

# DOULA CARE AMONG PARTURIENT

*A Thesis Submitted To*  
*The Tamil Nadu Dr. M.G.R Medical University, Chennai,*  
*For The Award Of The Degree Of*  
*Doctor Of Philosophy In Nursing*



By

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C.S.I JEYARAJ ANNAPACKIAM COLLEGE OF NURSING

MADURAI

JULY 2015

# **DOULA CARE AMONG PARTURIENT**

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Pasumalai,  
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## **CERTIFICATE BY GUIDE**

This is to certify that the work embodied in the thesis entitled **“A study to evaluate the effectiveness of doula care on pain, anxiety and labor outcome among parturient in selected hospitals of Theni district”** submitted by Mrs.J.Kavitha for the award of the degree of Doctor of Philosophy in Nursing is a bonafide record of research work done by her during the period of study under my supervision, and guidance, and that it has not formed the basis for the award of any degree, diploma, fellowship or anyother similar title previously.

I also certify that this thesis is her original independent work. I recommend this thesis should be placed before the examiners for the award of Ph.D degree.

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**Date:**

## **CERTIFICATE BY CO-GUIDE**

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## **DECLARATION BY THE CANDIDATE**

I hereby declare that this dissertation/theses entitled “**A study to evaluate the effectiveness of doula care on pain, anxiety and labor outcome among parturient in selected hospitals of Theni district**” submitted by me for the degree of **DOCTOR OF PHILOSOPHY IN NURSING**, is my original and independent work done, during the year 2011 – 2015 under the supervision of Prof. Dr .A.Charles Stephen Rajasingh,M.S,M.ch, Research Guide, CSI Jeyaraj Annapackiam College of Nursing, Madurai. The work has not formed the basis for the award of any degree, diploma, fellowship or any other similar title previously.

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## **ACKNOWLEDGEMENT**

An effort of this academic pursuit would not have been a reality for me but for the constructive and purposeful support, guidance and encouragement rendered by a number of persons whose help I specially recognize through this acknowledgement. While my words are few, my appreciation is unmeasured, for the knowledge I realized and learning I experienced is second to none.

Any dissertation work is a corporate endeavor necessitating the assistance of more than one. My attempt to bring out this assignment is therefore teamwork. I the investigator of this study owe deep sense of gratitude to all those who have contributed to the successful completion of this study.

Many helping hands have smoothened every step of this dissertation I raise my heart in gratitude to **GOD ALMIGHTY** who has been my shepherd and guiding force behind all my efforts. His Omni presence has been my anchor through the hard times. I praise and thank the Lord Almighty for his abundant grace, blessing, support, wisdom, and strength throughout this endeavor.

At the outset, I wish to acknowledge with thanks for the unstinted support offered by Prof.Dr. C. Jothi Sophia Ph.D(N), Principal, CSI Jeyaraj Annapackiam College of Nursing, Madurai, for her valuable support in the form of guidance, expert suggestions, and ideas out of her experience which has laid a strong foundation, thereby teaching the nursing research and moulding this study.

I bounteously extend my thanks to Prof. Dr. Charles Stephen Rajasingh, M.S, M.ch, Research Guide, CSI JeyarajAnnapackiam College of Nursing, Madurai, for his guidance in the form of inspiring instructions, and eminent guidance, timely

corrections, encouragement intelligent and sustained guidance in my pursuit to complete this work.

With gratefulness I thank Prof. S. Sumithra, M.Sc (N), (Ph.D), Research Co - Guide, CSI Jeyaraj Annapackiam College of Nursing, Madurai, for her eminent guidance in the form of inspiring instructions, and encouragement in my pursuit to complete this work.

I wish to extend my gratitude to Prof. Dr.Merlin Balammal, Ph.D(N), Vice Principal, CSI Jeyaraj Annapackiam College of Nursing, Madurai, for the support and encouragement rendered to complete the study on time.

I also wish to acknowledge with thanks for the support offered by Prof. Dr. K. Rajalakshmi Ph.D(N), Research Guide, CSI Jeyaraj Annapackiam College of Nursing, Madurai, for her guidance, expert suggestions, which laid a strong foundation thereby moulding this study.

With gratitude I wish to acknowledge the support, and guidance offered by Prof.Dr.Angela Gnanadurai, Ph.D(N), for her suggestions and timely corrections rendered in completing the study.

I thank with deep sense of gratitude the Advisory Committee members Dr. Jeysingh and Dr.Sebesan CSI Mission Hospital, Madurai, for their support, keen interest, guidance, valuable suggestion, constructive criticism, continuous encouragement and co-operation extended to me.

I thank with sense of gratitude to Dr. Gabriel Jeyachandran, Director, CSI College of Education, Madurai, for the support, keen interest, guidance, valuable suggestion, constructive criticism, continuous encouragement and co-operation extended to me in this study.



I extend my sincere thanks to Prof. Dr. Jayathangaselvi Ph.D(N), Dr. Jancy Raychal Daisy Ph.D (N), and Dr.Jessie Ph.D(N) CSI college of nursing for their suggestions and support given to me in completing the study successfully.

I wish to express my heartfelt sincere thanks with deep sense of gratitude to Prof. S.Victor Devasivadam, M.Sc(N), (Ph.D) for his timely help, corrections, suggestions and constant motivation rendered to me throughout the study.

I extend my sincere thanks to sister Vanthana, Administrator, sister Dr.Pushpam,M.B.B.S.D.G.O, Holy Redeemer hospital, Theni for permitting me to undertake the study and for helping me in all ways and means during my data collection.

I wish to extend my gratitude to Dr.Suganthi,M.B.B.S Director, Krishnammal memorial hospital, Theni for the support and encouragement and providing me with the required facilities and permitting to undertake the pilot study.

I gratefully extend my heartfelt sincere thanks to the experts who validated the tool, intervention package and in providing their expert suggestions, their inputs and their constant encouragement to me in completing the study.

I wish to state my sincere thanks to all staff in labor ward, Holy redeemer hospital, Krishnammal memorial hospital for their cooperation, help, and timely suggestions rendered to complete the data collection of the study.

I hasten my thanks to Mr.A.Venkatesan M.Sc, P.G.D.C.A., Deputy Director of Medical Education, Chennai (Statistics) for his expert advice and guidance in the course of analyzing various data involved in this study.

I wish to extend my sincere thanks to Mrs. D. Nagomi Hepsiba, M.Sc (I.T), Lecturer in Computer Science, CSI Jeyaraj Annapackiam College of Nursing,

Madurai, for her timely help, support, encouragement offered in undertaking the study.

I wish to pledge my heartfelt thanks to the Librarians of CSI Jeyaraj Annapackiam College of Nursing, Madurai, College of Nursing Christian Medical College and Hospital Vellore, The Tamilnadu Dr. M.G.R. Medical University, Chennai, for their timely help in reviewing the literature in undertaking the study.

I hereby render my sincere thanks for the support extended by staffs of laser point Xerox, Madurai, for the support and assistance lent in preparing and editing this manuscript.

I am deeply indebted to my family members for their unending love, sincere support through fervent prayers provided to me throughout study to complete this work successfully.

I extend my sincere thanks to all my batch mates and friends whose support and motivation had been a source of encouragement throughout my study

I wish to express my heartfelt thanks to my family for the prayers and support given to carry out this study and to complete this study successfully.

This acknowledgement will not be complete if I fail to offer my special heartfelt thanks to my daughter Lakshanaa and my parents who supported me by all means.

At last but not least my heartfelt thanks to all my study participants and their family for their kind co operation during the data collection.

I extend my sincere thanks to all who directly and indirectly helped me to complete this study success.

**J. Kavitha, M.Sc (N).**

# ABSTRACT

## **Background of the study**

The main aim or goal of perinatal care is a family-centered approach. Many of the hospitals in the developed countries allow family members to be present during labor. Labor support has appeared in increasing numbers of official and legal documents as well as national and global initiatives. WHO also emphasized that the psychosocial care for women in labor is essential and should be based on a holistic perspective that encourages family-centered care that involves women in decision making.

Aim of the study was to evaluate the effectiveness of doula care on pain, anxiety and labor outcome among parturient in selected hospitals of Theni district.

## **Methodology**

A quantitative approach using a quasi experimental (post test) only design was applied to this study. The study was conducted in Holy redeemer maternity hospital, Theni among 200 primi parturient, (100 in the control group and 100 in the interventional group) who were selected by non probability convenience sampling technique. Data collection was based on interview technique and observation method.

The tools used in this study were demographic variables, standardized numerical pain rating scale, standardized state anxiety scale, and self developed questionnaire on labor outcome.

Data was collected from December 2013 to February 2015, at Holy redeemer hospital, Theni, after obtaining permission and ethical clearance from the concerned authorities. The participant's written consent was obtained. First 100 parturient were selected conveniently to the control group and the next 100 to the interventional group. Interventional group underwent doula care( Researcher acted as doula) along with routine care from latent phase of 1st stage of labor till immediate postpartum period.(until 1 hr after delivery ). The researcher assessed the level of pain, anxiety

during late active phase of first stage labor, and labor outcome was assessed during labor and immediate post partum period.

Control group underwent hospital routine care, pain and anxiety were assessed during late active phase of first stage of labor, and labor outcome observed during labor and immediate post partum period. The researcher taught about doula care to the control group to practice for future delivery. The Conceptual Framework for the present study was based on Roy's adaptation theory (1984). Data were analyzed by descriptive and inferential statistics.

### **Results**

There was a notable decrease in level of pain (15.8%,  $t=6.16$ ) anxiety (10.8%,  $t=6.01$ ) and improvement in the level of labor outcome (13.2%,  $t=7.60$ ) at  $p<0.001$  level in the interventional group as compared with the control group. Findings on correlation coefficient indicated that pain, anxiety and labor outcome were moderately related to each other among parturient in the interventional and control group

Age of the parturient, type of work, history of complications, weight of the parturient had significant association with level of pain among parturient in the interventional group. Age of the parturient, type of family, gestational weeks of parturient and history of complications had significant association with level of anxiety among parturient in the interventional group. Age of the parturient, Type of work, gestational weeks of parturient and history of complications, history of abortion had significant association with level of labor outcome among parturient in the interventional group

### **Conclusion**

The findings imply that adding doula care with routine care was found to be effective in reducing the pain, anxiety and in improving the labor outcome among primi parturient during labor. None of the parturient in the study reported adverse effects to doula care. Doula care filled the gap between the parturient and midwives.

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# CHAPTER I

## INTRODUCTION

### 1.1. BACKGROUND OF THE STUDY

Doulas – A risk free option for pain relief during child birth.

The birth of the child is the culmination of 9 month pregnancy. Child birth is one of the rewarding experiences that a woman goes through her life time. The feeling of giving birth to one's own identity is far supreme than any other feeling. Therefore it is extremely important to undergo a safe, pleasurable, empowered childbirth experience in order to ensure the wellbeing of the new born.<sup>1</sup>

Delivery and birth though is a joyful event in every family, the women who are pregnant for the first time perceive it as a frightened experience. They have apprehension regarding pain, and discomfort and added to it have fear of their baby having congenital abnormality<sup>2</sup>. Many parturient think that the intra partum period (i.e., labor, delivery, and the early postnatal) is a greater risk period for her and her baby.<sup>3</sup>

A woman generally has a vague notion that childbirth is unbearable pain and danger. This notion is formed as a result of the distorted tales heard during adolescence or later. As a result, during labor, a woman's negative attitude causes her entire body to tense up with fear. Pain and childbirth have been associated with each other for so long that normal uterine contractions are often referred to as 'pain'. The emotion of fear and its effects not only prolong labor but are also responsible for haemorrhage, tissue injury in the mother, exhaustion in the newborn.<sup>4</sup>

The main aim or goal of perinatal care is a family-centered approach. Many of the hospitals in the developed countries allow family members to be present during

labor<sup>5</sup>. Labor support has appeared in increasing numbers of official and legal documents as well as national and global initiatives. Many research studies have stated in their findings that the availability of a caregiver continuously should be an important factor in intra partum care.<sup>6</sup>

The environment in which the mother is admitted for perinatal care is comprised of various unfamiliar equipments along with unfamiliar language, procedures, and the presence of health care personnel can be intimidating. Fear and anxiety can increase pain during labor and lead to many consequences.<sup>7</sup> As per the findings of many research studies majority of the women have fear and anxiety and this may be due ignorant, prejudice, and misconceptions, this in turn increases mental tension leading to increased muscle tension of the uterine segments. When the muscle tension increases it also increases pain and longer duration of the labor process.<sup>8</sup>

“Doula (pronounced “doola”) is a Greek word which means “A woman who helps other woman” or care giver.<sup>9</sup> Doula is an assistant who provides physical as well as emotional support during child birth.<sup>10</sup> Shielakitzinger refers to them as birth sisters (1999).<sup>11</sup>

In ancient history before the field of obstetrics was developed, women had been assisting other women bringing up their children into the world from the womb. In the developed countries women delivered at home and they were assisted by females who were friends, relatives, or traditional birth attendants. These types of social support during deliveries and the quality of togetherness, caring, the social childbirth philosophy took major part in early twentieth century’s. After 1930 there was a shift in the child birth modalities from the homes to the medical institutions.<sup>12</sup>

In 1920s, forceps usage during uncomplicated births was started and promoted. Anesthesia came into force from 1940s. By 1950, caudal anesthesia was developed



and used, which was followed by the introduction of continuous lumbar epidural anesthesia in the 1960s. In the early 1970s, electronic fetal monitoring was introduced into the delivery rooms.<sup>12</sup>

As quoted by Yale, many new advances in the technology of medicine used in child birth and labor emerged. But it was done with the help of male physicians and the women delivered at medical institutions. “While the shift was of enormous benefit to high-risk mothers and babies, it subjected low-risk mothers to a battery of interventions that are often counterproductive to healthy labor and delivery”.<sup>13</sup>

Today, in most hospitals, although family members are welcome during labor and birth, “support” of laboring mothers is usually left to the intrapartum nurses. An inexperienced partner or family member of the woman may assist the nurse in support techniques. As the nurses have hectic amounts of clerical work only little time is available for the nurses for rendering tender loving care to the mothers. Thus the mothers concern over enormous interventions has resulted in parturient women choosing a professional support person or doula.

The recent advances had allowed women to remain conscious thus freeing nurses as they can care many patients. The birth attendants were not present at bedside throughout labor. Thus the practice of age old use of attendants came to an end in the early twentieth century.<sup>14</sup>

In olden days the mothers had learned regarding childbirth from their mothers and siblings. Birth took place in the familiar and comfortable place at home. There were many family rituals and cultural traditions which helped the women to become confident in giving birth. Throughout labor and birth, family members and wise women surrounded the laboring woman and gave her constant support and encouragement. When the modality changed from home to institutions there were no

people to support them during labor which lead to many consequences. Though nurses gave support, often they were responsible for several laboring women and could not stay continuously with one woman.

During 1960s, few childbirth organizations debated the presence of fathers into the labor room. Fathers provided special emotional support to laboring women and needed to be present during the birth of their child. Again now, in the 21st century, women needed support from females who were knowledgeable about child birth. Women often assume that a nurse, midwife, or doctor will stay with them throughout their labor. As discussed earlier the health care personnel could not stay with the delivering women due to their hectic clerical work and many other patient care, it can be helpful for another experienced woman to provide emotional and physical support during labor.<sup>15</sup>

Almost in every culture throughout history, women have been surrounded and cared by other women during childbirth. One of these women is a midwife, who is responsible for the safe passage of the mother and baby; the other woman is her mother who is beside the parturient and caring her, holding and comforting. Doula is a manifestation of the woman beside the mother.<sup>16</sup>

Sakala, Declercq, and Corry stated that globally the cesarean rate is more than 24%, induction rate is 44%, the use of epidural use is 63%, and artificial rupturing the membrane is 55%. A survey among the hospitalized mothers revealed that 75 percent of the women are confined to the hospital bed and in the lithotomy position. It also identified that the routine interventions are the concerns of mothers.<sup>17</sup>

Doulas are the persons who are skilled in non medical virtues. They assist the parturient and support them without doing clinical works. They do not engage

themselves in diagnosing or offering opinions, they do not make or take decisions for the parturient.<sup>18</sup>

Doulas started to flourish in their popularity in mid of 1980s as the parturient became stressed due to the increasing rate of surgical deliveries. They started to call for help from a female who were also knowledgeable about child birth to provide support and thus avoiding labor leading to surgical delivery.<sup>19</sup>

While discussing the roles of a doula, they provide child birth support activities and functions. They provide constant encouragement and counseling along with guiding the women in labor and child birth. They act as a liaison between the nurse and the patient along with the other health team members. According to Doulas of North America the roles of a doula are as follows,

- To predict and recognize delivery as a remarkable and unforgettable experience.
- To keep abreast with the physiology related to labor along with the psychological needs of a parturient.
- To assist the parturient in planning for an effective, safe labor and child birth.
- To support and stay through the entire prenatal and intra natal period.
- To improve an effective communication between the parturient and her spouse and also with the health care team members.

The Doulas use wide range of techniques such as guided imagery, therapeutic massage, acupressure, and breathing exercises against pain they also provide advices on changing positions which accelerates the labor. They also guide in the management of fear and anxiety during labor.<sup>1</sup>

The 21<sup>st</sup> century is described as the era of safe child birth, as there were vast improvements in the field of labor and child birth which focused on women's

psychosocial aspects. They used the use the power of touch and massage which aided in the reduction of pain, anxiety and stress during labor. Massage aids in the stimulation of producing oxytocin. The secretion of oxytocin into the blood causes a uterine contraction which in turn leads to a sense of well being, drowsy feeling, and increasing the coping to pain. On the other hand the synthetic oxytocin administered intravenously cannot cross the blood brain barrier, and hence it increases the contractions alone without the natural psychological effects.<sup>20</sup>

Simkim and Jamie Swan found that doula care during labor and child birth reduced surgical delivery by 26%, reduced the use of forceps by 41%, reduced the use of pain medications by 28 % and improved the satisfaction by 30 %. It also improved the self esteem and reduced the level of anxiety and depression.<sup>21</sup>

All women should have an easy access to antenatal checkups and labor support; it should be easily accessible, affordable, and available across the cultures. Lamaze quoted to plan a supportive birthing environment which includes a holistic approach in all means. A mother who is experienced in labor and childbirth provides a deserved contribution to the care during labor and delivery.<sup>22</sup>

Though pregnancy, labor and delivery are a joyful occasion in the every family the pain associated with labor is severe, leading to distress and anxious regarding the physiological changes in labor and child birth. Apart from the primitive methods of management, epidural analgesia and many complementary alternative methods have been used in managing pain, reducing stress, and anxiety.

The midwives, nurses and other personnel assist the parturient in psychosocial aspects by using complementary and alternative therapies. Most of the alternative methods are imported from the western origin.<sup>23</sup>The percentages of the population who report having used complementary and alternative therapies at least once vary

considerably, from 80% in Africa, 70% in Canada, 49% in France, 46% in Australia, 42% in the US, 40% in China, 31% in Belgium and 18% in Holland. According to a study by the Spanish Ministry of Health's Observatory of Natural Therapies, 95% of the Spanish populations were aware of natural therapies and 23% have used one.<sup>24</sup>

No two labors are alike, each is different. Even in one woman two labors will not be alike. There is no right or wrong, perfect or imperfect in labor. Your labor just happens; you cannot set specific goals for it. You simply equip yourself with some knowledge on relaxation and breathing techniques.<sup>2</sup>

According to World Health Organization (WHO) the goal for care in child birth process is to achieve safer mother and child by using minimal procedures with maximum safety to mother and child.<sup>25</sup>

Nurses are primary caregivers during the birth process, have the potential to reduce some use of medical interventions by providing effective comfort measures that support and promote physiologic labor.<sup>26</sup> Although effective at relieving pain, parenteral pain medication and epidural interventions cause known side effects for both mother and fetus, consequently lengthening the labor duration.<sup>27</sup>

Klaus reported that Constant assistance during perinatal period is an exception but due to the unpleasant experiences in labor and child birth had lead to change the exception of constant assistance to a routine care in the western culture. The aspects of continuous care include physical and emotional support, providing information regarding labor and child birth, and teaching about coping techniques and comforting techniques.<sup>28</sup>

World health organization had stated that parturient during the intranatal period can maintain any position they feel comfortable, but have to avoid long periods of lying on their back. The other comfortable positions which include knee chest,

standing, sitting and squatting are advisable. The comfort of the women should be taken in to account and their choice should be given a preference.<sup>29</sup>

Several factors affect the mother's experience of childbirth, but one of the most prominent factor is the support given during labor. Support can be given by the partner, family members, friends, doulas or hospital staff. Continuous support means the woman is having a supportive person by her side throughout the major part of the delivery.<sup>30</sup>

Providing appropriate and quality care for delivery process can be done in the form of the "Labor Support". This approach is one among the factors taken into account while trying to reduce the maternal and neonatal mortality percentages and thus fulfilling the Millennium development goals. It has also an important role in the promoting maternal satisfaction.<sup>31</sup>

Me as the researcher 10 years back underwent normal delivery and my length of II stage labor was more than 3 hours and I was exhausted more and did not have energy to cope with II stage of labor, hence my physician delivered my baby with the help of outlet forceps to avoid fetal distress. So the researcher personally feels happy to assist or help the women in labor through this present study.

## **1.2. SIGNIFICANCE AND NEED FOR THE STUDY**

One truth we gain from living through the years,

Fear brings more pain than does the pain it fears.

- John Golden

WHO also emphasized that the psychosocial care for women in labor is essential and should be based on a holistic perspective that encourages family-centered care that involves women in decision making.<sup>25</sup> Every women in the perinatal period has a right to be assisted by another women or a man whom she has confidence

and trusts. If no one is available of that sort then may be a person who is specially trained to provide an assistive care.<sup>32</sup>

In olden days among many cultures women have delivered at their homes with the assistance of another women.<sup>33</sup> However, as years past majority of the women deliver in institutions almost in all the developed and the developing countries. Today labor and delivery are considered as medical events, and women who is in is considered as patients.<sup>34,35</sup> As a result of the above mentioned fact constant intrapartum assistance received by women is being lost.<sup>36</sup>

Majority of the birth settings restrict the women from walking or moving freely. A survey among the mothers in 2002 revealed that after admission for labor in the hospitals the mothers 71% did not walk around. The reason for this was they were "connected to things" 67%, followed by "unable to support self due to pain medication" (32%), and "told not to walk around" (28%). Only sixty percent of them reported that they changed positions while on bed to relieve pain during labor.<sup>26</sup>

WHO reproductive health library stated in 2012, all hospitals should implement programmes that offer continuous support to women during labor. The presence of a companion of the woman's own choice should be permitted and encouraged. An alternative to this may be to integrate "doulas" in maternity wards for the provision of continuous support to women during labor. Doulas are lay women who have received special training to provide non-medical support to women and families during labor, childbirth and the postpartum period. Policy-makers and administrators should recognize that the best outcomes are achieved when continuous labor support is provided by non-staff providers, especially doulas. This is particularly important where policy-makers wish to reduce high caesarean rates in their hospitals or country.<sup>37</sup>

The total cesarean rate in the United States (U.S.) in 2006 was 46.6% greater than in 1970. The Centers for Disease Control and Prevention (CDC) reported that in 2006, 31.1% of all U.S. deliveries were accomplished via cesarean. Among term, low risk women giving birth for the first time and with a vertex presenting fetus, a cesarean rate of 25% was reported by the CDC in 2005. These cesarean rates are now higher than ever before and farther from national objectives. It has been recently suggested that a cesarean rate up to 10% leads to good outcome but on the other hand a caesarean rate greater than 15% leads to harmful effects. This suggestion reaffirms the conclusion reached by the World Health Organization over twenty years ago that no region in the world is justified in having a cesarean rate above 10-15%. Although it is difficult to put an accurate figure on the financial impact of current cesarean rates, it is estimated that costs for a cesarean are, on average, \$2180 more than for a vaginal delivery.

Based on 2006 statistics, simply decreasing the current cesarean rate of 31.1% to 30.1% would save approximately \$93 million per year while decreasing the total U.S. cesarean rate to 15% would save approximately \$1.5 billion per year. With the dual benefit of decreasing morbidities and cost achievable through decreasing cesarean rates, understanding factors that may contribute to cesareans must be a research priority.<sup>38</sup>

Cesarean section (CS) rates had almost doubled in the last decade in the developed countries like Australia, France, Germany, Italy, North America and United Kingdom. Same situation is found even in the developing countries like China, Brazil and India, especially due to institutional births. Even though the indication of CS have not changed so far and these remain fetal distress, mal presentation, multiple gestation, previous caesarean, protracted labor and CS on demand.<sup>39,40,41,42</sup>



The survey conducted by World Health Organization between 2004 and 2008 in which 24 countries from the region of Latin America, Africa and Asia participated has reported in 2010, that, in 23 countries rate of Caesarean deliveries without medical indication ranged between 0.01% and 2.10%, whereas, in China it shoots up to 11.6%.<sup>43</sup>

The death and disability caused by unwanted procedures is a serious problem, and a number of obstetrical interventions can have a negative impact on health among the mother and child. Though we don't know the causes of caesarean section in India the common causes may be increasing access to health care technologies, women empowerment and decision-making status in deciding for their labor and childbirth aspects. Even painless delivery concept also had influenced the caesarean section rates.<sup>44</sup>

The Caesarean Sections rate in India was 7.1% in 1998 and 16.7% change in the rates is expected every year in India which is one of the highest rates among the countries of South East Asia region.<sup>45</sup> Various studies have shown that constraint of data has masked actual rates. The five year audit from a large teaching hospital in Kolkata showed a Caesarean Section rate of 49.9%<sup>46</sup> and another study in Madras showed a 50% Caesarean Section rate. This current rate was 1.7 times higher in Kerala which had occurred in the private hospitals in Kerala.<sup>47</sup>

The international mother baby childbirth initiative (IMBCI) explains the need for evidence-based and humanistic improvements in perinatal care. It specifies the importance of perinatal care, a pleasant birth experience for the mothers, and its impact on the outcome. The purpose of the IMBCI is to promote a global awareness on the health and well-being of all mother and child during pregnancy, labor and delivery and Setting a gold standard for excellence in obstetrical care. The mission of

the IMBCI is to improve care throughout the perinatal period, to prevent mortality, to alleviate suffering, and to promote health of the mother and child globally.<sup>48</sup>

Doula care usage during labor and the advantages of having a doula during labor has been recognized by the World Health Organization, and the American College of Obstetricians and Gynecologists, the Society of Obstetricians and Gynecologist of Canada, the Institute for Health Care Improvement (Boston), and the Medical Leadership Council; an organization of 1200 US Hospitals. Constant psychological support for the mothers who are in labor has been an essential concept in improving the standards of obstetrical care which increases the satisfaction of a woman's birth experience and leading it to a pleasant experience.<sup>49</sup>

Wall and Melzack believed that pain must be relieved effectively because pain and discomfort during labor can increase the duration of labor, increases anxiety of the mother and may have deleterious effects on mother and child.<sup>50</sup>

The 'Better Births Initiative' which is a structured motivational program promotes humane, evidence-based care during labor. This program has the concept of promoting assistant or a companion during labor which prevents unwanted procedures such as starvation, supine position and routine episiotomy. Uruguay enacted a law in 2001 stating that the women have the right to have a companion along with them during labor for improving health of the mother and the child. The persons for assistance may be spouses, mothers, a family member, or a relative to reduce pain, shorten the length of labor, initiate breast feeding, and improve the satisfaction.<sup>51</sup>

### **1.2.1. Pain**

Labor pain is a complex, personal, subjective, multi-factorial phenomenon which is influenced by psychological, biological, socio-cultural and economic factors. Though pregnancy and labor is considered as one of the most painful events in human

life, it varies from person to person and from every pregnancy. Usually the mothers who are pregnant for the first-time have increasing levels of pain than the mothers who had delivered before.<sup>52</sup>

Pain during the first stage of labor starts first from the cervix and the muscles of the lower uterine segments.<sup>53,54</sup> when the cervix along with lower uterine segment is dilated it results in swelling, stretching and atrophy. Dilation of the vaginal canal causes acute tearing of fascia and causes intense pressure of the perineum.

Aching, or cramping pain results due to the pressure of the roots of lumbosacral plexus as a result of pain-sensitive structures within pelvic cavity and the stimulation of these structures leads to pain in the lumbar region, hence the pain in the first stage is more than the second stage.<sup>55,56,57</sup>

Spielman in the year 1987, in reviewing the use of systemic analgesics during labor, stated that "all narcotics used for pain relief may adversely affect the fetus or neonate". Avoiding neonatal respiratory depression, a direct result of placental transfer of the narcotic, requires careful timing and dosage management when administering the drug.<sup>58</sup>

Administration of meperidine (Demerol) has been shown to depress newborn neurobehavioral (wakefulness, sucking, and attention to visual and auditory stimuli) responses for as long as four days.<sup>59</sup> Babies born to mothers who received meperidine during labor have been observed to have abnormal reflexes and decreased social responsiveness.<sup>60</sup>

The use of lumbar epidural anesthesia in management of discomfort and pain during labor and child birth has been increasing here as well as throughout the world,<sup>61</sup> despite its advantages, potential risks must be recognized. Hypotension during perinatal period is major consequence because of epidural block and may result in

decreased cerebral and uterine blood flow.<sup>61</sup> Administration of epidural anesthesia by a physician skilled in this technique is mandated, as well as one-on-one nursing care for continuous monitoring of the maternal-fetal unit.<sup>62</sup>

Paracervical block anesthesia has also been used for pain relief during the first stage of labor, but bradycardia is a major risk to the fetus.<sup>63</sup> although fetal effects of the bradycardia remain controversial, fetal acidosis (fall in pH and rise in base deficit) has been reported with bradycardia lasting more than ten minutes.<sup>64</sup>

Potential complications following obstetric analgesia and anesthesia have led to emphasis on non pharmaceutical pain relief methods. Also, women have described increased Child birth satisfaction with active participation, self-control, and self-reliance during labor and delivery.<sup>65</sup>

Amedee peret FJ stated that in recent years in Brazil many pregnant women are increasingly resorting to a scheduled lower segmental cesarean section (LSCS) in order to avoid labor pain, most women request pain relief and various pharmacological and non pharmacological intervention.<sup>66</sup>

Since the origin of mankind for women the reduction of pain has been an important topic of interest especially during labor and delivery. Commonly it is being managed by pharmacological techniques. But during early labor the complementary modalities of pain management is a part of nursing practice which is safe as well as without adverse effects.<sup>67</sup>

Jimenez suggested that there should be shift of paradigm from discomfort management to alleviate suffering and provide comfort as educators initiate the health care receivers with techniques that improves the comfort.

The use of non pharmacological procedures should adjunct the treatment and not replaces the treatment for managing the women during labor and child birth.<sup>68</sup>

Numerous non pharmacologic pain-relief techniques were used on laboring women to assess which was most effective technique. Of the ten non pharmacological strategies rated by forty six mothers, breathing techniques were reported as the most active pain relieving technique used during labor. It is then followed by various relaxation methods, acupressure, and massage.<sup>69,70</sup>

### **1.2.2. Anxiety**

Anxiety is silent and creeps into every aspect of life right from womb to tomb. Parturient often experience anxiety which is normal up to a certain limit; findings from previous studies quote that 1 in 5 parturient experience varying level of anxiety from moderate to severe. 6%-13% of the mothers experience severe anxiety which affects labor and child birth.<sup>71</sup> severe anxiety interferes with labor and child birth process; both the physical and the psychological pathways are affected. Use of epinephrine promotes the uterine contractibility and thus aids in labor process.<sup>72</sup>

Ryding found that severe anxiety among the parturient may affect the labor process and lead to emergency surgical deliveries.<sup>73</sup> Globally as well in United States the incidence of surgical deliveries are about 29%. In India it is about 70 – 80% where institutional deliveries take place.<sup>74</sup>

Majority of the studies revealed that there is a remarkable increase in the surgical deliveries around the states like Andhra Pradesh, Goa, Kerala, Tamil Nadu and West Bengal and the reason pertaining to it is the fear of child birth especially among the primi parturient. Educational status and their socio- economic status of the parturient are important factors in deciding the modality of delivery.<sup>44</sup> In some

studies, the most common cause of caesarean section in primiparous women was the fear of childbirth.<sup>75,76</sup>

The psychological aspects of the mothers are as important as of her physical well being and its equally important.<sup>77</sup>

According to Langley and Anderson (1893-94), stimulation of sympathetic nerves to the uterus by fear causes the uterus to appear pallid, firm, bloodless, but when the stimulation is removed, it rapidly fills with blood and becomes elastic deep pink uterus leads to urgent distress of the fetus. Restricted circulation can give rise to severe pain in the muscle tissues of the uterus and lengthen the labor.<sup>4</sup>

Mild anxiety is considered normal for women during labor and birth. However, excessive anxiety and fear increases catecholamine secretion, resulting in more pelvic pain. The stimuli reaching the brain; this in turn magnifies pain perception. As anxiety heightens, muscle tone heightens, the course of uterine contractions decrease, and pain increases; thus fear and anxiety mechanism comes in to action. Ultimately this cycle will slow down the progress of labor<sup>78</sup>.

When women support their pelvis in their preferred positions gravity is used and thus aiding in mobility. This leads to improved fetopelvic relationship. Numerous study findings done on the relationship between fear and anxiety, stress and labor outcome had shown that increased levels of anxiety is due to the presence of increased levels of epinephrine (Stress Hormone) in the blood, which may affect the labor process, cause abnormal fetal heart rate patterns, reduced contractions of the uterus, longer duration of labor stages, and apparently low Apgar scores.<sup>79,80</sup>

Childbirth is viewed as a psychologically important task for pregnant women. Mastery or control of that task and the childbirth satisfaction that results may lead to increased locus of control, increased self-esteem, and decreased postpartum

depression which all affects the way in which women assume the task of motherhood.<sup>64</sup> Pain during childbirth can be viewed as a stressor that potentially threatens mastery of the task of childbirth. By mobilizing inner resources and using pain management techniques not totally reliant on doctors and drugs, laboring women can potentially maintain their sense of mastery and positively perceive their birth experience. Health care workers should provide choices, such as use of non pharmaceutical comfort measures that allow women to cope largely through their own resources supporting this concept of mastery.<sup>81</sup>

A study done by Oumtanee and Ratchukul in Thailand quoted that parturient needed nursing support to assist them in managing pain, discomfort, stress, and anxiety, but when they expressed their needs to the caring nurses the nurses did not give attention to their needs hence the author revealed that there was a shortage in healthcare members and because of this shortage the quality of care given to the intra partum mothers was poor.<sup>82</sup>

Studies have shown that anxiety due to labor in women may lead to obstetrical complications like preeclampsia, forceps delivery, prolonged precipitated labor, post partum hemorrhage, manual removal of placenta, fetal distress, preterm labor, and child birth abnormalities.<sup>83</sup>

### **1.2.3. Labor support (doula) and outcome**

Doula -It's a weird word, one may not be familiar. They are birth supporters or assistants used during deliveries but on a small scale. On the other hand the recent trend of using a doula is advancing in labor and child birth. Majority of study findings have revealed that use of doula during labor has many benefits such as reduction of the duration of labor process, reduces pain medications for pain

management, and reduces the incidence of surgical delivery to half. A doula will charge a specific fee for helping you during the birth.<sup>84</sup>

“The doula’s role is to provide physical and emotional support and assistance in gathering information for women and their partners during labor and birth. The doula offers help and advice on comfort measures such as breathing, relaxation, movement and positioning. She also assists the woman and her partner to become informed about the course of labor and their options. Perhaps the most crucial role of the doula is providing continuous emotional reassurance and comfort”.<sup>85</sup>

In Ireland National hospital constant assistance in psychological support for a mother in labor was introduced 25 years ago and was used in labor and child birth. The results after using were beneficial and enormously impressive. It also revealed that there was a drop in the hospital's average length of labor to from half to a third than before the program. The program also uses membrane rupture and oxytocin to assure a certain dilation rate. Surgical delivery rates had been 6 percent for more than 2 decades. Duration of labor was reduced, complications were reduced, and hospital stay after delivery was apparently shortened.

The Swiss Association of Doulas was founded in 2006. During 2011 around 90 doulas had been offering their services as doulas in birth care. Their work was appreciable and welcomed at majority of the Swiss hospitals. Whereas in Australia, the doula care was not regulated and certification was not compulsory for using doulas in child birth activities hence, anyone can be a doula. In United States and Canada, labor/birth doulas are not regulated although training and optional certification was available. Few organizations where training for doula is available are CAPPA (Childbirth and Postpartum Professional Association), CBI (Childbirth



International) , DONA (Doulas of North America) ICEA (International Childbirth Education Association).<sup>1</sup>

Most of the hospitals in North America have their own doula care programs in which they employ doulas during labor and child birth for assisting in social support, psychological support.<sup>86</sup>

Doulas known as the “mother the mother,” and her role involves in :

- Providing psychological support.
- Using comfort measures such as breathing, relaxation techniques, and ambulation and positioning.
- Providing expert advice or information.
- Reassuring and supporting the mother continuously.
- Improving communication between the mother and health team members.

What doulas do not do?

- Doulas are not medical professionals and they do not engage in diagnosing or taking decisions.
- They do not involve in performing procedures like per vaginal exams or fetal heart monitoring
- They do not leave the mother until child birth and immediate postpartum period.
- They don't have bias in caring and irrespective of culture, caste, creed, etc.
- They don't take the role of one's spouse.
- They do not deliver the baby.<sup>87</sup>

The service of a doula is relatively new to India. In India, majority of the hospitals don't allow their family members to be with the parturient during labor and

child birth in the labor rooms. Now a days as per the WHO recommendations the partner or the women who trusts recommended to allow in the labor ward, but due to lack of awareness, very less number of women adopting the labor support by their partners, relatives, and friends.

Childbirth and Postpartum Professional Association (CAPPA) India, a non-profit organization headed by Sonali Shivilani said, in a city where everyone is eager to try out the latest delivering techniques, be it hypno-birthing or water-birthing, a new concept is fast catching up is the use of a doula. Currently, there are only a few doulas in the city, and most are from abroad and recently CAPPA India offering training courses for doula, child birth educator and lactation educator.<sup>88</sup>

Anikapuri as one of the doula and child birth educator in India, feel the main qualities of a doula should be genuine interest in women and supporting their choices, empathy, passion (to be able to stick around for those 48 hour labors) and determination (to be able to stand your ground). In India today where doulas are a new concept and also expressed that, she shocked at the number of women she met today who want to have doula support during labor! We thought the concept would take a while to catch and perhaps yes, the majority of people don't really know who we are or what we do. But the word is spreading and when they hear that there is someone available with you for your entire labor and birth, we find women loving, needing and willing to enlist that support. Nuclear families are increasing and couples want their own information, their own set up and are not willing for extended families to be so involved anymore. In fact, in my last few labors, I have had the couple request even mom and mom-in-law to leave the labor and delivery room. So, in my opinion there is a huge scope for Doulas in India.<sup>89</sup>

Simkin has quoted in 2007 that effort should be taken to make labor and child birth experience a pleasant one, without any stress, and a good privacy for a delivering mother. The routine procedures which are not confident of bringing a positive benefit should be avoided and the communication should be respected on either side. In many places women do not have an access to doula care.<sup>90</sup>

As revealed by enormous study findings social support reduces the emotional distress, stress, and thus improves the labor outcomes. This is an important factor which helps the parturient to cope with pain and discomfort and in managing stress, apprehension, and fear.<sup>91</sup>

In the management of pain an alternative to epidural analgesia is social support as quoted by many studies and it reduces pain and discomfort, reducing physical ailments.<sup>92</sup> Continuous, one-to-one support has the potential to provide emotional stability and poise than when compared with usual care. When the use of epidural analgesia is reduced during labor it may in turn reduce use of intravenous infusion, amount of synthetic oxytocin, vacuum usage, usage of forceps, and reduce continuous bladder drainage. It may also increase ambulation during labor and enhance spontaneous birth.<sup>93</sup>

The mechanism of action by which doula care produces its positive effect is assumed to be due to the catechol-amine, stress hormones-adrenalin and nor-adrenalin. These hormones cause increased secretion of adrenalin which reduces the labor process and making labor and child birth stressful and leading to complications. When the mother is supported continuously the mother's physical and psychological health is improved. By calming the patient through touch, reassurance, and relaxation, the women's stress hormone secretion is reduced hence apprehension and pain is

reduced, this ultimately lessens the need for medical intervention and shortens the duration of labor.<sup>94</sup>

A systematic review from Hodnett stated that continuous support during labor and delivery contributes a reasonable benefit to satisfaction. When parturient evaluated their labor experience they found out four factors which predominated the level of satisfaction during labor and they were, amount of assistance from supporting person, relationship with caregivers, advice in decision-making activities, and expecting more than normal.<sup>95</sup>

In the year 2012 Hodnett and his colleagues published an updated Cochrane review on the use of continuous support for women during childbirth. The findings of 22 studies that included more than 15,000 women were undertaken. Women were randomized to either continuous care group or to social support during labor. For the participants in the interventional group continuous support was given by a health team member such as a midwife or nurse. Women who were not part of the woman's social network and not part of hospital staff (doula 5 studies; childbirth educators 1 study, retired nurses 1 study), or a companion of the woman's social network such as a female relative or the woman's partner (6 studies). Continuous support was compared with usual care.

The findings revealed that among the women who had continuous support had normal vaginal deliveries, their use of pain medications was reduced and also there was a reduction in the amount of negative feelings, usage of forceps, and surgical deliveries. Labor process was enhanced with shorter duration of labor. APGAR was increased and labor outcome was improved in such women when compared with women with usual care group.<sup>96</sup>

There are many studies which also have quoted that a supporting woman, apart from the nurse who cares her, is the best assistant for providing supportive care. Rosan P conducted a meta-analysis among 8 randomized trials in which supportive care was provided by various categories of health caregivers. These trials investigated untrained lay women, trained lay women, female relatives, nurses, lay midwives, and student lay midwives as support persons. The author found that a supportive care given by a lay women who is untrained was effective and consistent on the outcome variables during labor and child birth.<sup>97</sup>

The roles of the obstetrical nurse and the professional doula differ markedly, yet they also overlap somewhat and should complement each other.<sup>98</sup> The role of the nurses involves both performing clinical skills as well as administrative responsibilities which is not a part of the doula's role and their responsibility is to assess both the mother and child, with usual care such as administration of drugs and intravenous fluids, and stabilizing the newborn based on hospital policy.

A study undertaken to examine the parturient expectations, among primiparous mothers, revealed that the caring intrapartum nurse spends 53% of her time in managing physical discomfort, providing psychological support, and in offering information regarding labor and child birth.<sup>99</sup> Whereas in controversy another study found that the nurses spent only 6–10% of their time engaged in labor-support activities.<sup>100</sup>

In this view a similar study identified few barriers to supportive care as quoted by the caring nurses, they were shortage of staff, uncomfortable physical environment, and pessimistic attitude of the staff towards supportive care.<sup>101</sup> This gap in care can be filled or bridged by the doulas who can assist in providing optimal optimistic care during delivery.

Hodnett, Gates and Sakala stated that various studies have shown the benefits of doula were 26% less likely to have cesarean, 41% less likely to have forceps or vacuum extraction, 40% less likely to use oxytocin, 25% reduction in the length of labor, 28% reduction in the use of analgesia.<sup>96</sup>

A meta analysis from six randomized studies, concluded that the presence of doula reduces the incidence of surgical delivery by 50 %, reduced the duration of labor by 25%, reduced the synthetic oxytocin use by 40 %, and request for epidural pain management drugs by 60%.<sup>102</sup> When the number of surgical deliveries are reduced by 50% it also reduced the amount of money spent on this by the health agencies. The expenditure was reduced to 1.3 billion dollar annually.<sup>9</sup>

The findings of the study undertaken by Ciobanu and Anca revealed that labor outcome variables were improved among the parturient who practiced pranayama and relaxation in the first stage of labor than the mothers who received usual care. There was a marked decrease in the length of first stage of labor among pranayama group.<sup>103</sup>

Though it is known that having a good social support during labor and child birth is an important function for the nurses and midwives, shortage of health care personnel contribute majority of the problems which are critical in nature. These health care members in turn have limited time to provide supportive care; hence the parturient women are left without continuous social support. It is also proposed that support by a doula should be made a part of comprehensive nursing strategy to provide quality care during delivery.

Doula support is known to have a positive effect on labor process, delivery and psychosocial outcomes. Although nurses are efficient in providing physical and psychological support, because of the time constraints their care is also limited in the amount of support. To enhance the comfort and quality of the care given, it is

important for the nurses to identify and test the measures which enhance support. It has been identified that doula care is one such intervention who serves as an informal support person to provide appropriate care to laboring women and it is clinically significant.<sup>104</sup>

Labor pain is an inevitable and intricate part of the childbirth. The intensity of the pain experienced during labor affects maternal psychology, labor progress and fetal well-being. Physiological factors, such as uterine contractions and cervical dilatation though essential parts of labor, are the major contributors to labor pain. Psychological factors, such as stress, anxiety, fear, sense of loss of control and sense of abandonment also contribute to it.<sup>105</sup> There is a wide spectrum of factors which may influence labor pain including personal, physical and medical characteristics.<sup>106</sup> It is seen that 68.3% of women described labor pain as severe and > 86% of the women would want the pain to be relieved. Understanding the patient's suffering and ensuring safe labor with minimal pain is one of the basic principles of modern obstetrics.<sup>107</sup> Methods for relieving pain and anxiety associated with childbirth have long been the concern of health care professionals. Although pharmaceutical agents continue to be used to provide pain relief to women in labor, they are now used judiciously.<sup>108</sup>

The interventions that make motherhood safe are known and the resources needed are obtainable. Doula care has become one of the emerging trends in caring for the parturient in labor and child birth. Doula care is one of the resources which make the parturient to cope up with labor process effectively, hence it helps in reducing pain, anxiety, and promotes labor outcome which in turn indirectly reduces health care costs and maternal fetal complications.

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) in today's scenario gives importance to patient's experience which also can be referred to "patient satisfaction". Simultaneously satisfaction in labor or pleasant labor experience is an important aspect in many of the private hospitals.<sup>109</sup> Usage of Doula care in labor and delivery is cost effective, has no adverse effects, Hence a new era of the health-care system, and may be realized in the developing countries when doula care is an adjunct to usual perinatal care.

In this study the investigator believed in mothering the mother by offering continuous uninterrupted physical and emotional support throughout the labor, immediate post partum period, with the primary goal of helping parturient to have a safe, pleasant and an empowered birth experience.

### **1.3. STATEMENT OF THE PROBLEM**

A Study to evaluate the effectiveness of doula care on pain, anxiety and labor outcome among parturient in selected hospitals of Theni District.

### **1.4. OVERALL AIM**

To help the parturient to reduce and manage pain and anxiety with non pharmacological methods, promote labor outcome, thus leading to blissful birth experience thereby reducing the health care costs and complications of child birth.

### **1.5. OBJECTIVES**

1. To assess pain, anxiety and labor outcome among parturient of control group after routine hospital care.
2. To assess pain, anxiety and labor outcome among parturient of interventional group after doula care.



3. To evaluate the effectiveness of doula care on pain, anxiety and labor outcome among parturient between control group and interventional group.
4. To find out the correlation between pain, anxiety, and labor outcome among parturient in the control group.
5. To find out the correlation between pain, anxiety, and labor outcome among parturient in the interventional group.
6. To associate pain, anxiety, labor outcome with selected socio demographic variables and clinical variables among parturient of control group.
7. To associate pain, anxiety, labor outcome with selected socio demographic variables and clinical variables among parturient of interventional group.

#### **1.6. HYPOTHESES**

**H<sub>1</sub>** .There is a significant difference in the post test scores of pain, anxiety and labor outcome among parturient between control group and interventional group.

**H<sub>2</sub>** . There is a significant relationship between pain, anxiety and labor outcome among parturient of control group.

**H<sub>3</sub>**-There is a significant relationship between pain, anxiety and labor outcome among parturient of interventional group.

**H<sub>4</sub>**-There is a significant association between pain, anxiety, labor outcome and selected socio demographic variables, clinical variables among parturient in the control group.

**H<sub>5</sub>**-There is a significant association between pain, anxiety, labor outcome and selected socio demographic variables, clinical variables among parturient in the interventional group.

## **1.7. OPERATIONAL DEFINITIONS**

### **1. Effectiveness**

It refers to the difference between the post test scores of pain, anxiety and labor outcome between the control and interventional group as measured by standardized numerical pain rating scale, state anxiety scale, and self developed labor outcome questionnaire.

### **2. Doula care**

In this study it refers to the qualified nurse (investigator) as birth assistant (doula), for the parturient of interventional group, from the first stage of labor until immediate post partum period (1hr after delivery). It includes selected nursing measures such as massage, breathing exercise, positions, and continuous emotional psychosocial support.

### **3. Pain**

It is an unpleasant sensation in varying degrees felt by the parturient while labor begins and it last throughout labor process as measured by standardized Numerical pain rating scale.

### **4. Anxiety**

It refers to panic attacks felt by the parturient during labor process as measured by standardized Spielberger's state anxiety scale.

### **5. Labor outcome**

It refers to the progress of labor which was measured in terms of length labor, modality of delivery, APGAR score of baby, duration of hospital stay etc as measured by self developed labor outcome questionnaire.

### **6. Parturient**

In this study it refers to pregnant woman with labor pain who admitted in labor unit and waiting to deliver the baby for the first time.

## **1.8 ASSUMPTIONS**

1. Almost all parturient report some degree of pain during the process of childbirth.
2. Primi parturient may have fear and anxiety regarding birth process.
3. The level of fear and anxiety may vary from parturient to parturient
4. Doula care has no adverse effects on parturient.
5. Doula care helps the parturient to manage with pain, promotes labor outcome and may reduce anxiety

## **1.9. DELIMITATIONS**

- The study is delimited to selected hospital of Theni district.
- The study is delimited to only primi parturient.
- The responses of the participants elicited through standardized tool and structured questionnaire

## **1.10. PROJECTED OUTCOME**

- The findings of the study will help to know the effectiveness of doula care in terms of reduction in the labor pain, anxiety and promotes good labor outcome.
- The study outcome enables the nurse educator or nursing faculty to guide students in such a way to provide holistic nursing care.
- The study outcome may prove that doula care is cost effective without any adverse effects.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

Researchers generally undertake a literature search to familiarize themselves with a knowledge base. A review of related literature is an integral component of any scientific approach. It involves a systematic identification, location, scrutiny and summary of written materials that contain information on a research problem.

