults. Children regularly experience impulsive and severe procedure-related pain that can be connected with negative emotional and psychological effects (Cummings EA, Reid GJ, 1996). During the vaccination pain in children with serious and chronic diseases is a major public health problem that has been cumulative over the last 20 years (Cohen LL, 2008).

Finding of Cramer Berness L,J (2005) and Cohen L,L (2002) indicates that distraction technique i.e. light and sound producing toys and cartoon movies are effective in reducing pain during and after immunization. They said results are comparable with other studies.

The present study on “Effect of audio visual distraction among preschool children during vaccination” was conducted with a total number of 200 preschool children from selected hospitals and clinics from Coimbatore with a purposive sampling method. Whereas, these 200 children were divided into control and experimental group to know the effectiveness of the study. The distress level was assessed with the self-constructed questionnaire on **Vaccination Distress Scale (VDS)** which consists of 20 statements in 3 dimensions. The statements were prepared based on two pint Likert scale with yes and no options. It has positive and negative statements. Positive statements were given 1 for yes and 2 for no option, whereas negative statements were awarded 2 for yes and 1 for no options. Higher the score higher the distress level, lower the score lower to distress level. The researcher had obtained the permission from the government and private hospital-clinic for the conduct of the study. Ethical clearance and parental concern was also obtained for the study.

In control group the sample were assessed with Vaccination Distress Scale (VDS) during the time of vaccination procedure in selected hospitals after obtaining permission from

government health authorities as well as from doctors. This group were not given any intervention during vaccination and named as control group. The researcher has prepared 3D video as a distracter to use during vaccination procedure. The children were given 3D glasses to wear and subjected to watch the cartoon video at the time of vaccination procedure in experimental group. The videos were shown with the help of laptop as well as wall projector.

At the same time the researcher observed the child's distress level and assessed using the Vaccination Distress Scale. This experiment helps to assess the difference between control and experimental group children distress levels and also helped to assess the effectiveness of distracter prepared by the researcher. The researcher has obtained following key findings and major findings from this research.

5.1 Key finding of the present study

- In Control group, the majority of children are having high distress level (62.0%), at the time of vaccination procedure, and the rest 19.0% are having moderate as well as low distress level during vaccination procedure. This clearly indicates majority of preschool children are under high distress level during vaccination.
- In experimental group, it was observed that, the majority of children are having low distress (47.0%) after applying audio-visual distraction technique at the time of vaccination, 29.0% are having moderate and only 24.0% are having high distress levels. This results shows that audio-visual distraction techniques for children at the time of vaccination has an effective response.
- **Age**: In control group, majority of 2-4 years children have high distress i.e. 64.8% and the rest 27.0% felt moderate score and no one found in low distress levels. With respect to 4-8 years age group, majority i.e. 55.5% are having high distress levels, 14.28% experienced moderate and the rest 30.0% having low distress level during vaccination procedure. Whereas, in Experimental group, majority of 2-4 years children showed low as well as moderate distress i.e. 37.7% and the rest 24.4% showed high distress at the time of vaccination procedure. In case of 4-8 years, majority i.e. 54.5% are having low distress, 21.8% exhibited moderate and the rest 23.6% showed high distress at the time of vaccination procedure.
- **Gender:** In control group, majority of male children are (60.78%) having high distress level, 11.76% had moderate and the rest 27.45% showed low distress during vaccination. In case of female children, majority i.e. 63.2% predicted high distress, 26.5% had moderate and the rest 10.2% are under low distress at the time of vaccination procedure.

In experimental group, majority of male children i.e. 55.5% showed low distress, 16.6% having moderate and the rest 27.7% predicted high distress at the time of vaccination after applying audio-visual distraction. In case of female children, majority i.e. 43.4% had moderate, 36.9% showed low and the rest 19.5% are under high distress.

- **Type of hospital:** In control group, among government hospital children, majority i.e. 55.5% had high distress, and 19.0% showed moderate and the rest 25.3% predicted low distress level. In case of private hospital, majority i.e. 86.3% showed high distress, 13.6% had under moderate distress level and no one was in low distress. With respect to clinics, majority i.e. 53.3% proved high distress, 26.6% were moderate and the rest 20.0% gave low distress response during vaccination.