A review of literature helps to assess what is already known, what is still unknown and untested, justify the need for its replication throw some light on the feasibility of the study and problems that may be encountered. It also helps to involve promising methodological tools, which sheds light on ways to improve the efficiency of data collection and obtain useful information on how to increase the effectiveness of data analysis.

The overall process of review of literature is to develop a strong knowledge base to carry out research and other scholarly educational and clinical practice activities. It helps to determine the gaps consistencies and inconsistencies in the literature about the particular subject under study.

The related literature is reviewed from the published and unpublished articles and Medline and internet search to broaden the understanding and insight in to the selected problem under the study.

The review of literature is a broad overview of studies, which are organized chronologically and arranged under the following sections.

## **2.1. Review of literature**

Section 1: Literature related to pain on labor women

Section 2: Literature related to anxiety on labor women

Section 3: Literature related to doula (support) and labor outcome among parturient

## **2.2. Conceptual framework**

It was based on Sister Callista Roy's Model of Adaptation.

### **2.1.1. Section 1: Literature related to pain on labor women**

A scientific research was undertaken with the aim to determine the effectiveness of warm shower water among primi gravid mothers in terms of labor pain at paras hospital, Gurgaon. 30 Samples were selected with the purposive sampling technique. Study group (n=15) underwent warm shower, it lasted for 20 minutes. After a full body or lower back shower, samples spent 15 minutes in directing shower water toward anybody region that they felt most comfortable temperature of the water was constantly maintained in 37C. Samples of comparison group received standard childbirth care. Data regarding socio demographic variables and obstetric information were collected then pain level was measured before and after intervention with the modified combined numerical categorical pain intensity scale during active phase of labor i.e 3-6m cervical dilatation in both groups. In the study group, the mean, SD of pre assessment pain score was 4.13, 0.221, post assessment mean, SD pain score were 2.41, 0.0434, obtained t value 12.32 which showed significant at p=0.001 level. This study concluded that shower therapy during labor could be an effective non pharmacological intervention in reducing pain perception.<sup>110</sup>

A quasi experimental study was carried out by Pandiammal P to identify the effectiveness of music therapy on labor pain among mothers in the first stage of labor at PACR maternity hospital, Rajapalayam. 240 parturient selected by purposive sampling technique of which 120 were allotted to comparison group and 120 were allotted to study group. The investigator used demographic variable Performa, obstetric variable Performa, numerical pain rating scale, simplified partogram for data collection. The music therapy was given for 15-20 minutes for every one hour for the experimental group, no intervention given for control group except routine care. Results showed, that the central tendency of pain score for comparison group were high in after routine care (M=8.156, SD=0.436) compared to the level of pain score before routine care (M=7.241,SD=0.590). The difference was found statistically significant at 95% level of confidence. In the study group after therapy pain score was low (M=5.712, SD=0.361) compared to before therapy level of pain score (M=7.365, SD=0.977). The difference was found statistically significant at 95% level of confidence and can be attributed to the effectiveness of music therapy.<sup>111</sup>

This study was aimed at identifying the correlation between pain, cognitive activity and the concomitant efficiency during different stages of labor i.e during the latent phase ( $\leq 3$  cm), mid-active (5-7 cm), and transitional phase ( $\geq 8$  cm). 115 nulliparous parturient were asked to rate their pain, and asked about their thoughts during each of the stages. Severe pain during the latent stage of labor were indicator of lengthier latent ( $r=0.58$ ) and active ( $r=0.50$ ) stages of labor. Distress-related thoughts during latent labor were indicator of lengthier latent ( $r=0.31$ ,  $p<.01$ ), active ( $r=0.67$ ), and second-stage ( $r=0.61$ ) labor. This study identified that no correlation between pain and cognitive activity measured during active labor and efficiency during active labor and second stage of labor. Pain and cognitive activity evaluated

during latent phase were also related to labor outcome. 13 of nineteen parturient (68.4%) who reported "horrible" or "excruciating" pain needed assisted delivery, compared with 8 of twenty seven parturient (29.6%) in the "discomforting" pain group. subjects in the "distress related" group had 2.6 times the incidence of assisted delivery, five times the incidence of abnormal fetal heart rate patterns, and four times the requirement for neonatal assistance for the neonate than subjects in the "coping" group. This study suggested that latent labor is a crucial stage in the psychobiology of labor and pain and cognitive activity during this latent stage determines the labor efficiency and outcome.<sup>112</sup>

A study was done with the purpose of assessing the pre-test and post-test labor pain intensity score, labor outcomes and to determine the association of level of pain among nullipara mothers during 1st stage of labor in interventional and comparison group. Quasi experimental design with purposive sampling technique was adopted to recruit the study subjects. Experimental group underwent effleurage massage, comparison group underwent routine care. Structured performa was prepared to collect baseline data, pain was assessed with numerical pain rating scale (standardized scale) immediately before and after the abdominal effleurage and routine maternity care and record analysis Performa was used to assess the labor outcomes (maternal outcomes in terms of total duration of labor, nature of delivery and APGAR score at 5 min after birth and fetal heart sound score immediately before and after the abdominal effleurage and routine maternity care). Results showed mean square between subject effect and within subject effect were 354.61 and 5.96 respectively and F value comes out to be 858.33 and 14.42 respectively. The calculated F value is more than table value at  $p=0.05$  level of significance. Findings revealed that abdominal effleurage was having significant effect on reducing the labor

pain intensity during active phase but was not effective during transition phase in experimental group. Further the result shows that there was no significant effect on total duration of labor, fetal heart sound score and finally the APGAR score of newborn at 5 min after birth.<sup>113</sup>

An experimental research was conducted by Kirandeep kaur to identify the effect of video regarding breathing exercises during labor on pain perception and duration of labor among primigravida admitted in tertiary care hospital, India. Forty mothers purposely selected randomly allocated 20 each in study group and comparison group. The study group shown a video on breathing exercises during labor before onset of labor, and performance of exercise were assessed through the check list. The pain score during 1<sup>st</sup>stage of labor assessed with numerical pain rating scale. Duration of 1<sup>st</sup>and 2<sup>nd</sup>stage of labor measured by developed tool. The assessment of pain at the latent early and late active phases of labor showed statistically remarkable difference among study and comparison group ( $p < 0.01$ )statistical remarkable difference ( $p < 0.01$ ) was also observed in the duration of first stage labor with mean duration (8 hrs48 minutes) in study group as compared to comparison group (9 hrs 48minutes), the mean duration of second stage of labor also significantly less ( $p < 0.01$ ) i.e 24 minutes in the study group as compared to 32 minutes in comparison group, this study concluded, practice of breathing exercises during labor help to reduce pain and duration of 1<sup>st</sup> and second phase of labor.<sup>114</sup>

An experimental study was conducted by Reejamariam Joseph at NITTE University, Mangalore, to determine the effectiveness of jasmine oil massage on level of pain during 1<sup>st</sup> phase of labor among 40 primi parturient. The socio demographic data were collected from the parturient with self report and pain was measured with Visual analogue scale in both massage group and routine care groups. Results showed



that significant difference was found between pre test and post test score of pain in the massage group (  $t = 9.869$  ,  $p < 0.05$ ) and also a notable difference was found between massage group and hospital routine care group. The pre-test ( $t = 0.36$ ,  $p > 0.05$ ) and the post-test ( $t = 11.75$ ,  $p < 0.05$ ). No significant association was found between pain and personal variables in the massage group. In this study Jasmine oil massage proved to decrease the perception of first stage labor pain.<sup>115</sup>

A Randomized trial was conducted with concealed allocation, assessor blinding for some outcomes, and intention-to-treat analysis among forty six parturient, a singleton fetus with  $> 37$  weeks of gestational age, expecting normal vaginal delivery, 4–5 cm of cervical dilation, intact amniotic membranes, and no intake of medication after admitted for labor. Study subjects underwent a 30 minutes massage over lumbar region by a physiotherapist during the active stage of labor. Researcher collected data from the comparison group without performing massage. Both the group parturient underwent usual hospital treatment. Level of pain rated with the help of visual analogue scale. Short Form McGill Pain Questionnaire, was used to identify the location of pain, and time of analgesics administration. After labor, a blinded investigator also recorded length of labor, type of delivery, fetal wellbeing, and the maternal satisfaction. After the massage, pain level was 52 mm (SD 20) in the study group and 72 mm (SD 15) in comparison group, which was remarkably different with a mean difference of 20 mm (95% CI 10 to 31). No significant difference noted with the other outcome variables. Labor outcomes were also similar between the groups except the length of labor, which was 6.8 hr (SD 1.6) in the study group and 5.7 hr (SD 1.5) in the comparison group, mean difference 1.1 hr (95% CI 0.2 to 2.0). This study concluded that Massage was effective comfort measure in decreasing the level of pain during child birth.<sup>116</sup>

A quasi- experimental study was conducted with the purpose of evaluating the abdominal effleurage in terms of labor pain during first phase of labor with the parturient of labor room in the selected hospital of Indore. Two group pre test post test design was used for this study. Purposive sampling technique was used to select 60 parturient having 4-10 cm cervical dilation. Mainly 3 steps of abdominal effleurage were followed that are abdominal circles, side strokes and abdominal strokes. The observations were recorded immediately before the intervention and after the intervention. Data analysis revealed that there was no association between labor pain and selected variables of comparison group as well as effleurage group at the level of  $p \leq 0.05$ . Pain score was recorded by “Modified Fordyce Pain Scale” that revealed the significant effectiveness of abdominal effleurage on labor pain intensity. The statistical pain difference was computed by Mann Whitney U value ( $p \leq 0.001$ ) as computed by SPSS 10. Ultimately the study concluded that abdominal effleurage was good technique in reducing pain among parturient during first stage of labor.<sup>117</sup>

A randomized controlled trial was done to assess the effect of massage given by trained massage professionals in reducing pain among parturient in during labor at BC Women’s Hospital, Vancouver, 77 healthy nulliparous parturient expecting normal vaginal labor. Swedish massage given for up to 5 hours by a trained person during labor versus routine treatment. Pain level was assessed in three times i.e cervical dilation at 3–4 cm, 5–7 cm, and 8–10 cm using the McGill Pain Intensity tool. Findings showed that the mean cervical dilation at the time of epidural analgesia after adjustment for station of the presenting part, cervical dilatation, and status of amniotic membranes while getting admitted to labor ward was 5.9 cm (95% CI 5.2–6.7) compared to 4.9 in the comparison group (95% CI 4.2–5.8). Scores on the McGill Pain Scale were consistently lower in the massage group (13.3 vs. 16.9 at 3–4 cm,

13.3 vs. 15.8 at 5–6 cm, and 19.4 vs. 28.3 at 7–8 cm), although these differences were not statistically significant. These findings revealed that massage was effective means of pain reduction that may be related with delayed use of epidural analgesia.<sup>118</sup>

To identify the effect of relaxation techniques in terms of pain, maternal and perinatal morbidity during childbirth at Australia, authors searched from the Cochrane Pregnancy and Childbirth Group's Trials Register in 30th November 2010, The Cochrane Complementary Medicine Field's Trials Register at November 2011, the Cochrane Central Register of Controlled Trials (The Cochrane Library 2010, Issue 4), MEDLINE search from 1966 to 30 November 2010, CINAHL search from 1980 to 30 November 2010, the Australian and New Zealand Clinical Trial Registry on 30 November 2010, Chinese Clinical Trial Register on 30 November 2010, Current Controlled Trials on 30 November 2010, ClinicalTrials.gov on 30 November 2010, ISRCTN Register on 30 November 2010, National Centre for Complementary and Alternative Medicine (NCCAM) on 30 November 2010 and the WHO International Clinical Trials Registry Platform on 30 November 2010. Randomized controlled trials comparing relaxation techniques with routine care, no treatment, other non-pharmacological forms of pain relief in labor or placebo were selected. 3 authors individually evaluated trials and obtained needed data. Data were checked for accuracy. 2 authors independently evaluated trial quality. Authors tried to contact study authors to gather extra information.

Authors studied about 1374 mothers from 11 studies in this research, Results showed, relaxation technique was associated with a reduction of pain during the latent stage (mean difference (MD) -1.25, 95% confidence interval (CI) -1.97 to -0.53, one trial, 40 mothers) and active stage of labor (MD -2.48, 95% CI -3.13 to 0.83, two trials, 74 mothers). There was statistical significance on labor outcomes with

relaxation and it showed higher satisfaction with pain relief (risk ratio (RR) 8.00, 95% CI 1.10 to 58.19, one trial, 40 women) and lower instrumental delivery (RR 0.07, 95% CI 0.01 to 0.50, two trials, 86 mothers). Yoga was associated with reduction of pain (mean difference (MD) -6.12, 95% CI -11.77 to -0.47), one trial, 66 mothers), greater maternal satisfaction with pain relief (MD 7.88, 95% CI 1.51 to 14.25, one trial, 66 mothers), satisfaction with the delivery experience (MD) 6.34, 95% CI 0.26 to 12.42, one trial, 66 mothers), and reduced length of labor when compared to routine care (MD -139.91, 95% CI -252.50 to -27.32, one trial, 66 mothers) and when compared with supine position (MD -191.34, 95% CI -243.72 to -138.96, one trial, 83 mothers). Trials assessing music and audio analgesia found no difference between groups in terms of pain, satisfaction with pain relief, and operative delivery. This study concluded that relaxation and yoga may be helpful in reducing pain, promoting obstetrical outcome.<sup>119</sup>

Chandra T in the year 2011 did a study to assess the effectiveness of back massage on pain during first phase of labor among primi mothers in selected hospital at Selam . Olive oil massage was given to primi parturient of massage group and comparison group underwent usual care. Pain level was measured after massage and usual care among mothers of massage group and comparison group respectively. Results revealed that the mean pain intensity during the first stage of labor was remarkably different between the massage group and the comparison group. This study concluded that there was notable reduction in the level of pain,  $t= 8.88$  which shows significance at 0.01 level.<sup>120</sup>

A randomized controlled trial was undertaken at Iran with a aim to assess the effects of birth ball in terms of pain, contractions, and length of the active stage of labor , sixty primiparous mothers aged 18 to 35 years were allocated in the study

group and comparison group. Pain scores were assessed by using a visual analogue scale. Findings showed, mean pain scores in the study group were remarkably lower than the mean pain scores in the comparison group ( $P < 0.05$ ). There were no significant differences between length of the active stage of labor or the space between contractions in the two groups ( $P > 0.05$ ). This study concluded that use of a birth ball had no impact on the length of the active phase of labor, the duration of uterine contractions, or the space between contractions, this non pharmacological management could reduce the severity of pain during the active stage of labor.<sup>121</sup>

An experimental study was conducted by Jeyabharathi B at SRM hospital, Chennai, to assess the effectiveness of selected nursing interventions on labor pain. Study group underwent comfort measures such as massage, breathing exercises and changing positions. Sixty primi parturient recruited and they allocated equally like thirty in the study group, thirty in the comparison group. The pre test score of labor pain revealed in the study group mean, standard deviation (SD) were 5.66, 2.23 respectively. For the comparison group mean, standard deviation were 5.75, 2.43. unpaired 't' test value was 0.158 which showed no notable difference between two groups on labor pain before the intervention. The posttest score of pain in the study group revealed a mean of 3.33 with SD of 1.86 and mean value of 5.69 with SD of 2.59 in comparison group. 't' test score was 4.384 which showed highly significance between two groups on pain at  $p < 0.001$  level.<sup>122</sup>

The aim of the scientific research was to identify the perception and practice of the primary level health care workers who conducts natural delivery on pain management during childbirth process. A cross sectional questionnaire survey was collected at institute of child and mother health during May and June 2009 among senior staff midwives and family welfare visitors. Among ninety seven subjects

75.3% were senior midwives and 24.7% were Family welfare visitors. Only 6.2% thought a mother on pain during labor must receive an analgesic, 7.4% used analgesic and 10.5% stated that need of analgesics during their own labor. About 58.6% told to use injection hyoscine butyl bromide and 6.9% received injection Pethidine during labor. 40% percent requested to do comfort measures to parturient in labor. Those were providing assurance (88.7%), describing the mother about the process of childbirth (84.5%) and 77.3 % would allow partner in the labor room. About two thirds subjects believed that pain management techniques may limit progress of labor, 69.5% apprehend fetal distress while 60% were told that they preferring the natural labor pain.<sup>123</sup>

This double blinded placebo controlled trial was conducted with the aim of exploring the efficacy and safety of TENS on specific acupuncture points on pain among parturient during the 1st phase of labor. 105 full term parturient were randomly allocated to 52 parturient in study group and 53 in the control group. Study group underwent TENS on 4 acupuncture points (Hegu [Li 4] and Sanyinjiao [Sp 6]). Visual analogue scale was used to measure pain before thirty minutes and sixty minutes after TENS. Pain level was decreased in each group before TENS and placebo. A questionnaire was provided at 24 h postnatally to assess the experience of TENS and ready to have the TENS again. Type of delivery and fetal outcome also assessed. Study group revealed post interventional pain was decreased significantly than the control group (31/50 [62%] vs 7/50 [14%],  $P < 0.001$ ). Willingness of using the TENS for a future delivery was also notably different (TENS 48/50 [96%] vs TENS placebo: 33/50 [66%],  $P < 0.001$ ). Cesarean delivery was increased in the study group (12/50 [24%] vs 4/50 [8%],  $P = 0.05$ ), but the fetal measures were not different. This

study suggested that TENS was effective when given with specific acupressure points during childbirth.<sup>124</sup>

A study conducted by Bgharpoosh M to assess the effectiveness of relaxation methods on pain reduction during childbirth. Sixty two mothers got admitted in Fatemieh hospital at Hamadan, Iran, were recruited by convenience sampling and were equally divided into 2 groups such as comparison group and study group. The comparison group received routine hospital care during their childbirth and the study group underwent the relaxation methods after training. The level of pain was measured with standardized numerical pain rating scale, and the behavioral responses were recorded using an observational checklist. The statistical analysis of data denoted remarkable difference in the level of pain between the two groups at  $P=0.0001$  level. Also there was a notable difference in behavioral responses between the 2 groups at  $P<0.0001$  level. This study suggested that the relaxation technique is easy to perform without any risk and also has cost effective. Hence, it was recommended for pain relief during labor.<sup>125</sup>

A clinical trial was undertaken at labor ward of university hospital, Korea with the purpose of identifying the effectiveness of SP6 acupressure on pain and time of child birth among mothers in delivery. 75 mothers were allocated by randomization into SP6 touch, and thirty nine in the comparison group. The recruited subjects were matched according to parity, cervical dilation, labor stage, rupture of amniotic membrane, and presence of partner during delivery. There were no additional oxytocin augmentations or use of analgesics. The 30-minute acupressure was provided for study group. Labor pain was rated 4 times using a structured questionnaire with a visual-analogue scale before intervention, immediately after the intervention, and 30 and 60 minutes after the intervention. Duration of labor was

measured in two times i.e from 3 cm cervical dilatation to 10 cm cervical dilatation, and from cervical dilatation to the delivery.

Findings showed, remarkable differences between the 2 groups on pain scores at all time points following the acupuncture, immediately after the acupuncture ( $p = 0.012$ ); 30 minutes after the acupuncture ( $p = 0.021$ ); and 60 minutes after the acupuncture ( $p = 0.012$ ). The total labor time (3 cm dilatation to delivery) was significantly shorter in the SP6 acupuncture group than in the comparison group ( $p = 0.006$ ). The study concluded that SP6 acupuncture was effective in reducing pain and duration of labor.<sup>126</sup>

The study was carried out to evaluate the nature and severity of labor pain among twenty nine mothers. Participants rated their pain with the use of McGill Pain Questionnaire during the 1<sup>st</sup> stage of labor, and again 24–48 hours of post partum. Majority revealed that labor pain was severe. However, pain level greatly varied among participants. This study concluded that, previous experience of labor pain had strong association with perceived levels of current labor pain. Participants who experienced significant levels of pain previously but not related to labor had low or moderate levels of labor pain. Participants who experienced little pain previously but not related to labor, had high level of labor pain.<sup>127</sup>

A scientific research was done to assess the effect of epidural analgesia versus intravenous meperidine analgesia with the use of patient controlled devices during labor. 459 term nulliparous mothers expecting natural delivery were recruited and with randomization participants divided in to epidural analgesia group and intravenous meperidine analgesia group. 226 mothers received epidural analgesia was started with 0.25% bupivacaine and was maintained with 0.0625% bupivacaine and fentanyl 2 microg/ml at 6 ml/hr with 5-ml bolus doses



every 15 minutes as needed. 233 Mothers in the intravenous analgesia group received 50 mg meperidine with 25 mg promethazine hydrochloride as an initial bolus followed by 15 mg meperidine every 10 min as needed. Findings revealed that protocol violations occurred in 8% i.e 38 out of 459 of mothers. There was no statistical difference in the number of LSCS between the 2 groups (epidural analgesia, 7% [16 of 226; 95% confidence interval, 4-11%] vs. intravenous meperidine analgesia, 9% [20 of 233; 95% confidence interval, 5-13%];  $P = 0.61$ ). Significantly more mothers who received epidural analgesia had assisted deliveries compared with meperidine analgesia group (12% [26 of 226] vs. 3% [7 of 233];  $P < 0.001$ ). The study suggested that mothers who received epidural analgesia expressed lower level of pain during labor and delivery as compared with mothers of intravenous meperidine analgesia group.<sup>128</sup>

### **2.1.2. Section 2: Literature related to anxiety on labor women**

This clinical trial was undertaken to find out the effectiveness of aromatherapy with rose oil and warm foot bath on anxiety during active stage of labor among primi mothers at Tehran, Iran. One hundred and twenty primi mothers, selected randomly and then allocated into 3 equal groups. The interventional group one underwent rose oil inhalation and footbath for 10 minutes and group two received footbath with warm water for 10 minutes during early active stage and transitional stages. Comparison group underwent usual care based on hospital policy during labor. During labor before and after the intervention anxiety was measured with visual analogous scale. During transitional phase after the intervention in the interventional group one anxiety level was  $4 \pm 2.31$ , in the interventional group two  $5.53 \pm 1.98$  and in comparison group  $7.61 \pm 2.06$ . Anxiety scores before the intervention in transitional stage during labor showed in group one was  $3.69 \pm 2.4$ , in group two  $5.31 \pm 2.56$ , and in the

comparison group  $8.42 \pm 2.55$ . There was notable difference on anxiety level between before and after the intervention among interventional group one at  $P = 0.001$  level. But no remarkable difference on anxiety between group two and comparison group. Anxiety scores after the intervention in transition phase in the interventional group one was  $2.25 \pm 1.71$ , which proved effectiveness of the intervention in the group one. 2nd group was more effective ( $4.67 \pm 2.74$ ) than comparison group ( $8.28 \pm 2.26$ ) at  $P = 0.001$  level. Anxiety scores in the intervention groups in active stage after intervention were significantly lower than the comparison group at  $P < 0.001$  level. Anxiety scores before and after intervention in intervention groups in transitional phase was remarkably lower than the comparison group at  $P < 0.001$ . The study concluded that aromatherapy with rose oil and warm water footbath decreases anxiety among parturient.<sup>129</sup>

A randomized controlled study carried out at Almatrentaih Private Hospital situated in Alexandria, Egypt. 100 mothers in the 1st phase of labor were selected based on study criteria. Selected participants were randomly assigned with the help of computer software either in the study group or comparison group. Author used two tools, one is demographic questionnaire consisted of age of the mother, gestational weeks, parity, and body mass index (BMI). Second one was Visual Analogue Scale which was standardized tool to rate the level of pain, anxiety, and fatigue during labor. Consent from the participants was received, and then the demographic data was collected. The study group received the shower for 30 minutes, and the comparison group underwent routine hospital measures based on hospital policy. Again, both groups were asked to rate level of pain, anxiety, and fatigue by the Visual Analogue Scale. Findings showed that no remarkable differences between the study group and comparison group regarding the demographic data. No notable differences were ruled

out between both groups before intervention. The study group had significantly lower pain and anxiety levels ( $P = 0.011$ , and  $P = 0.018$ ) respectively, when compared with the comparison group. No notable differences were found between both groups on level of fatigue among parturient. Regression analysis showed that warm shower was a significant predictor for pain reduction in the study group at  $P = 0.005$  level. This study reported that warm showers during labor reduces pain and anxiety.<sup>130</sup>

This study was undertaken to reveal the impact on postnatal support, maternal anxiety and symptoms of depression among primi mothers in Nepal when their partner supported them continuously during labor, the study involved 231 Nepali primi mothers, of whom 77 were supported continuously by their partners, 75 by female friends, and 79 were not supported by any companion during labor. Data was collected at six to eight weeks of post partum, during data collection postpartum support questionnaires, a state-trait anxiety scale and the Edinburgh postnatal depression scale were administered. Structural equation modeling was conducted. Results showed that continuous support from a partner during his wife's labor was related to a greater degree of postnatal support than those who were not supported by their partners ( $\beta=0.23$ ,  $p<0.001$ ). Similarly, the more the mothers considered they were being supported, the less likely to experience maternal anxiety ( $\beta=-0.52$ ,  $p<0.001$ ), which in turn was related with a lower level of depression ( $\beta=0.43$ ,  $p<0.001$ ). These findings were consistent, even after adjustments for the effect of female friend support during the postnatal period. This study suggested that continuous support from partners during labor has a direct impact on the perceived postnatal support and an indirect impact on anxiety and depression among primi mothers in Nepal.<sup>131</sup>

A study was undertaken by Billert H, Gaca M, Miluska J, Breborowicz G on Anxiety assessment in parturient requesting epidural analgesia for pain relief. 45 women both primi and multipara women were included in the study. Anxiety was assessed before giving epidural analgesia then pain was measured before and after giving epidural medication. Results revealed that anxiety was increased among the primi mothers than the multipara mothers. Negative correlation was found between state anxiety and pain Epidural analgesia. It concluded, parturient requesting EA, state anxiety level is increased and not connected with the trait.<sup>132</sup>

A quasi experimental study was done to know the effectiveness of planned teaching program on knowledge and reducing anxiety about labor among primigravida in selected hospitals of belgaum, Karnataka. 60 primigravida mothers (30- experimental, 30 – control group) attending antenatal OPD at KLES Dr.Prabakarkore hospital, Belgaum, were selected with the purposive sampling technique. Data was obtained using structured knowledge questionnaire and standardized Zung'sself rating scale. The results showed that mean score on knowledge in experimental group was 16.8 and in control group it was 0.6, the anxiety score mean difference was 37.6 in experimental group, and in control group it was 0.16, hence planned teaching program was effective method to gain knowledge about labor and it showed that there was positive correlation between knowledge and reducing anxiety among experimental group.<sup>133</sup>

This prospective study was carried out to rule out the how far anxiety associated of with fear about labor? One hundred and fifty six pregnant mothers who enrolled to the health centers of Qom were recruited by simple randomization. Anxiety and fear about the labor and delivery among nulliparous mothers were measured state-trait anxiety scale and childbirth attitudes questionnaire during 28 to

38 week of gestation respectively. Findings showed that, there was a association between fear of childbirth and state and trait anxiety at  $p < 0.05$  level. Logistic regression analysis revealed that state and trait anxiety at gestational week of 28<sup>th</sup> had increased risk of fear of childbirth (odds ratio [OR] 2.7, 95% confidence interval [CI] 1.69-4.35) ( $p = 0.03$ ) ([OR] 2.8, 95% [CI] 1.17-6.80) ( $p = 0.02$ ) respectively. It also indicated that state and trait anxiety increased the risk of fear of childbirth at gestational age of week 38<sup>th</sup> ([OR] 2.7, 95% [CI] 1.03-6.80) and ([OR] 5.4, 95% [CI] 1.75-16.76) ( $p = 0.04$ ) ( $p = 0.003$ ) respectively. This study reported fear regarding labor may lead to anxiety.<sup>134</sup>

A Randomized controlled trial was conducted to examine the effectiveness of music therapy on pain and anxiety during labor. Sixty primi parturient expected to have a natural vaginal delivery were recruited with randomization and further divided into two groups. The music group got hospital usual care and music therapy, but the comparison group underwent only usual care. Present behavioral intensity was rated by the nurses, anxiety was rated with a visual analogue scale for anxiety and finger temperature at 2-4 cm cervical dilatation and 5-7 cm cervical dilatation. Findings showed that the music group had lower pain, anxiety and a higher finger temperature during the latent stage of labor, and no remarkable differences were noted between the two groups obstetrical outcome during the early phase of labor. This study given proved that music therapy was effective intervention for parturient during labor to reduce pain and anxiety.<sup>135</sup>

A study was conducted to investigate the effectiveness of hydrotherapy on maternal anxiety, pain, neuro endocrine responses, plasma volume shift, and uterine contractions during delivery. Pretest posttest design with repeated measures was used. Correlations among variables were measured before hydrotherapy and twice during

hydrotherapy. 11 full term mothers with the mean age 24.5 years in natural labor were immersed to the xiphoid in 37 °C water for 1 hr. Blood samples drawn and anxiety, pain were measured at before intervention and again at 15 and 45 minutes of hydrotherapy pain and anxiety measurement taken. Uterine contractions were observed telemetrically. Findings showed, Hydrotherapy had association with anxiety, vasopressin, and oxytocin levels at 15 and 45 minutes at  $p < 0.05$  level. There were no notable differences between before intervention and after intervention on pain. During hydrotherapy pain reduction more for mothers with high level of pain than mothers with low level of pain. At 15 minutes of hydrotherapy among mothers with high level of pain showed reduction of cortisol level twice as for those with low level of pain.  $\beta$ -endorphin levels increased at 15 minutes but did no difference noted between before intervention and at 45 minutes of immersion. During intervention, frequency of uterine contractions reduced. A positive plasma volume shift noted at 15 minutes of hydrotherapy had correlation with duration of contraction. This study concluded that hydrotherapy had impact on neuro endocrine responses that changes psycho physiological processes of labor.<sup>136</sup>

A scientific research was undertaken to examine the effects of educational intervention to promote women's self-efficacy for childbirth and coping activity on anxiety and pain during delivery process. An efficacy-enhancing educational intervention based on Bandura's self-efficacy theory was used. The Chinese primi pregnant women who met inclusion criteria were recruited with randomization and they allocated in to two groups called interventional group (n = 60) and comparison group (n = 73). The interventional group underwent educational programme at the 33<sup>rd</sup> to 35<sup>th</sup> gestational weeks. This efficacy enhancing education last for 90 minutes, 2 sessions were administered for the interventional group, whereas comparison group

underwent only routine care. Data regarding obstetrical outcome were collected within 48 hours of postpartum. The short form of the Chinese Childbirth Self-Efficacy tool was used to rate the maternal self-efficacy before labor. Pain, anxiety during the three stages of labor and coping behavior during labor were measured by the Visual Analogue Scale and Childbirth Coping Behavior Scale respectively.

Findings revealed that, interventional group was more likely to demonstrate higher levels of self-efficacy for childbirth at  $p < 0.0001$  level, lower perceived anxiety at  $p < 0.001$ , early stage  $p = 0.02$ , middle stage pain at  $p < 0.01$  level, early stage at  $p = 0.01$  level, middle stage had greater performance of coping behavior during labor at  $p < 0.01$  level. This study concluded that the efficacy enhancing educational intervention was effective in promoting mother's self-efficacy to cope with labor.<sup>137</sup>

A scientific study was carried out to identify the effect of structured education program among expectant fathers who present with their wife during labor. Eighty seven fathers who were present with their pregnant wife's throughout labor and birth at a hospital in central Taiwan. By block randomization forty five participants assigned to an interventional and forty two fathers to comparison group. Demographic data, a childbirth expectations questionnaire, and a trait anxiety were obtained during the process of randomization. 2 hours after birth of postpartum, entire expectant fathers completed a state anxiety scale. Findings revealed that there were no statistically remarkable differences between the interventional and comparison groups of fathers in trait anxiety and their antenatal childbirth expectations. covariance i.e ancova analysis revealed the effect of the education on childbirth was significant for the postnatal level of anxiety ( $f = 3.38, P = 0.001$ ). The study findings justified that

the structured education program on childbirth from the self-efficacy theory was effective in alleviating anxiety among partners of pregnant women.<sup>138</sup>

This research study was conducted to assess the effectiveness of relaxation techniques on anxiety and also to find out the correlation between anxiety and the levels of Immunoglobulin A among labor women in a maternity hospital, State of Espírito Santo, Brazil. Sixty women were recruited randomly and they divided equally in two groups called study group, and comparison group. After obtaining demographic data from the samples, state and trait anxiety were measured with the use of State Trait Anxiety scale, and the level of salivary IgA was obtained through immune turbidimetry. Mann-Whitney, Wilcoxon, and Pearson's correlation statistical analysis showed a notable reduction in the state anxiety among samples of study group at  $p = 0.01$  level; there was no correlation between and state, trait variables of anxiety and the salivary IgA level among samples both groups.<sup>139</sup>

An exploratory descriptive correlation study was conducted to identify the correlation between anxiety and level of control during labor among primi mothers, at labor ward of a public teaching hospital in Hong Kong, China. 90 participants were selected through convenience sampling technique. The Labour Agency Scale (LAS) is a self-report scale was used to rate their level of control during labor. A Visual Analogue Scale for anxiety was utilized to rate their level of anxiety during childbirth. Correlation coefficient test denoted a notable negative correlation between the feelings of control and maternal anxiety during childbirth. There was no significant correlation between women's attendance at prenatal classes and level of control during labor. The study revealed a significant negative correlation between mother's anxiety and level of control during childbirth. It concluded that midwives should motivate women to enhance their personal coping during childbirth process and maternal



satisfaction with their labor process. The insignificant relationship between attendance at antenatal classes and feelings of control suggested the need to evaluate the content of childbirth preparation classes in order to empower women's control during childbirth.<sup>140</sup>

A randomized controlled study was conducted by Mei yueh Chang to know the impact of massage on pain and anxiety during labor, at a regional hospital in southern Taiwan from September 1999 to January 2000. 60 primi parturient expected to have a natural delivery were recruited with randomization and they allocated into two groups named as massage group and non massage group. The massage group underwent massage whereas the non massage group did not received massage. Present behavioral intensity was utilized to rate their pain during labor. Anxiety was rated with the visual analogue scale for anxiety. The severity of pain and anxiety between the two groups were compared in three periods such as cervical dilatation at 3–4 cm, 5–7 cm and 8–10 cm. In both groups, there was a relatively steady increase in pain and anxiety level as labor progressed. Results demonstrated that the massage group had significantly lower pain in all three stages of labor (Phase1  $P=0.000$ , Phase2  $P=0.002$ , Phase3  $P=0.000$ ) and anxiety levels were significantly different between two groups only in latent stage at  $P=0.00$  level. 26 out of 30 (87%) massage group participants reported that massage was helpful in pain and anxiety relief during childbirth. Findings suggested that massage was a low cost comfort measure that can alleviate pain and anxiety during childbirth.<sup>141</sup>

A study was conducted to rule out the personal profile and socio-economic data of pregnant women and their husbands fear regarding normal spontaneous childbirth, at 16 maternity centers of Finland. Questionnaire survey as a research design was used for this study. Data was collected from the subjects at 30th week of

pregnancy in outpatient department. 278 mothers and their partners were selected. Obstetric outcome assessed were Personality traits, socio-economic factors, satisfaction about life, husband and pregnancy and labor related anxiety and fear. Findings showed that, the more anxiety, neuroticism, vulnerability, depression, low self-esteem, dissatisfaction with the husbands support, and inadequate social support the women reported, the more they showed pregnancy related anxiety and fear of spontaneous delivery. multiple regression analysis showed that the psychological factors were the indicators of pregnancy related anxiety (increase in  $R^2=0.20$ , at  $P<0.001$  level, the strongest indicator being general anxiety (beta = 0.28, at  $P<0.001$  level. inadequate support lead to severe fear about normal delivery (increase in  $\chi^2= 13.66$ , at  $P<0.01$  level, the strongest factor being dissatisfaction with the husbands (Wald 8.61,  $P<0.01$ ). Life-dissatisfaction reported by the husbands contributed to pregnancy associated anxiety and his dissatisfaction with the husbands support contributed to the woman's fear of spontaneous delivery. It Concluded that the nature of a pregnant mother and her husband, and their personal relationship, influenced the woman's attitude to her pregnancy and her forthcoming delivery.<sup>142</sup>

A study was conducted to identify the factors which lead to anxiety regarding labor. One hundred pregnant women consecutively referred from antenatal centers to a psychosomatic outpatient clinic due to their extreme fear about labor process, were selected. Three subgroups were thirty six primipara, eighteen women with a previous vaginal delivery and forty six women with a previous complicated deliver. Findings showed that, Anxiety regarding delivery was associated with lack of trust in the obstetrical nurse (73%), fear of own incompetence (65%), fear of death of mother, infant or both (55%), intolerable pain (44%) or loss of control (43%). In the description of the anxiety, more than one focus could be found. A previous

complicated delivery predisposed for fear of death at  $p < 0.001$  level. In other aspects, no difference found between the subgroups. Fear of death in a previous labor was associated with this fear about the current labor (100%, 21%,  $p < 0.001$ ) and with fear about loss of control (61%, 18%  $p < 0.01$ ). Many women (37%) had husbands who admitted anxiety over the childbirth. It concluded that anxiety about delivery was associated with basic human feelings such as lack of trust, fear of female incompetence and fear of death. Fear of pain is important factor but not predominant.<sup>143</sup>

This study was conducted to measure the plasma epinephrine and nor epinephrine, and the length of labor among multi gravid mothers in stage 1 during labor (from 3 to 6 cm of cervical dilatation with the mean duration 2.7 hours was significantly related to measures of plasma epinephrine and nor epinephrine obtained at the onset of the stage 1 ( $n = 50$ ). Epinephrine was remarkably related to observer ratings of participants stress and the scores from the three dimensions of Labor Anxiety Inventory. The fetal heart rate pattern in stage 2 labor that is at 7 to 10 cm of cervical dilatation with the mean duration 1.2 hours was significantly related to stage 1 measures of epinephrine, observed stress, and two of the anxiety dimensions ( $n = 44$  to 47). The findings supported for the hypotheses that, under normal clinical conditions, several types of patient anxiety were associated to catecholamine levels and that anxiety and epinephrine are related to length of labor and well-being of the neonate.<sup>144</sup>

### **2.1.3. Section 3: Literature related to doula (support) and labor outcome among parturient**

A case control study which looked at the benefits of hypnotherapy during 1st and 2nd stage of child birth process was done among pregnant women. 126 primigravida women with 300 age matched controls and 136 parous women having their second baby with 300 age matched controls were selected. Women who underwent normal vaginal deliveries were only selected. 6 sessions of hypnotherapy were given by trained professional hypnotherapists during antenatal period. The post test mean length of 1<sup>st</sup> phase of labor among the primigravida mothers in the study group was 6.4 hours as against 9.3 hours in the non study group.(  $p < 0.0001$ ); the mean length of the second stage was in the study group 37 minutes and in the non study group 50 minutes ( $p < 0.001$ ). Among multi parous women the post test mean length of the 1<sup>st</sup> phase of labor was 5.3 hours and 6.2 hours in the non study group ( $p < 0.01$ ). The mean length of the second phase was 22 minutes and 24 minutes respectively. The use of analgesics was significantly reduced ( $p < 0.001$ ) in both the hypnotized groups compared with their non study group.<sup>145</sup>

This experimental research study was undertaken among 600 nulliparous women who were expected to have a spontaneous vaginal delivery were randomly selected. Selected subjects were allocated equally to Aromatherapy group, biofeedback group and comparison group, i.e.200 subjects in each group. The investigator rated the pain by using visual pain analog scale. The data collection was done from December 2012 to September 2013 at selected hospitals of Coimbatore. Randomly selected subjects, group 1 (n=200) received aromatherapy where lavender oil was applied over the back and abdomen with a slight massage, group 2 (n=200) received Cardiotokograph, an electronic machine was used for biofeedback study. In

this, mother asked to experience both fetal heart sound and variation in uterine contractions. Group 3 Control group (n=200) Received only routine interventions according to hospital policies. In this study the mean post test pain score for aromatherapy group and biofeedback was reduced when compared with comparison group. Similarly the mean length of labor also reduced in 1 st stage and 2 nd phase of labor. But 't' test revealed that there was a notable difference among aromatherapy and biofeedback group in pain score during latent phase, active phase and transitional phase. When considering the length of labor it was found significant difference between aromatherapy and biofeedback group in first stage of labor ( $p < 0.0001$ ). But no difference were found in second and third stage of labor ( $p = 0.0518$ ,  $p = 1.000$  respectively). The association of findings with demographic and obstetrical score was assessed by using chi-square test. It was reported that body mass index ( $\chi^2 = 35.8$ ), nature of onset of labor pain ( $\chi^2 = 6.9$ ), analgesics ( $\chi^2 = 43.7$ ), and history of dysmenorrhea ( $\chi^2 = 43.7$ ) were having association with labor pain. But nature of conception ( $\chi^2 = 0.011$ ) and regular antenatal checkup ( $\chi^2 = 3.15$ ) is not having association with labor pain. Overall there was a slight difference between aromatherapy and biofeedback therapy. But when compared with aromatherapy there was a limited pain reduction in biofeedback therapy. However biofeedback therapy also found effective when compared with comparison group.<sup>146</sup>

This study was conducted in Government general hospital, Thambaram in Chennai, Tamilnadu . 240 low risk primi mothers were selected and were assigned randomly into two equal groups. The birthball group underwent birthball exercise programme consisted of 15 minutes videotape followed by live demonstration on birthball positioning and movements during prenatal checkups. Members of study group were asked to practice the swaying movements and positions on birthball at

least 20 minutes after the 36 weeks of gestation. Each woman in birth ball group was provided ball during labor and motivated one hour ones to practice movements with bithball. Two groups were underwent standard nursing treatment during childbirth. In active phase of labor i.e at 3-6 cm of cervical dilatation, socio demographic and labor related data were collected and then labor pain was rated with the help of numerical rating scale and child birth experience was measured by modified labor agentry scale, Results showed, Out of 240 participants, there were totally 29 dropouts, 14 in the birthball group and 15 in the non birth ball group due to fetal distress, intolerable pain needed pain medication, needed augmentation and uncooperative mothers. The analysis was done for a total of 211 participants (106 in birth ball group and 105 in non birth ball group) The baseline values that in birth ball group, birth experience mean score was 32.85(SD=3.29) whereas in non birth ball group it was 27.40(SD=2.97) and the difference was 5.45 score and this was due to movements and position changes using birth ball during labor. There was high statistical significance at  $p=0.001$  level found in child birth experience between both groups. There were no significant difference between birth ball and non birth ball group for all the demographic variables. Between both groups, high remarkable difference found in length of labor, use of pain killers, and induction of labor with oxytocin at  $p=0.001$  level. Type of delivery and contraction pattern were highly significant at  $p=0.01$  level.<sup>147</sup>

A study was undertaken in Iran among 150 pregnant women who were selected randomly were assigned to one among the three groups either supportive care, acupressure, or comparison group. The dependent variables in this study were pain and labor outcome. Pain was measured by Visual Analogue Scale (VAS) and outcome was measured by a labor outcome checklist. The supportive care group

underwent both physical and psychological support. In the acupressure group, BL32 acupoint was pressed during the labor contractions. The findings suggested that there was a decrease in the level of pain, and improved labor outcome between the three groups. The findings revealed that maternal supportive care and acupressure during labor reduced the level of pain and improved the obstetrical outcomes.<sup>148</sup>

An observational cohort study on women at pregnancy term with the aim to compare recumbent and alternative positions in terms of labor process, type of delivery, neonatal wellbeing, and intrapartum fetal head rotation, Primiparous women with physiological pregnancies and single cephalic fetuses were samples for the study. 225 primiparous were selected (69 in Group-A and 156 in Group-B), Group-A if they spent more than 50% of labor in a recumbent position and Group-B when in alternative ones, In detail, Group-B patients assumed the upright position in 46.1% of the cases, the sitting position in 21.1% of the cases, the “on all fours” position in 16.2% of the cases, and a balloon-squatting position in 16.6% of the cases. Results showed, Significant statistical differences were found in duration of both 1<sup>st</sup> and 2<sup>nd</sup> phase of labor (mean value of  $336.1 \pm 161.1$  versus  $192.1 \pm 125.8$ ;  $84.4 \pm 57.8$  versus  $34.4 \pm 32.6$  minutes, resp.  $p < 0.001$ ). Similarly, significant differences in terms of pain level with a mean NRS score of  $7.1 \pm 1.6$  versus  $3.7 \pm 1.2$  were, respectively, detected ( $p < 0.001$ ). The two batches remarkably differed for the analgesia request rate, respectively, with 34.8% versus 9.6% rate ( $p < 0.0001$ ) Regarding the mode of delivery, 47.8% of Group-A patients delivered by vaginal route, 26.1% required operative vaginal delivery, and 26.1% underwent CS. Group-B patients delivered in 87.1% by vaginal route and required operative vaginal delivery in 7.1% and CS in 5.8% ( $p < 0.001$ )

In Group-A, dystocia occurred in 13.05% of the cases and abnormal fetal heart rate in 13.05% of the cases while in Group-B this condition occurred, respectively, in 0.7% and 5.1% ( $p < 0.05$ ) Episiotomy was performed in 100% of Group-A patients who delivered by vaginal route compared to the 32.7% of Group-B ( $p < 0.001$ ), while 1st-2nd degree vaginal tears occurred, respectively, in 5.9% versus 49% of the cases ( $p < 0.001$ ); no differences between two groups in terms of neonatal outcomes were reported. Authors concluded that, significant differences between the groups in terms of labor length, Numeric Rating Scale score and analgesia request rate, type of delivery, need of episiotomy. No differences were found in terms of neonatal outcomes.<sup>149</sup>

A cross-sectional study was conducted with the aim to assess mother's view regarding the labor support quality. 100 women who were hospitalized in the postpartum ward of Gonabad 22 Bahman Hospital, and had normal vaginal delivery were chosen using convenience sampling method. Participants were asked to fill in the demographic questionnaire and the form of assessment quality of labor support. In this study, the data showed a mean participants' age of  $27/14 \pm 5/89$  years and a mean admission-delivery time interval of  $305/13 \pm 147/30$  minutes. Results showed that 74 percent of women evaluated the emotional support as good, 93% of the women had reported that they are satisfied with physical support, and 92 percent of the participants had expressed that they were content with the instructions/information provided by the personnel. According to this study, overall satisfaction from the quality of labor support has been acceptable in Gonabad 22 Bahman Hospital.<sup>150</sup>

A randomized trial was carried out with two groups of 60 respondents, where both used the breathing technique, one with and one without lavender essence. This study was done in Fatemieh hospital in Shahroud, Iran. The laboring mothers, being



participated in the study, were candidates for vaginal delivery. The duration of the first stage of labor was recorded from cervical dilatation of three centimeters. The second stage of labor also was recorded from the full cervical dilatation time until child birth. The breathing technique was such that when the contraction began, a deep breath was taken and exhaled. Then fast shallow breathings, being 1.5 times more than ordinary breathing per minute, were performed. The mothers in the experimental group were asked to put the mask on their faces and inhale the lavender essence. In the control group, only the breathing technique was used. 't'-test was used to compare the mean lengths of active phase and second phase of labor and demographic variables. Chi square test was used for nominal variables such as education and job. Results showed, the mean age in breathing technique with lavender and breathing technique alone were  $25.5 \pm 4.3$  and  $26 \pm 4.9$ , respectively. Two groups were comparable in this regards ( $P = 0.6$ ), but the length of active phase in interventional group was  $7.85 \pm 3.85$  hours and in the control group it was  $9.88 \pm 6.65$  hours. The decrease of the length of labor in the active phase was higher among the experimental group than in the control group ( $P = 0.04$ ). In second stage, length of labor was  $16.5 \pm 5.7$  and  $28.9 \pm 17.4$  minutes in the experimental and control groups, respectively. Difference in length of labor was significant at ( $P = 0.001$ ) this research showed that aromatherapy can be used to reduce labor duration..<sup>151</sup>

A quasi-experimental study was done to identify the effect of positioning on duration of first stage of labor among primigravida mothers. 60 primi mothers with a single live fetus in cephalic presentation, between 32-41 weeks of gestation were included in the study. They were selected purposively and assigned randomly 30 each in the treatment group and the control group. The clients in the treatment group received positioning and the other group received treatment as usual care. Progress of

labor was assessed through partograph. The findings suggested that first stage of labor duration was reduced in the treatment group by 2 hours than the comparison group at  $P < 0.001$ , maintenance of standing positions during the first stage of labor decreases the length of first stage of labor.<sup>152</sup>

A study was undertaken to compare the effectiveness of different positions, standing versus lying on selected labor and neonatal outcomes among parturient under epidural analgesia. The mothers in the interventional group used standing during second stage of labor, and the comparison group used any recumbent position. Findings revealed that there was a notable difference between both the groups. The duration of second stage among the standing group was lesser than the mothers who used lying position. Authors' concluded, parturient under an epidural analgesia should be motivated to use standing position in the second phase of childbirth.<sup>153</sup>

A study to identify the effect of support during labor among primi mothers were carried out at Kathmandu, Nepal. The sample consisted of women who gave birth with their husband present ( $n=97$ ), with a female friend present ( $n=96$ ), with mixed support ( $n=11$ ), and finally, a non support group ( $n=105$ ). The labor outcome was measured by Labor Agency Scale. Analysis of F-test variance, and multiple regression analyses revealed that the parturient who had partners support during labor and child birth had higher mean scores ( $47.92 \pm 6.95$ ) than mothers who delivered with the help of female friends, the women who gave birth with mixed support ( $39.91 \pm 8.27$ ) and the non support group ( $36.68 \pm 8.31$ ). There was a positive notable association between the control during labor and husband's company.<sup>154</sup>

A true experimental study was conducted in Tehran, to identify the effectiveness of massage and presence of attendant, on pain, anxiety and maternal satisfaction during delivery. A 128 primi mother more than 37 weeks of gestation

were randomly selected and were assigned into massage, attendant and comparison groups. The mothers in the massage group underwent massage 3 times during labor. The levels of pain, anxiety, and maternal satisfaction were assessed by VAS, STAI, and maternal satisfaction check list after 30 minutes following the intervention. The level of pain was reduced in the massage group at ( $p < 0.05$ ), maternal satisfaction was greater in massage group ( $p < 0.001$ ). The massage group had lowered pain and anxiety in three phases in comparison with comparison group ( $p < 0.05$ ).<sup>155</sup>

A study was conducted to evaluate the effectiveness of continuous one-to-one labor support among parturient. Authors searched the Cochrane Pregnancy and Childbirth Group's Trials Register in 31 December 2010, a selected criterion was, 2 investigators individually assessed methodological quality and gathered needed data. The findings suggested that 21 scientific trials with 15061 mothers who met inclusion criteria were recruited. Findings based on random-effects analyses, mothers who belonged to the constant supportive care had normal vaginal delivery, used lesser analgesics, had minimal dissatisfaction, and shorter duration of labor, reduced risk for surgical delivery, and a higher Apgar score, than the mothers in the comparison group. Hence constant support during labor and delivery has benefits for parturient and fetus and has no known adverse effect.<sup>96</sup>

An exploratory study to determine the family support among the mothers in order to prepare a check list for measuring the maternal and neonatal well being was carried out at the Christian Medical College & Hospital, Ludhiana. 80 mothers were selected purposively and the investigator prepared the tool. The findings stated that the mean percentage score 91.08% of informational support was the highest support of the postnatal women during pregnancy. Though there was large amount of support from the spouses, family and friends, the main psychological support was by the

nurses. There were no complications for the mother and the child during labor and child birth. The hospital stay was reduced; APGAR was higher for the babies. There was a strong notable relation between the family support and mother's health, Neonatal health.<sup>156</sup>

A prospective randomized controlled trial was conducted at Birth centre in London teaching hospital to assess the effectiveness of feeding during labor on labor and birth outcomes. Two thousand and four hundred and twenty six first time pregnant mothers who were non-diabetic at term, with a live single baby in vertex presentation and in labor with a cervical dilatation of < 6 cm were recruited. Intervention was Consumption of a light diet or water during labor. The primary outcome measure was normal vaginal delivery rate. Other outcomes measures such as length of labor, use of induction of labor, forceps usage and surgical delivery rates, incidence of minor ailments. The findings showed that there was no notable difference in the rates of normal vaginal delivery, length of labor, incidence of minor ailments. Neonatal outcomes was also same. Hence taking a light diet during labor had no effect on labor outcomes among participants.<sup>157</sup>

A randomized clinical trial was carried out in Iran to find out the effectiveness of birthing in water pools on labor outcome. The sample was selected randomly and 53 mothers were allotted to the interventional group and the remaining 53 were allotted to the comparison group. The study group underwent delivered in warm water pools where as the comparison group mothers delivered routinely at the hospital. The findings revealed that mothers in the routine care group required increased oxytocin, antispasmodics, opiates, and analgesics than those in the interventional group ( $P < 0.001$ ). Third stage of labor was shorter in the

interventional group by 2 minutes than the comparison group. Pain was lesser in among the mothers who delivered in the water pool than in the hospitals.<sup>158</sup>

A study to identify the psychological support methods provided by doulas during labor was undertaken. A sample of 10 parturient and 30 doulas were involved in the study. Two doulas worked in hospital based programmes whereas the others had independent practices. The findings stated that doulas used reassurance, encouragement, praise, and explaining. This was as same as the role of midwives as per the articles published and quoted earlier. The psychological support or care given by the doulas was more improvised and beneficial than the services offered by traditional birth attendants. The skills used by the doulas in constant care were emotionally complex. Application of these skills may provide an intrusion into the optimistic 'doula effect' on labor and fetal outcomes.<sup>159</sup>

A study to identify the effects of doula care on labor outcome was done by using a prospective cohort design. The sample consisted of 141 primi mothers who belonged to low socio economic group at a regional hospital in California. The doula care group consisted of 44 and routine care 97 mothers. The variables assessed were Labor outcome and neonate feeding data. Follow-up interviews conducted at 3<sup>rd</sup> day. Findings revealed that the mothers who underwent doula care had shorter duration of stages of labor, reduced use of forceps, and increased onset of lactation. Initiation of breast feeding was earlier in the doula care group than the routine care group.<sup>160</sup>

A randomized controlled trial to determine the effect of doula continuous supportive care on middle class primi parturient was carried out on 420 mothers. Among them 224 were grouped under the continuous care group and the remaining were allotted to routine care group. The doula group had support from their male partners as well as a doula, while the routine care group was supported by their

husbands alone. The data was collected at discharge and 6 weeks after child birth. The findings quoted that the mothers in the doula group had lesser level of pain, anxiety, and there was 13% reduction in the surgical deliveries. There was reduced need for analgesia in the doula group than the comparison group. All the spouses of mothers rated having a doula as "very positive" (93%) or "positive" (7%).<sup>161</sup>

A randomized controlled clinical trial was undertaken to evaluate the effect of a supportive companion during labor and child birth on selected outcome measures. The mothers in the supportive companion chose a companion of their choice. The subjects were selected randomly 105 in the interventional group and 107 in the comparison group. Outcome measures such as maternal satisfaction, obstetrical and neonatal outcome and breastfeeding were assessed. The findings suggested that the mothers who received constant support by the companion of their choice were more satisfied with childbirth experience. There was an association between maternal satisfaction and presence of a companion, with care received and with medical guidance, during labor. Whereas there was an association between presence of companion and care received, with vaginal delivery, during delivery. Hence presence of a companion of the mother's choice had an impact on her satisfaction with labor and delivery.<sup>162</sup>

A comparative study to evaluate the effect of doula support versus no support on labor outcome among mothers during labor was undertaken at New Jersey. 600 first time expectant mothers were selected conveniently and assigned randomly 300 in the doula support group and the remaining 300 in the no support group. The doula group received 2 hour sessions twice and the labor outcome measures such as duration of labor, mode of delivery, type and timing of analgesia/anesthesia, and Apgar scores were noted. Findings showed, that there was a shorter stages of labor

among the mothers in the support group along with improved cervical dilatation, required lesser amount of analgesics, had improved APGAR scores rather than in the comparison group. Hence the mothers in the low economic group had an option to select a female friend or family member who has received lay doula training which eventually shortens the labor process.<sup>163</sup>

A study was conducted to investigate the association between doula care usage and labor process by using nursing students as trained doulas among parturient. 89 mothers who delivered spontaneous vaginal births during 2 years were selected conveniently. Labor outcome measures were measured and the findings suggested that there was a significant association between complementary doula interventions and epidural analgesia usage. No notable association was found between epidural use and number of births, economic levels, educational status, and the type of health team member. Hence students trained in doula supportive care may change the environment for intranatal nursing practice thereby making the labor process a fruitful one and an excellent experience.<sup>164</sup>

A Randomized controlled trial was conducted to assess the effect of acupuncture during labor on pain, degree of relaxation and obstetrical outcome in labor ward at a tertiary care centre hospital in Sweden. 90 mothers were selected randomly among them 46 mothers received acupuncture during labor and the remaining 44 mothers received routine care. The Results revealed that acupuncture treatment during labor remarkably decreased the need for analgesia, had better comfort, as compared with the routine care group. There were no noted adverse effects of acupuncture on labor process and outcomes. Hence acupuncture can be used as an adjunct to routine care during labor and child birth.<sup>165</sup>

A qualitative study was conducted to identify the experiences and views of 84 Zambian mothers and 40 health care workers regarding use of a companion during labor process. Their views were that including support persons in labor wards would be beneficial as females understand the emotional aspects in a good manner and they help in laboring process. The healthcare team members argued that informal support persons provide a feeling of security to the mother in labor and delivery. They also added that the hospitals did not allow a companion along with them during labor and child birth.<sup>166</sup>

A randomized study was undertaken to find out the effect of supportive care on labor outcome among primiparas mothers. Out of the total sample 149 was allotted to doula support, and 165 had routine care. The data was collected from the mother's medical records and phone interviews with the clients. Analysis revealed that mothers who underwent doula support during labor had significantly less epidural use (54.4% versus 66.1%,  $P < .05$ ) than women in the routine care group. The mothers in doula group also stated that the labor process was an excellent experience, and had positive effects on their emotional feelings and stability. However there was change in surgical delivery incidence, usage of forceps, and initiation of breast feeding etc.<sup>167</sup>

A research study was conducted among primigravida in Botswana to find out the effect of female care giver as a labor companion on obstetrical outcomes, 109 primigravida mothers who expected spontaneous vaginal delivery were randomly assigned into comparison group and an interventional group. The findings revealed that majority of the mothers in the interventional group had normal vaginal delivery, required less analgesics, required less oxytocin, and fewer surgical deliveries than in the comparison at  $p < 0.05$  level. Hence the presence of a female care giver during



labor process for labor support is cost effective which was consistent with traditional cultural practices.<sup>168</sup>

A randomized controlled trial to identify the effect of doula care support on mother infant interaction, baby development and initiation of breast feeding was carried out 9 weeks after delivery. Primigravida women who expected vaginal deliveries were randomly assigned either to doula support group (n=33) and no-doula group (n=71). The investigator visited the mother at 2 months after delivery in order to assess the development status of the infant with Bayley Scales of Infant Development-Second Edition and to observe the mother's interaction with her infant. M-I interaction was scored on a scale of 1-7. The findings suggested that the mother infant interaction scores had a notable change between the doula group and the comparison group. The doula supported mothers' mean interaction score was significantly higher than the no-doula group of mothers for 4 of 5 observation periods at ( $p < .05$ ). Hence doula care support among parturient had a positive impact on mother infant interaction at 2 months after child birth.<sup>169</sup>

A Meta-analysis undertaken among four studies on young women who belonged to low income group and who underwent labor process without a support was compared with women who underwent labor process with support. The authors identified that the primipara mothers who delivered with continuous labor support by a labor attendant shortens the length of labor by 2.8 hours, reduces the risk of surgical delivery half the rate, reduces forceps usage, reduces the rate of oxytocin by half. Mothers also had good satisfaction and better post natal care and a good labor outcome thus reducing the maternal complications.<sup>170</sup>

A study to assess the experiences and perceptions of women's regarding doula care in their labor process among 12 women who had institutional deliveries was

carried out. Structured interviews were conducted for one hour duration in their residence after 7 weeks postpartum until 16 weeks postpartum period. The findings revealed that doulas were beneficial to the parturient in many ways. Moreover 11 out of 12 parturient explained that they would like to have doula support again in their future pregnancies. All of them said that their experience of labor process with doulas was pleasant and excellent; they were really good, they are wonderful, and were tackling the situation efficiently. They also added that they were impressed and they loved their doula.<sup>171</sup>

A Randomized controlled trial to rule out the effectiveness of having a supportive companionship during child birth on various aspects of adaptation to parenthood among primipara expectant who expected normal vaginal delivery was undertaken. Constant support was given by the volunteers from the community without medical or nursing experience. They supported them in areas such as comfort, reassurance and praise given to support group. The findings suggested that constant support during labor had no measurable influence on the progress of labor. Diastolic blood pressure and analgesia requirement was reduced, the mothers felt that they had adapted well during labor, and pain, anxiety was reduced in constant support group than the no support group. After 6 weeks postpartum the mothers in the support group were breastfeeding exclusively than the mothers in the no support group. Hence it was concluded that, delivering in a hospital with constant support lead to good adaptation and improved the competence, gained confidence to cope with transition to parenthood and initiation of breastfeeding.<sup>172</sup>

A study to identify the effect of social support during labor process on maternal and infant morbidity was undertaken on 465 healthy primigravida women. They were selected randomly and the doula group consisted of 465 primigravida mothers and the comparison group without social support consisted of 249 primigravida mothers. The findings suggested that the mothers with continuous

support during labor process had lesser perinatal complications ( $p < 0.001$ ) including surgical delivery (7% vs 17%  $p < 0.01$  level), reduced oxytocin usage, and lesser rate of infant admission in NICU care ( $p < 0.10$ ), reduced length of labor (7.7 hrs vs. 15.5 hrs) ( $p < 0.001$ ). Hence it was concluded that constant social support was beneficial to women during labor and childbirth.<sup>173</sup>

## **2.2. CONCEPTUAL FRAMEWORK**

Researcher identified use of Sister Callista Roy's Model of Adaptation as a conceptual framework<sup>174</sup> is very appropriate for the nursing practice of providing comfort for women in labor. The ability of the nurse to provide comfort is a fundamental component of nursing responsibility.

The conceptual framework used in this study was based on Roy's adaptation theory (1984). This theory focuses on environment, person, adaptation and adaptive modes.

### **Environment**

It is defined as all circumstances that surround and affect the behavior of a person. Thus all stimuli whether internal or external are part of persons environment change in the environment act as a catalyst thus stimulating a person to make adaptive responses.

### **Person**

Person is a biopsychosocial being as a whole and constantly interacting with changing environment.

Man, as the recipient of nursing care, can be conceptualized as an adaptive system. This person receives inputs that come both externally from the environment outside the person and internally from the self. These inputs, termed as stimuli, can be classified in three categories: "focal stimuli, or stimuli immediately confronting the person; contextual stimuli, or all other stimuli present, either within persons as their

internal condition or coming as input from the environment; and residual stimuli such as beliefs, attitudes, or traits which have an indeterminate effect on the present situation”.

### **Adaptation**

It is a process that involves a systematic series of actions directed towards some end. The person has two major processing subsystems within himself, the regulator and the cognator. Human beings use these subsystems to cope up with internal and the external environment stimuli. The mechanism of regulator acts in the autonomic nervous system which includes endocrine, neural, and perception pathways. The individual is prepared to cope up with the stimuli by this mechanism. The cognator includes emotions, information processing, learning, and judgment. The process of perception bridges the two mechanisms Responses to stimuli are carried out through four modes namely physiologic, self-concept, interdependence and role function.

### **Adaptive modes**

The physical mode covers basic needs, such as eating, sleeping and protecting the body. Self-concept refers to an individual's beliefs and feelings about him or herself. Role function mode, involves the perception of where the individual fits in the social network, how he or she relates to other people and should behave towards them. Interdependence mode refers to the personal relationships he or she has with friends, family and life partners.

When the inputs are favorable, the adaptive level is high and enhances the optimum health in an individual. If it is not a favorable stimuli, it leads to maladaptive response where there is a constant friction between stimuli and the environment, which causes the morbidity and mortality to the mother and foetus/ newborn.

Nurses play a vital role in bringing positive external stimuli to enhance the optimal health of an individual. The nurses direct the ways to adapt to environment which reduces sickness behaviors. Theorists insist that nurses play a different role in influencing the external stimuli in performing various comfort measures and constant emotional support which termed as doula care.

For this current study parturient with labor pain admitted in hospital considered as adaptive system. In environment, the focal stimuli to the parturient were labor pain, changes in the lower uterine segment, contextual stimuli were demographic variables ( age, religion, education, occupation, place of residence , type of family etc), clinical variables ( gestational week, weight of the parturient, practice of antenatal exercises etc) labor room environment such as new place and new hospital staff, new equipments, nearby parturient, procedures like per vaginal examination, and residual stimuli were parturient attitude towards child birth experience, tales heard about labor process.

Because Roy's model includes the concept of humanism, which focuses on a person's creative power, the nurse helps the person to use his own abilities whenever possible.

Here researcher acted as a doula for the interventional group and helped the parturient to use her abilities on labor process by giving massage, breathing exercise, positions, continuous emotional and psychosocial support along with hospital treatment whereas control group undergoes routine hospital treatment (monitoring vital signs, maternal and fetal well being, per vaginal examination, administering iv fluids, enema, recording and reporting).

The laboring woman, in her own level of adaptation, tries to manage above mentioned stimuli through her regulator and cognator coping mechanisms. An

increase in catecholamine or stress hormone production would be a regulator coping mechanism.<sup>83</sup>( not focused in this study); adapting hospital routine care can be the cognator coping for control group, adapting doula care would be a cognator coping mechanism for interventional group. The researcher, in assessing the woman's adaptive response, would focus on evaluation of physiologic and self concept modes after administration of doula care to interventional group and for the control group after routine hospital care.

    Laboring woman usually started to cry, thrash about in bed, and state that she could no longer tolerate the pain shows her physiological need of comfort. For the interventional group, doula care may ease the pain (decrease the stimuli) and promote labor outcome an adaptive response in the physiologic mode. This was evaluated by assessing the pain level with the help of standardized numerical pain rating scale (NPRS) and labor outcome with the self developed questionnaire. Because doula care involves active participation and mobilization of inner resources, it may also promote an adaptive response in the self-concept mode can be evaluated through her level of anxiety with standardized state anxiety Y-I scale. For the control group after routine hospital care level of pain, anxiety and labor outcome were assessed by the researcher. Effectiveness of doula care was determined by comparing the level of pain, anxiety and labor outcome among parturient between and control group and interventional group.

**Conclusion:**

    Roy's Adaptation Model provides a framework to better understand why it is important for caregivers of laboring women to minimize stressful environments. Caregivers must provide management techniques that are safe and effective in lowering levels of pain and anxiety. Optimally, these interventions actively involve the woman in labor, and promotes labor outcome. Doulas emerge as a mighty advancement in the perinatal care of the parturient who attend to their physical and psychological needs.

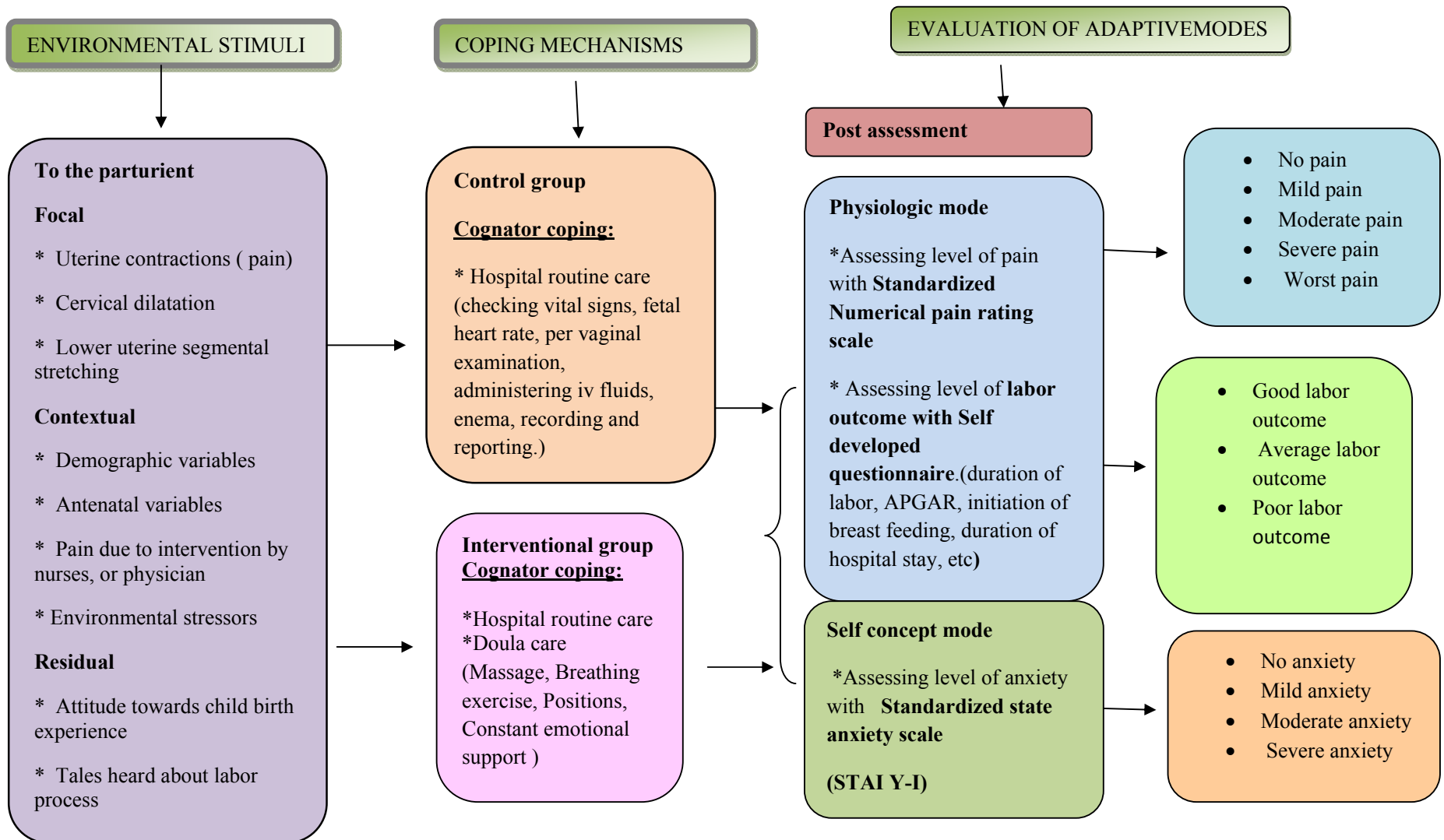


Figure 2.2.1: Conceptual framework based on Roy's adaptation theory (1984)

## **CHAPTER III**

### **MATERIALS AND METHODS**

According to Sharma, research methodology is a systematic procedure which the researcher starts from the initial identification of the problem to its final conclusion. The role of methodology consists of procedures and techniques for conducting a study.

This chapter deals with the methodology formulated for the problem selected and discussed under the following headings such as research approach, research design, setting, population, sample, sampling technique, development and description of the tool, validity, reliability, pilot study, method of data collection and plan for data analysis.

The present study has been undertaken to evaluate the effectiveness of doula care in terms of pain, anxiety and labor outcome among parturient in selected hospitals of Theni District.



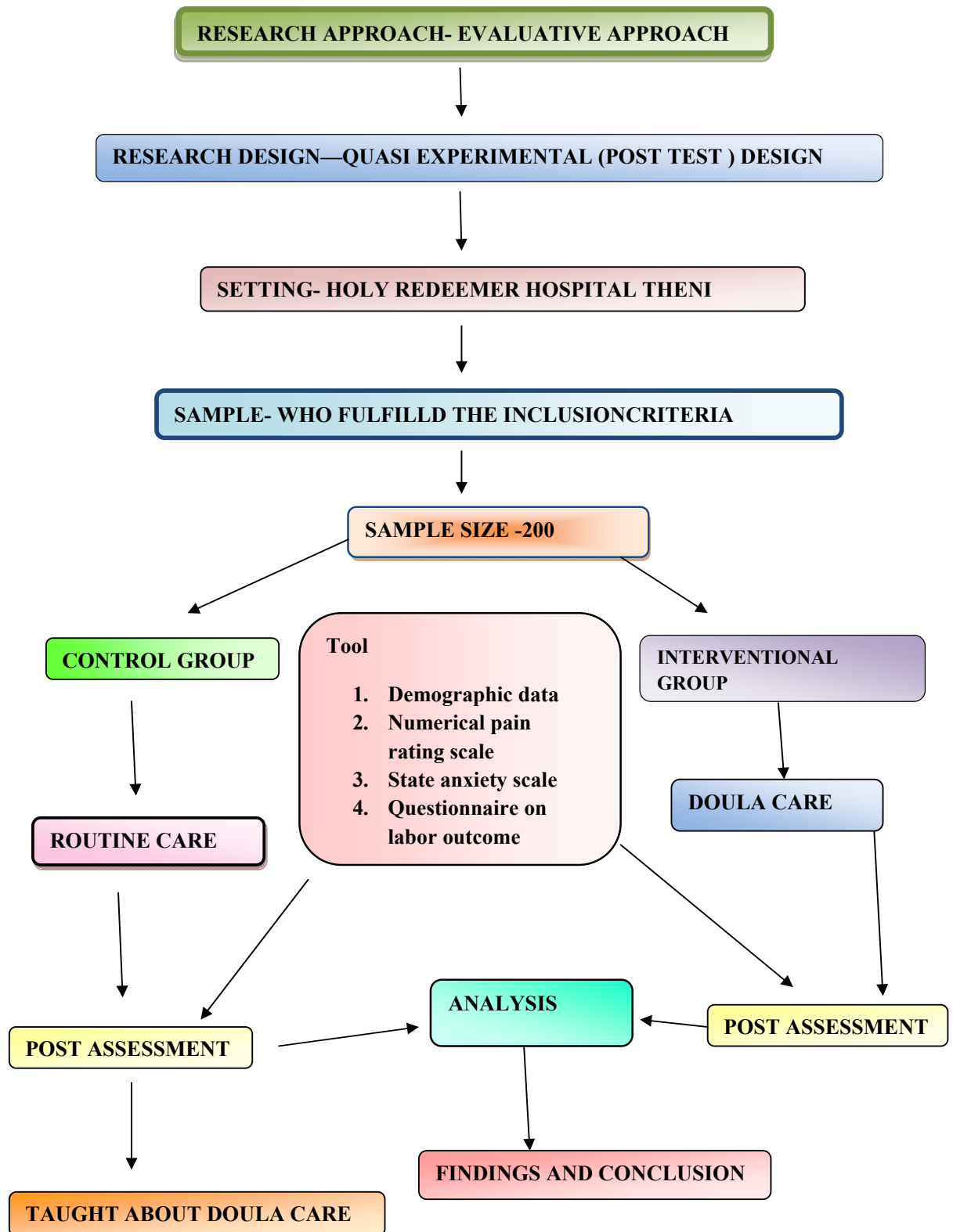


Figure 3.1: Schematic presentation of the study

### 3.1. RESEARCH APPROACH

A Quantitative approach was used in this study. This present study was aimed to evaluate the effectiveness of doula care on pain, anxiety and labor outcome among parturient.

### 3.2. RESEARCH DESIGN

Quasi experimental (Post test only) design.

E	X	O <sub>1</sub>
C	-	O <sub>2</sub>

In this design

E - Interventional group.

C - Control group

X - Manipulation – independent variable (doula care)

O<sub>1</sub> -pain score, anxiety score, labor outcome score in the post test among parturient of interventional group.

O<sub>2</sub> -pain score, anxiety score, labor outcome score in the post test among parturient of control group.

### 3.3. VARIABLES

**3.3.1. Independent variables:** Doula care

**3.3.2. Dependent variables:** Labor pain, Anxiety, and Labor outcome were the dependent variables in this study.

**3.3.3. Control of extraneous variables:** to exert control over extraneous variables following measures were taken

- One hospital was taken to assess all patients in the same hospital environment to avoid bias in pain, anxiety, labor outcome due to difference in staffing,

infrastructure and policy and protocol of the labor ward. Parturient from both control and interventional group were assessed in the same hospital environment.

- Pain and anxiety were assessed immediately after contractions during active phase of labor ( cervical dilatation at 6-7cm)
- Mothers were enquired for major illness during pregnancy and labor and were excluded.

### **3.4. SETTING OF THE STUDY**

The study was conducted at Holy Redeemer Hospital in Theni, it is a maternity hospital run by sisters from Roman Catholic presentation convent, it is attached with training institute where they run labor training course. Hospital has 3 operation theatre, 5 bedded ICU, 2 labor tables in the labor room, 6 beds in the observation room, 11 individual rooms, 19 bedded ward, apart from this the hospital also has lab, pharmacy, MRD, immunization clinic, Obstetrics and Gynecology OPD, Peadiatric and Neonatal OPD, General Medicine OPD. According to 2012 census on an average more than 600 deliveries took place, among them 350 were normal deliveries and 274 were LSCS.

### **3.5. POPULATION**

#### **3.5.1. Target population**

The target population of this study was all primi parturient admitted for labor in the hospital.

#### **3.5.2. Accessible population**

The accessible population for the study was primi parturient admitted for labor in Holy redeemer hospital, Theni, during the period of data collection.

### 3.5.3. Sample

The sample comprised of parturient admitted for labor at Holy redeemer hospital, Theni, and those who fulfilled the inclusion criteria during the period of data collection.

### 3.6.1. SAMPLING PROCESS

Power analysis was carried out to calculate the estimated sample size. Based on previous study to reduce pain by 50%, to reduce anxiety by 60%, to improve labor outcome by 70%, from the base line with 5% alpha error and 20% beta error with 80% power. The required sample size was 86 per group with 10% drop out it was 95 which in turn was rounded to 100 in each group. The total sample size was 200. (100 in the control group and 100 in the interventional group).

$$n = \frac{[P1 (100-P1) + P2 ((100 - P2)] (Z_{\alpha} + Z_{\beta})^2}{(P1-P2)^2}$$

Anticipated values of the population proportions	=	P1 & P2
Level of Significance	=	100 (1- $\alpha$ ) %
Power of the Test	=	100 (1- $\beta$ ) %
Meaningful Difference	=	d

### 3.6.2. Sample size

The sample included in the study were 217 primi parturient, among 217 primi parturient in the study, 7 (3.68%), 10 (4.60%) had discontinued due to lack of progress in labor, underwent emergency LSCS in the interventional group, control group respectively.

Hence the final sample size was 200. The data analysis was done for 200 subjects (100 in the control group and 100 in the interventional group.)

### **3.6.3. Sampling technique**

Non probability Convenience sampling technique was used for selecting the sample.

### **3.6.4. Criteria for sample selection**

#### **3.6.4.1. Inclusion Criteria**

Primi parturient with

- 37- 41 completed weeks of gestation
- age between 18- 35 years
- single fetus with cephalic presentation
- expecting normal vaginal delivery.
- no intake of analgesics
- who were able to understand Tamil or English.
- painful contractions which resulted in more than 25 % of cervical effacement on admission to the labor unit

#### **3.6.4.2. Exclusion Criteria**

Primi parturient with

- pre existing medical condition such as diabetes mellitus, hypertension renal, cardiac, epilepsy, psychosis on drugs, physically challenged
- conditions arising during pregnancy: gestational diabetes, placental abnormalities, 2<sup>nd</sup> or 3<sup>rd</sup> trimester hemorrhage, intra uterine growth retardation, presence of fetal congenital abnormality.
- full cervical (10cm) dilatation on admission to the labor ward.

### **3.7. DEVELOPMENT AND DESCRIPTION OF THE TOOL**

The researcher found that there were widely used standardized instruments available to assess labor pain and anxiety, but no standardized instrument available to assess the labor outcome, hence the researcher developed a tool appropriate to the nursing profession within the Indian context.

In this present study the following instruments were developed by the researcher based on the objectives of this study.

1. Tool to collect demographic data which includes socio demographic variables and clinical variables.
2. Tool to assess labor outcome

The following steps were adopted prior to the development of the tool:

- With the help of extensive review of literature from various resources (textbooks, journals, periodicals, website, Medline search, etc) in order to select the most suitable and appropriate tool for this present study.
- Personal experience of teaching and guiding students in classroom as well as in the clinical field.
- Personal consultation and discussion with experts from nursing, research, statistics, psychology and OBG physician
- Interaction with the parturient in the clinical field
- Preparation of the blue print

3. The instruments used in this study were

1. Demographic variables
2. Standardized numerical pain rating scale
3. Standardized state anxiety scale
4. Questionnaire on labor outcome.

All the above tool were sent for content validity to 14 experts in the field of nursing, gynecology, psychology and statistics with check list to evaluate each tool based on the objectives of the study and also all instruments were translated into Tamil language by the Tamil expert and again it retranslated into English by the English expert in order to improve its validity.

### **3.7.1. Tool I -Demographic Variables**

It was developed by the researcher to gather information about parturient; it includes socio demographic variables and clinical variables.

Socio demographic variables consisted of age, religion, marital status, place of residence, educational status, occupation, type of work, type of family, family income, attainment of menarche, type of marriage, and duration of marital life of the parturient.

Clinical variables consisted of antenatal visits, gestational weeks during labor, and weight of parturient, nature of parturient, history of complications, support group, dietary pattern, history of abortion and practice of antenatal exercises.

Interview method was used to collect demographic variables from the parturient at labor unit during latent phase of first stage of labor. (Cervical dilatation<3cm)

Scoring and interpretation: No score was allotted. The data were used for descriptive analysis.

### **3.7.2. Tool II- Numerical pain rating scale (NPRS)**

NPRS was developed by the pain consortium and national initiative on pain control, to assess the subjective intensity of pain. The number that the respondent indicates on the scale to rate their intensity of pain is recorded. Scores ranges from 0-

10, higher score indicate greater pain. Permission to use this scale is not necessary when use it for nonprofit academic research.

It is a widely used standardized scale for the assessment of pain among patients. This scale consists of five items ranging from zero to ten. The subject level of pain was scored according to the severity of pain, and the score was given from zero to ten. The parturient pain was divided in to five categories and pain score was given according to the numerical pain rating scale as follows

- 0: No pain,
- 1 -3: Mild pain,
- 4 –6: Moderate Pain,
- 7 – 9: Severe,
- 10: worst pain.

In this study immediately after uterine contractions during active phase of labor by interview method parturient asked to rate their pain level on numerical pain rating scale.

### **3.7.3. Tool III - State anxiety scale**

The standardized state – trait anxiety inventory (STAI) of Spielberger C.D was used. It is a widely used standardized scale for measuring state and trait form of anxiety. It comprises of two separate self report for measuring State anxiety (STAI-Y-I) and trait anxiety (STAI-Y-II). In this study only the State anxiety (S-anxiety) was evaluated with state anxiety inventory (STAI Y-I). It evaluates how respondents feel ‘right now’ at that moment and the intensity of their feeling of anxiety.

It is a 4 point likert scale consisted of 20 items among them item numbers 3,4,6,7,9,12,13, 14,17,18 were positive items and item numbers 1,2,5,8,10,11,15,16, 19, 20 were negative items. The positive items were scored as Not at all-1,



somewhat - 2, Moderately So-3, and Very much so-4. The negative items were scored reversely as Not at all-4, Somewhat-3, Moderately So-2, and Very much so-1. Permission to use this tool is not necessary when use it for nonprofit academic research.

Immediately after contractions during active phase of labor, by interview method data was collected. Approximately 10 -15 minutes needed to assess the anxiety with this tool.

The minimum score was 20 and the maximum score was 80. The grading of anxiety was according to the state anxiety scale (STAI-Y-I ) as follows

20: No anxiety,

21-40: Mild level of anxiety,

41-60 : Moderate level of anxiety,

61-80: Severe level of anxiety.

#### **3.7.4. Tool IV- Questionnaire on labor outcome.**

It was developed by the researcher for this study based on extensive review literature and its content was validated by the experts. It has 11 multiple choice questions regarding duration of labor, use of oxytocin, rupturing of membrane, mode of delivery, APGAR, initiation of breast feeding, duration of hospital stay. Each question has 3 options and 1<sup>st</sup> option carries 1 mark, 2<sup>nd</sup> option carries 2 marks, 3<sup>rd</sup> option carries 3 marks. Maximum possible score was 33, minimum possible score was 11.

Labor outcome was graded as follows:

<15- Good outcome

15-24- Average outcome

>24 - Poor outcome.

Observation method was used to collect data throughout labor and during post partum period. Researcher observed the parturient throughout labor and duration of hospital stay was observed from the hospital record.

### **3.8. DEVELOPMENT OF INTERVENTION**

In this study the researcher had taken a concept of doula which means assisting the women during labor.

First draft about doula care was developed by the researcher for this study based on:

1. Techniques (measures that diminish painful stimulus, measures that inhibit pain awareness and measures that reduce women's negative emotional and physical reaction) quoted by Penny simkin PT<sup>175</sup>
2. Perceived needs and problems of parturient during labor
3. Extensive review literature from various resources.
4. Personal experience of teaching and guiding students in the clinical field.
5. Personal consultation and discussion with experts from nursing, research, statistics, psychology and Obstetrician.
6. Interaction with the parturient in the clinical field

Doula care content was translated in to Tamil language by Tamil expert and edited to improve its validity.

In this study the researcher assisted the parturient of interventional group with the concept of doula care which includes selected nursing measures such as massage, breathing exercise, positions and constant emotional psychosocial support.

#### **3.8.1. DESCRIPTION OF DOULA CARE**

In this study, it refers to the qualified nurse as birth assistant,(the investigator acted as doula) given doula care along with the hospital routine treatment to the parturient of interventional group to reduce pain, anxiety and to promote labor outcome. Doula care was administered from the latent phase of first stage of labor

until immediate post partum period (1 hr after delivery). Control group underwent routine hospital treatment based on hospital policy.

Doula care includes selected nursing measures such as

- Massage
- Abdominal breathing or diaphragmatic breathing exercise
- Positions
- Emotional psycho social support

### **3.8.2.1. Massage**

#### **a. Back massage**

Help the parturient to lie on either left or right side. Apply powder over the back. Doula facing the mothers back and with one hand holding the hip and with the other hand locates the flat, hard surface of lower back just above the hip, once located should press by the heel of the palm on the sacral region and once pressed rotate it clockwise and anti clockwise towards lumbar region.

#### **b. Effleurage massage**

Effleurage is a light moving of fingertips on the lower abdomen that is between the navel and the pubic hair. Help the parturient to sit or lie comfortably. Doula, placing the fingertips of both hands on either side of the navel of the parturient, making circles by moving fingers lightly in circular motion from the centre of the abdomen, outwards the hip. Then down toward the pubic hair and up again towards the navel.<sup>4</sup>

Each massage was given by the doula 3 times. (Each for 5minutes). Total time duration required to do both massages (3 times) approximately 30 minutes.

### **3.8.2.2. Abdominal breathing**

It is the process of breathing using the diaphragm, taking deep breaths up to the full capacity of the lungs. As it uses the movement of the diaphragm (expand

during inhalation and contract during exhalation) it's called as abdominal breathing.<sup>176</sup>

Help the parturient to find a comfortable position, ask her to keep her one hand over the abdomen and tell her to watch the abdomen and start to focus on inhaling deep through nose allowing the abdomen to expand fully; slowly and completely, then exhale through nose, gently pulling the abdomen inwards so that all the air is released. Instruct the parturient to take 5-6 seconds to inhale, and the same time to exhale.<sup>177</sup> Practice breathing slowly at a rate of 5-7 breaths per minute. Maintain this pattern of breathing for 5 minutes.<sup>178</sup>

This was practiced 4 times during first stage of labor process, needed time was 20 minutes.

### **3.8.2.3. Positions**

#### **a. Walking**

In this study it refers to walking slowly. During contractions stop walking. When the contractions is over resume walking. This was practiced for 15 minutes (each time) 5 times during first stage of labor. Time needed for this was 1 hr 15 minutes.

#### **b. Squatting – (Using footstool or low stool)**

Help the parturient to sit on the footstool knees apart. As the parturient sit on this fashion, the weight of the upper part of the body is supported by the footstool and it helps the pelvic floor relaxed.

It was practiced for 5 minutes (each time), 5 times during first stage of labor. Time needed for this was 25 minutes.

#### **c. Standing with back to the wall**

Here the parturient will hunch the shoulders forward and bend the knees, stand with back to the wall by pressing the part of the back that have discomfort. This exercise gives counter pressure on the lower back will relieve the discomfort. It was

practiced for 3 minutes (each time), 10 times during first stage of labor. Time needed for this was 30 minutes.<sup>4</sup>

All above mentioned physical comfort measures given to the parturient alternatively in a view of her comfort during first stage of labor.(Cervical dilatation <7cm)

For the above comfort measures, total time needed was 3 hrs approximately.

#### **3.8.2.4 .Emotional psychosocial support**

In this study it refers to researcher as doula, being friendly, concerned, gentle, communicating warm positive regard, reassurance to the parturient and also conveying sense of security and well being by constant presence with the parturient throughout labor to avoid fear, anxiety and to promote labor outcome.

### **3.9. VALIDITY**

The tool II and III (Numerical pain rating scale, State anxiety scale) selected for the study were universally accepted standardized tools and clinically tested. Demographic variables, Questionnaire on labor outcome and intervention on doula care were prepared by the researcher based on extensive review literature. The content validity of the instruments, intervention on doula care was evaluated by a panel of 14 experts from nursing, psychology, statistics, obstetrics and gynecology. The experts were requested to give their valuable corrections and suggestions regarding accuracy, relevance and appropriateness of the content.

Expert's suggestions were carried out in the instruments and intervention then during pilot study, the tool and intervention were found to be complete in terms of content and clarity of language.

### **3.10. RELIABILITY**

The reliability of the numerical pain rating scale was established by test retest method and for other tool cronbach's alpha was calculated.

Numerical pain rating scale  $r=0.86$ ,

State anxiety scale  $r= 0.78$ ,

Labor outcome questionnaire  $r=0.81$ .

### **3.11. PILOT STUDY**

In order to test the feasibility of the study a pilot study was conducted from august 2013 to October 2013 among 20 primi parturient (10 in the interventional, and 10 in the control group) at Krishnammal memorial hospital, Theni. The findings suggested that there was a significant difference on anxiety and labor outcome level among parturient between control and interventional group at  $p<0.001$  level. All the parturient in the interventional group expressed that they felt comfortable and no one reported any adverse effects regarding doula care. These findings suggested that doula care was effective and feasible.

The following modifications were done after the pilot study were,

- The investigator modified few aspects in the wordings of the demographic data.
- Data collection method to assess anxiety was changed from self report to interview method

### **3.12. METHOD OF DATA COLLECTION**

Main study data collection was started from December 2013 to February 2015, at Holy redeemer hospital, Theni. Prior permission was obtained from the study centre, and the objectives and nature of the study were explained to the administrator,

and other faculty including the health care workers who were posted in the labor unit before starting the data collection.

Samples were selected by convenience sampling technique. The participants were explained about the study and were assured of confidentiality of the data collected. Then oral and written consent were got from participants. First 100 parturient were selected conveniently by the researcher and were assigned as control group. After admission to the labor unit during latent phase of first stage of labor (cervical dilatation <3cm) socio demographic data and clinical variables were collected from the parturient and then they underwent routine care as per the hospital policy. The researcher assessed the level of pain, anxiety during active phase of first stage labor, and labor outcome was assessed during labor and post partum period. Based on ethical consideration, the researcher taught about the doula care to the control group to practice for future delivery.

Next 100 parturient selected conveniently were grouped as interventional group. The participants were explained about the study and were assured of confidentiality of the data collected. Then oral and written consent were got from participants. After admission to the labor unit, during latent phase of first stage of labor (cervical dilatation <3cm) socio demographic data and clinical variables were collected from the parturient and then doula care was given along with routine care from latent phase of first stage of labor till immediate postpartum period.

In doula care the investigator started with walking, standing with back of the wall alternatively, then breathing exercises and back massage given alternatively, lastly squatting position and effleurage massage given alternatively, all above mentioned comfort measures were intermittently given to the parturient in a view of her comfort, and the researcher as a doula developed good rapport, friendly concerned

manner clarified parturient doubts and motivated to adapt with various comfort measures and also being continuously with the parturient gave positive regards, reassurance throughout the labor to meet her emotional and psychosocial needs. Pain and anxiety were assessed immediately after painful contractions at active phase (cervical dilatation 6-7cm) of first stage of labor, and labor outcome observed throughout labor and during immediate post partum period.



### 3.12.1: DATA COLLECTIONPROCEDURE

**Table 3.12. 1: Data collection procedure**

<b>Steps</b>	<b>Control group</b>	<b>Interventional group</b>
	Data was collected from 3 <sup>rd</sup> week of December 2013 to 2 <sup>nd</sup> week of July, 2014	Data was collected from 3 <sup>rd</sup> week of July, 2014 to 2 <sup>nd</sup> week of February 2015
1.	First 100 parturient who got admitted for labor and fulfilled the inclusion criteria during above mentioned period were selected conveniently by the researcher and they were grouped as control group	After completion of control group the next 100 parturient who got admitted for labor and fulfilled the inclusion criteria during above mentioned period were selected conveniently by the researcher and they were grouped as interventional group.
2.	After explaining in detail about the study oral and written consent was obtained from the participants	After explaining in detail about the study oral and written consent was obtained from the participants
3.	Demographic data (socio demographic variables and clinical variables) was collected from the parturient by interview method at labor unit during latent phase of first stage of labor.(Cervical dilatation <3cm)	Demographic data (socio demographic variables and clinical variables) was collected from the parturient by interview method at labor ward during latent phase of first stage of labor.(Cervical dilatation <3cm)
3.	Under went routine hospital care throughout labor process.	Underwent doula care along with routine hospital care. Here the researcher as doula developed good rapport and friendly relationship with the parturient,

		administered massage, motivated the parturient to adopt various positions, taught to practice breathing exercise, clarified her doubts and gave positive regards, reassurance, throughout labor and until immediate post partum period.(1 hr after delivery)
4.	Researcher assessed their pain and anxiety level immediately after contractions during active phase of first stage of labor (cervical dilatation at 6-7cm) with the help of numerical pain rating scale and state anxiety inventory Y-I by interview method.	Researcher assessed their pain and anxiety level immediately after contractions during active phase of first stage of labor (cervical dilatation 6-7cm) with the help of numerical pain rating scale and state anxiety inventory Y-I by interview method
5.	Researcher observed the labor outcome throughout the labor process and during immediate post natal period with the help of self developed labor outcome questionnaire	Researcher observed the labor outcome throughout the labor process and during immediate post natal period with the help of self developed labor outcome questionnaire
6.	Based on ethical considerations instructions regarding doula care provided to parturient after delivery in order to practice for their future delivery	

### **3.13. ETHICAL CONSIDERATIONS**

#### **3.13.1. Beneficence**

##### **3.13.1.1. The right to freedom from harm**

Though this study is quasi experimental design, the intervention used was non invasive.

#### **3.13.2. Respect for human dignity**

##### **3.13.2.1. The right to self determination**

1. The proposal was approved by the screening committee of The Tamilnadu Dr.M.G.R Medical University, Chennai.
2. Ethical clearance was obtained from the ethical committee of the study centre.
3. Prior permission was sought from higher authorities in concerned institution before commencing the study.
4. Oral and written consent were obtained from all the study participants.

##### **3.13.2.2. The right to full disclosure**

1. Participants were advised for the voluntary nature of the study and given the opinion to withdraw from the study at any stage without being subjected to any penalty.
2. Participants were not required to identify themselves by name and have not been identified during data analysis or during discussion of the results and conclusions.
3. Full explanation of the purpose of the research was given and the researcher was available to provide information and support as needed.

### **3.13.3. Justice**

#### **3.13.3.1. Right to fair treatment**

Based on ethical consideration about doula care was taught to control group at the end of the study.

#### **3.13.3.2. The right to privacy**

1. As they were informed that data collected from questionnaires then stored in computer discs for final analysis would be kept in a secure place and shredded after the study had been completed.
2. Self administered questionnaires only were administered to potentially protect the anonymity and privacy of the respondents contributing to the confidentiality of the responses.

### **3.14. PLAN FOR DATA ANALYSIS**

The data was analyzed according to the objectives of the study by using descriptive and inferential statistics.

1. Frequency and percentage was used for analyzing socio demographic variables and clinical variables.
2. Effectiveness of doula care in terms of pain, anxiety and labor outcome among parturient between control and interventional group was tested by using independent 't' test.
3. Chi-square analysis was used to find out the similarity (homogeneity) among parturient in the frequency distribution of demographic data between control and interventional group and also to find out the association between pain, anxiety and labor outcome with the selected socio demographic variables and clinical variables among parturient in the control and interventional group.
4. Pearson correlation coefficient was used to find out the correlation between pain, anxiety, labor outcome among parturient in the control and interventional group

## CHAPTER - IV

### ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the description of sample, analysis and interpretation of the data collected to evaluate the effect of doula care on pain, anxiety and labor outcome among the parturient. The data obtained were tabulated, analyzed and interpreted using descriptive and inferential statistics on the basis of objectives and hypotheses formulated for the purpose of the study.

#### **Descriptive statistics were used to present the following:**

1. Frequency and percentage were used to present the demographic variables of parturient as well as the level of pain, anxiety and labor outcome.
2. Chi-square analysis was used to find out the similarity (homogeneity) among parturient in the frequency distribution of demographic data between control and interventional group and also to find out the association between pain, anxiety and labor outcome with the selected socio demographic variables and clinical variables among parturient in the control and interventional group.

#### **Inferential statistics were used to present the following:**

1. The student independent t test was used to compare the mean scores between control and interventional group on effectiveness of doula care among parturient
2. Pearson correlation coefficient was used to find out the relationship between pain, anxiety, and labor outcome among parturient in the control and interventional group.

## **OBJECTIVES**

1. To assess the pain, anxiety, and labor outcome among parturient of control group after routine hospital care.
2. To assess the pain, anxiety and labor outcome among the parturient of interventional group after doula care.
3. To evaluate the effectiveness of doula care on pain, anxiety and labor outcome among parturient between control group and interventional group.
4. To find out the correlation between pain, anxiety, and labor outcome among parturient in the control group.
5. To find out the correlation between pain, anxiety, and labor outcome among parturient in the interventional group.
6. To associate pain, anxiety, labor outcome with selected socio demographic variables and clinical variables among parturient of control group.
7. To associate pain, anxiety, labor outcome with selected socio demographic variables and clinical variables among parturient of interventional group.

## **HYPOTHESES**

- H<sub>1</sub>**-There is a significant difference in the post test scores of pain, anxiety and labor outcome among parturient between control group and interventional group.
- H<sub>2</sub>**. There is a significant relationship between pain, anxiety and labor outcome among parturient of control group.
- H<sub>3</sub>**. There is a significant relationship between pain, anxiety and labor outcome among parturient of interventional group.
- H<sub>4</sub>**- There is a significant association between pain, anxiety, labor outcome and selected socio demographic, clinical variables among parturient in the control group.

**H<sub>5</sub>**- There is a significant association between pain, anxiety, labor outcome and selected socio demographic variables, clinical variables among parturient in the interventional group.

**The data collected were tabulated and presented as follows**

**Section I: Distribution of parturient according to their socio demographic and clinical variables between control group and interventional group.**

1. Distribution of parturient according to their socio demographic variables in the control and interventional group.
2. Distribution of parturient according to their clinical variables in the control and interventional group

**Section II: Distribution of parturient according to their pain, anxiety, and labor outcome in the control group and interventional group.**

1. Distribution of parturient according to their pain level in the control group and interventional group
2. Distribution of parturient according to their anxiety level in the control group and interventional group
3. Distribution of parturient according to their labor outcome level in the control group and interventional group.