In experimental group, majority of government hospital children (73.9%) exhibited low distress, and 19.5% showed moderate and the rest 6.5% had high distress level after undergoing audio-visual distraction technique at the time of vaccination procedure. In case of private hospital, majority i.e. 64.0% had high distress, 24.0% showed low and the rest 12.0% predicted moderate distress. With respect to clinics, majority i.e. 58.6% had moderate distress, 24.1% performed low and the rest 17.2% had high distress level after undergoing audio-visual distraction technique at the time of vaccination procedure.

- **Care giver:** In control group, among primary care giver, majority of children (64.8%) showed high distress, 10.8% had moderate and the rest 24.3% are reported low distress during vaccination procedure. In case of secondary care giver, majority i.e. 18.9% had high distress, 14.8% under moderate and the rest 1.35% are under low distress at the time of vaccination. This concludes children who accompanied with primary care giver are showing higher distress level compared to children with secondary care giver.

In experimental group, majority of children who came with primary care takers showed low distress with audio-visual distraction method during vaccination, 21.6% had moderate and the rest 29.7% had high distress even after the distraction technique. In case of secondary care giver, majority i.e. 50.0% of children showed moderate distress, 42.3% reported low and only 7.69% had high distress levels during vaccination.

- **Type of vaccination:** In control group, majority of children (82.3%) who received DPT vaccination reported high distress and the rest 17.6% showed moderate distress level during vaccination. In case of children who received MMR vaccination, majority i.e. 52.3% had high distress, 13.6% moderate and the rest 38.0% proved low distress level. With respect to children who received flue vaccination, majority i.e.56.2 % showed high distress, 12.5% had moderate and the rest 31.2% reported low distress level. In case of children who received Varicella

vaccination all respondents (100%) underwent moderate distress whereas in case of children who received Biovae A vaccination (100.0%) reported low distress level.

In experimental group, majority of children who received DPT vaccination (47.2%) reported low distress during vaccination, 25.0% had moderate and rest 16.6% are under high distress level. In case of children who received MMR vaccination, majority i.e. 45.4% showed low distress, 40.9% had high and the rest 13.6% are under moderate distress level during vaccination. With respect to children who receive flue vaccination, majority i.e. 53.8% had moderate distress, 23.0% showed low and the rest 23.0% are under high distress level. In case of children who received Varicella vaccination, majority i.e. 50.0% reported low distress, 31.2% had moderate and the rest 18.7% under high distress level after applying audio-visual distraction method. Also, In case of children who received Biovae A vaccination, majority i.e. 52.9% proved low distress, 31.2% had moderate and only 18.7% under high distress level at the time of vaccination procedure with audio-visual distraction technique.

- **Needle size:** In control group, majority of children who vaccinated by number 24 needle size (59.3%) had high distress, 21.8% showed moderate and the rest 18.7% reported low distress level during vaccination. In case of children who got vaccinated by 25 number needle size, majority showed low distress i.e 61.9%, 28.5% showed moderate distress and the rest 9.52% are under high distress level. In case of children who got vaccinated by 26 number needle size, majority proved (87.2%) high distress and the rest 12.7% had moderate distress level, here no respondents showed low distress levels during vaccination procedure.

In Experimental group, children who vaccinated by 24 number needle size, majority 51.7% reported moderate distress, 27.5% showed high distress levels and the rest 20.6% had low distress during vaccination procedure after adopting distraction techniques. In case of children who got vaccinated by number 25 needle size, majority i.e. 71.4% reported low distress with audiovisual distraction method, 22.8% had high and the rest 5.7% showed moderate distress during vaccination. In case of children who got vaccinated by 26 number needle size, majority i.e. 44.4% reported low distress, 33.3% had moderate and the rest 22.2% are under high distress level during vaccination with audio-visual distraction technique.

- **Number of vaccination:** In control group, majority of children who receive 1 vaccination, (56.5%) had high distress level, 20.2% reported moderate and the rest 23.1% showed low distress level. In case of children who receive 2 vaccinations at a time, majority showed (74.1%) high distress, 16.1% had moderate and the rest 9.67% reported low distress levels.

In experimental group, it was observed that majority of children who receive 1 vaccination (50.0%) reported low distress during vaccination, 35.2% had moderate and the rest 14.7% showed high distress at the time of vaccination.

In case of children who receive 2 vaccinations at a time, majority reported (43.7%) high distress levels, 40.6% had low distress and the rest 15.6% showed moderate distress during vaccination procedure with audio-visual distraction.

- **Type of area:** In control group, among rural area children, majority i.e 63.6% reported low distress, and 36.3% had high distress at the time of vaccination. In case of urban area children, majority i.e. 63.2%% had high distress, 24.4% showed moderate and the rest 12.2% had low distress level. With respect to semi urban area children, majority i.e. 67.5% had high distress, 17.5% showed moderate and the rest 15.0% showed low distress level.

In experimental group it was observed that among rural children, majority (52.9%) reported low distress, 26.4% had moderate and the rest 20.5% showed high distress level. In case of urban area children, majority i.e. 46.6% had low as well as moderate distress and the rest 6.6% showed high distress level after undergoing audio-visual distraction method. With respect to semi urban area children, majority (41.6%) showed low as well as high distress and the rest 16.6% had moderate distress level at the time of vaccination by using audio-visual distraction method.

- **Administration of vaccination:** In control group, majority of children who got vaccination in Intra muscular vaccination had (57.3%) high distress levels, 24.0% reported moderate and the rest 18.6% are under low distress levels during vaccination. In case of children who vaccinated in Subcutaneous mass, majority i.e. 76.0 % showed high, 4.0 % had moderate and the rest 20.0% reported low distress levels during vaccination.

In experimental group, it was observed that children who received vaccination through Intra muscular mode majority reported (34.3%) had moderate distress, 20.3% had low and the rest 17.1% showed high distress at the time of vaccination. In case of Subcutaneous mass vaccination, majority i.e. 44.4% showed low distress, 19.4% had moderate and the rest 36.1% reported high distress during vaccination procedure.

5.2 Major findings of the study

- **Age:** In control group, the mean and SD values of 2-4 years children were 34.162 and 3.4521, in case of 4-8 years it was 32.111 and 4.9125 respectively. The obtained t value was 2.234 and p value .028 which is significant at .05 percent level. This showed that 2-4 years age preschool children predicted high distress compared to 4-8 years age group children.

  In experimental group, the observed mean and SD values of 2-4 years children was 29.73 and 5.29, in case of 4-8 years it was 29.27 and 4.97 respectively. The obtained t value was .447 and p value .656 which is not significant.

- **Gender:** In control group, among male children, the observed mean and SD values are 32.45 and 4.851, in case of female it was 33.30 and 4.154 respectively. The obtained t value was o.945 and p value .347 which is not significant.

In experimental group, it was observed that, the mean and SD values of male children were 29.74 and 5.630, whereas for female it was 29.17 and 4.44 respectively. The obtained t value was .552 and p value .582 which is not significant.

- **Type of hospital:** In control group, the observed mean and SD values of government hospital were 32.7 and 4.784, whereas in private hospital children it was 35.00 and 1.825 respectively. In case of clinics, the observed mean was 32.66 and SD 5.367. The obtained F value was 4.769 and p value .000 which is significant at .01% level. This represents that the mean value among children who got vaccinated in private hospital was higher and their distress level was high compared to children of government and clinics.

In experimental group, the observed mean and SD value of government hospital children were 26.84 and 4.016 respectively. In case of private hospital it was 34.56 and 4.8311. With respect to clinic, the observed mean was 29.27and SD 3.4110. The obtained F value was 29.038 and p value .000 which is highly significant .01% level. This result proved that, the mean value among children who got vaccinated in government hospital with audio-visual distraction facilities provided was lower and their distress level was low compared to the children of private hospital and clinics.

- **Care giver:** From control group, the mean and SD values of children of primary care giver were 33.00 and 5.028, in case of secondary care giver it was 32.50 and 2.626 respectively. The obtained t value was .483 and p value .630 which is not significant.

From this result, it was concluded that there is no significant difference observed among children's vaccination distress levels based on care givers.