**Section III: Effectiveness of doula care on pain, anxiety, and labor outcome among parturient between control group and interventional group**

1. Comparison of pain level among parturient between control group and interventional group.
2. Reduction of pain scores among parturient between control group and interventional group.

3. Statement wise difference on anxiety level among parturient between control group and interventional group.
4. Comparison of anxiety among parturient between control group and interventional group.
5. Reduction of anxiety scores among parturient between control group and interventional group.
6. Item wise difference on labor outcome among parturient between and control group and interventional group
7. Comparison of labor outcome among parturient between control group and interventional group
8. Differences on labor outcome score among parturient between control group and interventional group.
9. Effectiveness of doula care on pain, anxiety and labor outcome among parturient between control group and interventional group.

**Section IV: Correlation between pain, anxiety and labor outcome among parturient in the control and interventional group.**

1. Correlation between pain, anxiety, labor outcome among parturient in the control group
2. Correlation between pain, anxiety, labor outcome among parturient in the interventional group.



**Section V: Association between pain, anxiety, labor outcome and socio demographic, clinical variables among parturient of control and interventional group.**

1.a. Association between pain level and socio demographic variables among parturient in the control group

1.b. Association between pain level and clinical variables among parturient in the control group

2.a. Association between anxiety level and socio demographic variables among parturient in the control group

2.b. Association between anxiety level and clinical variables among parturient in the control group

3.a. Association between labor outcome and socio demographic variables among parturient in the control group

3.b. Association between labor outcome and clinical variables among parturient in the control group

4.a. Association between pain level and socio demographic variables among parturient in the interventional group

4.b. Association between pain level and clinical variables among parturient in the interventional group

5a. Association between anxiety level and socio demographic variables among parturient in the interventional group

5.b. Association between anxiety level and clinical variables among parturient in the interventional group

6.a. Association between labor outcome and socio demographic variables among parturient in the interventional group

6.b. Association between labor outcome and clinical variables among parturient in the interventional group.

## Section I

**Table 4.1.a: Distribution of parturient according to their socio demographic variables between control group and interventional group.**

N=200

Socio demographic variables		Group				Chi square
		Control		Interventional		
		n	%	n	%	
Age	< 20 years	10	10.0	10	10.0	$\chi^2=0.76$ p=0.86
	20 -25 years	62	62	58	58	
	25 -30 years	22	22.0	23	23.0	
	> 30 years	6	6.0	9	9.0	
Marital Status	Married	98	98.0	97	97.0	$\chi^2=0.33$ p=0.84
	Widow	1	1.0	2	2.0	
	Separated	1	1.0	1	1.0	
Locality of Residence	Rural	39	39.0	39	39.0	$\chi^2=2.10$ p=0.34
	Urban	25	25.0	33	33.0	
	Semi urban	36	36.0	28	28.0	
Religion	Hindu	79	79.0	71	71.0	$\chi^2=1.72$ p=0.42
	Christian	12	12.0	16	16.0	
	Muslim	9	9.0	13	13.0	
Educational Status	Primary Education	2	2.0	5	5.0	$\chi^2=2.09$ p=0.71
	High school	16	16.0	12	12.0	
	Higher Secondary	22	22.0	25	25.0	
	Collegiate Education	41	41.0	39	39.0	
	Professional Education	19	19.0	19	19.0	
Occupation	Home maker	63	63.0	58	58.0	$\chi^2=2.62$ p=0.62
	Daily wage Labourer	4	4.0	7	7.0	
	Farmer	6	6.0	3	3.0	
	Technical/ clerical Job	16	16.0	15	15.0	
	Professional	12	12.0	16	16.0	
Type of work	Sedentary	82	82.0	84	84.0	$\chi^2=0.16$ p=0.92
	Moderate	15	15.0	13	13.0	
	Strenuous	3	3.0	3	3.0	
Type of Family	Nuclear family	56	56.0	59	59.0	$\chi^2=0.18$ p=0.91
	Joint family	42	42.0	39	39.0	
	Extended family	2	2.0	2	2.0	

Income of Family Rs per Month	Rs.5001-10000	15	15.0	21	21.0	$\chi^2=1.22$ $p=0.27$
	Rs.10000	85	85.0	79	79.0	
Attainment of Menarche	< 12 years	27	27.0	24	24.0	$\chi^2=0.23$ $p=0.62$
	12-15 years	73	73.0	76	76.0	
Type of Marriage	Consanguineous	18	18.0	15	15.0	$\chi^2=0.32$ $p=0.56$
	Non Consanguineous	82	82.0	85	85.0	
Duration of Marital Life	< 2 years	83	83.0	85	85.0	$\chi^2=0.15$ $p=0.76$
	2-5 years	17	17.0	15	15.0	

The above table 4.1.a shows the distribution of parturient according to their socio demographic variables between control and interventional group.

When comparing the age, in the control group 10 (10%) belonged to age group less than 20 years, 62 (62%) belonged to the age group between 25 -30 years, 22 (22%) belonged to the age group between 25- 30 years, 6 (6%) belonged to the age group of > 30 years, whereas in the interventional group 10 (10%) belonged to less than 20 years, 58 (58%) belonged to the age group between 25 -30 years, 23 (23%) belonged to the age group of 25- 30 years, 9 (9%) belonged to the age group of > 30 years.

Regarding marital status of parturient, in the control group 98 (98%), 1 (1%), 1 (1%) were married, widow, separated respectively, whereas in the interventional group 97 (97%), 2(2%), 1 (1%) were married, widow, separated respectively. None of the parturient got divorced both in the control group and interventional group.

Regarding place of residence in the control group 39 (39%), 25 (25%), 36 (36%) hailed from rural, urban and semi urban respectively, whereas in the

interventional group 39 (39%), 33 (33%), 28 (28%) hailed from rural, urban, semi urban respectively.

Regarding religion, in the control group 79 (79%), 12 (12%), 9 (9%) were belonged to Hindu, Christian, Muslim respectively, whereas in the interventional group 71 (71%), 16 (16%), 13 (13%) were belonged to Hindu, Christian, Muslim respectively.

Regarding educational status, in the control group 2 (2%) had studied up to primary education, 16 (16%) had studied up to high school education, 22 (22%) had studied up to higher secondary education, 41 (41%) had collegiate education, 19 (19%) had professional education, whereas in the interventional group 5 (5%) had studied up to primary education, 12 (12%) had studied up to high school education, 25 (25%) had studied up to higher secondary education, 39 (39%) had collegiate education, 19 (19%) had professional education, in both control and interventional group no one belonged to no formal education.

Regarding occupation, in the control group 63 (63%) were homemakers, 4 (4%) were daily wage laborers, 6(6%) were farmers, 15 (15%) were technical/ clerical workers, 12 (12%) were professionals, whereas in the interventional group 58 (58%) were homemakers, 7 (7%) were daily wage laborers, 3 (3%) were farmers, 16 (16%) were technical/ clerical workers, 16 (16%) were professionals.

Regarding type of work, in the control group 82 (82%), 15 (15%), and 3 (3%) were sedentary, moderate, and strenuous workers respectively, whereas in the interventional group 84 (84%), 13 (13%), and 3 (3%) were sedentary, moderate, and strenuous workers respectively.

Regarding type of family, in the control group 56 (56%), 42 (42%), and 2 (2%) hailed from nuclear, joint and extended family respectively, whereas in the

interventional group 59 (59%), 39 (39%), and (2 (2%) hailed from nuclear, joint and extended family respectively.

Regarding income of family, in the control and interventional group no one had earned an income between Rs.1000- 3000, andRs.3001- 5000. In the control group 15 (15%) earned an income between Rs. 5001-10,000, 85 (85%) earned an income above Rs.10000, whereas in the interventional group 21 (21%) earned an income between Rs. 5001-10,000, 79 (79%) earned an income above Rs.10000.

Regarding attainment of menarche, in the control group 27 (27%) were attained menarche below 12 years old, 73(73%) were attained menarche between 12- 15 years, whereas in the interventional group 24 (24%) were attained menarche below 12 years old, 76 (76%) were attained between 12- 15years. In both the groups no one attained menarche above 15 years.

Regarding type of marriage in the control group 18 (18%) had consanguineous marriage, 82 (82%) had non consanguineous marriage, whereas in the interventional group 15 (15%) had consanguineous marriage, 85 (85%) had non consanguineous marriage.

Regarding duration of marital life 83 (83%) had less than 2 years of marital life, 17 (17%) had 2-5 years of marital life, whereas in the interventional group 85 (85%) had less than 2 years of marital life, 15(15%) had 2- 5 years of marital life, both in the control and interventional group no one had more than 5 years of marital life.

Chi square analysis was done to find out similarity in the frequency distribution of socio demographic variables among parturient between control and interventional group. The findings revealed that there was no significant difference in the socio demographic variables among parturient between control and interventional group, hence it was inferred that the samples selected for control and interventional group were similar in nature (homogenous).

**Table 4.1.b: Distribution of parturient according to their clinical variables between control and interventional group.**

N=200

Clinical variables		Group				Chi square value
		Control		Interventional		
		n	%	n	%	
Antenatal Check up	> 6 visits	100	100.0	100	100	$\chi^2=0.00$ p=1.00
Gestational weeks of parturient	37-40 weeks	63	63.0	67	67.0	$\chi^2=0.35$ p=0.55
	> 40 weeks	37	37.0	33	33.0	
Weight of the parturient	< 50 kg	11	11.0	9	9.0	$\chi^2=0.65$ p=0.72
	50kg- 70 kg	72	72.0	77	77.0	
	> 70 kg	17	17.0	14	14.0	
Nature of parturient	Naturally tense and anxious	56	56.0	64	64.0	$\chi^2=1.33$ p=0.24
	Sportive	44	44.0	36	36.0	
History of complications	Nil	90	90.0	92	92.0	$\chi^2 =1.22$ p=0.94
	Hypothyroidism	2	2.0	2	2.0	
	Hypertension	2	2.0	1	1.0	
	Hypotension	3	3.0	2	2.0	
	Poly hydramnios	1	1.0	2	2.0	
	Oligohydramnios	2	2.0	1	1.0	
Support group during prenatal period	Parents	19	19.0	24	24.0	$\chi^2=1.13$ p=0.57
	In-laws	25	25.0	20	20.0	
	Husband	56	56.0	56	56.0	
History of Abortion	Yes	12	12.0	8	8.0	$\chi^2=0.88$ p=0.34
	No	88	88.0	92	92.0	
Dietary pattern	Vegetarian	11	11.0	12	12.0	$\chi^2=0.05$ p=0.82
	Non Vegetarian	89	89.0	88	88.0	
Practice of antenatal exercises	Walking	37	37.0	35	35.0	$\chi^2=0.15$ p=0.76
	Exercise	1	1.0	3	3.0	
	Yoga	3	3.0	6	6.0	
	Combined	8	8.0	10	10.0	
	Nil	51	51.0	46	46.0	

The above table 4.1.b explains the distribution of parturient according to their clinical variables between control and interventional group.

Regarding antenatal check up, in the control and interventional group all the parturient 100(100%) had antenatal check up( more than 6 times during pregnancy).

Regarding gestational week of parturient, in the control group 63( 63%) belonged to 37-40 weeks of gestation, 37 (37%) belonged to more than 40 weeks of gestation, whereas in the interventional group 67( 67%) belonged to 37-40 weeks of gestation, 33 (33%) belonged to more than 40 weeks of gestation.

Regarding weight of the parturient, in the control group 11(11%) had less than 50 kg, 72 (72%) had weight between 50- 70 kg, 17(17%) had more than 70 kg, whereas in the interventional group 9 (9%) had less than 50 kg, 77 (77%) had weight between 50- 70 kg, 14 (14%) had more than 70 kg.

Regarding nature of parturient, in the control group 56 (56%) were naturally tensed, 44 (44%) were sportive, whereas in the interventional group 64 (64%) were naturally tensed, 36 (36%) were sportive.

Regarding history of complications, in the control group 90(90%) had no complications, 2 (2%) had hypothyroidism,2 (2%) had hypertension, 3 (3%) had hypotension, 1 (1%) had polihydraminos, 2 (2%) had oligohydraminos whereas in the interventional group 92 (92%) had no complications, 2 (2%) had hypothyroidism, 1 (1%) had hypertension, 2 (2%) had hypotension, 2 (2%) had polihydraminos, 1 (1%) had oligohydraminos.

Regarding support group during prenatal period, in the control group 19 (19%), 25 (25%), 56 (56%) had support from parents, in laws, husband, respectively whereas in the interventional group 24(24%), 20 (20%), 56(56%) had support from

parents, in laws, husband, respectively. In both the control and interventional group no one had support from relatives, friends, neighbors, and health personnel.

Regarding history of abortion, in the control group 12 (12%) had abortion, 88 (88%) had no abortion previously, whereas in the interventional group 8 (8%) had abortion, 92 (92 %) had no abortion previously.

Regarding dietary pattern, in the control group 11(11%) belongs to vegetarian, 89 (89%) belongs to non vegetarian whereas in the interventional group 12 (12%) belongs to vegetarian, 88 (88%) belongs to non vegetarian.

Regarding practice of antenatal exercises, in the control group 37(37%), 1(1%), 3(3%), 8(8%) were practiced walking, exercises, yoga, combination of exercises respectively, 51 (51%) were did not practice any kind of exercises during pregnancy, whereas in the interventional group 35(35%), 3(3%), 6 (6%), 10(10%) were practiced walking, exercises, yoga, combination of exercises respectively, 46 (46%) were did not practice any kind of exercises during pregnancy.

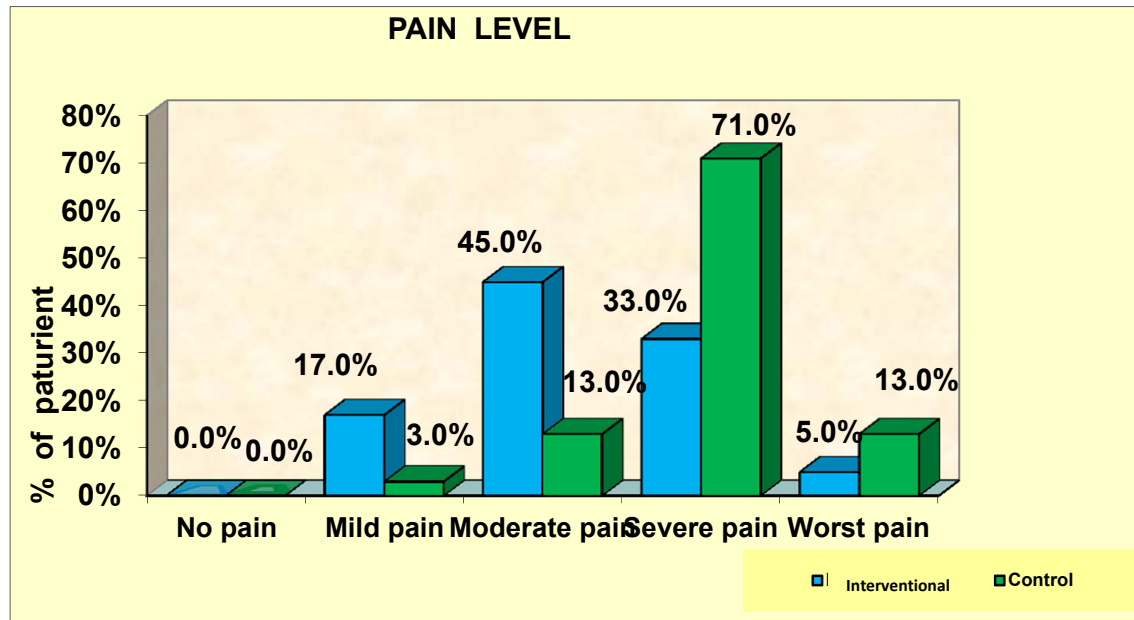
Chi square analysis was done to find out similarity in the frequency distribution of clinical variables among parturient between control and interventional group. The findings revealed that there was no significant difference in the clinical variables among parturient between control and interventional group, hence it was inferred that the samples selected for control and interventional group were similar in nature (homogenous).



## Section II

### 2.2. Distribution of parturient according to their pain, anxiety, and labor outcome in the control group and interventional group.

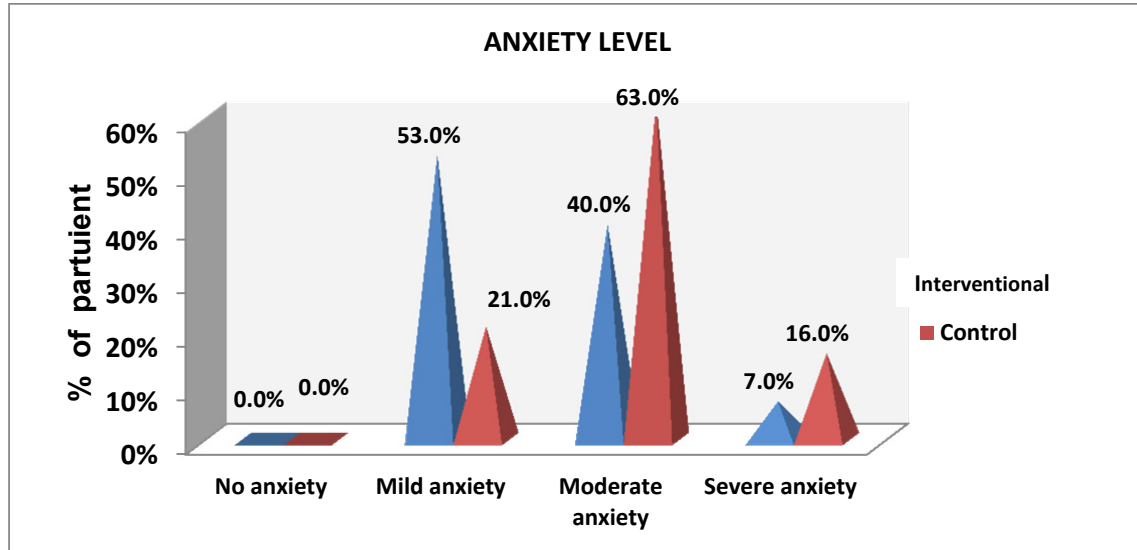
#### 1. Pain



**Figure 4.2.1: A Multiple bar diagram shows the percentage distribution of parturient according to their pain level in the control and interventional group.**

In the control group none of them rated no pain, 3 (3.0%) had mild pain, 13 (13%) had moderate pain, 71 (71%) had severe pain, 13 (13%) had worst pain. In the interventional group none of them had no pain, 17 (17%) had mild pain, 45 (45%) had moderate pain, 33 (33%) had severe pain, and 5 (5%) had worst pain. Hence it revealed that there was a difference in the pain level among parturient between control and interventional group.

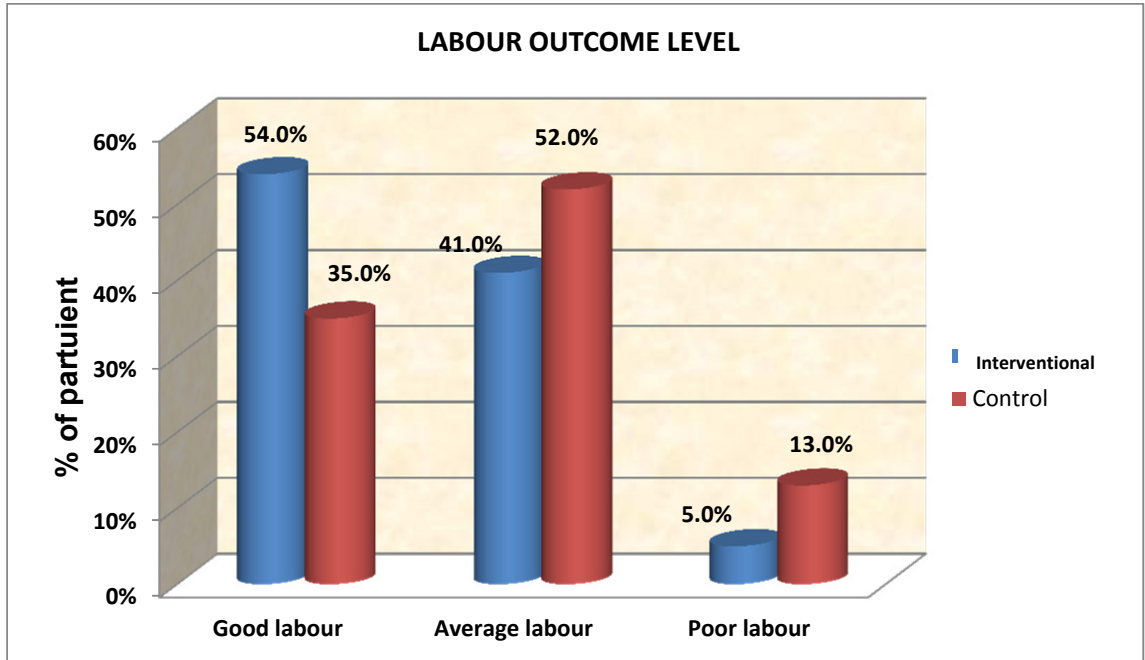
## 2. Anxiety



**Figure 4.2.2: A Multiple pyramid diagram shows the percentage distribution of parturient according to their anxiety level between control group and interventional group**

In the control group none of them reported no anxiety, 21(21%) had mild anxiety, 63(63%) had moderate anxiety, 16 (16%) had severe anxiety, whereas in the interventional group none of them had no anxiety, 53 (53%) had mild anxiety, 40 (40%) had moderate anxiety, 7 (7%) had severe anxiety. Hence it revealed that there was a difference in the anxiety level among parturient between control and interventional group.

### 3. Labor outcome



**Figure 4.2.3: A multiple cylinder diagram showing percentage distribution of parturient according to their labor outcome between control and interventional group**

In the control group 35 (35%) had good labor outcome, 52 (52%) had average outcome, 13(13%) had poor outcome whereas in the interventional group 54 (54%) had good outcome, 41(41 %) had average outcome, 5(5%) had poor outcome. Hence it revealed that there was a difference in the labor outcome level among parturient between control and interventional group.

### Section III

#### 4.3: Effectiveness of doula care on pain, anxiety, and labor outcome among parturient.

**Table 4.3.1: Comparison of pain level among parturient between control and interventional group. N=200**

Pain	Control group Group (100)		Interventional group(100)		Chi square value
	No.	%	No.	%	
No pain	0	0.0	0	0.0	
Mild pain	3	3.0	17	17.0	$\chi^2=40.28$
Moderate pain	13	13.0	45	45.0	P=0.001***
Severe pain	71	71.0	33	33.0	
Worst pain	13	13.0	5	5.0	
Total	100	100	100	100	

\* significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

Table 4.3.1 reveals about the pain level among parturient between control and interventional group.

After routine hospital care among parturient in the control group, 0 (0%) none of the parturient had no pain, 3(3.0%) of had mild pain and 13(13.0%) of them had moderate pain , 71 (71%) of them had severe pain score and 13 (13%) of them had worst pain score.

After administration of doula care along with routine care among parturient in the interventional group, 0 (0%) none of the parturient had no pain, 17 (17.0%) of them had mild pain, and 45 (45% ) of them had moderate pain, 33 ( 33%) of them had severe pain and 5 (5%) of them had worst pain.

Chi square test was used to test statistical significance.  $\chi^2=40.28$ , it showed a very high significant difference at  $p=0.001$  level. Hence it could be interpreted that the statistical difference in the pain level between control and interventional group may be due to the effect of doula care.

**Table 4.3.2: Reduction of pain scores among parturient between control and interventional group**

N=200				
Group	Maximum score	Mean pain score	Mean pain reduction score with 95% Confidence interval (CI)	Percentage of reduction score with 95% Confidence interval (CI)
Control group	10	7.85	1.58(1.07 – 2.08)	15.8% (10.7% –20.8%)
Interventional group	10	6.27		

Table 4.3.2 Shows the reduction of pain score among parturient between interventional and control group.

The mean pain score for the interventional group was 6.27, and for the control group the mean pain score was 7.85. The differences in the posttest pain scores between the control and interventional group were analyzed using proportion with 95% CI and mean difference with 95% CI. On an average, interventional group pain level was reduced by 15.8% than the control group. Hence it could be interpreted that pain level was reduced among parturient who underwent doula care which proved that doula care was effective in pain reduction among parturient.

**Table4.3.3: Statement wise difference on anxiety level among parturient between control group and interventional group**

N=200

Statements in the anxiety tool	Group				Student independent t-value	
	Control		Interventional			
	Mean	SD	Mean	SD		
I feel calm.	2.61	.97	2.26	.92	<b>t=2.61</b>	<b>p=0.01**</b>
I feel secure.	2.68	.92	2.31	.95	<b>t=2.79</b>	<b>p=0.01**</b>
I am tense.	2.05	.74	1.93	.71	t=1.16	p=0.24
I feel strained.	2.38	.49	2.25	.72	t=1.50	p=0.13
I feel at ease	3.02	.47	2.43	.79	<b>t=6.38</b>	<b>p=0.001***</b>
I feel upset	22.35	.98	2.17	.85	t=1.38	p=0.16
I am presently worrying over possible misfortunes	2.09	.71	2.06	.81	t=0.27	p=0.78
I feel satisfied.	3.08	.65	2.70	.87	<b>t=3.50</b>	<b>p=0.001***</b>
I feel frightened	2.76	.92	2.52	.97	<b>t=1.96</b>	<b>p=0.05*</b>
I feel comfortable.	2.21	.78	2.25	.76	t=0.36	p=0.71
I feel self-confident	2.86	.84	2.60	.94	<b>t=2.05</b>	<b>p=0.04*</b>
I feel nervous.	2.51	.66	2.28	.68	<b>t=2.42</b>	<b>p=0.02*</b>
I am jittery.	2.34	.68	2.02	.70	<b>t=3.27</b>	<b>p=0.01**</b>
I feel indecisive.	3.12	.70	2.38	.91	<b>t=6.45</b>	<b>p=0.001***</b>
I am relaxed.	3.12	.74	2.54	.97	<b>t=4.75</b>	<b>p=0.001***</b>
I feel content.	2.58	.52	2.42	.75	t=1.75	p=0.08
I am worried.	2.25	.44	2.11	.67	t=1.76	p=0.08
I feel confused..	2.59	.49	2.38	.76	<b>t=2.31</b>	<b>p=0.02*</b>
I feel steady.	2.62	.49	2.50	.61	t=1.53	p=0.12
I feel pleasant	2.55	.50	2.44	.66	t=1.33	p=0.18

\* significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

The above table 4.3.3 shows that there was a significant difference in the anxiety level among parturient between control and interventional group. Student independent 't' test denoted the statistical significance between control and interventional group in the following statements, parturient feeling calm, feeling secured, feeling at ease, a relaxed mood, having a sense of satisfaction, frightening thoughts, feeling of self confidence, feeling nervous, jittery, indecisive and confused. Hence it referred that significant difference on anxiety level in selected statements of anxiety tool between control and interventional group may be because of doula care.

**Table 4.3.4: Comparison of anxiety level among parturient between control group and interventional group**

**N=200**

<b>Anxiety</b>	<b>Control group</b>		<b>Interventional group</b>		<b>Chi square value</b>
	No. of parturient	%	No. of parturient	%	
No anxiety	0	0.0	0	0.0	
Mild anxiety	21	21.0	53	53.0	$\chi^2=22.49$
Moderate anxiety	63	63.0	40	40.0	P=0.001***
Severe anxiety	16	16.0	7	7.0	
Total	100	100	100	100	

\* significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

Table 4.3.4 shows the anxiety level among parturient between control and interventional group.

After routine hospital care in the control group, 0(0%) of the parturient had no anxiety, 21 (21.0%) of them had mild anxiety and 63 (63.0%) of them had moderate anxiety, (16% ) of them had severe anxiety.

After administration of doula care along with routine care in the interventional group 0 (0%) of the parturient had no anxiety, 53 (53.0%) of them had mild anxiety and 40 (40.0%) of them had moderate anxiety, 7 (7%) of them had severe anxiety.

Chi square test was used to test statistical significance  $\chi^2=22.49$ , which showed a significant difference at  $P=0.001$  level. Hence it could be interpreted that the statistical difference in the anxiety level between control and interventional group may be due to the effect of doula care.



**Table 4.3.5: Reduction of anxiety scores among parturient between control group and interventional group.**

**N=200**

<b>Group</b>	<b>Maximum score</b>	<b>Mean anxiety score</b>	<b>Mean anxiety reduction score with 95% Confidence interval (CI)</b>	<b>Percentage of reduction score with 95% Confidence interval(CI)</b>
Control group	80	52.28		
Interventional group	80	43.63	8.65(5.81 – 11.48)	10.8% (7.3% – 14.4%)

Table 4.3.5 shows the reduction in the level of anxiety among parturient in the interventional group while comparing with control group.

The mean anxiety score for the interventional group was 43.63, and for the control group the mean anxiety score was 52.28. On an average, in the interventional group the anxiety level was reduced by 10.8% than control group. Differences between posttest anxiety scores of control and interventional group were analyzed using proportion with 95% CI and mean difference with 95% CI. Hence it could be interpreted that anxiety level was reduced among parturient who underwent doula care which proved that doula care was effective in anxiety reduction among parturient.

**Table 4.3.6: Item wise difference on labor outcome among parturient between control group and interventional group.**

		N=200				
Items in the labor outcome tool		Group				Chi square value
		Control		Interventional		
		n	%	n	%	
Stage I	<12 hrs	34	34.0	38	38.0	$\chi^2=0.52$ p=0.74
	12 - 14 hrs	48	48.0	43	43.0	
	> 14 hrs	18	18.0	19	19.0	
Stage II	< 1 hr	42	42.0	60	60.0	$\chi^2=6.70$ p=0.03*
	1 - 2 hrs	52	52.0	37	37.0	
	> 2 hrs	6	6.0	3	3.0	
Stage III	< 15 min	47	47.0	62	62.0	$\chi^2=8.16$ p=0.02*
	15 - 30 min	37	37.0	25	25.0	
	>30 min	16	16.0	13	13.0	
Use of oxytocin	not used	14	14.0	32	32.0	$\chi^2=12.52$ p=0.01**
	In 2nd stage	15	15.0	5	5.0	
	In 1st stage	71	71.0	63	63.0	
Membrane ruptured at	Spontaneous / artificial in 2nd stage	27	27.0	51	51.0	$\chi^2=12.17$ p=0.01**
	Spontaneous in 1 <sup>st</sup> stage	45	45.0	29	29.0	
	Artificial in 1st stage	28	28.0	20	20.0	
Mode of delivery	Natural / Normal with episiotomy	93	93.0	97	97.0	$\chi^2=1.68$ p=0.19
	Forceps delivery	7	7.0	3	3.0	
APGAR Score at birth	7-10	84	84.0	89	89.0	$\chi^2=1.07$ p=0.30
	4-6	16	16.0	11	11.0	
Complications during labor	No	94	94.0	95	95.0	$\chi^2=0.11$ p=0.73
	Yes	6	6.0	5	5.0	
Initiation of breast feeding	within ½ an hour after delivery	81	81.0	86	86.0	$\chi^2=4.23$ p=0.12
	½ an hour- 2 hrs after delivery	18	18.0	10	10.0	
	> 2 hours after delivery	1	1.0	4	4.0	

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After birth baby kept at	Mothers side	83	83.0	85	85.0	$\chi^2=0.17$ $p=0.91$
	warmer	14	14.0	12	12.0	
	Incubator	3	3.0	3	3.0	
Duration of Hospital stay	3 days	71	71.0	85	85.0	$\chi^2=6.20$ $p=0.05^*$
	3-5 days	14	14.0	9	9.0	
	> 5 days	15	15.0	6	6.0	

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\* significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

The above table 4.3.6 shows that there was a significant difference on labor outcome among parturient between control and interventional group. chi square statistical analysis denoted statistical significant difference in the following items, duration of labor- II stage, III stage, use of oxytocin, rupturing of membrane and duration of hospital stay. Hence it revealed that the statistical significant difference on labor outcome in selected items of labor outcome tool among parturient between control and interventional group may be because of doula care.

**Table 4.3.7: Comparison of labor outcome among parturient between control and interventional group**

labor outcome	N=200				Chi square value
	Control group		Interventional group		
	No. of parturient	%	No. of parturient	%	
Good labor outcome	35	35.0	54	54.0	<b><math>\chi^2=8.91</math> P=0.01**</b>
Average labor outcome	52	52.0	41	41.0	
Poor labor outcome	13	13.0	5	5.0	
Total	100	100	100	100	

\* Significant at  $P \leq 0.05$ , \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

Table 4.3.7 reveals about the labor outcome among parturient between control and interventional group.

Among the parturient in the control group, 35 (35%) of them had good labor outcome, 52 (52.0%) of them had average labor outcome, and 13 (13.0%) of them had poor labor outcome. After administration of doula care along with routine hospital care among parturient in the interventional group 54 (54%) of them had good labor outcome, 41 (41.0%) of them had average labor outcome and 5 (5.0%) of them had poor labor outcome. Chi square test was used to test statistical significance,  $\chi^2=8.91$  showed highly significance at  $P=0.01$  level. Hence it could be interpreted that the statistical difference in the labor outcome score among parturient between control and interventional group may be due to the effect of doula care.

**Table 4.3.8: Difference on labor outcome among parturient between control and interventional group.**

N=200

<b>Group</b>	<b>Maximum score</b>	<b>Mean labor outcome score</b>	<b>Mean labor outcome score with 95% Confidence interval</b>	<b>Percentage of labor outcome score with 95% Confidence interval</b>
Control group	33	18.86	4.37(3.23 – 5.50)	13.2% (9.8% – 16.7%)
Interventional group	33	14.49		

Table 4.3.8 shows the differences on labor outcome among parturient between control and interventional group.

The mean labor outcome score for the interventional group was 14.49, and for the control group the mean labor outcome score was 18.86. On an average, in the interventional group the labor outcome score was reduced by 13.2% than the labor outcome score of control group, thereby denoting improvement in the labor outcome among parturient in the interventional group eventually. Differences in the labor outcome scores between the control and interventional group were analyzed using proportion with 95% CI and mean difference with 95% CI. Hence it could be interpreted that labor outcome was promoted among parturient who underwent doula care which proved that doula care was effective in promoting labor outcome among parturient.

**Table 4.3.9: Effectiveness of doula care on pain, anxiety and labor outcome among parturient between control and interventional group.**

N=200

Variables	Group	Mean ± SD	Mean Difference	Student's independent t-value
<b>Pain</b>	Control	7.91±1.65	1.64	t=6.16 P=0.001***
	Interventional	6.27±2.09		
<b>Anxiety</b>	Control	52.28±10.49	8.65	t=6.01 P=0.001***
	Interventional	43.63±9.84		
<b>Labor Outcome</b>	Control	18.86±4.07	4.37	t=7.60 P=0.001***
	Interventional	14.49±4.05		

\* significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

The above table 4.3.9 explains about the effectiveness of doula care on pain, anxiety and labor outcome among parturient between control and interventional group.

In order to find out the effect of doula care on pain, anxiety, labor outcome among primi parturient between control and interventional group student independent “t” test was done.

Regarding pain the mean score was 6.27 and the standard deviation was 2.09 in the interventional group, whereas in the control group the mean score was 7.91, standard deviation was 1.65, mean difference was 1.64, obtained “t” value was 6.16 which was statistically very high significant at  $p=0.001$  level.

Regarding anxiety the mean score was 43.63 and the standard deviation was 9.84 in the interventional group, whereas in the control group the mean score was 52.28, standard deviation was 10.49, mean difference was 8.65, obtained “t” value was 6.01 which was statistically very high significant at  $p=0.001$  level.

Regarding labor outcome the mean score was 14.49 and the standard deviation was 4.05 in the interventional group, whereas in the control group the mean score was 18.86 , standard deviation was 4.07 , mean difference was 4.37, obtained “t” value was 7.60 which was statistically highlighted at  $p=0.001$  level.

The findings revealed that there was a significant marked difference in the mean scores of pain, anxiety, labor outcome among parturient between control and interventional group. Student independent “t” test also showed a significant difference on pain, anxiety and labor outcome between control and interventional group. This difference in the scores was due to the intervention doula care. Hence it could be interpreted that the differences in mean scores on pain, anxiety and labor outcome were true statistical difference and hypotheses  $H_1$  was accepted. Hence it can be concluded that doula care was effective among parturient on labor to reduce pain, anxiety and to promote labor outcome.

## Section IV

### 4.4. Correlation between pain, anxiety and labor outcome among parturient in the control and interventional group.

**Table 4.4.1: Correlation between pain, anxiety, labor outcome among parturient in the control group.**

Variables	Mean ± SD	Karl Pearson correlation coefficient “r” value	P value
<b>Pain</b>	7.85±1.51	r= 0.46	p=0.01**
<b>Anxiety</b>	52.28±10.50		
<b>Pain</b>	7.85±1.51	r= -0.42	p=0.01**
<b>Labor outcome</b>	18.86±4.08		
<b>Anxiety</b>	52.28±10.50	r= 0.45	p=0.01**
<b>Labor outcome</b>	18.86±4.08		

\* significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

Table 4.4.1 shows the correlation between pain, anxiety, labor outcome among parturient in the control group.

To find out the correlation between the dependent variables i.e. pain, anxiety, and labor outcome Karl Pearson correlation coefficient was calculated.

As indicated in the above table in the control group, the mean score of pain level was 7.85 with a standard deviation of 1.51, the mean score of anxiety was 52.28 with a standard deviation of 10.50. Obtained ‘r’ value was 0.46, denoted pain and anxiety were moderately related at  $p=0.01$  level. Hence it referred that when the pain level increases anxiety level of the parturient also increases during labor.



Regarding the relationship between pain and labor outcome, the mean score of pain level was 7.85 with a standard deviation of 1.51, the mean score of labor outcome was 18.86 with a standard deviation of 4.08. Obtained 'r' value was - 0.42, denoted pain and labor outcome were moderate negatively related at  $p=0.01$  level. This negative correlation denotes that as the pain level increases labor outcome decreases (in this study lesser outcome denotes good labor outcome as per the grading of the labor outcome tool), hence it could be interpreted that effective uterine contractions (pain) promotes the labor outcome among parturient.

Regarding the relationship between anxiety and labor outcome, the mean score of anxiety level was 52.28 with a standard deviation of 10.50; the mean score of labor outcome was 18.86 with a standard deviation of 4.08. Obtained 'r' value was 0.45, denoted anxiety and labor outcome were moderately related at  $p=0.01$  level. This positive correlation denotes that as the anxiety level increases labor outcome score also increases, (high score of labor outcome denotes poor outcome based on grading of the tool labor outcome), hence it could be interpreted that severe anxiety may inhibit the progress of labor outcome among parturient.

Above findings showed that there was a correlation between pain, anxiety and labor outcome among parturient of control group. Hence hypotheses  $H_2$  was supported.

**Table 4.4.2: Correlation between pain, anxiety, labor outcome among parturient in the interventional group.**

<b>Variables</b>	<b>Mean ± SD</b>	<b>Karl Pearson correlation coefficient 'r' value</b>	<b>n=100 P value</b>
<b>Pain</b>	6.27±2.09	r= 0.46	p=0.01**
<b>anxiety</b>	43.63±9.84		
<b>Pain</b>	6.27±2.09	r= -0.50	p=0.01**
<b>Labor Outcome</b>	14.49±4.05		
<b>Anxiety</b>	43.63±9.84	r= 0.44	p=0.01**
<b>Labor Outcome</b>	14.49±4.05		

\*significant at  $P \leq 0.05$ , \*\* significant at  $P \leq 0.01$ , \*\*\* significant at  $P \leq 0.001$

Table 4.4.2 shows the correlation between pain, anxiety, labor outcome among parturient in the interventional group.

To find out the correlation between the dependent variables i.e. pain, anxiety, and labor outcome Karl Pearson correlation coefficient was calculated.

As indicated in the above table in the interventional group, the mean score of pain level was 6.27 with a standard deviation of 2.09, the mean score of anxiety was 43.63 with a standard deviation of 9.84. Obtained 'r' was 0.46, which revealed that pain and anxiety were moderately related at  $p=0.01$  level. Hence it referred that when the pain level increases anxiety level of the parturient also increases during labor.

Regarding the relationship between pain and labor outcome, the mean score of pain level was 6.27 with a standard deviation of 2.09, the mean score of labor outcome was 14.49 with a standard deviation of 4.05, obtained 'r' value was - 0.50, denoted pain and labor outcome were moderate negatively related at  $p=0.01$

level. This negative correlation says that as the pain level increases labor outcome decreases (in this study lesser outcome denotes good labor outcome as per the grading of the labor outcome tool), hence it could be interpreted that effective uterine contractions (pain) promotes the labor outcome among parturient.

Regarding the relationship between anxiety and labor outcome, the mean score of anxiety level was 43.63 with a standard deviation of 9.84, the mean score of labor outcome was 14.49 with a standard deviation of 4.05. Obtained 'r' value was 0.44, denoted anxiety and labor outcome were moderately related at  $p=0.01$  level. This positive correlation says that as the anxiety level increases labor outcome score also increases, (high score of labor outcome denotes poor outcome based on grading of the tool labor outcome), hence it could be interpreted that severe anxiety may inhibit the progress labor outcome among parturient.

Above findings showed that there was a correlation between pain, anxiety and labor outcome among parturient of interventional group. Hence hypotheses  $H_3$  was supported.

## Section V

### 4.5. Association between pain, anxiety, labor outcome and socio demographic, clinical variables among parturient in the control and interventional group.

**Table 4.5.1.1: Association between pain level and socio demographic variables among parturient in the control group.**

Socio demographic variables		Level of pain score								Chi square value	
		Mild pain		Moderate pain		Severe pain		Worst pain			Total
		n	%	n	%	n	%	n	%		
Age in years	< 20	0	0.0	1	10.0	8	80.0	1	10.0	10	$\chi^2=28.967$ $p=0.001^{***}$
	20 -25	0	0.0	6	9.7	48	77.4	8	12.9	62	
	25 -30	1	4.6	5	22.7	14	63.6	2	9.1	22	
	> 30	2	33.3	1	16.7	1	16.7	2	33.3	6	
Marital status	Married	3	3.1	13	13.3	69	70.4	13	13.3	98	$\chi^2=0.83$ $p=0.99$
	Widow	0	0.0	0	0.0	1	100	0	0.0	1	
	Separated	0	0.0	0	0.0	1	100	0	0.0	1	
Locality of residence	Rural	1	2.6	6	15.4	27	69.2	5	12.8	39	$\chi^2=6.04$ $p=0.41$
	Urban	0	0.0	1	4.0	22	88.0	2	8.0	25	
	Semi urban	2	5.6	6	16.7	22	61.1	6	16.7	36	
Religion	Hindu	2	2.5	10	12.7	57	72.2	10	12.7	79	$\chi^2=3.68$ $p=0.72$
	Christian	0	0.0	1	8.3	9	75.0	2	16.7	12	
	Muslim	1	11.1	2	22.2	5	55.6	1	11.1	9	
Educational status	Primary	0	0.0	1	50.0	1	50.0	0	0.0	2	$\chi^2=5.81$ $p=0.92$
	High school	1	6.3	2	12.5	10	62.5	3	18.8	16	
	Higher Secondary	0	0.0	3	13.6	16	72.7	3	13.6	22	
	Collegiate	2	4.9	5	12.2	29	70.7	5	12.2	41	
	Professional	0	0.0	2	10.5	15	78.9	2	10.5	19	

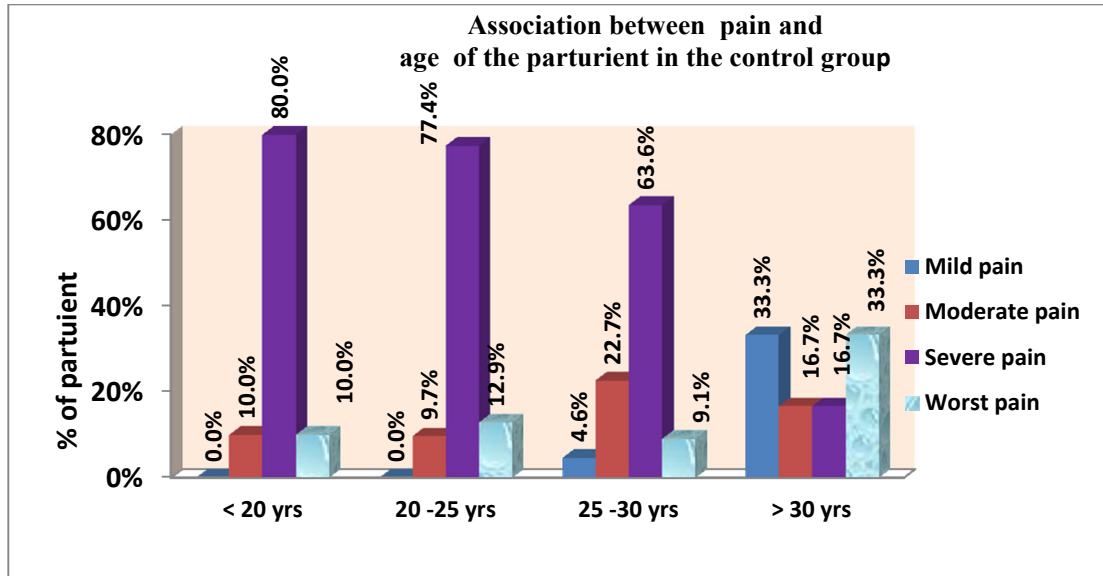
Occupation	Home maker	2	3.2	7	11.1	47	74.6	7	11.1	63	$\chi^2=9.96$ p=0.62
	Daily wage Laborer			2	50.0	1	25.0	1	25.0	4	
	Farmer			1	16.7	5	83.3			6	
	Technical/ clerical	1	6.7	1	6.7	10	66.7	3	20.0	15	
	Professional			2	16.7	8	66.7	2	16.7	12	
Type of work	Sedentary	2	2.4	11	13.4	57	69.5	12	14.6	82	$\chi^2=11.62$ p=0.07
	Moderate	1	6.7			13	86.7	1	6.7	15	
	Strenuous			2	66.7	1	33.3			3	
Type of family	Nuclear family	1	1.8	7	12.5	39	69.6	9	16.1	56	$\chi^2=4.16$ p=0.65
	Joint family	2	4.8	5	11.9	31	73.8	4	9.5	42	
	Extended family			1	50.0	1	50.0			2	
Income of family Rs per month	Rs.5001-10000	2	13.3	2	13.3	9	60.0	2	13.3	15	$\chi^2=6.58$ p=0.08
	> Rs.10000	1	1.2	11	12.9	62	72.9	11	12.9	85	
Attainment of menarche	< 12 years	1	3.7			23	85.2	3	11.1	27	$\chi^2=6.01$ p=0.11
	12-15 years	2	2.7	13	17.8	48	65.8	10	13.7	73	
Type of marriage	Consanguineous			3	16.7	13	72.2	2	11.1	18	$\chi^2=0.95$ p=0.81
	Non Consanguineous	3	3.7	10	12.2	58	70.7	11	13.4	82	
Duration of marital Life	< 2 years	3	3.6	9	10.8	59	71.1	12	14.5	83	$\chi^2=3.16$ p=0.36
	2-5 years			4	23.5	12	70.6	1	5.9	17	

\* significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

Table 4.5.1.a reveals the association between pain and socio demographic variables among parturient in the control group.

In order to determine the association between the post test score of pain and the socio demographic variables a chi square analysis was done.

Among socio demographic variables age of the parturient ( $\chi^2=28.967$  p=0.001\*\*\*) had very high significant association with pain i.e. Elder age group parturient had less pain than younger parturient.



**Figure 4.5.1.1a: A Multiple bar diagram shows the association between pain level and age of the parturient in the control group.**

In the control group, elder age group parturient (>30years) had less pain than the younger parturient, it may be due to the age maturity, elder parturient able to cope up with pain better than the younger parturient.