From experimental group, the observed mean and SD values of children of primary care giver was 29.58and 5.79, in case of secondary care giver it was 29.19 and 2.20 respectively. The obtained t value was .333 and p value .740 which is not significant even after provided audio-visual distraction technique. But comparatively the distress levels reduced than control group with no significant difference.

- **Type of vaccination:** In control group, the observed mean and SD value of children who received DPT vaccination were 35.156 and 2.715 respectively. In case of MMR vaccination it was 31.333 and 5.043 respectively. With respect to flue vaccination, the observed mean was 31.500 and SD 5.403, whereas in case of Varicella vaccination, the obtained mean was 29.333and SD value .8165. In case of children who received biovac A vaccination, the obtained mean was 26.000and SD value .0000 The calculated F value was 6.975 and p value .000 which is significant at .01% level. This concludes that children who received DPT vaccination reported high distress levels followed by flue and MMR vaccination.

In experimental group, the observed mean and SD value of children who received DPT vaccination were 28.34 and 4.209 respectively. In case of children who received MMR vaccination, the obtained mean was 30.63 and SD value 7.352. With respect to flue vaccination mean was 31.38 and SD value 3.948. In case of Varicella vaccination it was 28.93 and 7.352 respectively. With respect to Biovac A vaccination, the observed mean was 29.25 and SD 4.8511. The obtained F value was .964 and p value .444 which is not significant, which means after provided audio-visual distraction technique for preschool children at the time of vaccination there was no significant difference in their distress levels..

- **Needle size:** In control group, the observed mean and SD value of children who vaccinated by 24 number needle size were 33.06 and 4.8522 respectively. In case of children who got vaccinated by 25 number needle size was 27.238 and 3.04 respectively. In case of children who vaccinated by number 26 needle size, it was 35.25 and 1.938 respectively. The obtained F value was 4.961 and p value .000 which is highly significant at .01% level. This results says that, obtained mean values differ in each needle size and children who got vaccinated by number 26 needle size had high distress compared to the other sizes.

In experimental group, the observed mean and SD value of children who vaccinated by 24 number needle size were 31.17 and 3.091 respectively. In case of children who got vaccinated by 25 number needle size was 27.36 and 5.292 respectively. In case of needle number 26, it was 30.27 and 5.537 respectively. The obtained F value was 5.567 and p value .005 which is significant at .05% level. This represents that needle number 26 distress level found to be reduced after audio-visual distraction.

- **Number of vaccination**: From control group it was observed that, the mean and SD values of children who received 1 vaccination was 32.42 and 4.861, in case of who children received 2 vaccinations at a time the values were 33.87and 3.518 respectively. The obtained t value was 1.493 and p value .096 which is not significant. This concludes the distress levels among children who receive one or two vaccinations doesn't reflect any difference in their distress levels.

From the experimental group, it was observed that, the mean and SD values of children who received 1 vaccination was 28.54 and 4.158, in case of children who received 2 vaccinations the observed values were 31.46 and 6.30 respectively. The obtained t value was 2.762 and p value .007 which is significant at .05% level. This indicates that children who received one vaccination had lower distress levels with audio-visual distraction method compared to those who receive two vaccinations at the same time.

- **Type of area:** In control group, the observed mean and SD value of rural area children were 29.27 and SD 5.551, whereas in urban area children it was 33.26 and 4.738, in case of semi-urban children the mean was 33.37 and SD 3.496. The obtained F value was 4.525 and p value .000 which is highly significant at .01% level. This means semi-urban areas had high distress than other area children.

In Experimental group, the observed mean and SD value among rural area children were 28.17and 4.789 respectively. In case of urban area children it was 28.00 and 3.107. With respect to semi urban area children, the observed mean was 31.94 and SD .5.850.The obtained F value was 7.425 and p value .001 which is .01% level significant. This indicates that the mean value among semi-urban was still remained high and indicates high distress level, where as urban and rural area children distress levels were reduced with audio-visual distraction technique.

- **Administration of vaccination**: From control group it was observed that, the mean and SD values of Intra muscular vaccination children were 32.65 and 4.344, in case of subcutaneous vaccination it was 33.52 and 5.050 respectively. The obtained t value was 0.829 and p value .409 which is not significant. This represents there is no significant difference exists among administration of vaccination and children's distress levels.