**Table 4.5.1.2: Association between pain and clinical variables among parturient in the control group**

										n=100	
Clinical variables		Pain score								Total	Chi square value
		Mild pain		Moderate pain		Severe pain		Worst pain			
		n	%	n	%	n	%	n	%		
Antenatal Check up	> 6 visits	3	3.0	13	13.0	71	71.0	13	13.0	100	$\chi^2=0.00$ p=1.00
Gestational weeks of parturient	37-40 weeks			7	11.1	47	74.6	9	14.3	63	$\chi^2=6.10$ p=0.11
	> 40 weeks	3	8.1	6	16.2	24	64.9	4	10.8	37	
Weight of the parturient	< 50 kg			2	18.2	6	54.5	3	27.3	11	$\chi^2=6.09$ p=0.41
	50kg- 70 kg	2	2.8	7	9.7	55	76.4	8	11.1	72	
	> 70 kg	1	5.9	4	23.5	10	58.8	2	11.8	17	
Nature of parturient	Naturally tense and anxious	2	3.6	7	12.5	38	67.9	9	16.1	56	$\chi^2=1.26$ p=0.73
	Sportive	1	2.3	6	13.6	33	75.0	4	9.1	44	
History of complications	Nil	3	3.3	8	8.9	69	76.7	10	11.1	90	$\chi^2=18.57$ p=0.01**
	Yes	0	0.0	5	50.0	2	20.0	3	30.0	10	
Support group during pregnancy	Parents	1	5.3	2	10.5	14	73.7	2	10.5	19	$\chi^2=1.97$ p=0.92
	In-laws	1	4.0	4	16.0	18	72.0	2	8.0	25	
	Husband	1	1.8	7	12.5	39	69.6	9	16.1	56	
History of abortion	Yes	1	8.3	2	16.7	7	58.3	2	16.7	12	$\chi^2=1.88$ p=0.59
	No	2	2.3	11	12.5	64	72.7	11	12.5	88	
Dietary pattern	Vegetarian	1	9.1	1	9.1	8	72.7	1	9.1	11	$\chi^2=1.82$ p=0.69
	Non Vegetarian	2	2.2	12	13.5	63	70.8	12	13.5	89	
Practice of antenatal exercises	Walking	2	5.4	5	13.5	24	64.9	6	16.2	37	$\chi^2=6.55$ p=0.88
	Exercise					1	100			1	
	Yoga			1	33.3	2	66.7			3	
	Combined					8	100			8	
	Nil	1	2.0	7	13.7	36	70.6	7	13.7	51	

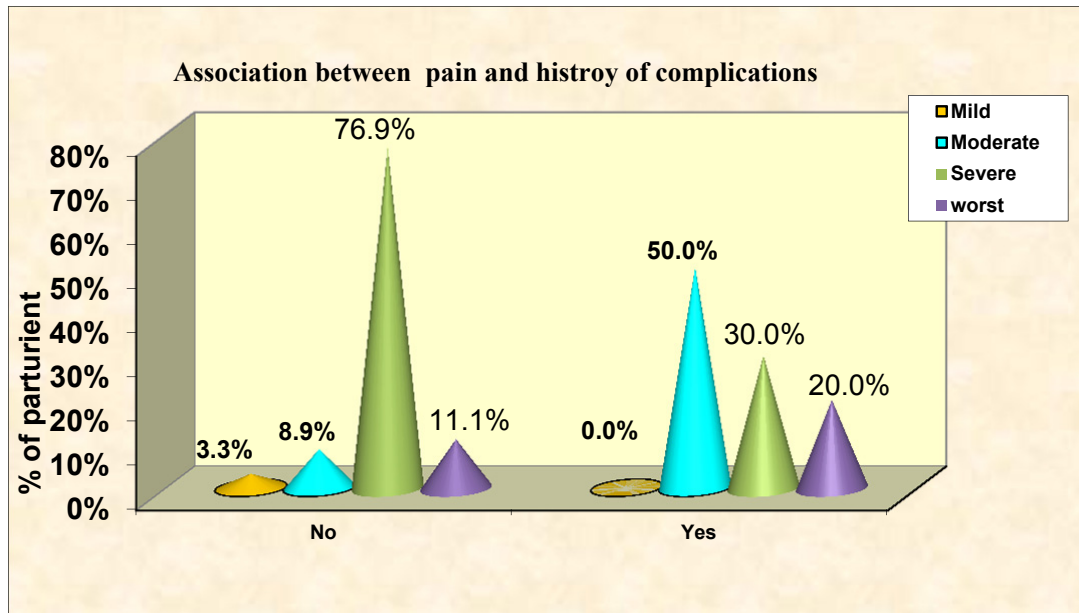
\*significant at P≤0.05 \*\* significant at P≤0.01 \*\*\* significant at P≤0.001

Table 4.5.1.2 shows the association between pain and clinical variables among parturient in the control group.

In order to determine the association between the post test score of pain and the clinical variables a chi square analysis was done.

Among clinical variables, history of complications ( $\chi^2=18.57p=0.01^{**}$ ) had high significant association with pain score i.e. parturient those who did not have the history of complications had less pain than those who had a history of complications during pregnancy. No other clinical variables had association with the level of pain among parturient in the control group.





**Figure 4.5.1.2a: A multiple pyramid diagram showing the association between pain and history of complications among parturient in the control group.**

Among clinical variables, history of complications ( $\chi^2=18.57p=0.01^{**}$ ) had high significant association with pain score i.e. parturient those who did not have the history of complications had less pain than those who had a history of complications during pregnancy, it may be assumed that the history of complications may have influence over the pain level during labor.

**Table 4.5.2.1: Association between anxiety and socio demographic variables among parturient in the control group.**

Socio demographic variables		Anxiety score						Total	Chi square value
		Mild		Moderate		Severe			
		n	%	n	%	n	%		
Age in years	< 20	0	0.0	7	70.0	3	30.0	10	$\chi^2=13.39$ $p=0.04^*$
	20 -25	14	22.5	43	69.4	5	8.1	62	
	25 -30	7	31.8	9	40.9	6	27.2	22	
	> 30	0	0.0	4	66.7	2	33.3	6	
Marital status	Married	21	21.4	63	64.3	14	14.3	98	$\chi^2=7.55$ $p=0.10$
	Widow					1	100.0	1	
	Separated					1	100.0	1	
Locality of residence	Rural	8	20.5	28	71.8	3	7.7	39	$\chi^2 =6.28$ $p=0.17$
	Urban	6	24.0	16	64.0	3	12.0	25	
	Semi urban	7	19.4	19	52.8	10	27.8	36	
Religion	Hindu	19	24.1	51	64.6	9	11.4	79	$\chi^2 =4.75$ $p=0.32$
	Christian	2	16.7	5	41.7	5	41.7	12	
	Muslim			7	77.8	2	22.2	9	
Educational status	Primary Education	1	50.0			1	50.0	2	$\chi^2=9.37$ $p=0.31$
	High school	3	18.8	10	62.5	3	18.8	16	
	Higher Secondary	2	9.1	15	68.2	5	22.7	22	
	Collegiate Education	8	19.5	28	68.3	5	12.2	41	
	Professional	7	36.8	10	52.6	2	10.5	19	
Occupation	Home maker	7	11.1	43	68.3	13	20.6	63	$\chi^2=21.19$ $p=0.01^{**}$
	Daily wage Laborer	3	75.0	1	25.0	0	0.0	4	
	Farmer	4	66.7	2	33.3	0	0.0	6	
	Technical/ clerical	3	20.0	11	73.3	1	6.7	15	
	Professional	4	33.3	6	50.0	2	16.7	12	
Type of work	Sedentary	15	18.3	55	67.1	12	14.6	82	$\chi^2=6.63$ $p=0.15$
	Moderate	4	26.7	8	53.3	3	20.0	15	
	Strenuous	2	66.7	0	0.0	1	33.3	3	
Type of family	Nuclear family	13	23.2	36	64.3	7	12.5	56	$\chi^2=2.67$ $p=0.61$
	Joint family	8	19.0	25	59.5	9	21.4	42	
	Extended family	0	0.0	2	100.0	0	0.0	2	

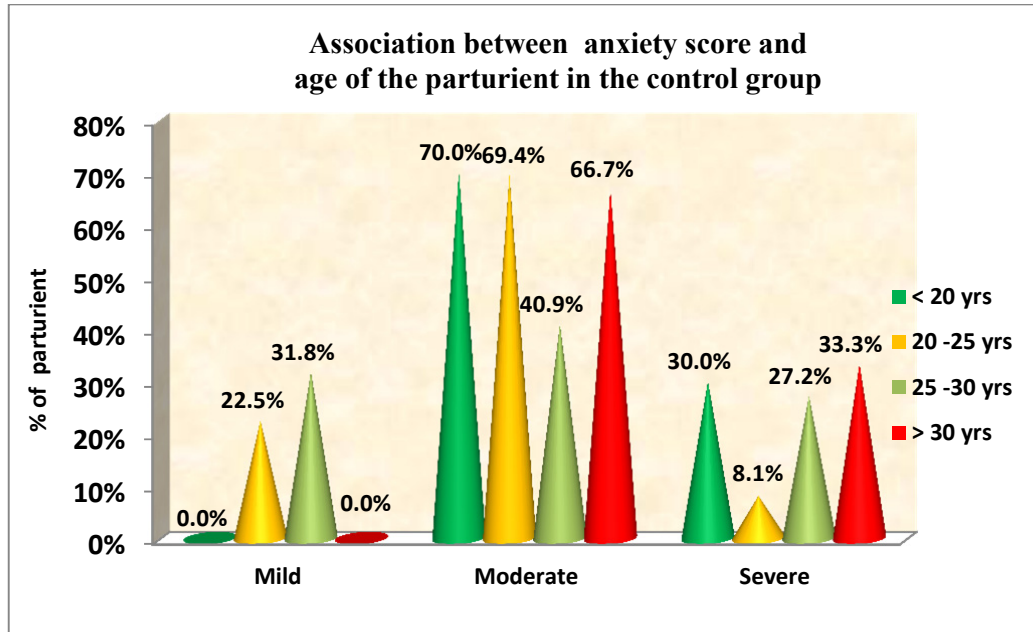
Income of family Rs per month	Rs.5001-10000	2	13.3	10	66.7	3	20.0	15	$\chi^2=0.70$ p=0.70
	> Rs.10000	19	22.4	53	62.4	13	15.3	85	
Attainment of menarche	< 12 years	10	37.0	15	55.6	2	7.4	27	$\chi^2=6.56$ p=0.04
	12-15 years	11	15.1	48	65.8	14	19.2	73	
Type of marriage	Consanguineous	5	27.8	9	50.0	4	22.2	18	$\chi^2=1.60$ p=0.04
	Non Consanguineous	16	19.5	54	65.9	12	14.6	82	
Duration of marital life	< 2 years	18	21.7	51	61.4	14	16.9	83	$\chi^2 = 0.52$ p=0.76
	2-5 years	3	17.6	12	70.6	2	11.8	17	

\*significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

Table 4.5.2.1 shows the association between anxiety and socio demographic variables among parturient in the control group.

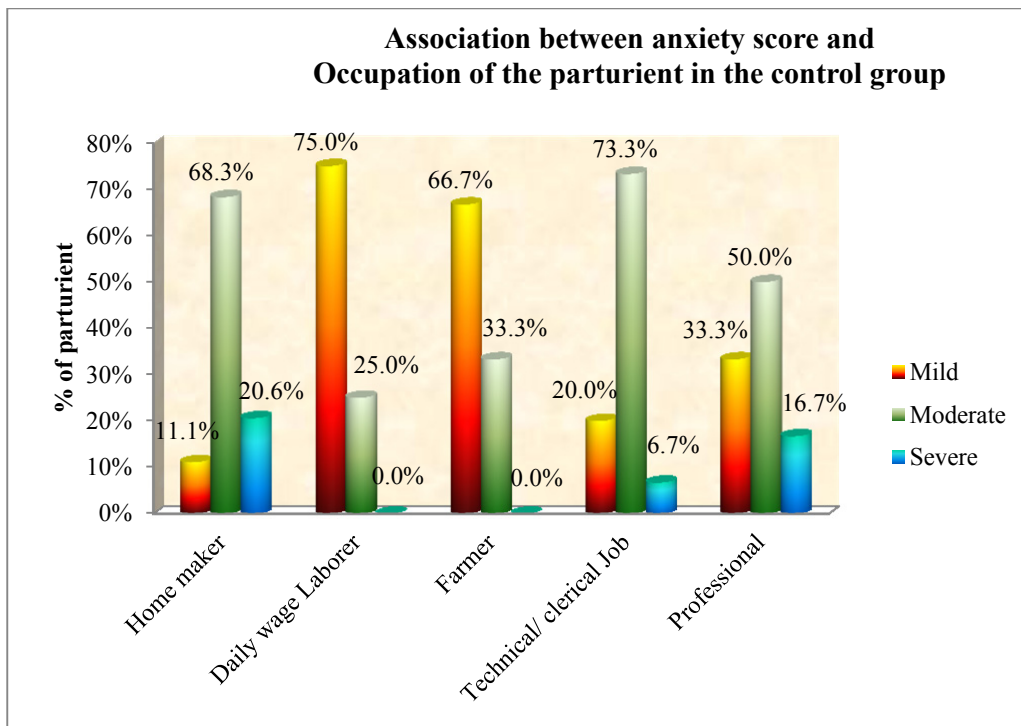
In order to determine the association between the post test score of anxiety and the socio demographic variables a chi square analysis was done.

Among socio demographic variables, age of the parturient ( $\chi^2=13.39p=0.04^*$ ) and occupation of the parturient ( $\chi^2=21.19p=0.01^{**}$ ) had significant association with anxiety score i.e. parturient between 21-30 yrs and who were daily wage laborers had less anxiety when compared with others. No other socio demographic variables had association with the anxiety level among parturient in the control group.



**Figure 4.5.2.1a: A multiple pyramid diagram showing the association between anxiety and age of the parturient in the control group**

In the control group, parturient between the age of 21-30 years had less anxiety when compared with other age group parturient, it may be because younger parturient may felt that they are on safer labor pertaining to their age when comparing with elder parturient.



**Figure 4.5.2.1b:A multiple cylinder diagram showing the association between anxiety score and occupation of the parturient in the control group.**

In the control group daily wage laborers had less anxiety when compared with other occupation; hence it could be interpreted that daily wage laborers were hard workers and able to adopt with the labor process effectively.

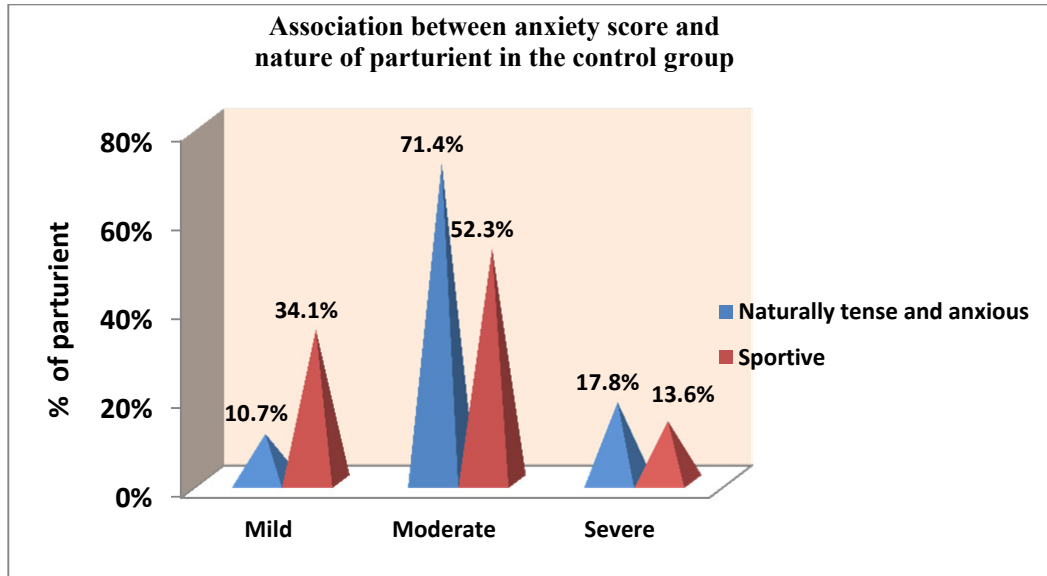
**Table 4.5.2.2: Association between anxiety and clinical variables among parturient in the control group.**

		Anxiety score						Total	Chi square value
Clinical variables		Mild		Moderate		Severe			
		n	%	n	%	n	%		
Antenatal Check up	> 6 visits	21	21.0	63	63.0	16	16.0	100	$\chi^2=0.00$ p=1.00
Gestational weeks of parturient	37-40 weeks	16	25.4	39	61.9	8	12.7	63	$\chi^2=2.76$ p=0.25
	> 40 weeks	5	13.5	24	64.9	8	21.6	37	
Weight of the parturient	< 50 kg	3	27.3	4	36.4	4	36.4	11	$\chi^2=4.98$ p=0.28
	50kg- 70 kg	14	19.4	48	66.7	10	13.9	72	
	> 70 kg	4	23.5	11	64.7	2	11.8	17	
Nature of parturient	Naturally tense and anxious	6	10.7	40	71.4	10	17.8	56	$\chi^2=8.12$ p=0.01**
	Sportive	15	34.1	23	52.3	6	13.6	44	
History of complications	Nil	21	100.0	58	64.4	11	12.2	90	$\chi^2=0.65$ p=0.01**
	Yes	0	0.0	5	50.0	5	50.0	10	
Support group during pregnancy	Parents	2	10.5	13	68.4	4	21.1	19	$\chi^2=2.51$ p=0.64
	In-laws	6	24.0	14	56.0	5	20.0	25	
	Husband	13	23.2	36	64.3	7	12.5	56	
History of abortion	Yes	1	8.3	9	75.0	2	16.7	12	$\chi^2=1.35$ p=0.50
	No	20	22.7	54	61.4	14	15.9	88	
Dietary pattern	Vegetarian	2	18.2	9	81.8			11	$\chi^2=2.71$ p=0.25
	Non Vegetarian	19	21.3	54	60.7	16	18.0	89	
Practice of antenatal exercises	Walking	4	10.8	26	70.3	7	18.9	37	$\chi^2=11.51$ p=0.12
	Exercise	1	100.0	0	0.0	0	0.0	1	
	Yoga	3	100.0	0	0.0	0	0.0	3	
	Combined	2	25.0	5	62.5	1	12.5	8	
	Nil	11	21.6	32	62.7	8	15.7	51	

\*significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

Table 4.5.2.2 shows the association between anxiety and clinical variables among parturient in the control group.

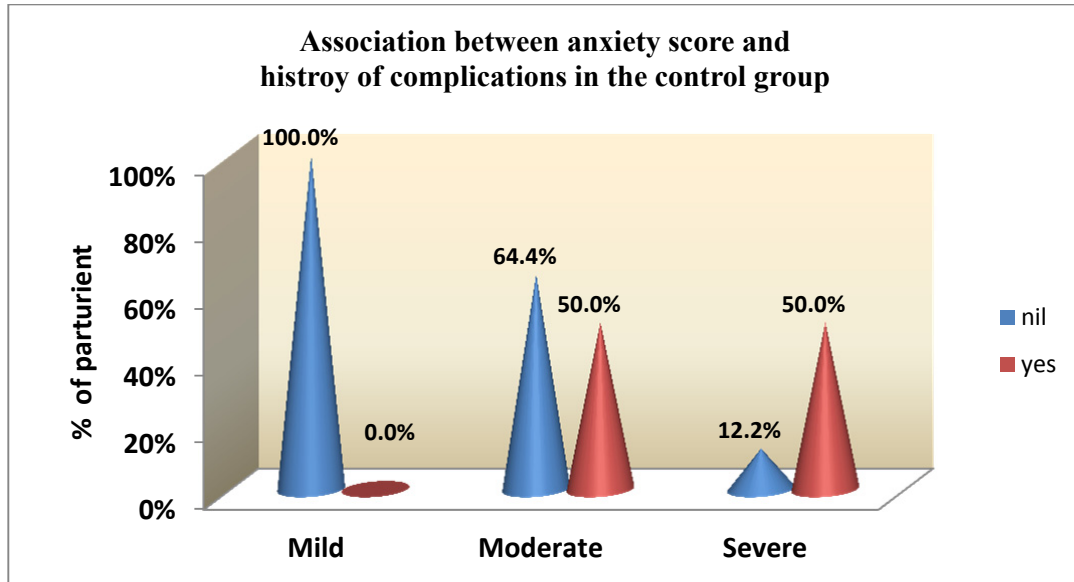
Among clinical variables, nature of parturient ( $\chi^2=8.12p=0.01^{**}$ ) and history of complications ( $\chi^2=10.65p=0.01^{**}$ ) had high significant association with anxiety score i.e. sportive parturient and those who did not have any history of complications had less anxiety than others. No other clinical variables had association with the anxiety level among parturient in the control group.



**Figure 4.5.2.2a: A Multiple pyramid diagram showing association between anxiety score and nature of parturient in the control group.**

Among clinical variables, nature of parturient had high significant association with anxiety score i.e. sportive parturient had less anxiety than anxious parturient; hence it can be inferred that nature of parturient plays a role on their anxiety level during labor process.





**Figure 4.5.2.2b:A Multiple pyramid diagram showing association between anxiety score and history of complications among parturient in the control group.**

In the control group, parturient who did not have any history of complications had less anxiety than the parturient with history of complications, it may be assumed that the parturient with the history of complications may have fear and anxiety about interference of existing complications on labor.

**Table 4.5.3.1: Association between labor outcome and socio demographic variables among parturient in the control group.**

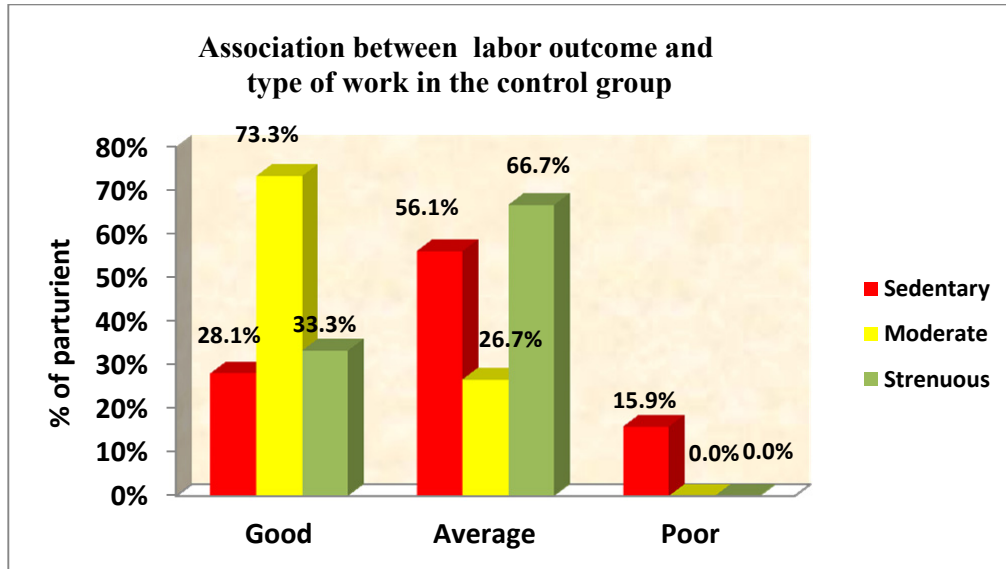
Socio demographic variables		Labor Outcome						Total	Chi square value
		Good		Average		Poor			
		n	%	n	%	n	%		
Age in years	< 20	3	30.0	6	60.0	1	10.0	10	$\chi^2=3.99$ p=0.67
	20 -25	24	38.7	30	48.4	8	12.9	62	
	25 -30	8	36.4	11	50.0	3	13.6	22	
	> 30			5	83.3	1	16.7	6	
Marital status	Married	35	35.7	50	51.0	13	13.3	98	$\chi^2=1.88$ p=0.75
	Widow			1	100.0			1	
	Separated			1	100.0			1	
Locality of residence	Rural	15	38.5	22	56.4	2	5.1	39	$\chi^2=5.52$ p=0.23
	Urban	6	24.0	15	60.0	4	16.0	25	
	Semi urban	14	38.9	15	41.7	7	19.4	36	
Religion	Hindu	29	36.7	40	50.6	10	12.7	79	$\chi^2=2.22$ p=0.69
	Christian	2	16.7	8	66.7	2	16.7	12	
	Muslim	4	44.4	4	44.4	1	11.1	9	
Educational status	Primary Education	1	50.0	1	50.0			2	$\chi^2=8.06$ p=0.49
	High school	2	12.5	12	75.0	2	12.5	16	
	Higher Secondary	6	27.3	12	54.5	4	18.2	22	
	Collegiate Education	17	41.5	18	43.9	6	14.6	41	
	Professional	9	47.4	9	47.4	1	5.3	19	
Occupation	Home maker	23	36.5	31	49.2	9	14.3	63	$\chi^2=3.52$ p=0.90
	Daily wage Laborer	1	25.0	3	75.0	0	0.0	4	
	Farmer	2	33.3	4	66.7	0	0.0	6	
	Technical/ clerical	4	26.7	8	53.3	3	20.0	15	
	Professional	5	41.7	6	50.0	1	8.3	12	
Type of work	Sedentary	23	28.1	46	56.1	13	15.9	82	$\chi^2=12.52$ p=0.01**
	Moderate	11	73.3	4	26.7	0	0.0	15	
	Strenuous	1	33.3	2	66.7	0	0.0	3	
Type of family	Nuclear family	14	25.0	36	64.2	6	10.7	56	$\chi^2=11.24$ p=0.02*
	Joint family	21	50.0	14	33.3	7	16.7	42	
	Extended family	0	0.0	2	100.0	0	0.0	2	

Income of family Rs per month	Rs.5001-10000	2	13.3	9	60.0	4	26.7	15	$\chi^2=5.12$ p=0.07
	> Rs.10000	33	38.8	43	50.6	9	10.6	85	
Attainment of menarche	< 12 years	12	44.4	13	48.1	2	7.4	27	$\chi^2=1.94$ p=0.38
	12-15 years	23	31.5	39	53.4	11	15.1	73	
Type of marriage	Consanguineous	6	33.3	10	55.6	2	11.1	18	$\chi^2=0.13$ p=0.93
	Non Consanguineous	29	35.4	42	51.2	11	13.4	82	
Duration of marital Life	< 2 years	30	36.1	42	50.6	11	13.3	83	$\chi^2 =0.39$ p=0.82
	2-5 years	5	29.4	10	58.8	2	11.8	17	

\*significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

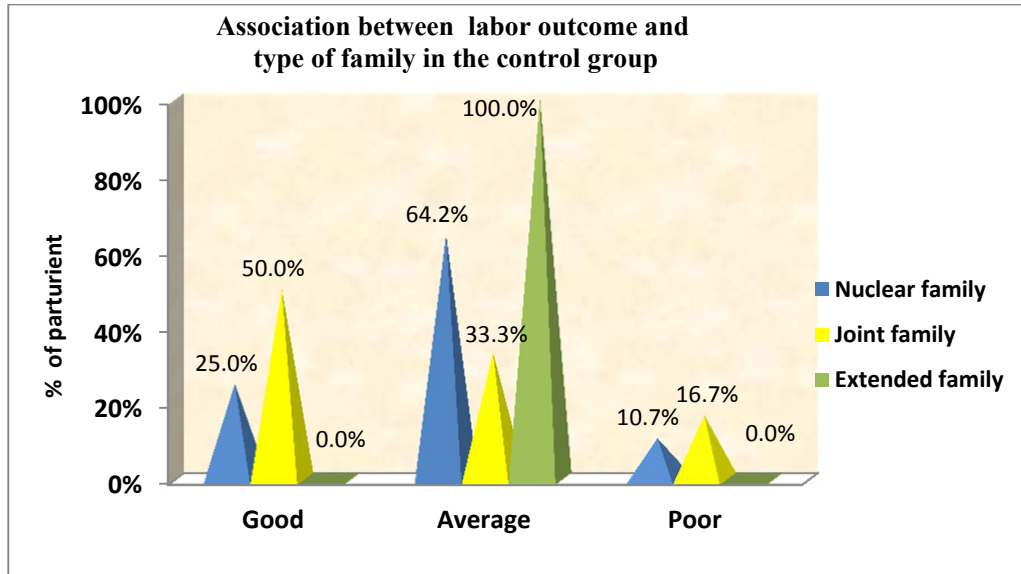
Table 4.5.3.1 shows the association between labor outcome and socio demographic variables among the parturient in the control group.

Among socio demographic variables type of work ( $\chi^2=12.52$  p=0.01\*\*) had high significant association and type of family ( $\chi^2=11.24$ p=0.02\*) had significant association with labor outcome i.e. Parturient who were moderate workers and those who hailed from joint families had good labor outcome than others. No other socio demographic variables had association with labor outcome among parturient in the control group.



**Figure 4.5.3.1a: A Multiple bar diagram showing association between labor outcome score and type of work of the parturient in the control group.**

Among socio demographic variables type of work ( $\chi^2 = 12.52$   $p = 0.01^{**}$ ) had high significant association with labor outcome i.e. Parturient who were moderate workers had good labor outcome than sedentary and strenuous workers, hence it was assumed that moderate workers due to their nature of work they coped up with labor process effectively than other type of workers.



**Figure 4.5.3.1b: A Multiple pyramid diagram showing association between labor outcome score and type of family among parturient in the control group.**

Among socio demographic variables type of family ( $\chi^2=11.24p=0.02^*$ ) had significant association with labor outcome i.e. Parturient who hailed from joint families had good labor outcome than others, hence it could be interpreted that parturient from joint families may had support and care during pregnancy from their family members which may indirectly influenced their labor.

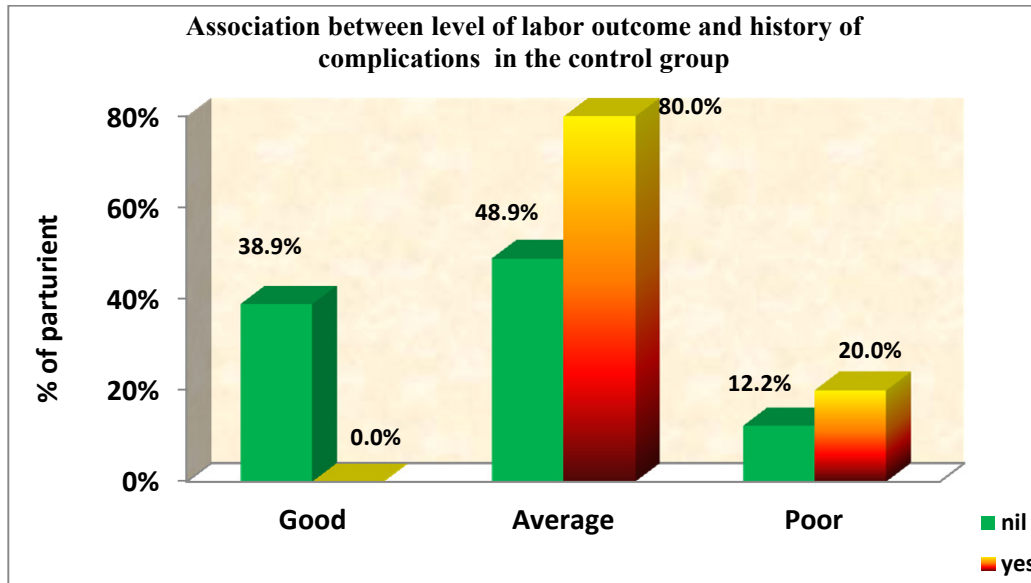
**Table 4.5.3.2: Association between labor outcome score and clinical variables among parturient in the control group.**

		<b>n=100</b>							
<b>Clinical variables</b>		<b>Labor outcome score</b>						<b>Total</b>	<b>Chi square value</b>
		Good		Average		Poor			
		n	%	n	%	n	%		
Antenatal check up	> 6 visits	35	35.0	52	52.0	13	13.0	100	$\chi^2=0.00$ p=1.00
Gestational weeks of parturient	37-40 weeks	24	38.1	33	52.4	6	9.5	63	$\chi^2=2.05$ p=0.35
	> 40 weeks	11	29.7	19	51.4	7	18.9	37	
Weight of the parturient	< 50 kg	5	45.5	6	54.5	0	0.0	11	$\chi^2 =2.25$ p=0.68
	50kg- 70 kg	24	33.3	38	52.8	10	13.9	72	
	> 70 kg	6	35.3	8	47.1	3	17.6	17	
Nature of parturient	Naturally tense and anxious	14	25.0	34	60.7	8	14.3	56	$\chi^2 =5.66$ p=0.06
	Sportive	21	47.7	18	40.9	5	11.4	44	
History of complications	Nil	35	38.9	44	48.9	11	12.2	90	$\chi^2=5.99$ p=0.05*
	Yes	0	0.0	8	80.0	2	20.0	10	
Support group during pregnancy	Parents	8	42.1	7	36.8	4	21.1	19	$\chi^2=2.99$ p=0.56
	In-laws	7	28.0	15	60.0	3	12.0	25	
	Husband	20	35.7	30	53.6	6	10.7	56	
History of abortion	Yes	0	0.0	8	80.0	2	20.0	12	$\chi^2=5.99$ p=0.05*
	No	35	39.8	44	50.0	11	12.5	88	
Dietary pattern	Vegetarian	4	36.4	7	63.6			11	$\chi^2 =1.93$ p=0.38
	Non Vegetarian	31	34.8	45	50.6	13	14.6	89	
Practice of antenatal exercises	Walking	16	43.2	15	40.5	6	16.2	37	$\chi^2 =13.67$ p=0.09
	Exercise	1	100.0	0	0.0	0	0.0	1	
	Yoga	3	100.0	0	0.0	0	0.0	3	
	Combined	3	37.5	5	62.5	0	0.0	8	
	Nil	12	23.5	32	62.7	7	13.7	51	

\*significant at P≤0.05 \*\* significant at P≤0.01 \*\*\* significant at P≤0.001

Table 4.5.3.2 shows the association between labor outcome and clinical variables of the parturient in the control group.

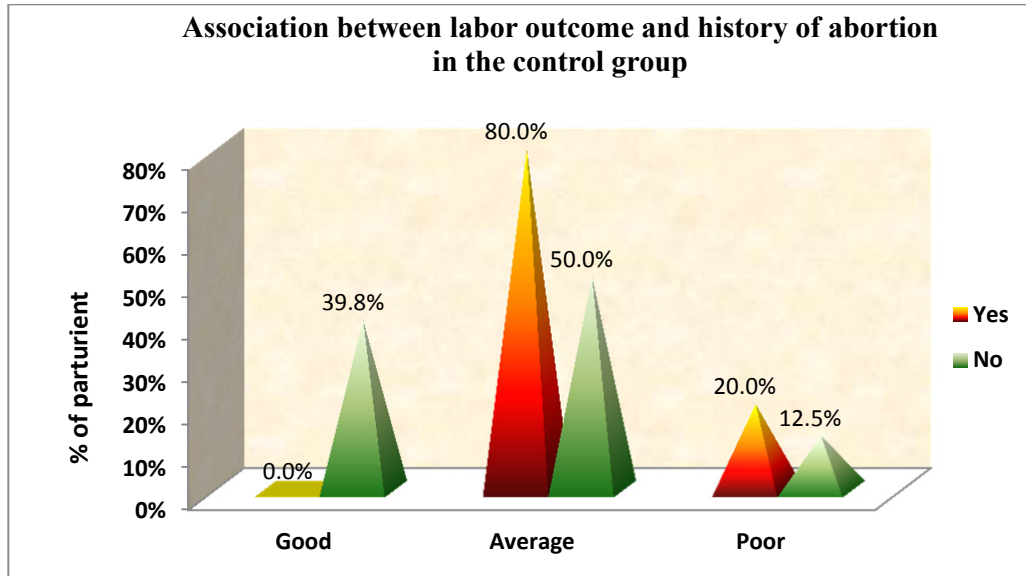
Among clinical variables history of complications ( $\chi^2 = 5.99, p = 0.05^*$ ) and history of abortion ( $\chi^2 = 5.99, p = 0.05^*$ ) had significant association with labor outcome i.e. Parturient who had no history of complications and no history of abortion had good labor outcome. No other clinical variables had association with the level of labor outcome among parturient in the control group.



**Figure4.5.3.2a:A Multiple bar diagram showing association between labor outcome score and history of complications among parturient in the control group.**

Among clinical variables history of complications ( $\chi^2=5.99p=0.05^*$ ) had a significant association with labor outcome i.e. Parturient who had no history of complications had good labor outcome than the parturient with history of complications. Hence it was assumed that history of complications may have impact over the labor process.





**Figure 4.5.3.2.b:A Multiple pyramid diagram showing association between labor outcome score and history of abortion among parturient in the control group**

Among clinical variables history of abortion ( $\chi^2=5.99$   $p=0.05^*$ ) had a significant association with labor outcome i.e. Parturient with no history of abortion had good labor outcome than the parturient with history of abortion. Hence it revealed that history of abortion may affect the labor process than the parturient with no history of abortion.

**Table 4.5.4.1: Association between pain and socio demographic variables among parturient in the interventional group**

**n=100**

Socio demographic variables		Pain score								Chi square value	
		Mild pain		Moderate		Severe pain		Worst pain			Total
		n	%	n	%	n	%	n	%		
Age in years	< 20	0	0.0	7	70.0	3	30.0	0	0.0	10	$\chi^2=21.49$ $p=0.01^{**}$
	20 -25	5	8.6	26	44.8	25	43.1	2	3.4	58	
	25 -30	7	30.4	10	43.5	4	17.4	2	8.7	23	
	> 30	5	55.6	2	22.2	1	11.1	1	11.1	9	
Marital status	Married	16	16.5	44	45.4	32	33.0	5	5.2	97	$\chi^2=5.53$ $p=0.47$
	Widow			1	50.0	1	50.0			2	
	Separated	1	100							1	
Locality of residence	Rural	5	12.8	18	46.2	15	38.5	1	2.6	39	$\chi^2=6.87$ $p=0.33$
	Urban	9	27.3	15	45.5	8	24.2	1	3.0	33	
	Semi urban	3	10.7	12	42.9	10	35.7	3	10.7	28	
Religion	Hindu	11	15.5	31	43.7	26	36.6	3	4.2	71	$\chi^2=4.34$ $p=0.63$
	Christian	3	18.8	8	50.0	3	18.8	2	12.5	16	
	Muslim	3	23.1	6	46.2	4	30.8			13	
Educational status	Primary Education			2	40.0	2	40.0	1	20.0	5	$\chi^2=15.57$ $p=0.21$
	High school	1	8.3	4	33.3	6	50.0	1	8.3	12	
	Higher Secondary	2	8.0	13	52.0	10	40.0			25	
	Collegiate Education	7	17.9	18	46.2	11	28.2	3	7.7	39	
	Professional	7	36.8	8	42.1	4	21.1			19	
Occupation	Home maker	8	13.8	28	48.3	18	31.0	4	6.9	58	$\chi^2=16.27$ $p=0.17$
	Daily wage Laborer			2	28.6	4	57.1	1	14.3	7	
	Farmer			2	66.7	1	33.3			3	
	Technical/ clerical	2	12.5	7	43.8	7	43.8			16	
	Professional	7	43.8	6	37.5	3	18.8			16	
Type of work	Sedentary	12	14.3	38	45.2	31	36.9	3	3.6	84	$\chi^2=12.99$ $p=0.05^*$
	Moderate	3	23.1	6	46.2	2	15.4	2	15.4	13	
	Strenuous	2	66.7	1	33.3	0	0.0	0	0.0	3	
Type of family	Nuclear family	12	20.3	25	42.4	19	32.2	3	5.1	59	$\chi^2=1.63$ $p=0.95$
	Joint family	5	12.8	19	48.7	13	33.3	2	5.1	39	
	Extended family			1	50.0	1	50.0			2	

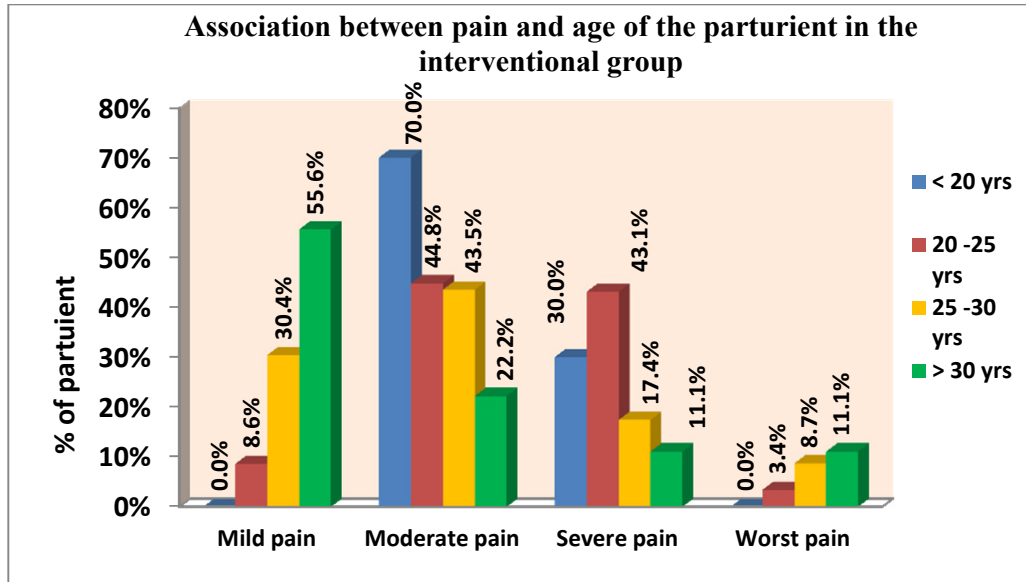
Income of Family Rs per Month	Rs.5001-10000	3	14.3	6	28.6	10	47.6	2	9.5	21	$\chi^2=4.51$ p=0.21
	> Rs.10000	14	17.7	39	49.4	23	29.1	3	3.8	79	
Attainment of Menarche	< 12 years	6	25.0	8	33.3	8	33.3	2	8.3	24	$\chi^2=2.84$ p=0.41
	12-15 years	11	14.5	37	48.7	25	32.9	3	3.9	76	
Type of Marriage	Consanguineous	2	13.3	9	60.0	4	26.7			15	$\chi^2=2.11$ p=0.54
	Non Consanguineous	15	17.6	36	42.4	29	34.1	5	5.9	85	
Duration of Marital Life	< 2 years	15	17.6	37	43.5	29	34.1	4	4.7	85	$\chi^2=0.72$ p=0.86
	2-5 years	2	13.3	8	53.3	4	26.7	1	6.7	15	

\* significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

Table 4.5.4.1 shows the association between pain level and socio demographic variables of the parturient in the interventional group.

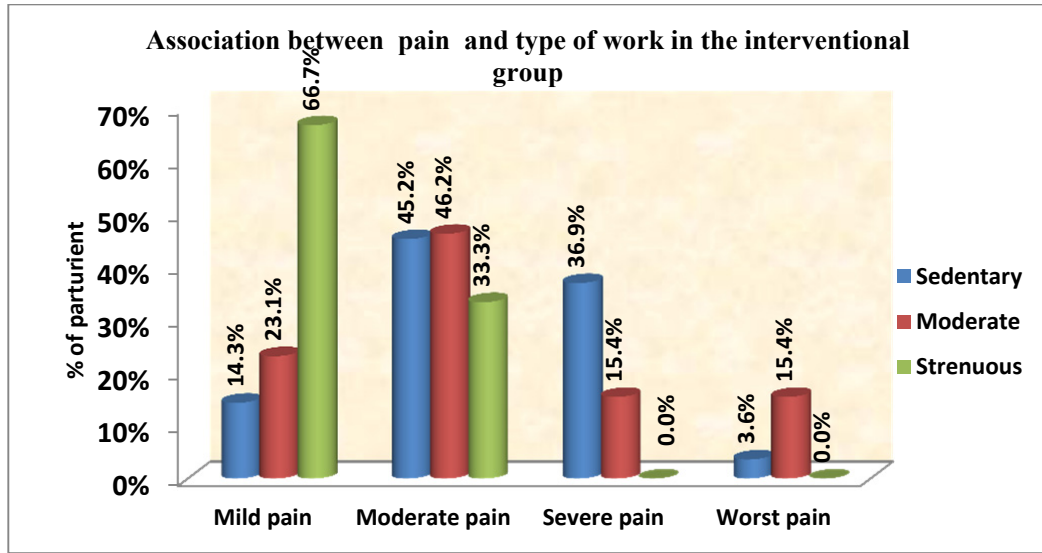
In order to determine the association between the post test score of pain and the socio demographic variables a chi square analysis was done.

Among socio demographic variables, age of the parturient ( $\chi^2=21.49$  p=0.01\*\*) had high significant association and type of work ( $\chi^2=12.99$  p=0.05\*) had significant association with pain level, i.e. parturient who belonged to younger age group (<20 years) and those who did strenuous work had less pain than others. No other socio demographic variables had association with the pain score among parturient in the interventional group.



**Figure 4.5.4.1a: A Multiple bar diagram showing association between pain score and age of the parturient among parturient in the interventional group**

Among socio demographic variables age of the parturient ( $\chi^2=21.49$   $p=0.01^{**}$ ) had high significant association with the level of pain, i.e. parturient who belonged to younger age group (< 20 years) had less pain than elder parturient. Hence it was assumed that younger parturient able to cope up with labor pain effectively than the elder parturient.



**Figure 4.5.4.1b :A Multiple cylinder diagram showing association between pain score and type of work among parturient in the interventional group**

Among socio demographic variables type of work ( $\chi^2=12.99$   $p=0.05^*$ ) had significant association with the level of pain, i.e. parturient who belonged to strenuous work had less pain than moderate and sedentary workers. Hence it could be interpreted that strenuous workers were hard workers and able to cope up with pain easily than sedentary and moderate workers.

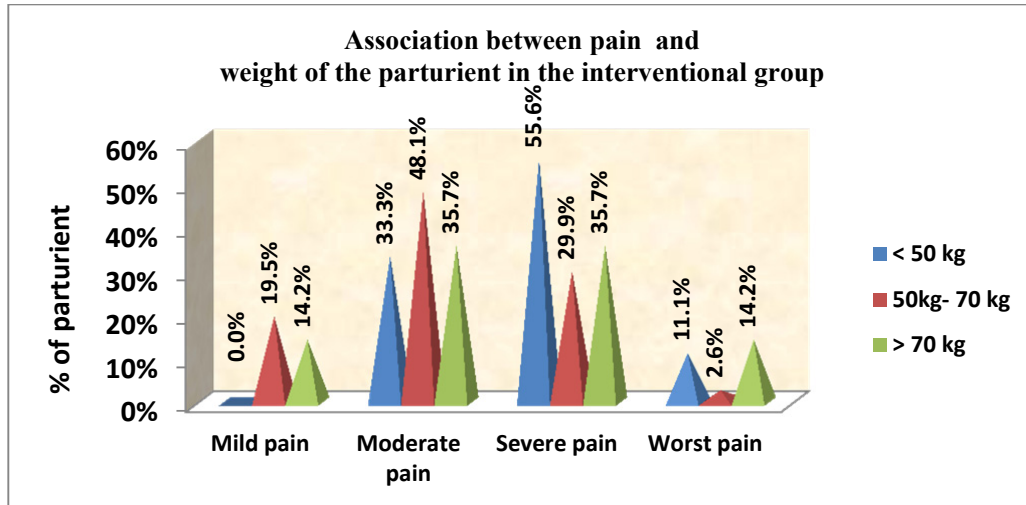
**Table 4.5.4.2: Association between pain score and clinical variables among parturient in the interventional group.**

										n=100	
Clinical variables		Pain score								Total	Chi square value
		Mild pain		Moderate pain		Severe pain		Worst pain			
		n	%	n	%	n	%	n	%		
Antenatal Check up	> 6 visits	17	17.0	45	45.0	33	33.0	5	5.0	100	$\chi^2=0.00$ p=1.00
Gestational weeks of parturient	37-40 weeks	10	14.9	29	43.3	25	37.3	3	4.5	67	$\chi^2=1.90$ p=0.59
	> 40 weeks	7	21.2	16	48.5	8	24.2	2	6.1	33	
Weight of the parturient	< 50 kg	0	0.0	3	33.3	5	55.6	1	11.1	9	$\chi^2=14.59$ p=0.02*
	50kg- 70 kg	15	19.5	37	48.1	23	29.9	2	2.6	77	
	> 70 kg	2	14.2	5	35.7	5	35.7	2	14.2	14	
Nature of parturient	Naturally tense and anxious	11	17.2	27	42.2	21	32.8	5	7.8	64	$\chi^2=3.13$ p=0.37
	Sportive	6	16.7	18	50.0	12	33.3			36	
History of complications	Nil	17	18.4	44	47.8	30	32.6	1	1.1	92	$\chi^2=38.79$ p=0.001***
	Yes	0	0.0	1	12.5	3	37.5	4	50.0	8	
Support group during pregnancy	Parents	3	12.5	9	37.5	10	41.7	2	8.3	24	$\chi^2=5.13$ p=0.52
	In-laws	2	10.0	12	60.0	6	30.0			20	
	Husband	12	21.4	24	42.9	17	30.4	3	5.4	56	
History of abortion	Yes	1	12.5	4	50.0	3	37.5			8	$\chi^2=0.64$ p=0.88
	No	16	17.4	41	44.6	30	32.6	5	5.4	92	
Dietary pattern	Vegetarian	2	16.7	6	50.0	4	33.3			12	$\chi^2=0.75$ p=0.85
	Non Vegetarian	15	17.0	39	44.3	29	33.0	5	5.7	88	
Practice of antenatal exercises	Walking	5	14.3	16	45.7	13	37.1	1	2.9	35	$\chi^2=18.50$ p=0.10
	Exercise	1	33.3	1	33.3			1	33.3	3	
	Yoga	2	33.3	3	50.0	1	16.7			6	
	Combined	4	40.0	6	60.0					10	
	Nil	5	10.9	19	41.3	19	41.3	3	6.5	46	

\*significant at P≤0.05 \*\* significant at P≤0.01 \*\*\* significant at P≤0.001

Table 4.5.4.2 shows the association between pain and clinical variables of the parturient in the interventional group.

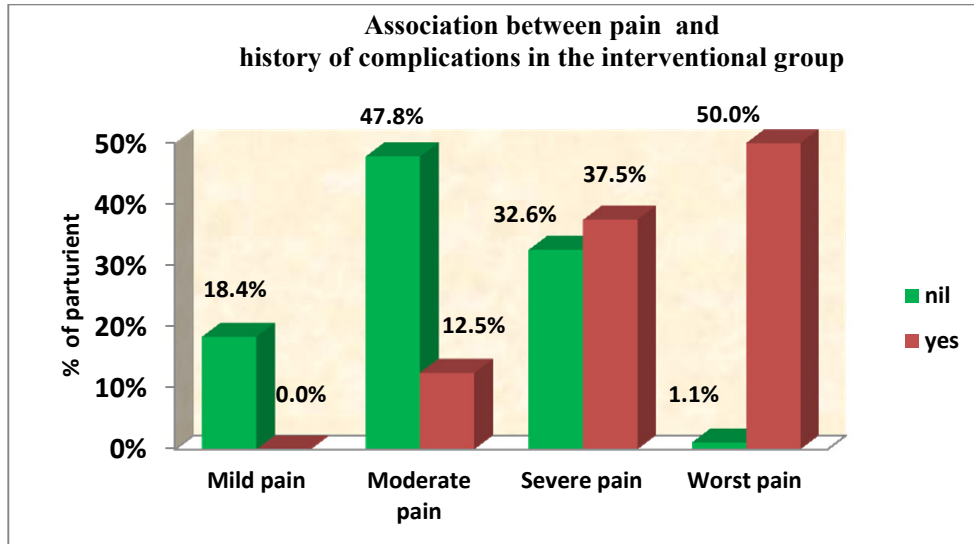
Among clinical variables weight of the parturient ( $\chi^2=14.59$   $p=0.02^*$ ) had significant association and history of complications ( $\chi^2=38.79$   $p=0.001^{***}$ ) had very high significant association with pain score i.e. Parturient who had weight between 50 -70 kg and no history of complication had less pain than others. No other clinical variables had association with the pain among parturient in the interventional group.