In experimental group, the mean and SD values of Intra muscular vaccination children were 28.93and 4.054, in case of subcutaneous vaccination it was 30.44and 6.522 respectively. The obtained t value was 1.425 and p value .157 which is not significant. This result also says that reduction in distress levels of children was found but no significant among the administration of vaccination.

5.3 CONCLUSION

Vaccination procedure is a major part of children's life as this is a means of their entire life protection from any ailments. At the same time in young age like toddler to preschool age, it will be a stressful events for both parents and children who undergoing for vaccination procedure. Previous studies have proved comforting children by storytelling, parental holding, talking with the child, toy distraction will reduce the distress level among young children. All these methods are easy, economical and no special equipments/training needed. It is surprising that so few interventions have been evaluated given the plethora of behavioral treatments (e.g., distraction, relaxation, modeling) for preschool-age and older child procedural pain (Powers, 1999). Of these, distraction is the dominant intervention for preschooler pain (L. L. Cohen, Blount, & Panopoulos, 1997) and is recognized for adult pain (McCaul & Haugtvedt, 1982). In present study, researcher has chosen preschool children due to their high level of fear and anxiety towards vaccination and prepared an effective 3D video of 3-4 minutes and showed to preschool children with the help of 3D glasses during vaccination. The results reported that distraction technique by using audio-visual mode appeared to be more effective in reducing the child's distress level. This is the best practical way of distracting preschoolers from vaccination in which helps both doctors as well as parents emotions.

Vaccination pain/distress levels vary among children and are unique due to factors such as the child's age, developmental level, cognitive and communication skills, and past experiences with pain. Studies have been conducted to investigate the efficacy of different pain management strategies and distraction techniques during vaccinations. There are numerous strategies for relieving vaccination pain and distress, consequently, the purpose of this study is to evaluate distress levels during vaccination procedure and to make a recommendation on whether AV distraction is appropriate according to the child's perspective and health care professionals or not. This study proves the distress level in experimental group with 3D audio-visual distraction was reduced significantly among children who vaccinated in government hospital, urban and rural area, bigger needle size i.e. 26 numbered, children who receive one vaccination at a time with 3D audio-visual distraction technique. However age, gender, care giver, type of vaccination, administration of vaccination did not predict any significant difference in their distress levels even after provided audio-visual distraction.

Hence audio-visual distraction show positive response, highly acceptable and seems to be a useful technique to divert child's mind during vaccination intern reduce their stressful reactions and helping them to enjoy and relax.

Social relevance of the Study

Regardless of any medical procedure, distracting mind and minimizing the stress may help children cooperate during the treatment and develop a positive attitude that will benefit both the patient and healthcare provider during future medical experiences. The young child who is undergoing vaccination procedure will have a more positive memory related to the procedure by reducing or alleviating the pain, which will reduce the stress and anxiety. By relieving fear and stress, the healthcare provider faces a less anxious and more cooperative child, resulting in a better medical outcome.

5.4 Limitations

- The subject couldn't be given pre and post-test since the study was done then and there with experimentation.
- Getting permission from government hospital was quite difficult and time consuming.
- Government hospital children and staffs were less cooperative due to heavy rush in government hospitals.
- Creation of own 3D video is expensive.
- Pain score and crying duration could also be assessed
- Physiological indices such as heart rate, blood pressure, oxygen saturation could have been assessed
- Behavior and response of the parents were difficult to manage in experimental group
- Control group study was easy but experimental every day was a challenge.

5.5 Recommendations

- ✓ Low cost 3D video can be made and distributed to hospital as a distraction method
- ✓ Other distraction techniques also can be used and compared
- ✓ Other psychological changes could be observed

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ANNEXURE-1

Vaccination Distress Scale (VDS)

I. Gender Background Information:

1. Age: □ **preschool (2-3years)** □**Early Childhood (4-8 years)**

2. Gender: □ **Male** □ **Female**

3. Type of Hospital: □**Government** □ **Private** □ **Clinic**

4. Type of caregiver who brought the child: □**Primary** □ **Secondary** □**Tertiary**

5. Name of vaccination:

□ **DPT** □**Hepatitis B**□**Hepatitis A** □**MMR** □**Pneumococcal**

□ **Typhoid** □**Flue** □**Varicella**

6. Needle size: □ **24** □ **25** □ **26**

7. Number of vaccine given: □**1** □**2**

8. Types of area: □**Rural** □ **Urban** □**Semi-Urban**

9. Types of vaccination: □**Intra muscular** □**Subcutaneous**

II. QUESTIONNAIRE

Vaccination Distress Scale (VDS)

Sl. No	Statements	Yes	No
I	**Face**		
1	 Happy Unhappy Sad Angry Crying Nervous Anxiety		
2	Dull looking face		
3	Unhappy with the surrounding		
4	Brave face		
5	Panic face		
6	Eye filled with tears		
II	**Behaviour**		
7	Behave normal		
8	Starts crying		
9	Refuses to come to the place		
10	Withdraw from care taker/mother or try toescape		
11	Starts kicking, hitting, pushing hand		
12	Screaming and begging to avoid vaccination		
13	After vaccination becomes normal		
14	Cries even after leaving the place		
15	Cries after going home(through call find out)		
III	**Pain**		
16	Level of pain : a) □No Pain b) □Immediately feels		
17	Swelling with pain		
18	No swelling but pain		
19	Stay calm even suffering from pain		
20	Reduced pain behaviour after sometime		

ANNEXURE-2

Scoring Key for Vaccination Distress Scale (VDS)

1

Q.no	Yes	No
1	**1(happy)**	**2(other)**
2	**2**	**1**
3	**2**	**1**
4	**1**	**2**
5	**2**	**1**
6	**2**	**1**
7	**1**	**2**
8	**2**	**1**
9	**2**	**1**
10	**2**	**1**
11	**2**	**1**
12	**2**	**1**
13	**1**	**2**
14	**2**	**1**
15	**2**	**1**
16 a)	**2**	**1**
16 b)	**1**	**2**
17	**2**	**1**
18	**1**	**2**
19	**1**	**2**
20	**1**	**2**

Statements	**Yes**	**No**
Positive	1	2
Negative	2	1

ANNEXURE-3

கோயம்புத்தூர் மாநகர்ட்சி மாநகர நல அலுவலர் அவர்களின் செயல்முறை
முன்னிலை:- மரு.கே.சந்தோஷ்குமார்.எம்பிபிஎஸ்., டி.பி.எச்

ந.க.எண். 01/2019/எம்.இ.5 நாள். .11.2

பொருள்:- கோயம்புத்தூர் மாநகராட்சி – பொது சுகாதாரம்
அவிநாசிலிங்கம் இன்ஸ்டியூட் ஆப் ஹோம்சயின்ஸ்
மாநகராட்சி நகர் நல மையம் - களப்பணி பயிற்சி மேற்கொள
- அனுமதி வழங்க உத்தரவிடுதல் - தொடர்பாக.

பார்வை:- உதவி பேராசிரியர் , அவிநாசிலிங்கம் இன்ஸ்டியூட் ஆப்
ஹோம்சயின்ஸ் அவர்களின் பரிந்துரை கடிதம் நாள்.20.08.20

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பார்வையில் காணும் உதவி பேராசிரியர் அவிநாசிலிங்கம் இன்ஸ்டியூட்
ஹோம்சயின்ஸ் அவர்களின் கடிதத்தில் அவிநாசிலிங்கம் இன்ஸ்டியூட்
ஹோம்சயின்ஸ் நிறுவனத்தினர் M.Phil பட்டிய படிப்பு பயிலும் செல்வி.பிரியங்க
அவர்கள் தனது பட்டிய படிப்பு தொடர்பாக (Effect of audio visual distraction
pre school children during vaccination) இம்மாநகராட்சி இராஜவீதி நக
மையத்தில் கர்ப்பிணித் தாய்மார்களின் தடுப்பூசி பணிகள் தொடர்பாக களப்
மேற்கொண்டு விபரம் சேகரிக்க கீழ்க்கண்ட நிபந்தனைகளின் அடிப்பட
01.12.2019 முதல் 31.12.2019 வரை களப்பயிற்சி மேற்கொள்ள கீழ்க்க
நிபந்தனைகளின்படி அனுமதி அளித்து உத்தரவிடப்படுகிறது.