**Figure 4.5.4.2.a: A Multiple cylinder diagram showing association between pain score and weight of the parturient in the interventional group**

Among clinical variables weight of the parturient ( $\chi^2=14.59$   $p=0.02^*$ ) had significant association with pain level i.e. Parturient who had weight between 50 -70 kg had less pain than other parturient. Hence it was assumed that moderate body built parturient able to cope up with labor pain well than the parturient with over and less weight





**Figure 4.5.4.2b: A Multiple bar diagram showing association between pain score and history of complications among parturient in the interventional group**

Among clinical variables history of complications ( $\chi^2 = 38.79, p = 0.001^{***}$ ) had very high significant association with pain score i.e. Parturient who had no history of complications felt less pain than parturient with history of complication, it may be assumed that the history of complications may have influence over the pain level during labor.

**Table 4.5.5.1: Association between anxiety and socio demographic variables among parturient in the interventional group**

**n=100**

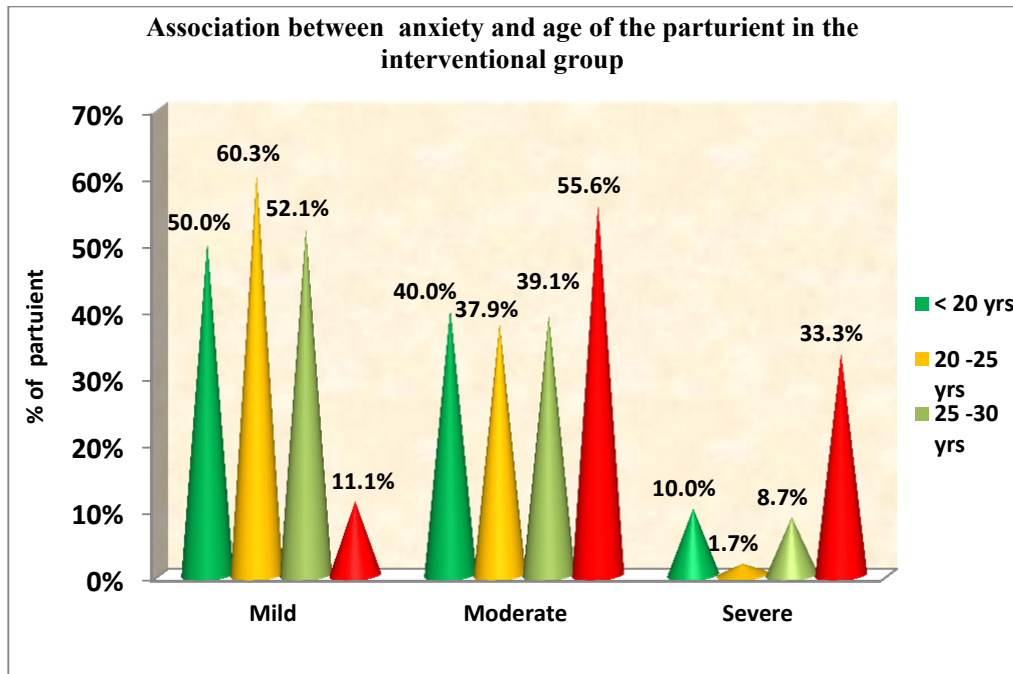
Socio demographic variables		Anxiety score						Total	Chi square value
		Mild		Moderate		Severe			
		n	%	n	%	n	%		
Age in years	< 20	5	50.0	4	40.0	1	10.0	10	$\chi^2 = 15.64$ p=0.01**
	20 -25	35	60.3	22	37.9	1	1.7	58	
	25 -30	12	52.1	9	39.1	2	8.7	23	
	> 30	1	11.1	5	55.6	3	33.3	9	
Marital status	Married	52	53.6	39	40.2	6	6.2	97	$\chi^2 = 7.37$ p=0.11
	Widow			1	50.0	1	50.0	2	
	Separated	1	100.0					1	
Locality of residence	Rural	24	61.5	13	33.3	2	5.1	39	$\chi^2 = 6.44$ p=0.16
	Urban	19	57.6	13	39.4	1	3.0	33	
	Semi urban	10	35.7	14	50.0	4	14.3	28	
Religion	Hindu	38	53.5	29	40.8	4	5.6	71	$\chi^2 = 4.74$ p=0.32
	Christian	7	43.8	6	37.5	3	18.8	16	
	Muslim	8	61.5	5	38.5			13	
Educational status	Primary Education	3	60.0			2	40.0	5	$\chi^2 = 7.31$ p=0.17
	High school	9	75.0	3	25.0			12	
	Higher Secondary	9	36.0	15	60.0	1	4.0	25	
	Collegiate Education	22	56.4	15	38.5	2	5.1	39	
	Professional	10	52.6	7	36.8	2	10.5	19	
Occupation	Home maker	28	48.3	25	43.1	5	8.6	58	$\chi^2 = 5.32$ p=0.72
	Daily wage Laborer	4	57.1	2	28.6	1	14.3	7	
	Farmer	3	100.0					3	
	Technical/ clerical	9	56.3	7	43.8			16	
	Professional	9	56.3	6	37.5	1	6.3	16	
Type of work	Sedentary	42	50.0	37	44.0	5	6.0	84	$\chi^2 = 5.69$ p=0.22
	Moderate	8	61.5	3	23.1	2	15.4	13	
	Strenuous	3	100.0					3	
Type of family	Nuclear family	24	40.6	28	47.5	7	11.9	59	$\chi^2 = 11.38$ p=0.02**
	Joint family	28	71.8	11	28.2	0	0.0	39	
	Extended family	1	50.0	1	50.0	0	0.0	2	
Income of Family Rs per month	Rs.5001-10000	11	52.4	8	38.1	2	9.5	21	$\chi^2 = 0.26$ p=0.87
	> Rs.10000	42	53.2	32	40.5	5	6.3	79	

Attainment of menarche	< 12 years	9	37.5	12	50.0	3	12.5	24	$\chi^2 = 3.58$ p=0.17
	12-15 years	44	57.9	28	36.8	4	5.3	76	
Type of marriage	Consanguineous	9	60.0	6	40.0			15	$\chi^2 = 1.39$ p=0.50
	Non Consanguineous	44	51.8	34	40.0	7	8.2	85	
Duration of marital Life	< 2 years	45	52.9	34	40.0	6	7.1	85	$\chi^2 = 0.01$ p=0.99
	2-5 years	8	53.3	6	40.0	1	6.7	15	

\*significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

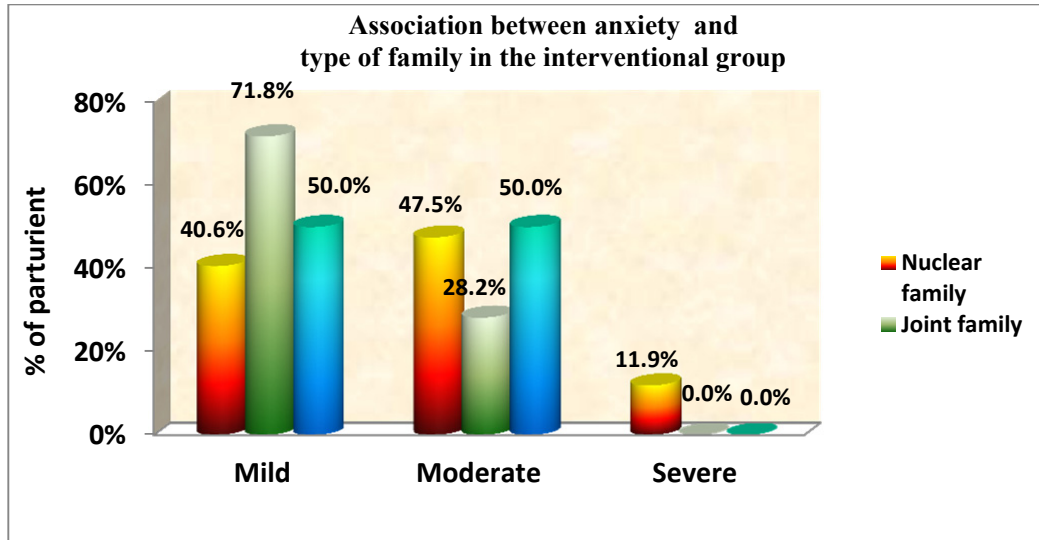
Table 4.5.5.1 reveals the association between anxiety and socio demographic variables of the parturient in the interventional group.

Among socio demographic variables age of the parturient ( $\chi^2=15.64$  p=0.01\*\*) and type of family ( $\chi^2=11.38$  p=0.02\*\*) had high significant association with anxiety level i.e. the parturient between the age of 20- 25 years and who lived in joint families had lesser anxiety than others. No other socio demographic variables had association with anxiety level among parturient in the interventional group.



**Figure 4.5.5.1a: A multiple pyramid diagram showing association between anxiety score and age of the parturient in the interventional group**

Among socio demographic variables age of the parturient had high significant association with anxiety level i.e. the parturient between the age of 20- 25 years had lesser anxiety than others, it may be because younger parturient may felt that they are on safer labor pertaining to their age when comparing with elder parturient.



**Figure4.5.5.1b: A multiple cylinder diagram showing association between anxiety score and type of family among parturient in the interventional group**

Among socio demographic variables type of family ( $\chi^2 = 11.38$   $p=0.02^{**}$ ) had a high significant association with the level of anxiety i.e. the parturient who lived in joint families had lesser anxiety than others. Hence it could be interpreted that parturient from joint families may have secured feeling which implies anxiety level of the parturient.

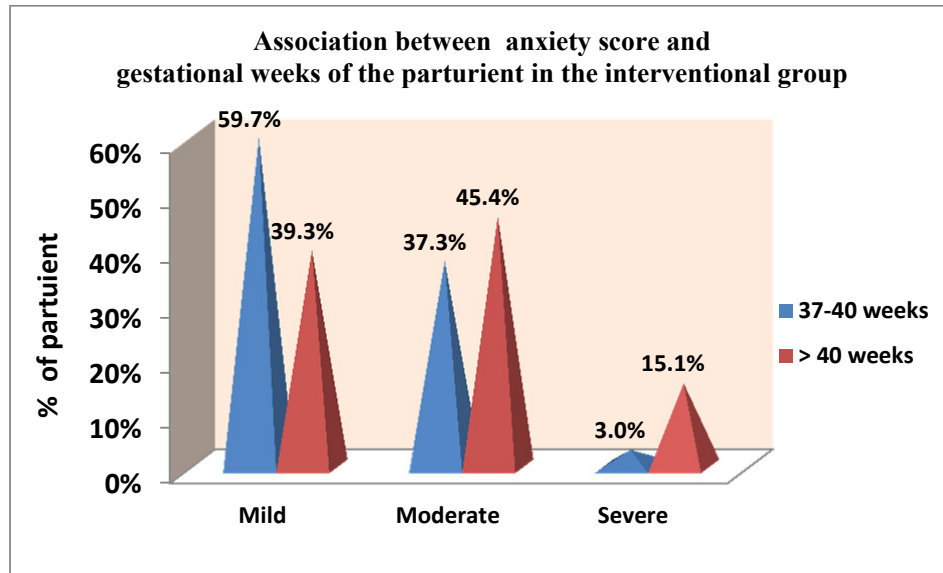
**Table 4.5.5.2: Association between anxiety level and clinical variables among parturient in the interventional group.**

								n=100	
Clinical variables		Anxiety score						Total	Chi square value
		Mild		Moderate		Severe			
		n	%	n	%	n	%		
Antenatal check up	> 6 visits	53	53.0	40	40.0	7	7.0	100	$\chi^2=0.00$ p=1.00
Gestational weeks of parturient	37-40 weeks	40	59.7	25	37.3	2	3.0	67	$\chi^2=6.76$ p=0.03*
	> 40 weeks	13	39.3	15	45.4	5	15.1	33	
Weight of the parturient	< 50 kg	4	44.4	4	44.4	1	11.1	9	$\chi^2=0.52$ p=0.97
	50kg- 70 kg	42	54.5	30	39.0	5	6.5	77	
	> 70 kg	7	50.0	6	42.9	1	7.1	14	
Nature of parturient	Naturally tense and anxious	29	45.3	29	45.3	6	9.4	64	$\chi^2=4.66$ p=0.10
	Sportive	24	66.7	11	30.6	1	2.8	36	
History of complications	Nil	53	57.6	34	36.9	5	5.4	92	$\chi^2=11.29$ p=0.01**
	Yes	0	0.0	6	75.0	2	25.0	8	
Support group during pregnancy	Parents	15	62.5	7	29.2	2	8.3	24	$\chi^2=2.62$ p=0.62
	In-laws	12	60.0	7	35.0	1	5.0	20	
	Husband	26	46.4	26	46.4	4	7.1	56	
History of abortion	Yes	6	75.0	2	25.0			8	$\chi^2=1.89$ p=0.38
	No	47	51.1	38	41.3	7	7.6	92	
Dietary pattern	Vegetarian	8	66.7	3	25.0	1	8.3	12	$\chi^2=1.26$ p=0.52
	Non Vegetarian	45	51.1	37	42.0	6	6.8	88	
Practice of antenatal exercises	Walking	18	51.4	16	45.7	1	2.9	35	$\chi^2=19.04$ p=0.02
	Exercise	1	33.3			2	66.7	3	
	Yoga	4	66.7	2	33.3			6	
	Combined	6	60.0	3	30.0	1	10.0	10	
	Nil	24	52.2	19	41.3	3	6.5	46	

\* significant at P≤0.05 \*\* significant at P≤0.01 \*\*\* significant at P≤0.001

Table 4.5.5.2 reveals the association between anxiety level and clinical variables of the parturient in the interventional group.

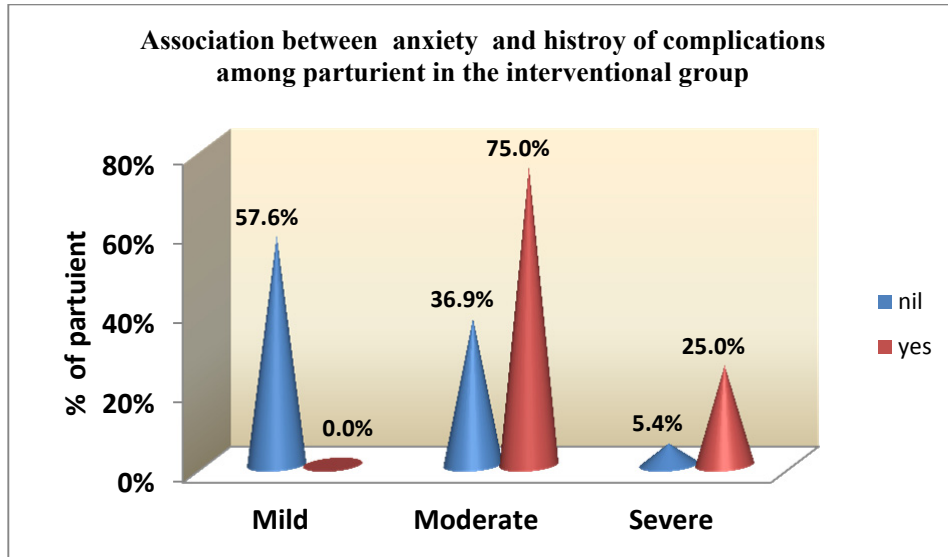
Among clinical variables, gestational weeks of the parturient ( $\chi^2=6.76$   $p=0.03^*$ ) had significant association and history of complications ( $\chi^2=11.29$   $p=0.01^{**}$ ) had high significant association with the anxiety score i.e. Parturient between 37 -40 weeks of gestation and who did not have history of complications had lesser anxiety than others. No other clinical variables had association with the anxiety level among parturient in the interventional group.



**Figure 4.5.5.2a: A multiple pyramid diagram showing association between anxiety and gestational weeks of the parturient in the interventional group.**

Among clinical variables, gestational weeks of the parturient ( $\chi^2=6.76$   $p=0.03^*$ ) had significant association with the anxiety score i.e. Parturient between 37 -40 weeks of gestation had lesser anxiety than others. Hence it could be interpreted that parturient who were post dated may have tension pertaining to progress of labor which in turn may increase their anxiety level.





**Figure 4.5.5.2b:A multiple pyramid diagram showing association between anxiety level and history of complications among parturient in the interventional group.**

Among clinical variables, history of complications ( $\chi^2=11.29p=0.01^{**}$ ) had high significant association with the anxiety score i.e. Parturient who did not have history of complications had lesser anxiety than others; hence it may be assumed that the parturient with the history of complications may have fear and anxiety about interference of existing complications on labor.

**Table 4.5.6.1.: Association between labor outcome and socio demographic variables among parturient in the interventional group.**

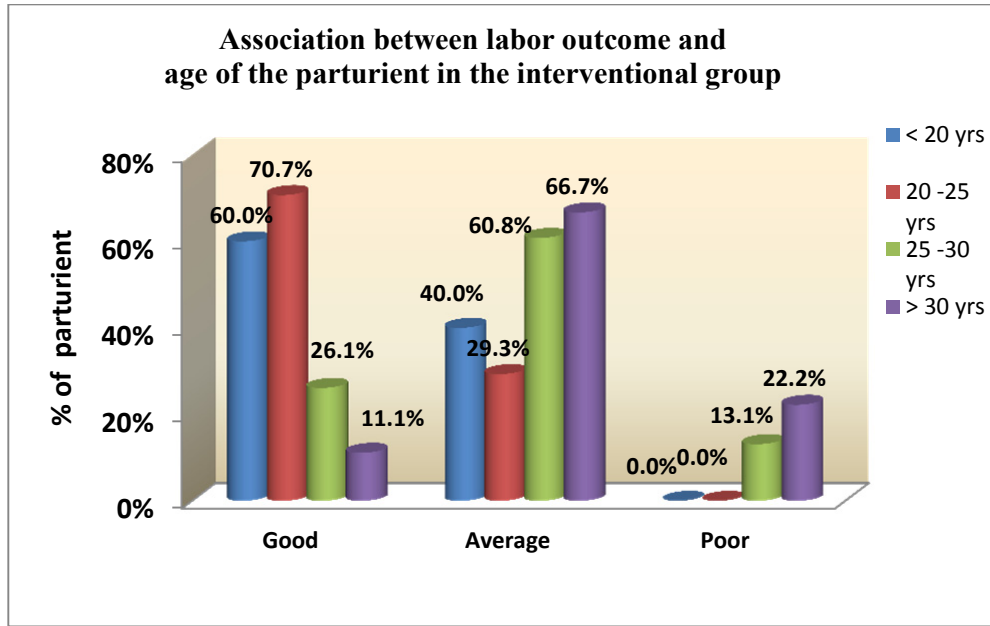
								n=100	
Socio demo graphic variables		Labor Outcome score						Total	Chi square value
		Good		Average		Poor			
		n	%	n	%	n	%		
Age in years	< 20	6	60.0	4	40.0	0	0.0	10	$\chi^2 = 26.75$ $p = 0.001^{***}$
	20 -25	41	70.7	17	29.3	0	0.0	58	
	25 -30	6	26.1	14	60.8	3	13.1	23	
	> 30	1	11.1	6	66.7	2	22.2	9	
Marital status	Married	53	54.6	39	40.2	5	5.2	97	$\chi^2 = 1.61$ $p = 0.80$
	Widow	1	50.0	1	50.0	0	0.0	2	
	Separated	0	0.0	1	100.0	0	0.0	1	
Locality of residence	Rural	26	66.7	13	33.3	0	0.0	39	$\chi^2 = 6.76$ $p = 0.14$
	Urban	16	48.5	15	45.5	2	6.1	33	
	Semi urban	12	42.9	13	46.4	3	10.7	28	
Religion	Hindu	39	54.9	30	42.3	2	2.8	71	$\chi^2 = 3.51$ $p = 0.47$
	Christian	7	43.8	7	43.8	2	12.5	16	
	Muslim	8	61.5	4	30.8	1	7.7	13	
Educational status	Primary Education	3	60.0	2	40.0	0	0.0	5	$\chi^2 = 6.48$ $p = 0.59$
	High school	9	75.0	3	25.0	0	0.0	12	
	Higher Secondary	13	52.0	10	40.0	2	8.0	25	
	Collegiate	21	53.8	15	38.5	3	7.7	39	
	Professional	8	42.1	11	57.9	0	0.0	19	
Occupation	Home maker	27	46.6	26	44.8	5	8.6	58	$\chi^2 = 11.59$ $p = 0.17$
	Daily wage Laborer	6	85.7	1	14.3	0	0.0	7	
	Farmer	3	100.0	0	0.0	0	0.0	3	
	Technical/ clerical	11	68.8	5	31.3	0	0.0	16	
	Professional	7	43.8	9	56.3	0	0.0	16	
Type of work	Sedentary	39	46.4	38	45.2	5	6.0	84	$\chi^2 = 11.62$ $p = 0.02^*$
	Moderate	12	92.3	1	7.7	0	0.0	13	
	Strenuous	3	100.0	0	0.0	0	0.0	3	
Type of Family	Nuclear family	25	42.3		54.3	2	3.4	59	$\chi^2 = 11.29$ $p = 0.02^*$
	Joint family	28	71.7	8	20.6	3	7.7	39	
	Extended family	1	50.0	1	50.0	0	0.0	2	

Income of family Rs per Month	Rs.5001-10000	14	66.7	6	28.6	1	4.8	21	$\chi^2=1.79$ p=0.43
	> Rs.10000	40	50.6	35	44.3	4	5.1	79	
Attainment of menarche	< 12 years	12	50.0	11	45.8	1	4.2	24	$\chi^2=0.31$ p=0.85
	12-15 years	42	55.3	30	39.5	4	5.3	76	
Type of marriage	Consanguineous	10	66.7	5	33.3	0	0.0	15	$\chi^2=1.66$ p=0.43
	Non Consanguineous	44	51.8	36	42.4	5	5.9	85	
Duration of marital Life	< 2 years	45	52.9	35	41.2	5	5.9	85	$\chi^2=1.00$ p=0.60
	2-5 years	9	60.0	6	40.0	0	0.0	15	

\*significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

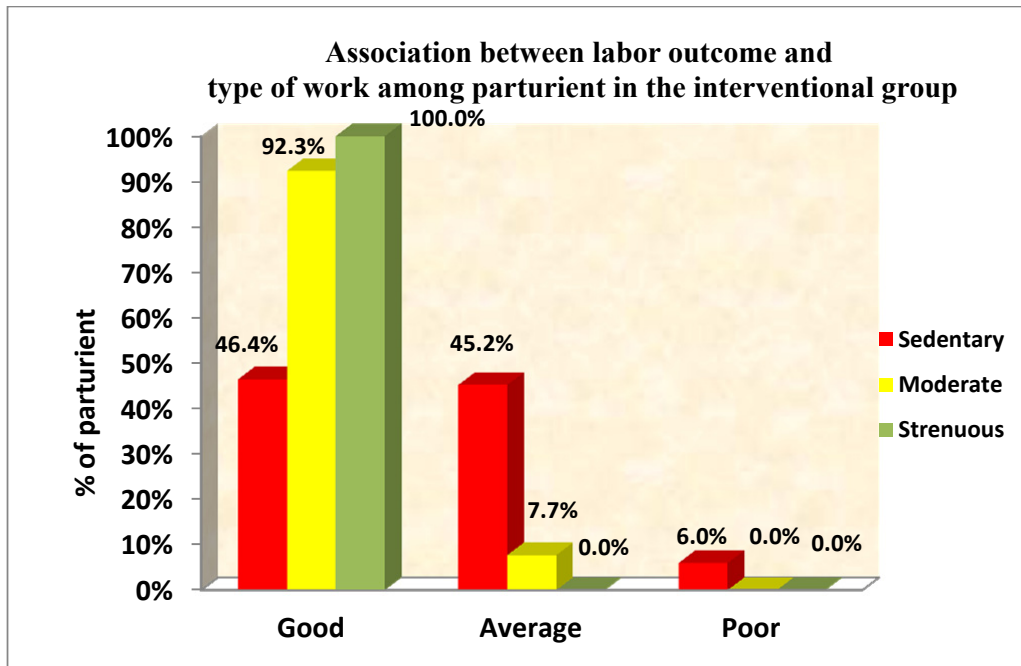
Table 4.5.6.1 reveals the association between labor outcome and socio demographic variables of the parturient in the interventional group.

Among socio demographic variables age of the parturient ( $\chi^2=26.75p=0.001$ \*\*\*) had very high significant association, type of work ( $\chi^2 =11.62$  p=0.02\*) and type of family ( $\chi^2=11.29p=0.02^*$  ) had significant association with the labor outcome score i.e. Parturient between the age of 20 -25 years, moderate/strenuous workers and who lived in joint families had good labor outcome than others. No other socio demographic variables had association with labor outcome score among parturient in the interventional group.



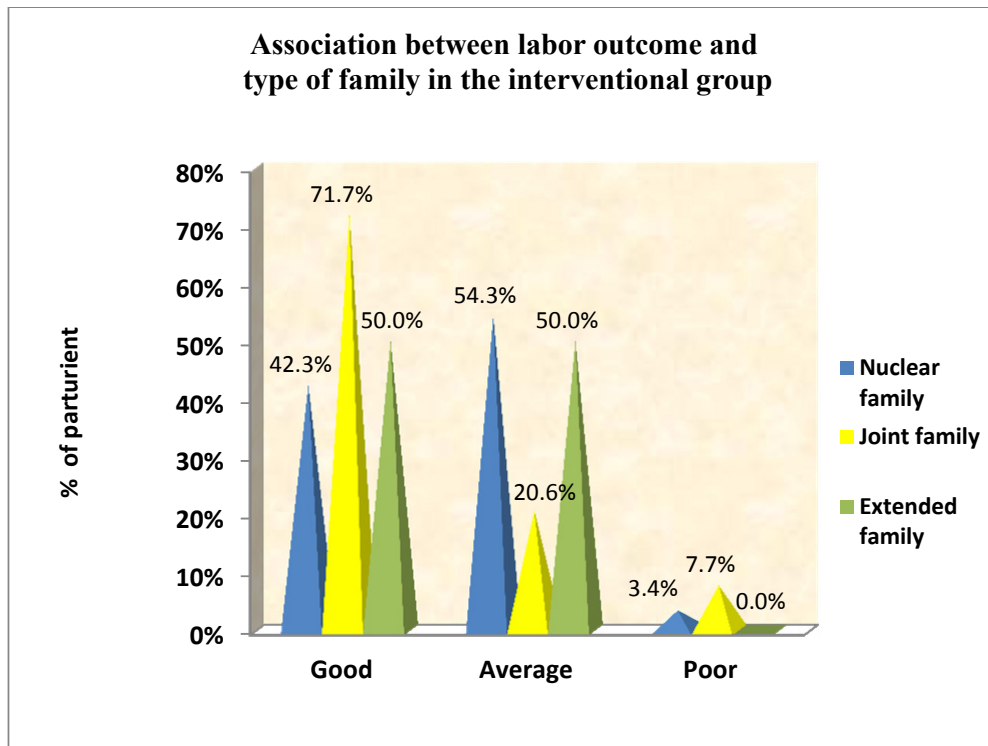
**Figure4.5.6.1a:**A multiple cylinder diagram showing association between labor outcome and age of the parturient in the interventional group .

Among socio demographic variables age of the parturient ( $\chi^2=26.75p=0.001^{***}$ ) had very high significant association with the labor outcome score i.e. Parturient between the age of 20 -25 years had good labor outcome than other age group parturient. Hence it could be referred that elder parturient may have delay in progress of labor due to their age maturity.



**Figure 4.5.6.1b: A multiple bar diagram showing association between labor outcome and type of work of the parturient in the interventional group.**

Among socio demographic variables type of work ( $\chi^2 = 11.62$   $p=0.02^*$ ) had significant association with the labor outcome score i.e. Parturient who belonged to moderate/strenuous work had good labor outcome than others. Hence it was assumed that strenuous/moderate workers due to their nature of work they coped up with labor process effectively than sedentary workers.



**Figure 4.5.6.1c: A multiple pyramid diagram showing association between labor outcome and type of family among the parturient in the interventional group.**

Among socio demographic variables type of family ( $\chi^2=11.29p=0.02^*$ ) had significant association with the labor outcome score i.e. Parturient who lived in joint families had good labor outcome than others. Hence it could be interpreted that parturient from joint families may had support and care during pregnancy from their family members which may indirectly influenced their labor.

**Table 4.5.6.2: Association between labor outcome and clinical variables among parturient in the interventional group**

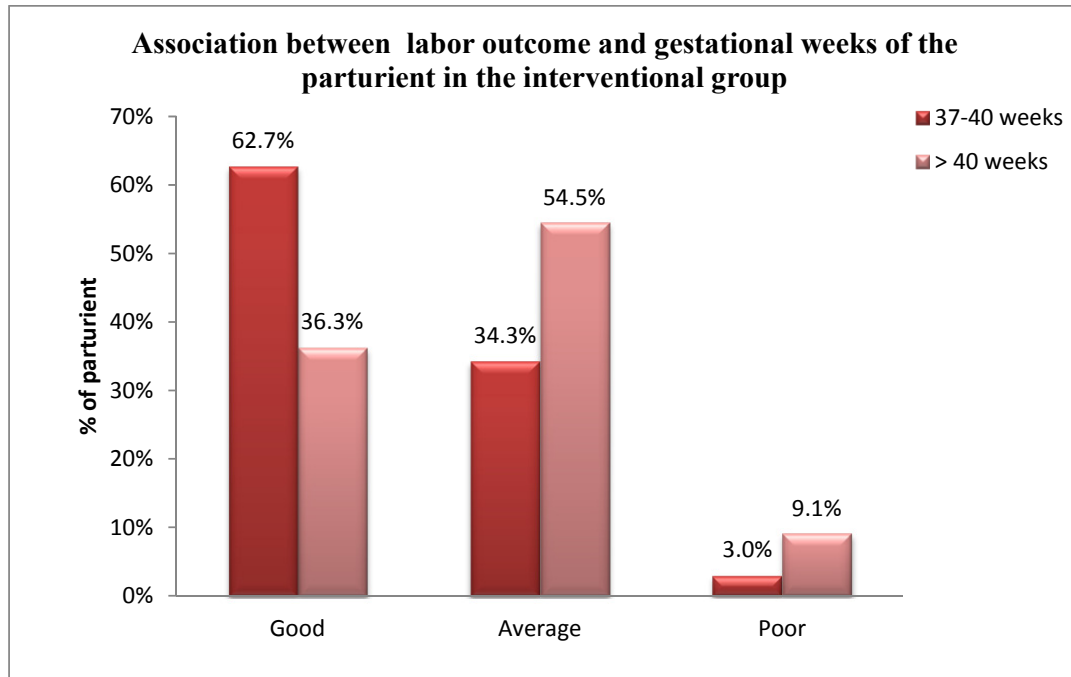
		n=100						Total	Chi square value
Clinical variables		Labor outcome score							
		Good		Average		Poor			
		n	%	n	%	n	%		
Antenatal Check up	> 6 visits	54	54.0	41	41.0	5	5.0	100	$\chi^2=0.00$ p=1.00
Gestational weeks of parturient	37-40 weeks	42	62.7	23	34.3	2	3.0	67	$\chi^2=6.69$ <b>p=0.03*</b>
	> 40 weeks	12	36.3	18	54.5	3	9.1	33	
Weight of the parturient	< 50 kg	7	77.8	2	22.2			9	$\chi^2=5.17$ p=0.27
	50kg- 70 kg	41	53.2	33	42.9	3	3.9	77	
	> 70 kg	6	42.9	6	42.9	2	14.3	14	
Nature of parturient	Naturally tense and anxious	33	51.6	26	40.6	5	7.8	64	$\chi^2=3.01$ p=0.22
	Sportive	21	58.3	15	41.7			36	
History of complications	Nil	54	58.6	36	39.1	2	2.2	92	$\chi^2=24.04$ <b>p=0.01**</b>
	Yes	0	0.0	5	62.5	3	37.5	8	
Support group during pregnancy	Parents	15	62.5	8	33.3	1	4.2	24	$\chi^2=1.06$ p=0.89
	In-laws	11	55.0	8	40.0	1	5.0	20	
	Husband	28	50.0	25	44.6	3	5.4	56	
History of abortion	Yes	1	12.5	5	62.5	2	25.0	8	$\chi^2=10.70$ <b>p=0.01**</b>
	No	53	57.6	36	39.1	3	3.2	92	
Dietary pattern	Vegetarian	7	58.3	5	41.7			12	$\chi^2=0.73$ p=0.59
	Non Vegetarian	47	53.4	36	40.9	5	5.7	88	
Practice of antenatal exercises	Walking	21	60.0	12	34.3	2	5.7	35	$\chi^2=12.86$ p=0.11
	Exercise	1	33.3	2	66.7			3	
	Yoga	4	66.7	2	33.3			6	
	Combined	1	10.0	9	90.0			10	
	Nil	27	58.7	16	34.8	3	6.5	46	

\*significant at  $P \leq 0.05$  \*\* significant at  $P \leq 0.01$  \*\*\* significant at  $P \leq 0.001$

Table 4.5.6.2 reveals the association between labor outcome and clinical variables of the parturient in the interventional group.

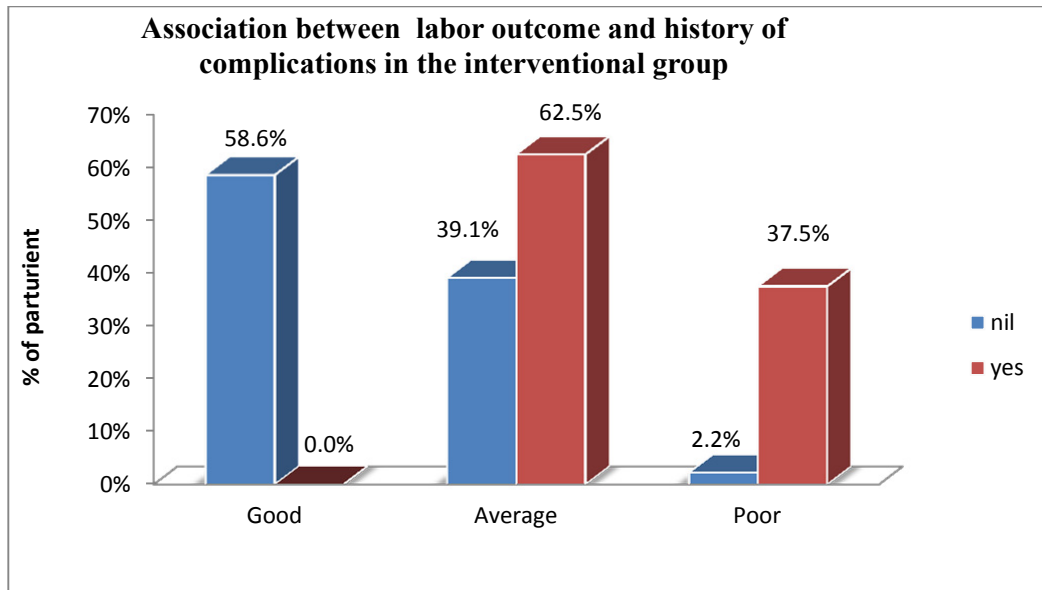
Among clinical variables, gestational weeks of the parturient ( $\chi^2=6.69$   $p=0.03^*$ ) had significant association, history of complications ( $\chi^2=24.04$   $p=0.01^{**}$ ) and history of abortion ( $\chi^2=10.70$   $p=0.01^{**}$ ) had high significant association with the labor outcome i.e. Parturient with 37 -40 wks of gestation, no history complications and no history of abortion had good labor outcome than others. No other clinical variables had association with labor outcome among parturient in the interventional group.





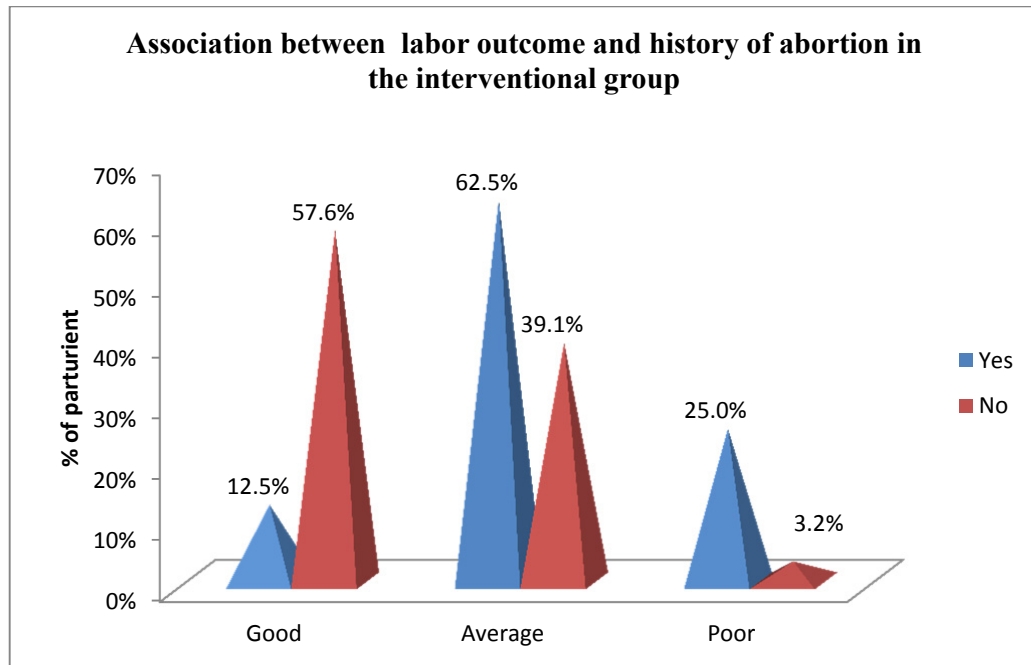
**Figure 4.5.6.2a: A multiple bar diagram showing association between labor outcome and gestational weeks of the parturient in the interventional group**

Among clinical variables, gestational weeks of the parturient ( $\chi^2=6.69$   $p=0.03^*$ ) had significant association with the level of labor outcome i.e. Parturient with 37 -40 weeks of gestation had good labor outcome than others. Hence it could be interpreted that post dated delivery may have delay in progress of labor than the normal full term delivery.



**Figure 4.5.6.2b: A multiple bar diagram showing association between labor outcome and history of complications among parturient in the interventional group**

Among clinical variables, history of complications ( $\chi^2=24.04p=0.01^{**}$ ) had high significant association with the level of labor outcome i.e. Parturient who did not have history of complications had good labor outcome than the parturient with history of complications. Hence it was assumed that history of complications may have impact over the labor process.



**Figure 4.5.6.2c: A Multiple pyramid diagram showing association between labor outcome and history of abortion among parturient in the interventional group**

Among clinical variables, history of abortion ( $\chi^2=10.70$   $p=0.01^{**}$ ) had high significant association with the level of labor outcome i.e. Parturient with no history of abortion had good labor outcome than the parturient with history of abortion. Hence it revealed that history of abortion may affect the labor process than with no history of abortion.

## **CHAPTER V**

### **DISCUSSION**

The findings of the study were discussed with reference to the objectives and hypotheses stated in chapter I and the findings related to the study.

The foreseen aim was to evaluate the effect of doula care in terms of pain, anxiety, and labor outcome among parturient admitted at selected hospital in Theni district, Tamilnadu.

Labor pain is an interrelated huge interaction among various physiologic, psychosocial, environmental and cultural factors.<sup>179</sup> It should be stressed that a mother's discomfort is rendered to change by the environment in which she is laboring. Many factors contribute to pain and such factors depend upon the people available and their communication methods.<sup>180</sup>

Although anxiety up to certain limit is considered normal during labor, excessive anxiety is an emotional factor that results in increase in pain.<sup>179</sup> Various studies have revealed that anxiety is precipitated by course of labor through the environmental factors.

For many women after entering the unfamiliar surrounding have caused the cessation of labor pain but they prefer to deliver in institutions as they believe it is safer in hospitals than in other places.<sup>181</sup>

Intervention to reduce pain and discomfort during labor and birth is a major part of modern obstetric care of laboring women. It is important for midwives to explore various strategies for diminishing or managing the pain caused by labor and birth. Many strategies may be adopted to alleviate pain and a major responsibility of the midwife is promoting and using non pharmacological technique<sup>182</sup> to promote the laboring woman's physical comfort, psychological well-being, and labor progress.

In 1985, WHO announced a voluntary choice of companionship to ensure the safety and satisfaction of mothers. A study has been supported this theory presence of companionship may improve uterus contractions and uterus blood flow by reduction of mothers' anxiety. However, usually the mother's emotional needs forgotten in labor due to much attention of mothers physical needs. Studies have shown that use of doula or trained companionship can reduce the duration of labor.<sup>183</sup>

Hence, the study aimed in evaluating the effectiveness of doula care on pain, anxiety and labor outcome among parturient. Doula care included breathing exercise, massage, positions and continuous reassurance and emotional support to the parturient to cope up with labor process effectively.

The present study was conducted at Holy redeemer hospital, Theni. In order to achieve the objectives of this study a quasi experimental post test design was adopted and convenience sampling technique was used to collect the samples. The sample included in the study were 217 primi parturient, Among 217 primi parturient in the study, 7 (3.68%), 10 (4.60%) had discontinued due to lack of progress in labor, underwent emergency LSCS in the interventional group, control group respectively. Hence the final sample was 200 (100 in the control group and 100 in the interventional group.)

### **5.1. Development of instrument and intervention**

The researcher found that there were widely used standardized instruments are available to assess labor pain and anxiety, no standardized instrument available to assess the labor outcome. Hence the researcher developed a tool appropriate to the nursing profession within the Indian context.

In this present study, demographic data, tool to assess the labor outcome and intervention regarding doula care were developed by the researcher with the help of

an extensive review literature from various resources based on the objectives of the study.

#### **5.1.1. In this study self developed tool:**

1. Demographic data which include socio demographic variables and clinical variables.
  - Socio demographic variables includes age, religion, marital status, locality of residence, educational status, occupation, type of work, type of family, family income per month, attainment of menarche, type of marriage, duration of marital life.
  - Clinical variables includes antenatal check up, gestational weeks, weight of the parturient, nature of the parturient, history of complications, support group , history of abortion, dietary pattern, practice of antenatal exercises
2. Questionnaire on labor outcome which consists of duration of labor, use of oxytocin, membrane ruptured at, type of delivery, baby's APGAR, baby kept after delivery, initiation of breast feeding and duration of hospital stay
3. Other standardized tool used were:
  1. Numerical pain rating scale
  2. Spielberger's state anxiety scale

#### **5.1.2. Intervention on doula care**

In this study the researcher taken a concept of doula which means assisting the women during labor as intervention

First draft about doula care was developed by the researcher for this study based on

1. Techniques (measures that diminish painful stimulus, measures that inhibit pain awareness and measures that reduce women's negative emotional and physical reaction) quoted by Penny simkin PT<sup>175</sup>

2. Perceived needs and problems of parturient during labor
3. Extensive review literature from various resources.
4. Personal experience of teaching and guiding students in the clinical field.
5. Personal consultation and discussion with experts from nursing, research, statistics, psychology and OBG physician
6. Interaction with the parturient in the clinical field

Keeping in a view of parturient need and problems during labor the researcher was made the content very simple, clear and comprehensive by selecting simple nursing comfort measures to avoid exhaustion of the parturient during labor.

In this study the researcher assisted parturient with the concept of doula care which includes selected nursing comfort measures (massage, breathing exercise, positions) to meet physical needs and constant emotional support was given to meet emotional needs of the parturient.

### **5.1.3. Doula care**

In this study, it refers to the qualified nurse as birth assistant,(the investigator acted as doula) given doula care along with the hospital routine treatment to the parturient of interventional group care to reduce pain, anxiety and to promote labor outcome. Doula care was administered from the latent phase of first stage of labor until immediate post partum period.(1 hr after delivery). Control group underwent routine hospital treatment.

Doula care includes selected nursing measures such as

- Massage
- Abdominal breathing or diaphragmatic breathing exercise
- Positions
- Emotional psycho social support

Further the checklist was developed to evaluate the all the instruments and intervention regarding doula care based on the criteria stated. Standardized tool (numerical pain rating scale, state anxiety scale) self developed tool (demographic data, questionnaire on labor outcome), and intervention about doula care along with objectives, hypotheses, operational definitions, blue print, criteria checklist given to 14 experts in the field of nursing, OBG physician, psychology, statistics, research and requested to give their valuable corrections and suggestions regarding accuracy, relevance and appropriateness of the content.

The validated tool and intervention were received from all experts with their valuable opinion and suggestions. The reliability of the instruments were tested and presented as follows

Numerical pain rating scale  $r=0.86$ ,

State anxiety scale  $r= 0.78$ ,

Labor outcome questionnaire  $r=0.81$ .

#### **5.1.4..Data collection**

After prior permission from the study setting the main study data collections was started from December 2013 to February 2015, at Holy redeemer hospital. First 100 parturient were selected conveniently by the researcher and were assigned as control group. After admission to the labor ward demographic data was collected from the parturient, and then they underwent routine care as per the hospital policy. The researcher assessed the level of pain, anxiety during active phase of first stage labor, and labor outcome was assessed during labor and post partum period. Based on ethical consideration, the researcher taught about the doula care to the control group to practice for future delivery.



Next 100 parturient selected conveniently grouped as interventional group. The participants were explained about the study and were assured of confidentiality of the data collected. Then oral and written consent were got from participants. After admission to the labor unit, socio demographic data was collected, and then doula care was given along with routine care from latent phase of first stage of labor till immediate postpartum period.

## **5.2. The findings are discussed under the following headings**

- 5.2.1. Distribution of parturient according to their socio demographic and clinical variables in the control group and interventional group
- 5.2.2. Distribution of parturient according to their pain, anxiety, and labor outcome between control and interventional group.
- 5.2.3. Effectiveness of doula care on pain, anxiety, and labor outcome among parturient between control and interventional group.
- 5.2.4. Correlation between pain, anxiety and labor outcome among parturient in the control group and interventional group.
- 5.2.5. Association between pain, anxiety, labor outcome and socio demographic, clinical variables among parturient in the control group and interventional group.

### **5.2.1: Distribution of parturient according to their socio demographic and clinical variables in the control and interventional group**

An analysis of the socio demographic variables and clinical variables of the parturient were examined in both control group and interventional group. Frequency and percentage were used to present the demographic variables of parturient and chi square analysis was used to find out the similarity (homogeneity) among parturient in

the frequency distribution of demographic data between control and interventional group

### **5.2.1.1: Socio demographic variables**

#### **1. Age**

In the control group 10 (10%) belonged to less than 20 years, 62 (62%) belonged to age between 25 -30 years, 22 (22%) belonged to age between 25- 30 years, 6 (6%) belonged age > 30 years, whereas in the interventional group 10 (10%) belonged to less than 20 years, 58 (58%) belonged to the age between 25 -30 years, 23 (23%) belonged to the age between 25- 30 years, 9 (9%) belonged age > 30 years.

#### **2. Marital status of parturient**

In the control group 98 (98%), 1 (1%), 1 (1%) were married, widow, separated respectively, whereas in the interventional group 97 (97%), 2 (2%), 1 (1%) were married, widow, separated respectively. None of the parturient got divorced both in the control and interventional group.

#### **3. Place of residence**

In the control group 39 (39%), 25 (25%), 36 (36%) hailed from rural, urban and semi urban respectively, whereas in the interventional group 39 (39%), 33 (33%), 28 (28%) hailed from rural, urban, semi urban respectively.

#### **4. Religion**

In the control group 79 (79%), 12 (12%), 9 (9%) were belonged to Hindu, Christian, Muslim respectively, whereas in the interventional group 71 (71%), 16 (16%), 13 (13%) were belonged to Hindu, Christian, Muslim respectively.

#### **5. Educational status**

In the control group 2 (2%) had studied up to primary education, 16 (16%) had studied up to high school education, 22 (22%) had studied up to higher secondary

education, 41 (41%) had collegiate education, 19 (19%) had professional education, whereas in the interventional group 5 (5%) had studied up to primary education, 12 (12%) had studied up to high school education, 25 (25%) had studied up to higher secondary education, 39 (39%) had collegiate education, 19 (19%) had professional education, in both control group and interventional group no one belonged to no formal education.

## **6. Occupation**

In the control group 63 (63%) were homemakers, 4 (4%) were daily wage laborers, 6(6%) were farmers, 15 (15%) were technical/ clerical workers, 12 (12%) were professionals, whereas in the interventional group 58 (58%) were homemakers, 7 (7%) were daily wage laborers, 3 (3%) were farmers, 16 (16%) were technical/ clerical workers, 16 (16%) were professionals.

## **7. Type of work**

In the control group 82 (82%), 15 (15%), and 3 (3%) were sedentary, moderate, and strenuous workers respectively, whereas in the interventional group 84 (84%) , 13 (13%), and 3 (3%) were sedentary, moderate, and strenuous workers respectively.

## **8. Type of family**

In the control group 56 (56%), 42 (42%), and 2 (2%) hailed from nuclear, joint and extended family respectively, whereas in the interventional group 59 (59%), 39 (39%), and (2 (2%) hailed from nuclear, joint and extended family respectively.

## **9. Income of family**

In the control and interventional group no one had earned an income between Rs.1000- 3000, andRs.3001- 5000. In the control group 15 (15%) earned an income between Rs. 5001-10,000, 85 (85%) earned an income above Rs.10000, whereas in

the interventional group 21 (21%) earned an income between Rs. 5001-10,000, 79 (79%) earned an income above Rs.10000.

#### **10. Attainment of menarche**

In the control group 27 (27%) were attained menarche below 12 years old, 73(73%) were attained menarche between 12-15 years, whereas in the interventional group 24 (24%) were attained menarche below 12 years old, 76 (76%) were attained between 12- 15years. In both the groups no one attained menarche above 15 years.

#### **11. Type of marriage**

In the control group 18 (18%) had consanguineous marriage, 82 (82%) had non consanguineous marriage, whereas in the interventional group 15 (15%) had consanguineous marriage, 85 (85%) had non consanguineous marriage.

#### **12. Duration of marital life**

In the control group 83 (83%) had less than 2 years of marital life, 17 (17%) had 2-5 years of marital life, whereas in the interventional group 85 (85%) had less than 2 years of marital life, 15(15%) had 2- 5 years of marital life, both in the control and interventional group no one had more than 5 years of marital life.

#### **5.1.2.2: Clinical variables**

##### **1. Antenatal check up**

In the control and interventional group all the parturient 100(100%) had antenatal check up (more than 6 times during pregnancy).

##### **2. Gestational weeks of the parturient**

In the control group 63(63%) belonged to 37-40 weeks of gestation, 37 (37%) belonged to more than 40 weeks of gestation, whereas in the interventional group 67(67%) belonged to 37-40 weeks of gestation, 33 (33%) belonged to more than 40 weeks of gestation.

### **3. Weight of the parturient**

In the control group 11(11%) had less than 50 kg, 72 (72%) had weight between 50- 70 kg, 17(17%) had more than 70 kg, whereas in the interventional group 9 (9%) had less than 50 kg, 77 (77%) had weight between 50- 70 kg, 14 (14%) had more than 70 kg.

### **4. Nature of parturient**

In the control group 56 (56%) were naturally tensed, 44 (44%) were sportive, whereas in the interventional group 64 (64%) were naturally tensed, 36 (36%) were sportive.

### **5. History of complications**

In the control group 90(90%) had no complications, 2 (2%) had hypothyroidism,2 (2%) had hypertension, 3 (3%) had hypotension, 1 (1%) had polyhydramnios, 2 (2%) had oligohydramnios whereas in the interventional group 92 (92%) had no complications, 2 (2%) had hypothyroidism, 1 (1%) had hypertension, 2 (2%) had hypotension, 2 (2%) had polyhydramnios, 1 (1%) had oligohydramnios.

### **6. Support group during prenatal period**

In the control group 19 (19%), 25 (25%), 56 (56%) had support from parents, in laws, husband, respectively whereas in the interventional group 24(24%), 20 (20%), 56(56%) had support from parents, in laws, husband, respectively. In both the control and interventional group no one had support from relatives, friends, neighbors, and health personnel.

### **7. History of abortion**

In the control group 12 (12%) had abortion , 88 (88%) had no abortion previously, whereas in the interventional group 8 (8%) had abortion , 92 (92 %) had no abortion previously.

## **8. Dietary pattern**

In the control group 11(11%) belongs to vegetarian, 89 (89%) belongs to non vegetarian whereas in the interventional group 12 (12%) belongs to vegetarian, 88 (88%) belongs to non vegetarian.

## **9. Practice of antenatal exercises**

In the control group 37(37%), 1(1%), 3(3%), 8(8%) were practiced walking, exercises, yoga, combination of exercises respectively, 51 (51%) were did not practice any kind of exercises during pregnancy, whereas in the interventional group 35(35%), 3(3%), 6 (6%), 10(10%) were practiced walking, exercises, yoga, combination of exercises respectively, 46 (46%) were did not practice any kind of exercises during pregnancy.

Chi square analysis revealed that there was no significant difference on socio demographic and clinical variables between the control and interventional group, hence it was inferred that both the group samples were similar in nature ( homogenous).

This study finding was supported by a study conducted by Vaijayanthimala M in the year 2013 to evaluate the effectiveness of birth ball usage during labor on pain and child birth experience of primi parturient mothers. This study was conducted in Government general hospital, Tambaram in Chennai, Out of 240 participants, there were totally 29 dropouts, The analysis was done for a total of 211 participants (106 in birth ball and 105 in comparison group) There was no notable difference in the baseline data among both the groups. <sup>147</sup>

It was also supported by a study done by Girija Kalayil Madhavanprabhakaran at Kollam, Kerala to determine the prevalence of pregnancy-specific anxiety across the three trimesters of pregnancy and postnatal period and to

relate anxiety with labor outcomes, a prospective cohort study was conducted among 500 low risk pregnant women of 18-35 years, in Kerala-India from 2004 - 2005. Results on Socio personal characteristics of samples revealed that more than half (60 %) of the pregnant women were in the age group of 20-24 years and nulliparous were of 69 %. Though 93 % of women had above high school education, (81.6%) of them were housewives. Eighty percent of them belonged to nuclear type of family with low middle income group. Only 9.6 % reported history of abortion. Majority of pregnant women (96%) had good support system and (88%) of the women were satisfied in their marital relationship.<sup>184</sup>

### **5.2.2: Distribution of parturient according to their pain, anxiety and labor outcome in the interventional and control group.**

#### **1.Pain**

In the control group none of them rated no pain, 3 (3%) had mild pain, 13(13%) had moderate pain, 71 (71%) had severe pain, 13 (13%) had worst pain. In the interventional group none of them rated no pain, 17 (17%) had mild pain, 45 (45%) had moderate pain, 33 (33%) had severe pain, and 5(5%) had worst pain.

#### **2.Anxiety**

In the control group none of them had no anxiety, 21(21%) had mild anxiety, 63(63%) had moderate anxiety, 16 (16%) had severe anxiety, whereas in the interventional group none of them had no anxiety, 53 (53%) had mild anxiety, 40 (40%) had moderate anxiety, 7 (7%) had severe anxiety.

#### **3.Labor outcome**

In the control group 35 (35%) had good labor outcome, 52 (52%) had average outcome, 13(13%) had poor outcome whereas in the interventional group 54 (54%) had good outcome, 41(41%) had average outcome, 5(5%) had poor outcome.

This study was supported by the study done by Jayanthi Gopal, Seela R, Chandra Sekhara Reddy O, and Kota Vasudeva Rao, on effect of Sacral Massage on pain during first stage of labor among postnatal mothers at Government Medical College and Hospital, Tiruvannamalai using a quasi experimental design. 30 women were selected in which 15 was in the study group and 15 women in the comparison group by means of convenient sampling. Pain level was measured by numerical rating scale. The study reflected that in experimental group 11 (73.3%) of the mother were having moderate pain, 4 (26.7%) had severe pain, and in control group 12 (80%) had moderate pain, 3 (20%) had severe pain.<sup>185</sup>

It also supported by a randomized controlled trial conducted at department of obstetrics, Sri Ramachandra Hospital with a sample size of 250 primigravida, 125 in each group, allotted using lot. Study group underwent progressive muscle relaxation whereas comparison batch underwent routine care. Results showed, state anxiety in the pretest, 36 (28.8%) in the PMR group and 41(32.8%) in the comparison batch had mild anxiety. 89 (70.2%) in the PMR and 84(67.2%) in comparison batch had moderate anxiety. No significant difference was found between groupson state anxiety. In the posttest, 22 (17.9%) in PMR group and 9(7.2%) in the comparison group had mild anxiety, 97 (78.9%) in the PMR and 84 (67.2%) in the comparison group had moderate anxiety and 4 (3.2%) in the PMR group and 32 (25.6%) in comparison batch had severe anxiety. The batches had a remarkable difference exhibited by chi square value of 17.80 with  $p < 0.001$ . Regarding pregnancy outcome with regard to mode of delivery 90 (74.2%) in the study group and 61(49.6%) in comparison batch had normal vaginal delivery, 27 (21.8%) in the study group and 50 (40.7%) in comparison batch had a caesarean section. Comparison between the study and the control group showed that there was a statistical significance in the mode of delivery at  $p < 0.001$ . In relation to APGAR score of newborn, 120(98.3%) in the study group and 110(89.4%) in comparison batch had APGAR score of 7-10 score. 2



(1.7%) in the study group and 10 (8.2%) in comparison batch had APGAR of 4-6, none of the babies in the study group and 3 (2.4%) in comparison batch had APGAR score of 0-3.<sup>186</sup>

### **5.2.3: Effectiveness of doula care on level of pain, anxiety, and labor outcome among parturient between the control and interventional group.**

#### **1. Pain**

After routine hospital care among parturient in control group, 0 (0%) of the parturient had no pain, 3 (3.0%) had mild pain and 13 (13.0%) of them had moderate pain, 71 (71%) of them had severe pain score and 13 (13%) of them had worst pain score.

After administration of doula care along with routine hospital care among parturient in the interventional group, 0 (0%) none of the parturient had no pain, 17 (17.0%) of them had mild pain, and 45 (45%) of them had moderate pain, 33 (33%) of them had severe pain and 5 (5%) of them had worst pain.

Chi square test was used to test statistical significance  $\chi^2=40.28$ , it showed very high Significant difference in the pain level among parturient between control group and interventional group at  $p=0.001$  level.

The mean pain score for the interventional group was 6.27, and for the control group the mean pain score was 7.85. On an average, interventional group were reduced 15.8% of severity pain score than control group. Differences between posttest pain scores of control and interventional group were analyzed using proportion with 95% CI and mean difference with 95% CI.

#### **2. Anxiety**

After routine hospital care in control group, 0 (0%) of the parturient had no anxiety, 21 (21.0%) of them had mild anxiety and 63 (63.0%) of them had moderate anxiety, 16% of them had severe anxiety.

After administration of doula care along with routine hospital care in the interventional group 0 (0%) of the parturient had no anxiety, 53 (53.0%) of them had mild anxiety and 40 (40.0%) of them had moderate anxiety, 7 (7%) of them had severe anxiety. Chi square test was used to test statistical significance  $\chi^2=22.49$ , which showed very high significant difference in the level of anxiety among parturient between control and interventional group at  $P=0.001$  level.

The mean anxiety score for the interventional group was 43.63, and for the control group the mean anxiety score was 52.28. On an average, interventional group were reduced 10.8% of anxiety score than control group. Differences between posttest anxiety scores of control and interventional group were analyzed using proportion with 95% CI and mean difference with 95% CI.

### **3. Labor outcome**

After routine hospital care among parturient in comparison batch, 35 (35%) of them had good labor outcome, 52 (52.0%) of them had average labor outcome, and 13 (13.0%) of them had poor labor outcome.

After administration of doula care along with routine care among parturient in the interventional group 54 (54%) of them had good labor outcome, 41(41.0%) of them had average labor outcome and 5 (5.0%) of them had poor labor outcome. Chi square test was used to test statistical significance.  $\chi^2=8.91$  showed highly significant difference in the level of labor outcome among parturient between control and interventional group at  $P=0.01$  level.

The mean labor outcome score for the interventional group was 14.49, and for the control group the mean labor outcome score was 18.86. On an average, interventional group were promoted 13.2% of labor outcome score than control group,

Differences between posttest labor outcome scores of control and interventional group were analyzed using proportion with 95% CI and mean difference with 95% CI.

#### **4. Effectiveness of doula care**

In order to find out the effect of doula care on pain, anxiety, labor outcome among primi parturient between control group and interventional group student independent “t” test was done.

Regarding pain the mean score was 6.27 and the standard deviation was 2.09 in the interventional group, whereas in the control group the mean score was 7.91 , standard deviation was 1.65 , mean difference was 1.64, obtained “t” value was 6.16 which shows a notable difference at  $p=0.001$  level.

Regarding anxiety the mean score was 43.63 and the standard deviation was 9.84 in the interventional group, whereas in routine care group the mean score was 52.28 , standard deviation was 10.49 , mean difference was 8.65, obtained “t” value was 6.01 which shows a significant difference at  $p=0.001$  level

Regarding labor outcome the mean score was 14.49 and the standard deviation was 4.05 in the interventional group, whereas in comparison group the mean score was 18.86 , standard deviation was 4.07 , mean difference was 4.37, obtained “t” value was 7.60 which was significant at  $p=0.001$  level.

These findings revealed that there was statistically very high significant difference in the mean scores of pain, anxiety, labor outcome among parturient between control and interventional group. This significance difference was due to the intervention on doula care along with routine care which was given to the parturient of interventional group. This proved that doula care was effective among parturient on labor to reduce pain, anxiety and to promote labor outcome.

Hence hypothesis H<sub>1</sub> (There is a significant difference in the post test scores of pain, anxiety and labor outcome among the parturient between control group and interventional group) was supported.

These findings were supported by a study undertaken by Mirjaveh, among 150 primiparous women who were selected using a simple random sampling. They were further divided into two groups; one group with doula support (n=75) and one comparison batch without doula support (n=75). The comparison batch received routine care and the doula group had an untrained doula from beginning of labor to the end of the second stage of labor. Pain was measured in both groups by means of a Visual Analogue Scale. The findings revealed that there was a difference between both the groups in the duration of labor, level of pain, and anxiety. The mothers in the doula care group had lesser pain, lesser duration of labor, and reduced need for caesarean section.<sup>187</sup>

This was also supported by Sanestani G, Khatiban M, Pourolajal J, Oshvandi K, in their study on influence of doula on the primi parturient's level of anxiety in the delivery ward, Iran, with the study design of randomized interrupted time series with a control group by convenience sampling 64 parturient randomly assigned to control and experimental group. Doula support given to experimental group with routine care, control group received only routine care, data were collected using state trait anxiety inventory and checklist. Results showed the age, education, family income, location of residency, the trait did not have any differences between 2 groups at the baseline. After intervention the state anxiety was reduced significantly in the experimental group compared with control group at the time of leaving the labor room, deliver room, recovery room (p=0.001) and this study concluded that doula can

significantly reduce the anxiety level and its complications among parturient during childbearing.<sup>188</sup>

The findings were congruent with the study findings of Langer A, who evaluated the effect of psychosocial support on labor outcome. Social support was provided to women in the interventional group, while women in comparison group received routine care. 724 mothers with a single fetus participated. Findings concluded that the social support group had higher degree of control over the delivery experience (79.8% Vs 77%), lesser duration of labor than the comparison group (4.56 hrs Vs 5.58 hrs), the frequency of exclusive breast feeding 1 month afterbirth was higher in the social support group (12%Vs7%).<sup>189</sup>

#### **5.2.4:Correlation between pain, anxiety and labor outcome among parturient in the control and interventional group.**

To find out the correlation between the dependent variables i.e. pain, anxiety, and labor outcome Karl Pearson correlation coefficient was calculated and the findings are quoted below.

##### **1. Control group**

Regarding the correlation between pain and anxiety, the mean score of pain level was 7.85 with a standard deviation of 1.51, the mean score of anxiety was 52.28 with a standard deviation of 10.50. obtained 'r' value was 0.46, denoted pain and anxiety were moderately related at p=0.01 level. Hence it revealed that as the pain level increases anxiety level also increase among parturient during labor.

Regarding the correlation between pain and labor outcome, the mean score of pain level was 7.85 with a standard deviation of 1.51, the mean score of labor outcome was 18.86 with a standard deviation of 4.08. Obtained 'r' value was -0.42,

denoted pain and labor outcome were moderate negatively related at  $p=0.01$  level. This negative correlation denotes that as the pain level increases labor outcome decreases (in this study lesser outcome denotes good labor outcome as per the grading of the labor outcome tool), hence it could be interpreted that effective uterine contractions (pain) promotes the labor outcome among parturient during labor.

Regarding the correlation between anxiety and labor outcome, the mean score of anxiety level was 52.28 with a standard deviation of 10.50; the mean score of labor outcome was 18.86 with a standard deviation of 4.08. Obtained 'r' value was 0.45, denoted anxiety and labor outcome were moderately related at  $p=0.01$  level. This positive correlation denotes that as the anxiety level increases labor outcome score also increases, (high score of labor outcome denotes poor outcome based on grading of the tool labor outcome), hence it could be interpreted that severe anxiety may inhibit the progress of labor among parturient during labor.

## **2. Interventional group**

Regarding the relationship between pain and anxiety, the mean score of pain level was 6.27 with a standard deviation of 2.09, the mean score of anxiety was 43.63 with a standard deviation of 9.84. Obtained 'r' value was 0.46, denoted pain and anxiety were moderately related at  $p=0.01$  level. Hence it revealed that as the pain level increases anxiety level also increase among parturient during labor.

Regarding the correlation between pain and labor outcome, the mean score of pain level was 6.27 with a standard deviation of 2.09, the mean score of labor outcome was 14.49 with a standard deviation of 4.05 obtained 'r' value was -0.50, denoted pain and labor outcome were moderate negatively related at  $p=0.01$  level. This negative correlation denotes that as the pain level increases labor outcome decreases (in this study lesser outcome denotes good labor outcome as per the grading

of the labor outcome tool), hence it could be interpreted that effective uterine contractions (pain) promotes the labor outcome among parturient during labor.

Regarding the correlation between anxiety and labor outcome, the mean score of anxiety level was 43.63 with a standard deviation of 9.84, the mean score of labor outcome was 14.49 with a standard deviation of 4.05. Obtained 'r' value was 0.44, denoted anxiety and labor outcome were moderately related at  $p=0.01$  level. . This positive correlation denotes that as the anxiety level increases labor outcome score also increases, (high score of labor outcome denotes poor outcome based on grading of the tool labor outcome), hence it could be interpreted that severe anxiety may inhibit the progress of labor outcome among parturient during labor.

These findings from both the control and interventional group indicated that pain, anxiety and labor outcome were moderately related to each other among parturient in the interventional and control group.

Hence hypotheses H2-(There is a significant relationship between pain, anxiety and labor outcome among parturient of control group) and

H3- (There is a significant relationship between pain, anxiety and labor outcome among parturient of interventional group) were supported

This study was supported by study done by Debajani Nayak ,Sharada Rastogi, Om Kumari Kathuria,on to assess the effect of massage on apprehension and pain and discomfort among primipara mothers during the first stage of labor, in selected hospitals of Odisha. The study used a quasi experimental design - one group pre-test post-test design. The sample comprised of 30 primipara mothers and was purposively selected. Mean post-test (50.06) and pre-test (59.23) anxiety scores differed significantly from each other in the experimental group. Similar trend was followed in case of pain perception scores (posttest score 6.27; pretest score 7.8). Further, a

significant correlation ( $r= 0.8192$ ) was obtained between anxiety and level of pain perception scores. Findings of the study revealed that massage therapy would be very helpful in alleviating anxiety level and pain perception in primipara mothers during first stage of labor.<sup>190</sup>

This study finding was congruent with a study conducted by Pirdel M on perceived environmental stressors and pain perception during labor among women at Tabriz Alzahra hospital. 600 mothers were randomly selected and were asked to fill a 40 item demographic questionnaire and particulars related to stressors and pain. There was a notable positive correlation between pain and labor stress due to environmental factors among primi mothers as compared with multipara mothers.<sup>191</sup>

Rajabi and his friends conducted a study in the year 2012 to determine the correlation between anxiety during labor and duration as well as outcome of delivery in women referring to hospitals affiliated to Shahid Behshti medical university and Shahid Akbarabadi hospital. A descriptive correlational design was used. 200 women were selected in a multi stage quota sampling in each hospital. Tools used were demographic and obstetrical questionnaire, Spielberg's state trait anxiety inventory and a check list regarding the condition of parturient during hospitalization. Findings were most women experienced moderate anxiety (53%/ 5), mean of total time of delivery was 250/87 150/37 min, (94%/5) was normal delivery, and concluded that no significant correlation found between anxiety and outcome of labor.<sup>192</sup>



## **5.2.5: Association between pain, anxiety, labor outcome and socio demographic, clinical variables among parturient in the control and interventional group.**

### **1. Control group**

In order to determine the association between the post test score of pain and the socio demographic and clinical variables a chi square analysis was done and details given below.

#### **1.1.Pain**

Among socio demographic variables age of the parturient ( $\chi^2=28.967$   $p=0.001^{***}$ ) had very high significant association with pain i.e. Elder age group parturient had less pain than younger parturient, it may be due to the age maturity elder parturient able to cope up with pain better than younger parturient.

Among clinical variables, history of complications ( $\chi^2=18.57$   $p=0.01^{**}$ ) had high significant association with pain score i.e. parturient those who did not have the history of complications had less pain than those who had a history of complications during pregnancy, it may be assumed that the history of complications may have influence over the pain level during labor.

#### **1.2.Anxiety**

Among socio demographic variables, age of the parturient ( $\chi^2=13.39$   $p=0.04^*$ ) and occupation of the parturient ( $\chi^2=21.19$   $p=0.01^{**}$ ) had significant association with anxiety score i.e. parturient between 21-30 yrs had less anxiety, it may be because younger parturient may felt that they are on safer labor pertaining to their age when comparing with elder parturient and who were daily wage laborers had less anxiety when compared with others, hence it could be interpreted that daily wage laborers were hard workers and able to adopt with the labor process effectively.

Among clinical variables, nature of parturient ( $\chi^2=8.12$   $p=0.01^{**}$ ) and history of complications ( $\chi^2=10.65$   $p=0.01^{**}$ ) had high significant association with anxiety score i.e. sportive parturient and those who did not have any history of complications had less anxiety than others, hence it can be inferred that nature of parturient plays a role in labor process and the parturient with the history of complications may have fear and anxiety about interference of existing complications on labor.

### **1.3.Labor outcome**

Among socio demographic variables type of work ( $\chi^2=12.52$   $p=0.01^{**}$ ) had high significant association and type of family ( $\chi^2=11.24$   $p=0.02^*$ ) had significant association with labor outcome i.e. Parturient who were moderate workers and those who hailed from joint families had good labor outcome than others, hence it was assumed that moderate workers due to their nature of work they coped up with labor process effectively than other type of workers and the parturient from joint families may had support and care during pregnancy from their family members which may indirectly influenced their labor.

Among clinical variables history of complications ( $\chi^2 =5.99$   $p=0.05^*$ ) and history of abortion ( $\chi^2=5.99$   $p=0.05^*$ ) had significant association with labor outcome i.e. Parturient who had no history of complications and no history of abortion had good labor outcome. Hence it was assumed that history of complications and history of abortion may have impact over the labor process.

## **2. Interventional group**

### **2.1.Pain**

Among socio demographic variables, age of the parturient ( $\chi^2=21.49$   $p=0.01^{**}$ ) had high significant association and type of work ( $\chi^2=12.99$   $p=0.05^*$ ) had significant association with pain level, i.e. parturient who belonged to younger age

group (<20 years) and those who did strenuous work had less pain than others. Hence it can be assumed that younger parturient able to cope up with labor pain effectively than other age group parturient and strenuous/moderate workers due to their nature of work they coped up with labor process effectively than sedentary workers.

Among clinical variables weight of the parturient ( $\chi^2=14.59$   $p=0.02^*$ ) had significant association and history of complications ( $\chi^2=38.79$   $p=0.001^{***}$ ) had very high significant association with pain score i.e. Parturient who had weight between 50 -70 kg and no history of complication had less pain than others. Hence it can be assumed that moderate body built parturient able to cope up with labor pain well than the parturient with over and less weight and history of complications may have influence over the pain level during labor.

## **2.2 Anxiety**

Among socio demographic variables age of the parturient ( $\chi^2=15.64$   $p=0.01^{**}$ ) and type of family ( $\chi^2=11.38$   $p=0.02^{**}$ ) had high significant association with anxiety level i.e. the parturient between the age of 20- 25 years and who lived in joint families had lesser anxiety than others, it may be because younger parturient may felt that they are on safer labor pertaining to age when comparing with elder parturient and parturient from joint families may have secured feeling which implies anxiety level of the parturient.

Among clinical variables, gestational weeks of the parturient ( $\chi^2=6.76$   $p=0.03^*$ ) had significant association and history of complications ( $\chi^2=11.29$   $p=0.01^{**}$ ) had high significant association with the anxiety score i.e. Parturient between 37 -40 wks of gestation and who did not have history of complications had lesser anxiety than others. Hence it could be interpreted that parturient who were post dated may have tension pertaining to progress of labor

which in turn may increase their anxiety level and parturient with history of complications may have fear and anxiety about interference of existing complications on labor.

### **2.3. Labor outcome**

Among socio demographic variables type of work ( $\chi^2=12.52$   $p=0.01^{**}$ ) had high significant association and type of family ( $\chi^2=11.24$   $p=0.02^*$ ) had significant association with labor outcome i.e. Parturient who were moderate workers and those who hailed from joint families had good labor outcome than others. Hence it can be referred that elder parturient may have delay in progress of labor due to their age maturity and strenuous/moderate workers due to their nature of work they coped with labor process effectively than sedentary workers.

Among clinical variables, gestational weeks of the parturient ( $\chi^2=6.69$   $p=0.03^*$ ) had significant association, history of complications ( $\chi^2=24.04$   $p=0.01^{**}$ ) and history of abortion ( $\chi^2=10.70$   $p=0.01^{**}$ ) had high significant association with the labor outcome i.e. Parturient with 37 -40 wks of gestation, no history complications and no history of abortion had good labor outcome than others. Hence it could be interpreted that post dated delivery may have delay in progress of labor than the normal full term delivery and history of complications and abortion may have the impact over the labor process.

These findings denoted that there was an association between the pain, anxiety, labor outcome with selected socio demographic, clinical variables among parturient of control and group and interventional group.

Hence Hypotheses H4 -There is a significant association between pain, anxiety, labor outcome among parturient and selected socio demographic variables, clinical variables in the control group.

H5- There is a significant association between pain, anxiety, labor outcome among parturient and selected socio demographic variables, clinical variables in the interventional group were supported.

These findings were congruent with a study done by Shrestha I, Pradhan N, sharma J in their descriptive study conducted in Tribhuvan University Teaching Hospital (TUTH), Kathmandu, Nepal where 300 term parturient who were in labor with cervical dilatation of 3-5 cm with three uterine contractions in 10 minutes which lasted for more than 30 sec were analyzed for socio-demographic data, clinical profile and pain assessment. Visual analog scale was used for pain assessment. Results showed, the intensity of labor pain was graded as severe by 32%, moderate by 57% and mild by 11% of parturient. Almost half of the parturient in the age group of  $\leq 19$  years described labor pain as severe as compared to women between 20-34 years (30.4%) and  $\geq 35$  years (20%). Among the nulliparous parturient, 37% described it as severe compared to only 20.7%. In those with  $\geq$  higher secondary level education, 35.9% described labor pain as severe as compared to those women who had education of  $\leq$  primary level (26.9%) and up to secondary level (27.1%). Labor pain was seems to be more severe in advanced labor with more than half describing it as severe when the cervix was dilated to 5 cm, as compared to only 25.9% and 29.4% of the parturient at 3 and 4cm cervical dilatation respectively. This study concluded that the labor pain was moderate to severe for majority of the parturient.<sup>193</sup>

A similar study conducted by Johnson A, Obuna, Odidika Ugochukwu J on Perception of labor pain and utilization of obstetric analgesia by Igbo women of Southeast Nigeria, This was a cross-sectional study that spanned 6 months (January 1, to June 30, 2011) and involved parturient who delivered by vaginal route in 3 different referral hospitals. They were interviewed with self-administered

questionnaires within the first 24-48 hours postpartum. Labor pains were rated using a 3-point verbal rating scale (VRS). Results showed a total of 530 parturient were interviewed but only 500 were analyzed. Fifty-two percent of parturient rated labor pain as severe. While 67.6% of parturient desired labor pain alleviation, only 38% actually requested for analgesia, and only 27% of parturient received pain relief during labor. The commonest pain relief available was intramuscular injection of Pentazocine Hydrochloride (92.6%) The influence of age, parity, educational status, maternal weight and companionship, on pain perception was statistically significant.<sup>194</sup>

The findings were supported by the descriptive co relational study on anxiety level and its related factors in the last trimester hospitalized pregnant women conducted by ZhanYinping, Zhang Donghua, YueYafei, China concluded that anxiety levels of pregnant women with some complications are higher than those of with no complications and some factors including pregnant age, time of delivery, expectation to a baby's gender, post partum care had association with the level of anxiety.<sup>195</sup>

## CHAPTER VI

### SUMMARY, RECOMMENDATIONS AND CONCLUSION

Labor is often described as the most intense pain ever experienced; it is the aspect of childbirth most feared by the expectant mother. Pain and its relief for women in labor has been a subject of interest since the dawn of mankind. Pain during childbirth is generally handled with pharmacological techniques. Complementary, non-pharmacologic methods of pain relief are a part of nursing practice that can be safely introduced in early labor.<sup>115</sup>

Understanding and responding to women's beliefs and attitudes during the childbearing period is an important focus of international maternity health policy. The psychosocial wellbeing of women is now viewed as equally important as her physical wellbeing.<sup>196</sup>

Labor in a clinical environment may undermine women's feelings of competence, perceptions of labor, confidence in adapting to parenthood and initiation of successful breastfeeding. These effects may be reduced by the provision of additional companionship (doula) during labor aimed to promote self-esteem.<sup>172</sup>

#### **Doula services internationally**

In the USA, DONA International, the world's oldest and largest organization of doulas, was founded in 1992 by a small group of some of the foremost experts in childbirth. DONA International now has over 7000 members around the world.

In the UK, doulas are an accepted part of maternity services. Some National Health Service (NHS) hospitals employ doulas and other has doulas as authorized volunteers, coming onto wards to support new mothers. Doula UK founded in 2001 and it has regular meetings with the Royal College of Midwives and is represented at

Parliamentary Group meetings. Doula UK and some charities provide a free service of support for vulnerable women in the UK.

In Poland, doulas are "regulated" and recognized by the government since January 2015, with the Doula in Poland Association being registered in the National Court Register as a Non-Governmental Organization (NGO) created to unite and educate doulas.

Around Europe, laws, policies and practices vary that affect a woman's ability to choose where she gives birth, with which medical attendants (or none) and with whom to support her. In France, a doula can be at birth at home only if a midwife or doctor is present and in other countries, birthing at home with midwives may not be possible. In contrast in the UK, women have the legal right to birth at home if they wish, either with midwives or unattended, whether or not a doula (who is not a medical attendant) is present. In the Netherland and some European countries, it is standard to allow at least 2 birth partners for a woman in labor, whereas other countries, including Spain and Poland, often make a woman choose only 1 birth partner. Sadly some public hospitals in Turkey will not allow anyone to support the birthing woman.<sup>197</sup>

Lexington Medical Center in West Columbia, SC, has been using doula care since 1994. Doulas are paid approximately 250 dollars per birth, of which mothers pay 50 dollars and the hospital pays 200 dollars. Most of the doulas work through organizations in the community or as independent practitioners and few of them work on call, and a mother in labor woman is unaware who will attend her in labor process. A substitute doula is always available if more than 1 birth occurs simultaneously. Efforts are in the process of incorporating social support during childbirth into obstetrical care. Almost all the countries are planning to institutionalize a new



professional figure an extensively trained “mother’s assistant,” who fulfills the role of doula.<sup>87</sup>

### **Doula services in India**

The baby center, a nonprofit organization, India quoted “A doula is a paid birth partner who supports the mother during labor and birth. You would have a doula in addition to a doctor, not instead of one.”<sup>198</sup>

Now a days, Hospitals in India allowing support person during labor with women’s choice. In our country, doulas tend to be experienced mums (mother, mother in law, sisters, friends). Their role is to support labor women in labor.

The service of a doula is relatively new to India. However, the practice of having a doula support is becoming an increasingly popular trend in large cities in India. Currently, there are only a few doulas in the cities, India and most are from abroad.

Lina Buncam, midwife from England, has been a doula for the last 11 years, and she is practicing in Mumbai for the last two-and-a-half years. According to her, doulas are slowly becoming popular in the city and hospitals are allowing their patients to bring doula. Lina has assisted labors in Breach Candy Hospital, Chrysalis Hospital (Khar) and Kokilaben Ambani Hospital.

Childbirth and Postpartum Professional Association (CAPP), India headed by Sonali shivlani, a non-profit organization offering training courses for doula, child birth educator and lactation educator.<sup>88</sup>

Shruti Saxena, doula trained from USA and now through Fortis la femme, Delhi providing doula services and conducting child birth classes for pregnant women.<sup>199</sup>

Divya Deswal, A certified Childbirth Educator and Hypnobirth Practitioner at Delhi offering doula services and child birth preparation classes.

Nora Kropp, A certified Professional Midwife at Bangalore offering doula services.<sup>200</sup>

Birthing Sanctuary, a sacred birth and educational center in Goa, India. It offers Ayurvedic doula course, it is a specialized doula course focusing ways to nurture women internally and externally, including nutrition, oils, massage, herbal baths and fumigations.<sup>199</sup>

Kachina Chawla, a resident of Delhi told, Due to the paucity of time, distance and varied commitments also make it difficult for mothers, sisters and friends, even though they willing to provide labor support. So women today can look forward to doula support during labor.

Shivani Sharma, an Andheri resident who gave birth to her daughter Janvi last December, used the services of a doula said, “It made the entire process so much simpler. Lina, professional midwife as my doula, was there throughout. However, doulas may not be affordable for all as they charge up to Rs10,000 per delivery.

Some doulas continue to support mother for the first days and weeks after baby is born. A doula will charge a specific fee for helping the mother during the birth. The rate will differ from doula to doula depending on her experience and training, what her services cover and your location. Some of them work on birth packages, which may include third trimester visits and labor and birth services. Others offer a full birth and postnatal package, which may involve postnatal visits.<sup>88</sup>

In India doula is an emerging profession, based on WHO recommendations continuous support with women’s choice is permitted during labor and child birth in

many developed hospitals of India. But utilization of this service by the labor women is minimal due to lack of awareness among people.

For nurse midwife doula services create yet another career opportunity as independent nurse practitioner. The costs of doula services, where available, are usually passed on to the mother's family. These costs could be a barrier to the provision of continuous support. Considering all the advantages and possible lower costs to the health system associated with the presence of a doula (less likelihood of cesareans sections and analgesia use), covering the cost of doula services should be considered by policy-makers. Programmes for training and accreditation of doulas should be available in all regions of the country. Courses and programmes can be offered by public hospitals and primary health services for training community doulas.<sup>37</sup>

### **6.1. Summary of the study**

This present study was undertaken to assess the effectiveness of doula care on pain, anxiety and labor outcome among parturient in selected hospitals of Theni District.

A quantitative evaluative approach with quasi experimental post test only design was applied to this study. The study was conducted in Holy redeemer maternity hospital, Theni. 200 primi parturient, who fulfilled the inclusion criteria, were selected by non probability convenience sampling technique. Data collection was based on interview technique and observation method.

Extensive review of literature and views of experts enhanced the development of the tool. The tools used in this study were demographic variables, standardized numerical pain rating scale, standardized state anxiety scale, and questionnaire on labor outcome.

The tools used for the study were universally accepted standardized tools and clinically tested. 3<sup>rd</sup> tool i.e. questionnaire on labor outcome was prepared by the researcher. Validity was done by giving the tool and the intervention to 14 experts in the field of nursing, obstetrics and gynecology, psychology and statistics. Based on their suggestions necessary modifications were made in the socio demographic variables.

Doula care was developed by the researcher for based on perceived needs of parturient and extensive review literature and it was validated by nursing experts, gynecologist, and psychologist.

In order to test the feasibility of the study a pilot study was conducted among 20 parturient (10 in the control and 10 in the interventional group) at Krishnammal Memorial hospital, Theni, from August 2013-October 2013. Data was analyzed and findings suggested that the study was feasible and practicable.

Data was collected from December 2013 to February 2015, at Holy redeemer hospital, Theni. Permission was obtained from the study centre, and the objectives of the study were explained to the administrator, and other faculty including the health care workers who were posted in the labor wards before starting the data collection. Samples were selected by convenience sampling technique. The participants were explained about the study and were assured of confidentiality of the data collected. Then oral and written consent were got from participants. First 100 parturient were selected conveniently by the researcher and were assigned as control group. After admission to the hospital socio demographic data was collected, and then they underwent routine care as per the hospital policy. The researcher assessed the level of pain, anxiety during late active phase of first stage labor, and labor outcome was

assessed during labor and immediate post partum period. The researcher taught about doula care to the control group to practice for future delivery.

Next 100 parturient grouped as interventional group. For the interventional group, Doula care was given along with routine care from latent phase of 1st stage of labor till immediate postpartum period.( until 1 hr after delivery ). In doula care the investigator started with walking, standing with back of the wall alternatively, then breathing exercises and back massage given alternatively, lastly squatting position and effleurage massage given alternatively, all above mentioned comfort measures intermittently given to the parturient in a view of her comfort, and the researcher as a doula continuously with the parturient gave positive regards, reassurance, emotional and psychosocial support throughout the labor. After the intervention pain and anxiety were assessed during late active phase of first stage of labor, and labor outcome observed during labor and immediate post partum period. Data were analyzed by descriptive and inferential statistics.

#### **6.1.2. Summary of the study findings**

1. The findings of the study showed that there was a notable decrease in level of pain, anxiety and improvement in the level of labor outcome between control and interventional group, which proved that doula care was effective among parturient.
2. Regarding pain the mean score was 6.27 and the standard deviation was 2.09 in the interventional group, whereas the control group mean score was 7.91, standard deviation was 1.65 , mean difference was 1.64, obtained “t” value was 6.16 which shows significance at  $p=0.001$  level.
3. Regarding anxiety the mean score was 43.63 and the standard deviation was 9.84 in the interventional group, whereas in the control group the mean score

was 52.28 , standard deviation was 10.49 , mean difference was 8.65, obtained “t” value was 6.01 which shows significance at  $p=0.001$  level.

4. Regarding labor outcome the mean score was 14.49 and the standard deviation was 4.05 in the interventional group, whereas in the control group the mean score was 18.86 , standard deviation was 4.07 , mean difference was 4.37, obtained “t” value was 7.60 which shows significance at  $p=0.001$  level.
5. Regarding the correlation between pain and anxiety, in the control group, the mean score of pain level was 7.85 with a standard deviation of 1.51, the mean score of anxiety was 52.28 with a standard deviation of 10.50. obtained ‘r’ value was 0.46, denoted pain and anxiety were moderately related at  $p=0.01$  level.
6. Regarding the correlation between pain and labor outcome, in the control group, the mean score of pain level was 7.85 with a standard deviation of 1.51, the mean score of labor outcome was 18.86 with a standard deviation of 4.08. Obtained ‘r’ value was -0.42, denoted pain and labor outcome were negatively related at  $p=0.01$  level.
7. Regarding the correlation between anxiety and labor outcome, in the control group, the mean score of anxiety level was 52.28 with a standard deviation of 10.50, the mean score of labor outcome was 18.86 with a standard deviation of 4.08. Obtained ‘r’ value was 0.45, denoted anxiety and labor outcome were moderately related at  $p=0.01$  level.
8. Regarding the correlation between pain and anxiety, in the interventional group, the mean score of pain level was 6.27 with a standard deviation of 2.09, the mean score of anxiety was 43.63 with a standard deviation of 9.84. Obtained ‘r’ value was 0.46, denoted pain and anxiety were moderately related at  $p=0.01$  level.

9. Regarding the correlation between pain and labor outcome, in the interventional group, the mean score of pain level was 6.27 with a standard deviation of 2.09, the mean score of labor outcome was 14.49 with a standard deviation of 4.05 obtained 'r' value was -0.50, denoted pain and labor outcome were moderate negatively related at  $p=0.01$  level.
10. Regarding the correlation between anxiety and labor outcome, in the interventional group, the mean score of anxiety level was 43.63 with a standard deviation of 9.84, the mean score of labor outcome was 14.49 with a standard deviation of 4.05. Obtained 'r' value was 0.44, denoted anxiety and labor outcome were moderately related at  $p=0.01$  level.
11. In the control group, pain had high significant association with age of the parturient. ( $\chi^2=28.967p=0.001^{***}$ ). i.e. elders had less pain than younger parturient. And also pain score had high significant association with history of complications. ( $\chi^2=18.57p=0.01^{**}$ ) i.e. parturient those who did not have history of complications had less pain than those who had a history of complications during pregnancy
12. In the control group, age of the parturient. ( $\chi^2=13.39p=0.04^*$ ) had significant association and occupation of the parturient ( $\chi^2=21.19p=0.01^{**}$ ) had high significant association with anxiety. i.e. parturient between the age of 21-30 yrs and daily wages were felt less anxiety than others, and also anxiety score had high significant association with ( $\chi^2=8.12p=0.01^{**}$ ) nature of parturient and with the history of complications ( $\chi^2=10.65p=0.01^{**}$ ). i.e. sportive parturient and those who did not have the history of complications had less anxiety than others.

13. In the control group, type of work ( $\chi^2=12.52$   $p=0.01^{**}$ ) had high significant association and type of family ( $\chi^2=11.24$  $p=0.02^*$ ) had significant association with the labor outcome score i.e. Parturient who had moderate work and who belonged to joint families were had good labor outcome than others and also history of complications ( $\chi^2=5.99$  $p=0.05^*$ ) and history of abortion ( $\chi^2=5.99$   $p=0.05^*$ ) had significant association with labor outcome score, i.e. parturient who had no history of complications and no history of abortion were had good labor outcome.
14. In the interventional group, age of the parturient ( $\chi^2=21.49$   $p=0.01^{**}$ ) had high significant association and type of work ( $\chi^2=12.99$   $p=0.05^*$ ) had significant association with the level of pain, i.e. younger and strenuous parturient had less pain than others. And also pain score had significant association with weight of the parturient ( $\chi^2=14.59$   $p=0.02^*$ ) and history of complications ( $\chi^2=38.79$  $p=0.001^{***}$ ) had very high significant association. i.e. parturient who had weight between 50 -70 kg and no history of complication had less pain than others.
15. In the interventional group, age of the parturient ( $\chi^2=15.64$  $p=0.01^{**}$ ) and type of family ( $\chi^2=11.38$   $p=0.02^{**}$ ) had high significant association with the level of anxiety i.e. the parturient between the age of 20- -25 years and joint families had less anxiety than others. Among clinical variables, gestational weeks of the parturient ( $\chi^2=6.76$   $p=0.03^*$ ) had significant association and history of complications ( $\chi^2=11.29$  $p=0.01^{**}$ ) had high significant association with the anxiety score i.e. parturient between 37 -40 weeks of gestation and no history complications had less anxiety than others.



16. In the interventional group, age of the parturient ( $\chi^2=26.75p=0.001^{***}$ ) had very high significant association, type of work ( $\chi^2=11.62 p=0.02^*$ ) and type of family ( $\chi^2=11.29p=0.02^*$ ) had significant association with the labor outcome score i.e. Parturient between the age of 20 -25 years, moderate/strenuous workers and who belonged to joint families had good labor outcome than others. Among clinical variables, gestational weeks of the parturient ( $\chi^2=6.69 p=0.03^*$ ) had significant association, history of complications ( $\chi^2=24.04p=0.01^{**}$ ) and history of abortion ( $\chi^2=10.70 p=0.01^{**}$ ) had high significant association with the level of labor outcome i.e. parturient with 37 -40 wks of gestation, no history complications and no history of abortion had good labor outcome than others.

## **6.2.CONCLUSION**

### **The following conclusions were drawn from the present study based on findings**

1. The facts and statistical findings imply that adding doula care with routine care was found to be effective in reducing the pain, anxiety and in improving the labor outcome among primi parturient during labor.
2. None of the parturient in the study reported adverse effects due to doula care.
3. Doula care which was given to parturient during labor accepted universally and holistically, hence it could be added into the treatment regimen which addresses the feasibility of the intervention in Indian scenario.
4. Doula care made the parturient to involve actively in child birth process, hence their maternal satisfaction on labor promoted.
5. Doula care met both physical and psychological needs of the parturient.
6. Doula care filled the gap between the parturient and midwives.

### **6.3. Limitations of the study**

1. The sample size was relatively small and also the subjects were from a selected hospital at Theni, which imposes limits on generalization.
2. The assessment of pain and anxiety was based on self report of primi parturient that could not be counter checked.
3. Findings of the study could be generalized only to particular primi parturient not for all the parturient.
4. Among 217 primi parturient in the study, 7 (3.68%), 10 (4.60%) had discontinued due to lack of progress in labor, underwent emergency LSCS in the interventional group, control group respectively. hence the final sample was 200(100 in the control group and 100 in the interventional group). The data analysis done for 200 subjects.

### **6.4. Impact of the study**

Labor support includes continuous presence, emotional support (reassurance, encouragement, and guidance); physical comforting (assistance in carrying out coping techniques, use of touch, massage, heat and cold, hydrotherapy, positioning, and movement); information and guidance for the woman and her partner; facilitation of communication (assisting the woman to express her needs and wishes); and nonmedical information and advice, anticipatory guidance, and explanations of procedures. Terms such as "doula," "labor assistant," "birth companion," "labor support specialist," "professional labor assistant," and "monitrice" refer to providers of this type of support.<sup>26</sup>

In line of this view, the present study aimed to evaluate the effectiveness of doula care on pain, anxiety and labor outcome among parturient. This present study findings revealed significant difference in the level of pain, anxiety and labor outcome between control group and interventional group. The observed difference between two groups confirmed that doula care was effective.

## **6.5. Nursing Implications**

The results of this study have valuable implications for nursing education, practice and administration and research. The finding of the study provided empirical evidence to prove that doula care was effective for women in labor.

### **6.5.1. Nursing Practice**

1. Pain management is the fundamental right for the each human being.
2. Labor room is the area where parturient used to scream and cry with pain, nurses are the one who present with parturient all time but due to other responsibilities and shift changes one nurse can't be present with parturient throughout her labor process because the duration of labor last for more than 10 hours .
3. There is a gap between the nurses and parturient to meet their physical and psychological needs, due to the constraints such as lack of staff, charting, monitoring maternal and fetal wellbeing, caring other labor women etc.
4. Nurses as doula can intervene to alter the physical discomfort and psychological isolation which affects the adjustment by strengthening coping mechanisms
5. Nurses as doula play a vital role in helping parturient to adjust changes in the bodily function, to reduce pain and anxiety and promote their labor outcome by inculcating the concepts pain and anxiety management.
6. The findings gives awareness to the health care industry and to the public, that doula support promotes maternal involvement to cope up with labor process effectively.
7. A protocol on implementation of doula support for the parturient can be developed in all hospitals and community settings.

### **6.5.2. Nursing Education**

1. The findings of the study will help the nursing students to understand the availability of doula support which can be administered by nursing students without any adverse effects.
2. Doula care should be incorporated in the nursing curriculum of the undergraduate and postgraduate students.
3. Student nurses can conduct mass and individual health education programs to make public to aware about doula support.
4. Student nurses must be motivated to prepare and use tools on assessing pain and anxiety among parturient.
5. Student nurses can incorporate other complimentary therapies with doula care while dealing with parturient.

### **6.5.3. Nursing Research**

1. One of the aim of nursing research is to expand and broaden the scope of nursing.
2. Findings of this study will provide a base line data about pain, anxiety, labor outcome and implication of doula care. Hence it can be used for further studies in this area.
3. It is necessary to undertake more research in the field of doula support to achieve holistic care among parturient.
4. Nurse researcher should challenge to perform scientific work and take part in assessment, application, and evaluation of pain, anxiety and labor outcome among parturient.
5. Nurse researcher can compare with psychosocial adjustments on pain, anxiety and labor outcome among parturient to identify the differences and planning approaches to minimize those differences to achieve holistic nursing care.

#### **6.5.4. Nursing Administration**

1. Teaching about doula support for the parturient and nurses must be made mandatory in labor unit of hospital by the nursing administrator.
2. In service education can be conducted periodically by the nursing administrator in all the clinical areas to update about doula support.
3. Nurse administrators can prepare skilled nurses who can spend time with parturient throughout labor irrespective of the shift duty.
4. Nurse administrators can encourage nursing staff to focus contribution towards reduction of pain, anxiety and promotion of labor outcome among parturient and also to make contribution towards parturient maternal satisfaction.
5. Nurse administrator can motivate the staff to conduct several studies in their clinical set up on physical and psychosocial measures to deal with pain, anxiety among parturient.
6. Nurse administrator can impose the routine utilization of pain and anxiety assessment scale in the labor ward. Nurse administrator can make separate room or wing with trained staffs to educate the parturient about child birth preparation and make the parturient to aware about doula services antenatally.

#### **6.6. RECOMMENDATIONS**

1. A study using multipara parturient can be undertaken at various other settings.
2. A similar study can be done on large sample size and in different settings.
3. A comparative study can be conducted using a Nurse as a doula versus a family member as a doula.
4. Qualitative studies can be conducted to help the clients during labor especially in their psychosocial aspects.
5. A similar study can be conducted by using different interventional strategies of non pharmacological management during labor among parturient.
6. A similar study can be conducted with different population who suffer with pain and stress.
7. A comparative study can be conducted on complementary therapies versus doula support among parturient.

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# **ANNEXURES**

## **I. Letters Seeking Permission to conduct the study**

**FROM**

J.Kavitha  
69, Miranda line first cross street  
Theni

**To**

**The Administrator**

Holy Redeemer Hospital  
Theni

Respected Madam

I am pursuing Ph.D Nursing under The Tamilnadu Dr.M.G.R Medical university, Chennai registered through CSI Jeyaraj Annapackiam college of nursing, Madurai under the Guidance of Prof.Dr.A. Charles Stephen Rajasingh, M.s. M.ch , Research guide, CSI Jeyaraj Annapackiam college of nursing. As part of my curriculum I wish to do a Research study on “A study to evaluate the effectiveness of doula care on pain, anxiety, labor outcome among parturient in selected hospital of Theni”. I wish to do my data collection in Holy redeemer hospital, Theni. Hence I request you to kindly grant me permission to do the study in your esteemed institution. I assure you that I will abide by the Hospital protocols and policies during my course of the study. Kindly do the needful.

Thanking you in Anticipation

**Station: Theni**

**Date: 3.5.2013**

**Your's faithfully**

**kavitha. J**

**FROM**

J.Kavitha  
69, Miranda line first cross street  
Theni

**To**

**The Administrator**  
Krishnammal Memorial Hospital  
Theni

Respected Madam

I am pursuing Ph.D Nursing under The Tamilnadu Dr.M.G.R Medical university, Chennai registered through CSI Jeyaraj Annapackiam College of Nursing, Madurai under the Guidance of Prof. Dr. A. Charles Stephen Rajasingh, M.s. M.ch , Research guide, CSI Jeyaraj Annapackiam College Of Nursing. As part of my curriculum I wish to do a Research study on “A study to evaluate the effectiveness of doula care on pain, anxiety, labor outcome among parturient in selected hospital of Theni”. I wish to do my pilot study data collection in Krishnammal Memorial hospital, Theni. Hence I request you to kindly grant me permission to do the pilot study in your esteemed institution. I assure you that I will abide by the Hospital protocols and policies during my course of the study. Kindly do the needful.