நிபந்தனைகள்

1) ஆராய்ச்சி பணி தொடர்பான விபரங்களை முன்கூட்டியே பெண் ம
அலுவலரிடம் தெரிவித்து உரிய ஒப்புதல் பெற்று, அவர்
அறிவுரையின்படி களப்பயிற்சி மேற்கொள்ள வேண்டும்.

2) களப்பயிற்சியின் போது சம்பந்தப்பட்ட நகர் நல மைய பெண் ம
அலுவலரின் கட்டுப்பாட்டில் இருக்க வேண்டும்.

3) களப்பயிற்சி மேற்கொண்டு சேகரிக்கப்பட்ட விபர அறிக்கை
இம்மாநகராட்சியுடன் பகிர்ந்து கொள்ள வேண்டும்.

4) களப்பணியின் போது பொது மக்கள் மற்றும் மாநகராட்சி பணிய
இடையூறு இன்றியும் , மாநகராட்சிப் பொருள்களுக்கு சேதம் ஏற்பட
இருக்கக் கேட்டுக் கொள்ளப்படுகிறது.

5) இவ்வுத்தரவானது தற்காலிகமானது.

6) இவ்வுத்திரவினை எந்நேரமும் இரத்து செய்ய மாநகராட்சி நிர்வாக
முழு அதிகாரமுண்டு.

மாநகர நல அலுவல
கோயம்புத்தூர் மாநகர

பெறுநர்
செல்வி.பிரியங்காதாஸ் , M.Phil
அவிநாசிலிங்கம் இன்ஸ்டியூட் ஆப் ஹோம்சயின்ஸ்
கோயம்புத்தூர் - 43

நகல்
1) உதவி பேராசிரியர் ,
அவிநாசிலிங்கம் இன்ஸ்டியூட் ஆப் ஹோம்சயின்ஸ், கோயம்புத்தூர் - 43
2) பெண் மருத்துவ அலுவலர், இராஜவீதி நகர் நல மையம்

ANNEXURE-4

SHUBAM Clinic
Multispeciality

Dr. *SUKUMAR.S*
M.B.B.S., DNB (Paed), MNAMS
Consultant Paediatrician

Date: 29.10.2019.

TO WHOM SO EVER IT MAY CONCERN

Ms.Priyanka Das, M.Phil Research Scholar (19PHDF006) her thesis entitled "Effect of audio-visual distraction among preschool children during vaccination" In this she is allowed to collect data from our clinic/hospital. She is allowed to come as per the schedule given by us.

Dr.S.SUKUMAR M.B.B.S., DNB (Paed)
Consultant Paediatrician
Registration No: 61207

7/140 B, Saravanampatti Road, Thulasi Pharmacy Building, Thudiyalur Bus Stand, Coimbatore - 641 034.
Ph : 0422 - 451 8090 Cell : 8 344 344 244 E-mail : shubamhealthcare@gmail.com

ANNEXURE-5

Data Collection Photos

ANNEXURE-6

INSTITUTIONAL HUMAN ETHICS COMMITTEE

Avinashilingam

Institute for Home Science and Higher Education for Women
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956) Re-accredited with 'A+' Grade by NAAC.
Recognised by UGC Under Section 12 B
Coimbatore-641 043, Tamil Nadu, India

6th August 2020

To
Ms. Priyanka Das
Department of Human Development
Avinashilingam Institute for Home Science and
Higher Education for Women
Coimbatore – 641 043

Dear Priyanka Das,

Ref: Your proposal No. IHEC /19-20/ HD /39 entitled "Effect of audio-visual distraction among preschool children during vaccination" submitted for approval to the IHEC on 30.10.19.

The Institutional Human Ethics Committee of our University hereby grants approval to your research proposal No.IHEC /19-20/ HD /39entitled "Effect of audio-visual distraction among preschool children during vaccination" submitted by you. The Approval number for the same is AUW/ IHEC/HD -19-20/XPD/39.

We wish you all the best in your research endeavours.

Regards,

S. Uma Mageshwari
Dr.S.Uma Mageshwari
Member Secretary