Thanking you in Anticipation

**Station: Theni**

**Date: 3.5.2013**

**Your's Faithfully**

**kavitha. J**



## II - LETTERS GRANTING PERMISSION FOR CONDUCTING STUDY

**SR.VANDANA**  
*Administrator*

**HOLY REDEEMER HOSPITAL,**  
*Periyakulam Road,*  
*Theni – 625 531.*  
*Phone No.04546 – 252 502.*

---

*Theni,*

*21.06.2013.*

To

*Mrs. J.Kavitha M.Sc ( N),*  
*No.69,Miranda line 1<sup>st</sup> street,*  
*Theni – 625 531.*

***Sub:- Permission to do Ph.D Research study Data collection.***

*Dear Madam,*

*We are pleased to inform you that we agree to give permission to do the data collection regarding your study and research work of "DOULA CARE ON PAIN ANXIETY and LABOUR OUTCOME". Kindly arrange your timings and inform in advance about your presence with our patients.*

*Thanking you,*

*Your's faithfully*

*S. Vandana*

**ADMINISTRATOR**  
**HOLY REDEEMER HOSPITAL**  
**THENI - 625 531.**



**KMH**

# Krishnammal Memorial Hospital

293, Periyakulam Road, **THENI** - 625 531.

Phone : (04546) 252721, 250700, 260957. Fax : 252721

E-mail : kmh\_theni@yahoo.co.in

**Dr. R. SUGANTHI** M.B.B.S.,  
Reg. No. 38953

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ENDOSCOPY FACILITY  
CARDIAC ECHO FACILITY  
Treadmill Test  
Modern Operation Theatre  
24 hours Pharmacy Service  
A/c Room Bed Facilities  
Ambulance Service

To

Mrs.Kavitha.J

69, Miranda line I st Street

Theni.

Respected Madam,

With reference to your letter dated on 25/05/2013  
regarding data collection for your ph.D study , you are here  
by permitted to do data collection in our institution  
with best wishes.

Date: 26/05/2013

Place : Theni.

Signature,

Krishnammal Memorial Hospital

Manager

**The Power of Healing**

## INSTITUTIONAL ETHICAL COMMITTEE CLEARANCE CERTIFICATE

Minutes of the ethical committee meeting held on 30.04.2011 in C.S.I. Jeyaraj Annapackiam College of Nursing, Madurai. The research title, Doula care among parturient was approved by the committee and **Mrs. J. Kavitha, M.Sc (N)** is permitted to do the research under the Guidance of **Prof. Dr.A. Charles Stephen Rajasingh, M.S., M.Ch** and Co-Guidance of **Prof. Sumithra, M.sc(N),(Ph.D)** for the research work is provisionally registered from 01.07.2011 for your years as a part time candidate for research leading to the award of Doctor of Philosophy in Nursing in the broad field of Community Health Nursing to The Tamil Nadu Dr.M.G.R. Medical University, Chennai.

<b>1. Chairperson</b> Prof.Dr.A.Charles Stephen Rajasingh, M.S.,M.Ch., Medical Superintendent, Christian Mission Hospital, Madurai.	<b>6. Member Secretary</b> Prof.Dr.C. Jothi Sophia, M.Sc(N)., Ph.D., Principal, C.S.I. JeyarajAnnapackiam College of Nursing, Madurai.
<b>2. Co-Chairperson</b> Prof.Dr. K. Rajalakshmi, M.Sc(N)., Ph.D., Research Coordinator, C.S.I. JeyarajAnnapackiam College of Nursing, Madurai.	<b>7. Member-Clinician</b> Prof.Dr.P. Jeyasingh, M.D.,D.V.,Ph.D., Head of Department (STD), Christian Mission Hospital, Madurai.
<b>3. Medical Scientist</b> Prof.Dr.V.N.Rajasekaran, M.D. Ph.D., Medical Director, Meenakshi Mission Hospital, Madurai	<b>8. Legal Expert</b> Mr. C. Fernandez Rathinaraja, M.A.,B.L., Legal Advisor, DM &R , Madurai.
<b>4. Philosopher</b> Prof.Dr..J.P.Gabriel, M.Sc.,M.Ed.,M.Phil.,Ph.D., Director, C.S.I. School of Education, Madurai.	<b>9. Social Scientist</b> Mr. R. Ravikumar, M.A,B.Ed., M.Phil., Principal, Bethsan Special School, Madurai.
<b>5. Member Secretary</b> Curriculum Development, The Tamil Nadu Dr.M.G.R. Medical University, Chennai.	<b>10. Community Worker</b> Mrs. Gandhimathi,M.A., Community Worker-Grade-III, Thiruparankundrum, Madurai.

### Signature of the Chairperson

Prof.Dr.A.Charles Stephen Rajasingh, M.S.,M.Ch.,

### **III. Letter requesting suggestion for establishing content validity**

**From**

**J. Kavitha**

NO.69, Miranda line 1<sup>st</sup> street

Theni

**To**

**Respected Sir / Madam**

**Subject: Letter requesting opinion and suggestions from experts for establishing content validity of the tool.**

I am a Ph.D Nursing student doing my Ph.D in the Tamil Nadu Dr. M.G.R. Medical University, Chennai, under the Guidance of Prof. Dr. A. Charles Stephen Raja Singh; M.S, M.ch, CSI Mission Hospital, Madurai. As part of my curriculum I am doing a research study on the topic mentioned below.

**Topic: “A Study to evaluate the effectiveness of doula care on pain, anxiety and labor outcome among parturient in selected hospitals of Theni district.”**

May I kindly request you to go through and validate the contents of the Standardized tool. Please give your valuable suggestions and expert opinion for modifying the tool.

**Thanking you in Anticipation**

**Place: Your's sincerely**

**Date :**

#### IV. a. EVALUATION CRITERIA FOR CONTENT VALIDATION

Evaluation criteria checklist for content validation of instruments

<b>Tool 1 and tool 3</b>	<b>Item nos</b>	<b>Agree</b>	<b>Disagree</b>	<b>Remarks</b>	<b>Suggestions</b>
1.Socio Demographic data	1.				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12.				
2.Clinical variables	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				

<b>Tool 3</b>	<b>Items</b>	<b>Agree</b>	<b>Disagree</b>	<b>Remarks</b>	<b>Suggestions</b>
Questionnaire on labor outcome	1.				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11.				

**IV. b. Criteria checklist for content validation of intervention (doula care)**

<b>Items</b>	<b>Very relevant</b>	<b>Relevant</b>	<b>Need modification</b>	<b>Not relevant</b>	<b>Remarks</b>
I. Massage: 1.Back massage 2.Effleurage					
II. Abdominal breathing					
III. Positions: 1.Walking 2.Squatting 3.Standing back with wall					
IV.Emotional psychosocial support					

SUGESSTIONS:

#### **IV. c. TOOL VALIDITY CERTIFICATE**

This is to certify that the tool and intervention to be used by **Mrs. J. Kavitha**, Ph.D student of the Tamil Nadu Dr. M.G.R. Medical University, Chennai, under C.S.I. Jeyaraj Annapackiam College of Nursing, Madurai, has been validated by me the undersigned. The suggestions and modifications given by me will be incorporated by the investigator in collaboration with her respective guide.

**Name** :

**Signature** :

**Designation** :

**Place** :



## V. LIST OF EXPERTS

**1. Dr.K.Rajalakshmi, R.N.,R.M, Ph.D(N)**

Research guide, CSI Jeyaraj Annapackiam College Of Nursing  
Madurai

**2. Dr. Vijayalakshmi, R.N.,R.M, Ph.D(N)**

Principal, Vignesh College of Nursing,  
Thiruvannamalai.

**3. Dr. Jaya Mohanraj, R.N.,R.M, Ph.D(N)**

Principal,SRM College of Nursing,  
Chennai

**4. Dr. Pramila Lee R.N.,R.M, Ph.D(N),**

Professor, CMC College of Nursing,  
Vellore

**5. Dr. Anbu sukumar, M.Sc (N),Ph.D(N)**

Head of the department  
CMC medical college and hospital,  
Vellore.

**6. Dr. Rajina Rani .M.Sc (N), Ph.D(N)**

Principal  
Doctor's college of nursing  
Pudukkotai

**7. Dr.Vasantha, M.Sc (N),Ph.D**

Shanmuga College of nursing  
Chennai

**8. Dr.Hanitha Ramanan, M.D,OG**

CSI Mission Hospital

Madurai

**9. Prof. Victor Devasirvadham, M.Sc (N),(Ph.D)**

Principal

Sai college of nursing

Andrapradesh

**10. Prof. Dr.J.P.Gabriel, M.Sc.,M.Ed.,M.Phil.,Ph.D.,**

Director,

C.S.I. School of Education, Madurai.

**11. Prof.Dr.P. Jeyasingh, M.D.,D.V.,Ph.D.,**

Head of Department

Christian Mission Hospital, Madurai

**12. Mr. Venkatesan, M.Sc P.G.D.C.A.,**

Deputy Director of Medical Education,(Statistics)

Directorate of Medical Education,

Kilpauk, Chennai.

**13. Dr.Viruthagirinathan, Ph.D**

Clinical psychologist

Madras medical college

Chennai

**14. Dr. Puspam, M.B.B.S, DGO**

Holy redeemer Hospital

Theni.

## **VI.a. Letter seeking consent of the subjects for participation in the Study**

**From**

**J. Kavitha**

NO.69, Miranda line 1<sup>st</sup> street  
Theni

**To**

**Respected Madam**

**Subject: Letter seeking consent of the subjects for participation in the study**

I am a Ph.D Nursing student doing my Ph.D in the Tamil Nadu Dr. M.G.R. Medical University, Chennai, under the Guidance of Prof.Dr.A. Charles Stephen Raja Singh; M.S, M.ch, CSI Mission Hospital, Madurai. As part of my curriculum I am doing a research study on the topic mentioned below.

**Topic: “A Study to evaluate the effectiveness of doula care on pain, anxiety and labor outcome among parturient in selected hospitals of Theni district.”**

Hence I request you kindly give consent and participate in my research study.

**Thanking you in Anticipation**

**Place: Theni**

**Your’s sincerely**

**Date:**

**kavitha. J**

## **VII. INFORMED CONSENT FORM - ENGLISH**

This is to inform that I have been informed about a study concerning the Effect of Doula care among parturient. Mrs.J.Kavitha, Research scholar from CSI Jeyaraj Annapackiam college of nursing, Madurai explained that my participation is voluntary and that I may withdraw at any time from the study without jeopardy to myself or family.

Mrs.Kavitha has discussed with me the nature of the study informing me that there are no risks in participating in the study. There are no known benefits either and it is unlikely that I will experience any direct benefit. However the information in the study may be of assistance in helping other women in labour to reduce their pain, anxiety, and improve labor outcome.

I will receive no financial compensation for my participation; however, discussions with the researcher may help me to better understand my condition and ways to alleviate or reduce pain, anxiety, and to promote labor outcome during labor.

My Participation will mean that Mrs. Kavitha will meet me and for a 15 minutes interview and complete the demographic questionnaire. Then an intervention namely doula care will be given to me throughout labor and up to 1 hr after delivery. My name will not appear in any materials only a code number will identify me as a participant in the study. All information I share with Mrs. Kavitha will be kept confidential.

I have been given a copy of the summary of this agreement for my review. If I have any further questions I May contact Mrs.Kavitha at 9486728283. I will receive information about the results of my participation in the study before my discharge from the hospital.

**PARTICIPANT'S SIGNATURE**

**DATE:**

**ADDRESS:**

**RESEARCHER'S SIGNATURE**

**DATE:**



## VIII.A. PATIENT INFORMATION PROFORMA - ENGLISH

### PART I- DEMOGRAPHIC DATA

S.NO:

Group: Interventional group / Control group

Socio demographic variables:

1. Age in years

1.< 20 years

2.20-25 years

3. 25-30 years

4 > 30 years

2. Marital Status

1. Married

2. Unmarried

3. Widow

4. Separated

3. Locality of Residence

1. Rural

2. Urban

3. Semi urban

4. Religion

1.Hindu

2 .Christian

3. Muslim

4.Others

5. Educational Status

1. No formal education
2. Primary Education (V Std)
3. High school (X std)
4. Higher Secondary (XII Std)
5. Collegiate Education
6. Professional Education

6. Occupation

1. Home maker
2. Daily wage Laborer
3. Farmer
4. Technical/ clerical Job
5. Professional
6. Others (Specify)

7. Type of Work

1. Sedentary
2. Moderate
3. Strenuous

8. Type of Family

1. Nuclear
2. Joint
3. Extended

9. Income of family Rs per Month

1. 1000-3000
2. 3001-5000
3. 5001-10000
4. >10000

10. Attainment of menarche

1. < 12 years

2. 12-15 years

3. >15 years

11. Type of marriage

1. Consanguineous

2. Non Consanguineous

12. Duration of marital life

1.< 2 years

2. 2-5 years

3.> 5 years

**Antenatal variables:**

13. Antenatal checkups: If yes number of visits-----

1.Yes( 1. 1-3 visits, 2. 4-6 visits,3. > 6 visits)

2.No

14. Gestational weeks during labor

1. < 37 weeks

2. 37-40 weeks

3. > 40 weeks

15. Weight of the mother

1. <50 kg

2. 50kg- 70 kg

3. >70 kg



16. Nature of parturient

1. Naturally tense and anxious

2. Sportive

17. History of complications during pregnancy: if yes specify-----

1. Yes

2. No

18. Support group during prenatal period

1. Parents

2. In-laws

3. Husband

4. Relatives

5. Friends

6. Neighbors

7. Health personnel

19. History of abortion

1. Yes

2. No

20. Dietary pattern

1. Vegetarian

2. Non vegetarian

21. Antenatal exercises/ Walking

1. Walking

2. Exercise

3. Yoga

4. Combined

5. Nil

## VIII. B. PART II- NUMERICAL PAIN SCALE

No pain 1-----2-----3-----4-----5-----6-----7-----8-----9-----10 worst pain

Indicate on the line where the pain is in relation to the two extremes- by the client

Present pain intensity (categorical scale)

**0 : No pain**

**1 -3 : Mild pain**

**4 – 6: Moderate Pain**

**7 – 9 : Severe**

### VIII. C. PART III – Spielberger’s State Anxiety Rating Scale

Sl.No.	Statements	Not at All (1)	Some What (2)	Moderately so (3)	Very Much So (4)
1	I feel calm.				
2	I feel secure.				
3	I am tense.				
4	I feel strained.				
5	I feel at ease				
6	I feel upset				
7	I am presently worrying over possible misfortunes				
8	I feel satisfied.				
9	I feel frightened				
10	I feel comfortable.				
11	I feel self-confident				
12	I feel nervous.				
13	I am jittery.				
14	I feel indecisive.				
15	I am relaxed.				
16	I feel content.				
17	I am worried.				
18	I feel confused.				
19	I feel steady.				
20	I feel pleasant				

It consisted of standardized Spielberger State Anxiety Inventory. It will be used to assess the level of anxiety among parturient with labour pain. The State anxiety inventory was developed by Charles D.Spielberger. It is a 4 point likert scale which consisted of 20 items which provides measure of state anxiety. It is a measure of the intensity of anxiety experienced at the time of assessment. Approximately 10 -15 minutes was required for an adult to complete the questionnaire.

### **Scoring Procedure**

The scale consisted of 20 items among them item numbers 3,4,6,7,9,12,13, 14,17,18 were positive items and item numbers 1,2,5,8,10,11,15,16, 19, 20 were negative items. The positive items were scored as Not at all-1,Somewhat - 2, Moderately so-3, and Very much so-4.The negative items were scored reversely as Not at all-4,Somewhat-3,Moderately so-2, and Very much so-1.

The minimum score was 20 and the maximum score was 80.The grading of anxiety was done as follows

20	:	No anxiety
21-40	:	Mild level of anxiety
41-60	:	Moderate level of anxiety
61-80	:	Severe level of anxiety

**VIII. D. PART IV- LABOR OUTCOME**

1. Duration of labor – **I st stage**

1. <12 hrs

2. 12 – 14 hrs

3. > 14 hrs

2. Duration of labor – **II stage**

1. < 1 hr

2. 1 – 2 hrs

3. > 2 hrs

3. Duration of labor – **III stage**

1. < 15 min

2. 15 – 30 min

3. >30 min

4. Use of oxytocin

1. Not used

2. In 2<sup>nd</sup> stage

3. In 1<sup>st</sup> stage

5. Membrane ruptured at

1. Spontaneous / artificial in 2<sup>nd</sup> stage

2. Spontaneous in 1<sup>st</sup> stage

3. Artificial in 1<sup>st</sup> stage

6. Mode of delivery

1. Natural / Normal with episiotomy

2. Forceps delivery

3. Vacuum extraction

7. APGAR Score of baby at birth

1. 7-10

2. 4-6

3. < 4

8. Complications during labor

1. No

2. Yes

9. Initiation of breast feeding

1. within ½ an hour after delivery

2. ½ an hour- 2 hrs after delivery

3. > 2 hours after delivery

10. Immediately after birth Baby kept at

1. mothers side

2. warmer

3. Incubator

11. Duration of hospital stay

1. 3 days

2. 3-5 days

3. > 5 days

Minimum score: 11

Maximum score : 33

**Interpretation of labor outcome:**

1. <15 : Good labor outcome

2. 15- 24 : fair/ Average / Moderate labor outcome

3. > 24 : Poor labor outcome.

## VIII.E. DESCRIPTION OF DOULA CARE

In this study, it refers to the qualified nurse as birth assistant, (the investigator acted as doula) given doula care along with the hospital routine treatment to the parturient of interventional group to reduce pain, anxiety and to promote labor outcome. Doula care was administered from the latent phase of first stage of labor until immediate post partum period. (1 hr after delivery). Control group underwent routine hospital treatment based on hospital policy.

Doula care includes

- Massage
- Abdominal breathing or diaphragmatic breathing exercise
- Positions
- Emotional psycho social support

### 3.8.2.1. Massage

**a. Back massage:** Help the parturient to lie on either left or right side. Apply powder over the back. Doula facing the mothers back and with one hand holding the hip and with the other hand locates the flat, hard surface of lower back just above the hip, once located should press by the heel of the palm on the sacral region and once pressed rotate it clockwise and anti clockwise towards lumbar region.

### **b. Effleurage massage**

Effleurage is a light moving of fingertips on the lower abdomen that is between the navel and the pubic hair. Help the parturient to sit or lie comfortably. Doula, placing the fingertips of both hands on either side of the navel of the parturient, making circles by moving fingers lightly in circular motion from the centre of the abdomen, outwards the hip. Then down toward the pubic hair and up again towards the navel.

Each massage was given by the doula 3 times. (Each for 5minutes). Total time duration required to do both massages (3 times) approximately 30 minutes.

### **3.8.2.2. Abdominal breathing:**

Is the process of breathing using the diaphragm. Taking deep breaths up to the full capacity of the lungs. As it uses the movement of the diaphragm (expand during inhalation and contract during exhalation) it's called as abdominal breathing.

Help the parturient to find a comfortable position, ask her to keep her one hand over the abdomen and tell her to watch the abdomen and start to focus on inhaling deep through nose allowing the abdomen to expand fully; slowly and completely, then exhale through nose, gently pulling the abdomen inwards so that all the air is released. Instruct the parturient to take 5-6 seconds to inhale, and the same time to exhale. Practice breathing slowly at a rate of 5-7 breaths per minute. Maintain this pattern of breathing for 5 minutes.

This was practiced 4 times during first stage of labor process, needed time was 20 minutes.

### **3.8.2.3. Positions**

**a. Walking:** In this study it refers to walking slowly. During contractions stop walking. When the contractions is over resume walking. This was practiced for 15 minutes (each time) 5 times during first stage of labor. Time needed for this was 1 hr 15 minutes.

#### **b. Squatting – (Using footstool or low stool)**

Help the parturient to sit on the footstool knees apart. As the parturient sit on this fashion, the weight of the upper part of the body is supported by the footstool and it helps the pelvic floor relaxed.

It was practiced for 5 minutes (each time), 5 times during first stage of labor. Time needed for this was 25 minutes.



### **c. Standing with back to the wall**

Here the parturient will hunch the shoulders forward and bend the knees, stand with back to the wall by pressing the part of the back that have discomfort. This exercise gives counter pressure on the lower back will relieve the discomfort. It was practiced for 3minutes (each time), 10 times during first stage of labor. Time needed for this was 30 minutes.

All above mentioned physical comfort measures given to the parturient alternatively in a view of her comfort during first stage of labor.

For the above comfort measures, total time needed was 3 hrs approximately.

### **3.8.2.4 .Emotional psychosocial support**

In this study it refers to researcher as doula, being friendly, concerned, gentle, communicating warm positive regard, reassurance to the parturient and also conveying sense of security and well being by constant presence with the parturient throughout labor to avoid fear, anxiety and to promote labor outcome.

பகுதி - ஜ - கர்ப்பிணி பெண்கள் பற்றிய விபரம்

மாதிரி எண் :

குழு : ஆராய்ச்சி குழு .: ஆராய்ச்சிக்கு உட்படாத குழு

பொதுவான தகவல்கள் :-

1) வயது

- அ) 20 வயதிற்கு கீழ்
- ஆ) 20 - 25 வயது வரை
- இ) 25 - 30 வயது வரை
- ஈ) 30 வயதிற்கு மேல்

2) திருமண நிலை

- அ) திருமணமானவர்
- ஆ) திருமணம் ஆகாதவர்
- இ) விதவை
- ஈ) பிரிந்து வாழ்பவர்

3) வாழிடத்தின் அமைவிடம்

- அ) கிராமம்
- ஆ) நகரம்
- இ) நகர் சார்ந்த பகுதி

4) மதம் ( சமயம் )

- அ) இந்து
- ஆ) கிறிஸ்துவர்
- இ) முஸ்லீம்
- ஈ) பிற மதத்தினர்

5) கல்வித் தகுதி

- அ) முறையான கல்வி இல்லை
- ஆ) தொடக்கக் கல்வி (ஐந்தாம் வகுப்பு வரை)
- இ) உயர்நிலைப் பள்ளிக் கல்வி (பத்தாம் வகுப்பு வரை)
- ஈ) மேல்நிலைக் கல்வி (பன்னிரண்டாம் வகுப்பு வரை)
- உ) கல்லூரிக் கல்வி
- ஊ) தொழிற் கல்வி

6) தொழில்:

- அ) குடும்பத் தலைவி  
ஆ) தினக்கூலி  
இ) விவசாயி  
ஈ) தொழில் நுட்ப  $\therefore$  அலுவலகப் பணியாளர்  
உ) உத்தியோகஸ்தர்  $\therefore$  தொழிற் சார்ந்த பணியில் இருப்பவர்  
ஊ) மற்றவை ( குறிப்பிடுக )

7) பணியின் ( வேலையின் ) இயல்பு

- அ) அலைச்சலில்லாத பணி  
ஆ) மிதமான பணி  
இ) கடுமையான பணி

8) குடும்பத் தன்மை

- அ) தனிக் குடும்பம்  
ஆ) கூட்டுக் குடும்பம்  
இ) பெரிய குடும்பம்

9) குடும்பத்தின் மாத வருமானம்

- அ) ரூ.1000 முதல் 3000 வரை  
ஆ) ரூ.3001 முதல் 5000 வரை  
இ) ரூ.5001 முதல் 10000 வரை  
ஈ) ரூ.10000 க்கு மேல்

10) பூப்படைந்த வயது

- அ) 12 வயதிற்குள்  
ஆ) 12 முதல் 15 வயதிற்குள்  
இ) 15 வயதிற்கு மேல்

11) திருமண வகை

- அ) இரத்த சொந்தம்  
ஆ) அன்னியம்

12) திருமண வாழ்க்கைக் காலம்

- அ) 2 வருடத்திற்குள்ளாக  
ஆ) 2 முதல் 5 வருடம் வரை  
இ) 5 வருடத்திற்கு மேல்

**கர்ப்ப காலம் பற்றிய தகவல்கள் :-**

**13) கர்ப்பகால மருத்துவ பரிசோதனைகள்**

- அ) ஆம் ( 1 – 1 முதல் 3 முறை,  
2 – 4 முதல் 6 முறை,  
3 – 6 முறைக்கு மேல் )

ஆ) இல்லை

**14) கருவின் வயது**

- அ) 37 வாரங்களுக்கு கீழ்  
ஆ) 37 – 40 வாரங்கள்  
இ) 40 வாரங்களுக்கு மேல்

**15) தாயின் எடை**

- அ) 50 கிலோவிற்கு கீழ்  
ஆ) 50 முதல் 70 கிலோ வரை  
இ) 70 கிலோவிற்கு மேல்

**16) தாயின் இயல்பு**

- அ) இயல்பாகவே பதற்றமும் கவலையும் உடையவர்  
ஆ) கவலைப்படாதவர்

**17) கர்ப்பகாலத்தில் ஏற்பட்ட பிரச்சனைகள் :- ஆம் எனில்**

**குறிப்பிடவும்**

- அ) ஆம்  
ஆ) இல்லை

**18) கர்ப்ப காலத்தில் துணை நின்றவர்கள்**

- அ) பெற்றோர்  
ஆ) மாமனார் மற்றும் மாமியார்  
இ) கணவர்  
ஈ) உறவினர்கள்  
உ) நண்பர்கள்  
ஊ) அன்டைவீட்டார்  
எ) சுகாதாரப் ∴ மருத்துவ பணியாளர்கள்

**19) கருச்சிதைவு விபரம்**

- அ) ஆம்  
ஆ) இல்லை

20) உணவு முறை

- அ) சைவம்  
ஆ) அசைவம்

21) கருவற்ற கால உடற்பயிற்சிகள்

- அ) நடைப் பயிற்சி  
ஆ) உடற்பயிற்சி  
இ) யோகாசனங்கள்  
ஈ) ஏதாவது இரண்டு பயிற்சிகள்  
உ) எதுவும் இல்லை

**பகுதி 1. எண் சார்ந்த வலி அளவு கோல்**

வலி  
இல்லை 1 ---- 2 ---- 3 ---- 4 --- 5 --- 6 --- 7 --- 8 ---- 9 --- 10  
மிக  
அதிகமான  
வலி

**மதிப்பிற்குரியோரே**

மேற்குறிப்பிட்டுள்ள அளவு கோலில் உங்கள் தற்போதைய வலியின் அளவை குறிப்பிடுக

**எண் சார்ந்த வலி அளவு கோலின் விளக்கம் :**

- 0 : வலி இல்லை
- 1-3 : சிறிய அளவிலான வலி
- 4-6 : மிதமான வலி
- 7-9 : அதிகமான வலி
- 10 : மிக அதிகமான வலி

பகுதி 3- ஸ்பீல்பெர்கர் மனப்பதட்டம் அளவுகோல்

மதிப்புக்குரியோரே, நீங்கள் தற்போது எப்படி உணருகிறீர்கள் என்பதை நன்றாக வாசித்தபின் சரியான விடையில் (v) குறியிடவும்.

வ. எண்	தன்பகுப்பாய்வு வினாக்கள்	இல்லவே இல்லை	சில நேரங்களில்	மிகமாக	எப்பொழுதும் அதிகமாக
1.	நான் மன அமைதியிடன் இருப்பதாக உணர்கிறேன்				
2*	நான் பாதுகாப்பாக இருப்பதாக உணர்கிறேன்.				
3.	நான் மன இறுக்கத்தோடு இருப்பதாக உணர்கிறேன்.				
4.	நான் பலவீனமாக இருப்பதாக உணர்கிறேன்.				
5*	நான் நிம்மதியாக இருப்பதாக உணர்கிறேன்.				
6.	நான் வருத்தத்தை உணர்கிறேன்.				
7.	நான் என் துரதிஷ்டங்களை நினைத்து கவலைப்பட்டுக்கொண்டு இருக்கிறேன்.				
8*	நான் மனநிறைவாக இருப்பதாக உணர்கிறேன்.				
9.	நான் பயந்த நிலையில் இருப்பதாக உணர்கிறேன்.				

10*	நான் சுகமாக இருப்பதாக உணர்கிறேன்.				
11*	நான் தன்னம்பிக்கையுடன் இருப்பதாக உணர்கிறேன்.				
12	நான் பதட்டமாக இருப்பதாக உணர்கிறேன்.				
13	நான் தளர்ச்சி அடைந்ததாக உணர்கிறேன்.				
14	நான் முடிவெடுக்கும் மனநிலையில் இல்லை என உணர்கிறேன்.				
15*	நான் தளர்வுற்ற நிலையில் இருப்பதாக உணர்கிறேன்.				
16*	நான் முழுத்திறனோடு இருப்பதாக உணர்கிறேன்				
17	நான் கவலைப்படுகிறேன்.				
18	நான் குழப்பமான நிலையில் இருப்பதாக உணர்கிறேன்.				
19*	நான் நிலையான மனநிலை உடையவனாக உடையவளாக உணர்கிறேன்.				
20*	நான் சந்தோஷமாக இருப்பதாக உணர்கிறேன்				

\*எதிர்மறை மதிப்பீடு



**பகுதி 4 – பிரசவ கால வெளிப்பாடு**

**1) பிரசவ கால நேரம் (முதல் நிலை)**

- அ) 12 மணி நேரத்திற்குள்  
ஆ) 12 முதல் 14 மணி நேரத்திற்குள்  
இ) 14 மணி நேரத்திற்கு மேல்

**2) பிரசவ கால நேரம் (இரண்டாம் நிலை)**

- அ) 1 மணி நேரத்திற்குள்  
ஆ) 1 முதல் 2 மணி நேரத்திற்குள்  
இ) 2 மணி நேரத்திற்கு மேல்

**3) பிரசவ கால நேரம் (மூன்றாம் நிலை )**

- அ) 15 நிமிடங்களுக்குள்  
ஆ) 15 முதல் 30 நிமிடங்கள் வரை  
இ) 30 நிமிடங்களுக்கு மேல்

**4) ஆக்ஸிடோஸின் என்ற மருந்து உபயோகப்படுத்தியது**

- அ) உபயோகப் படுத்தவில்லை  
ஆ) இரண்டாம் பிரசவ கால நிலையில்  
இ) முதல் பிரசவ கால நிலையில்

**5) பனிக்குடம் உடைந்தது**

- அ) இரண்டாம் பிரசவ கால நிலையில் தானாக  $\therefore$  மருத்துவ குழுவினரால் உடைக்கப்பட்டது.  
ஆ) முதல் நிலையில் தானாக உடைந்தது  
இ) முதல் நிலையில் மருத்துவ குழுவினரால் உடைக்கப்பட்டது.

**6) பிரசவம் நடந்த முறை**

- அ) இயற்கையான முறையில்  
ஆ) கிடுக்கிவழி மகப்பேறு  $\therefore$  ஆயுதம் மகப்பேறு  
இ) வெற்றிட அழுத்த ஆயுத உதவியுடன்

7) பிறந்த குழந்தையின் அப்கார் மதிப்பெண்

- அ) 7 முதல் 10 வரை  
ஆ) 4 முதல் 6 வரை  
இ) 4-கிற்கு கீழ் (உட்பட்டு)

8) பிரசவத்தின் போது பிரச்சனைகள்

- அ) இல்லை  
ஆ) ஆம்

9) முதன் முதலில் குழந்தைக்கு தாய்ப்பால் கொடுக்கப்பட்டது

- அ) பிறந்த ½ மணி நேரத்திற்குள்  
ஆ) ½ மணி நேரத்திலிருந்து 2 மணி நேரத்திற்குள்  
இ) 2 மணி நேரத்திற்கு மேல்

10) குழந்தை பிறந்தவுடன் வைக்கப்பட்ட இடம்

- அ) அம்மாவிடம்  
ஆ) வெப்ப மூட்டி  
இ) இன்குபேட்டர் (அடைகாக்கும் கருவி )

11) பிரசவத்திற்காக தாய் மருத்துவ மனையில் இருந்த நாட்கள்

- அ) 3 நாட்கள்  
ஆ) 3 லிருந்து 5 நாட்கள் வரை  
இ) 5 நாட்களுக்கு மேலாக

பிரசவ வெளிப்பாட்டின் மதிப்பீடு

குறைந்தபட்ச மதிப்பெண் : 11

அதிகபட்ச மதிப்பெண் : 33

15 மதிப்பெண்ணிற்கு கீழ் : அருமையான பிரசவ வெளிப்பாடு

15 – 24 மதிப்பெண் : சாதாரணமான பிரசவ வெளிப்பாடு

24 மதிப்பெண்ணிற்கு மேல் : மோசமான பிரசவ வெளிப்பாடு

## ரூலா அக்கறை அல்லது ரூலா துணை:

ரூலா துணை என்பது படித்து செவிலியர் பட்டம் பெற்ற செவிலியர் இந்த ஆராய்ச்சி படிப்பிற்காக பிரசவத்திற்கு வரும் தாய்மார்களுக்கு பிரசவ கால முதல் நிலையில் இருந்து 1 மணி நேரம் பிரசவத்திற்கு பின்பு வரை துணை நிற்பதாகும். இங்கு ஆராய்ச்சியாளர், ஆராய்ச்சி குழு தாய்மார்களுக்கு ரூலாவாக செயல்பட்டு அவர்களின் பிரசவ கால வலி, பயத்தை குறைத்து அருமையான பிரசவ வெளிப்பாட்டிற்கு உதவுவார், ஆராய்ச்சிக்கு உட்படாத குழு தாய்மார்களுக்கு மருத்துவ மனையின் வழக்கமான சிகிச்சை வழங்கப்பட்டது.

## ரூலா துணை கீழ்க்கண்ட வழிமுறைகளை உள்ளடக்கியது:

- அ) மசக்குதல் (அ) பிடித்து விடிதல்
- ஆ) சுவாசப் பயிற்சி
- இ) வெவ்வேறு உடல் நிலைகள்
- ஈ) உளவியல் ரீதியாக தாய்க்கு தைரியம், நம்பிக்கை ஊட்டல்

### அ) மசக்குதல் :

#### 1) கீழ் முதுகு பிடித்துவிடுதல் :

- தாய்மாரை இடப்புறமாகவோ வலது புறமாகவோ படுக்க வைக்க உதவுக.
- கீழ் முதுகில் பவுடர் போட வேண்டும்.
- ஆராய்ச்சியாளர் ரூலாவாக தாயின் முதுகு பக்கம் நோக்கி நின்று ஒரு கையை தாயின் இடுப்பின் மீது வைத்து மறு கையை பயன்படுத்தி தாயின் கீழ் முதுகின் தட்டையான பகுதியை தன் கையின் உள்பகுதியை கொண்டு அழுத்தி வடப்புறமாக மற்றும் இடப்புறமாக சுழற்ற வேண்டும். இவ்வாறு முதுகின் மேல் நோக்கி கைகளை நகர்த்தி செய்தல் வேண்டும்.

#### 2) எப்ளுரேஜ் மசக்குதல் (அ) மஸாஜ்

எப்ளுரேஸ் மஸாஜ் என்பது தாயின் வயிற்றுப் பகுதியில் கை விரல் நுனிகளை கொண்டு நடப்பது போல் செய்தல் ஆகும். இது கர்ப்பபை சுருங்கி விரிவடையும் போது அடிவயிறு விரைப்பாக இருக்கும். ஆப்பொழுது இந்த அதன் கடினத் தன்மையை குறைக்கும்.

- தாயை அவரது வசதிக்கேற்ப அமரவோ, படுக்கவோ செய்ய வேண்டும்.
- ரூலா தனது இரண்டு கைகளின் விரல் நுனிகளை தாயின் வயிற்றுப் பகுதியில் தொப்புளின் இருபுறமும் வைத்து விரல் நுனிகளை வைத்து வட்ட வட்டமாக நடந்து செல்வது போல் செய்ய வேண்டும். இதை வயிற்றின் நடுப்பகுதியில் தொடங்கி வெளிப்பக்கமாக இடுப்புப் பகுதி வரையிலும், வயிற்றின் நடுப்பகுதியில்

இருந்து கீழ் வயிற்றுப் பகுதி வரையிலும் பின் மேல் நோக்கியும் செய்தல் வேண்டும்.

இவ்வாறு இந்த இரண்டு மசக்குதல் (அ) பிடித்து விடுதல் பயிற்சியை டூலா 3 முறை (ஒவ்வொரு 5 நிமிடங்கள்) செய்ய வேண்டும். தோராயமாக மேற்கூறப்பட்ட முறையில் இந்த இரு பயிற்சியை செய்ய 30 நிமிடங்கள் ஆகும்.

**ஆ) அடிவயிற்று சுவாசப் பயிற்சி :**

இது உதரவிதானத்தைப் பயன்படுத்தி சுவாசப் பயிற்சி செய்யும் முறை. இதன் மூலம் நுரையீரலின் முழு சக்தியையும் பயன்படுத்தி சுவாசிக்கலாம். மூச்சை உள்ளிழுக்கும் போது உதரவிதானம் வயிற்றுப் பகுதியை விரிவடையச் செய்யும் மூச்சை வெளிவிடும் போது வயிற்றுப் பகுதியை சுருங்கச் செய்யும்.

- தாயின் வசதிற்கு ஏற்ப அமர செய்து தேவைப்பட்டால் முதுகிற்கு பின்னால் தலையணையை வைத்து சாய்ந்து அமரச் செய்யவும்.
- தாயை அவரது ஒருகையை வயிற்றின் மேல் வைக்கச் சொல்க.
- டூலா, தாயிடம் மூக்கின் வழியாக மூச்சை மெதுவாக நன் உள் இழுக்கச் சொல்ல வேண்டும், பின் உள் இழுத்த மூச்சை மெதுவாக மூக்கின் வழியாகவே வெளிவிடச் சொல்ல வேண்டும். மேற்சொன்னவற்றைச் செய்யும் போது தாயை வயிறு உள் மற்றும் வெளி செல்வதை உணரச் சொல்ல வேண்டும்.
- 5-6 வினாடிகளில் மூச்சை உள் இழுக்க மற்றும் வெளியிட சொல்ல வேண்டும்.
- இதே மாதிரி 5 முதல் 7 தடவை மூச்சுப் பயிற்சி 1 நிமிடத்திற்குள் செய்ய வேண்டும்.
- ஒரு முறையில் 5 நிமிடங்கள் மூச்சுப் பயிற்சி செய்ய சொல்ல வேண்டும்.

பிரசவ வலியின் போது இம்முறையில் நான்கு தடவைகள் செய்ய கிட்டத்தட்ட 20 நிமிடங்கள் தேவைப்படுகிறது.

**இ) வெவ்வேறு உடல் நிலைகள்**

1. நடத்தல் : இது மெதுவாக நடப்பதை குறிப்பிடுகிறது.

பிரசவ கால முதல் நிலையில் தாயின் கருப்பை சுருங்கி வலி ஏற்படும் போது நடப்பதை நிறுத்தி கருப்பை சுருங்கி விரிதல் நின்றவுடன் (வலி நின்றவுடன்) நடப்பதை தொடரச் செய்தல் வேண்டும்.

ஒரு முறை 15 நிமிடங்கள் நடக்க வேண்டும். இவ்வாறு 5 தடவை நடக்க மொத்தம் தோராயமான 1 மணி நேரம் 15 நிமிடங்கள் ஆகும்.

## 2) குந்து நிலையில் உட்காருதல் (அல்லது) தாழ்வான முக்காலியில் அமருதல்

இந்த ஆய்வில் குந்து நிலையில் அமருதல் என்பது மிகவும் தாழ்வான நிலையில் உள்ள முக்காலியில் தாயை கால்களை அகல விரித்து குத்துக்காலிட்டு அமரச் செய்ய வேண்டும். இது பிரசவ காலத்தில் இடுப்பு எழும்புகளை விரிவடையச் செய்ய உதவுகிறது. இவ்வாறு ஒரு முறைக்கு 5 நிமிடம் அமரச் செய்ய வேண்டும்.

இதே போல் 5 முறை அமரச் செய்ய 25 நிமிடங்கள் தேவைப்படுகிறது.

## 3) பின்முதுகை சுவரில் ஒட்டியவாறு நிற்பது

தாயின் பின் முதுகு சுவரில் ஒட்டியவாறு நிற்க செய்ய வேண்டும். பின் தாயை தோள்பட்டைகளை முன்புறமாக குறுக்கி கைகளை கால் முட்டிகளின் மேல் வைத்து முழங்கால்களை வளைத்து நிற்க சொல்லுதல் ஆகும். தூயை அவரின் கீழ் முதுகை சுவரில் வைத்து அழுத்த சொல்ல வேண்டும், இவ்வாறு செய்வதால் முதுகு வலி குறையும்.

ஒரு தடவைக்கு 3 நிமிடங்கள் மேற்சொன்னபடி நிற்க சொல்ல வேண்டும். இதேபோல் 10 முறை செய்ய கிட்டத்தட்ட 30 நிமிடங்கள் தேவைப்படுகிறது.

மேற்சொன்ன அனைத்து பயிற்சிகளை மேற்கொள்ள தோராயமாக 3 மணி நேரம் தேவைப்படுகிறது

ஈ) உளவியல் ரீதியாக தாய்க்கு நம்பிக்கையும் தைரியமும் ஊட்டல்: தாயின் மீது அக்கறை காட்டி இதமாக பேசி, நம்பிக்கை ஊட்டி, அச்சம் கவலை நீக்கி, பாதுகாப்பு உணர்வை ஏற்படுத்தி பிரசவம் சீரிய முறையில் நடைபெற டீலா உதவுவதே இம்முறையாகும்.

## Certificate of Editing

This is to certify that the manuscript titled “A Study to evaluate the effectiveness of doula care on pain, anxiety and labour outcome among parturient in selected hospitals of Theni District “ prepared by **Mrs.Kavitha.J ,M.Sc(N) , Ph.D** nursing student doing Ph.D under the Tamil Nadu Dr. M. G. R. Medical University, Chennai has been edited by me the undersigned



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## Effect of play therapy on children undergoing surgery

J. Kavitha \*



Pain in children has historically been under treated. Every study finds that we treat pain less aggressively as we are afraid of the side effects of medication. Pain is a unique, highly subjective, complex and multi dimensional experience encompassing many sensory and affective components. Post operatively the child experiences a varying degree of pain, which requires immediate management or care such as use of drug as well as non drug management like any diversion therapy.

Therapeutic play is a play technique that can be used by nurses to better understand children's feelings and thoughts. The need for play does not stop when children are ill or when they enter the hospital.

### Need for the study

Thousands of children are hospitalized and experience some type of acute pain. Pain can change a child's heart rate, blood pressure, and breathing, levels of oxygen, skin color, temperature and sweating. Changes in a child's behavior can also be important clue in the presence of pain. Play is one of the ways that a child hopes with pain.

William Li Hc, Lopez V, Lee TL,(2007) conducted a study on effects of post operative , therapeutic

play outcomes of school age children undergoing surgery. 233 children were invited to participate in a randomized control trial. The experimental group received therapeutic play; the control group received routine hospital care. Children in the experimental group reported significantly lower state anxiety score in post operative periods.

### Statement of the problem

A study to evaluate the effectiveness of play therapy on level of pain among school age children undergoing surgery in selected hospital at Coimbatore.

### Objectives

- To identify the effectiveness of play therapy among experimental group on pain reduction
- To assess the pain reduction among children control group
- To compare the post test level of pain reduction among experimental and control group
- To associate the post test level of pain reduction with the selected demographic variables of experimental group
- To associate the post test level of pain reduction with the selected demographic variables of control group.

**A study to evaluate the effectiveness of play therapy on level of pain among school age children undergoing surgery in selected hospital at Coimbatore**

### Hypotheses

**H1-** There is a significant difference in pain levels between pre and post test scores among experimental group.

**H2-** There is a significant difference in pain reduction between pre and post test scores among control group.

**H3-** There is a significant difference in pain reduction between the experimental and control group.

**H4-** There is a significant association between the level of pain among experimental group with selected demographic variables.

**H5-** There is a significant association between the level of pain among control group with selected demographic variables.

### Operational definitions

**Effectiveness** refers to the change brought in the post operative pain level by play therapy as measured by using structured tool.

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**Play therapy** refers to providing play materials like toys, dolls, puppets, story books, puzzles, craft materials, pictures, video games based on child's interest for first 48 hrs post operatively.

**Pain reductions** refers to the changes of response to pain observed among post operative children after the session of play therapy which can be measured using pain rating scale, biophysiological measurement scale and behavioral response to pain scale.

**Post operative pain** refers to pain experienced by the child after surgery as measured by using pain scale.

**Children undergoing surgery** in this study refers to children between 6-12 years undergoing any kind of surgical intervention except cardio thoracic surgery and neuro surgery whose pain behaviors are observed using a structured tool.

#### Assumptions

Children undergoing surgery may have varying levels of pain in post operative period.

Play therapy may reduce the level of pain among children undergoing surgery

#### Conceptual framework

The conceptual framework and model adopted for present study was based on Roy's Adaptation model, 1991. Roy's model focuses on the concept on adaptation of a person.

#### Methodology

**Research approach-** Evaluative approach

**Research design** - Quazi experimental design (pre test post test design control group design).

**Setting-** Masonic Hospital in Co-

imbatore. It is a 200 bedded hospital with all specialties. The pediatrics surgical ward consists of 20 beds and has a 9 bedded I.C.U. for the postoperative patients. It has 2 operation theatres. Approximately 4-6 pediatric surgeries are performed every day.

**Population:** Children aged between 6- 12 yrs undergoing surgery.

**Sample:** Children aged between 6-12 yrs undergoing surgery who fulfilled the inclusion criteria.

**Sample size:** 60 (30 in the experimental group and 30 in the control group).

**Sampling technique:** Convenient sampling technique was used to select the sample.

#### Selection criteria

##### Inclusion criteria

Children aged between 6-12 years irrespective of sex.

Children who can understand and speak English or Tamil.

Post operative children within 48 hrs.

##### Exclusion criteria

Children undergoing cardiac and neuro surgery.

Post operative children on ventilators.

**Validity:** Validity was obtained from five experts in the field of nursing, pediatrician and pediatric surgeon.

**Reliability:** Test retest method was used to find out the reliability of the tool. The reliability of the tool was  $r=0.88$

#### Description of the tool

**Section A** - Demographic data-

consisting of age, gender, type of anesthesia etc.

**Section B** - Pain rating scale- word graphic rating scale (Tesler, 1991).

**Section C** - Biophysiological measurement scale- consisting of assessment of pulse, temperature, BP, respiration, oxygen saturation and perspiration.

**Section D** - Observational check list for behavioral response to pain.- consisting of irritability, anger, refusal to food, mood changes, cry, facial grimace, restlessness etc.

**Data collection procedure:** First 30 children were selected conveniently grouped into experimental group, second 30 children were grouped into control group. Informed consent was obtained from each child and parents. For the experimental group, pre test was done on first day and on the same day play therapy was started and encouraged the children to play. Post test was done on the 4th day, whereas for the children in the control group pre test was done on first day with the hospital routine management without play therapy post test was done on 4th day.

#### Major findings

The age of the subjects in both the groups ranged between 6- 12 yrs, 52% of the children in the experimental group and 40% of children in the control group belonged to the age group between 6-8 years.

100 % of the children underwent surgery by general anesthesia and received analgesics.

In the experimental group, the mean scores before and after play therapy on pain rating scale, biophysiological measurement scale, behavioral response scale were 3.56 (SD=0.5176), 1.8 (SD=0.5787), 12.08 (SD=1.288) and 7.04(SD=1.968), 16.52 (SD=2.801), and 7.24 (SD=3.032) respectively. Calculat-



ed t values were 12.87, 12.29, and 14.89 respectively at 0.001 level. Table value was 3.745, which showed there was a significant reduction of pain after play therapy in the experimental group.

In control group the mean scores before and after on pain rating scale, biophysiological measurements scale, behavioral response to pain scale were 3.48 (SD=0.5994), 7.24 (SD=0.7976), 11.68 (SD=2.428), and 9.92 (SD =2.178) and 16.36 (SD=2.928), 12.00 (SD= 2.769) respectively. Calculated "t" values were 5.02, 3.863 and 8.397 respectively at 0.001 levels. Table value (t= 3.745).

Mean scores of children in experimental group on pain rating scale, bio physiological measurement scale and behavioral responses to pain scale after play therapy were 1.8, 7.04 and 7.24 respectively.

In control group, on pain rating scale, biophysiological measurement scale, and behavioral responses to scale on post test was as follows 2.84, 9.92 and 12.00 respectively. This indicates that there was mean scores differences in experimental and control group. The higher degree of pain reduction was found in experimental group. The t value obtained for pain rating scale, bio physiological measurement scale and behavioral responses to scale were 2.31, 4.906, and 5.797 respectively. These values were significant at 0.05 levels.

Chi square values were calculated to find out the association between the post test levels of pain reduction with selected demographic variables. The association of pain reduction with the age was 18.216 (table value =12.59), the calculated value was higher than the table value. Whereas, the association with education of mother ( $\chi^2= 2.075$ ), type of anesthesia ( $\chi^2=0$ ), analgesics prescribed ( $\chi^2=0$ ) were not associated.

Chi square analysis was calculated to find out the association between

the post test levels of pain reduction with demographic variables. There was a significant association between pain and sex of the child  $\chi^2 = 8.63$  (table value 7.82), age  $\chi^2 = 16.37$  (table value 12.59) respectively.

## Nursing implications

**Nursing practice:** The findings of this study will help to develop professional skill independently by displaying the play therapy for children with pain.

The findings will help to develop a policy on laughter therapy and can be used in the pediatric ward.

**Nursing education:** This finding will motivate the students to apply play therapy as evidence based practice.

It will also help the student nurses to use various assessment tools for assessing pain.

**Nursing research:** This study provides scope for further research related to various alternative therapies and non pharmacological methods of pain management on post operative pain among children.

This study also brings about the fact that more studies need to be conducted in this area which can promote theory development on pain phenomenon.

**Nursing administration:** Nurse administrators must plan and organize continuing nursing education programs regarding play therapy to update them with current trends.

Ward in charges can arrange the resources needed and encourage the staff nurses to use play therapy.

## Recommendations

The study can be conducted with large sample size in various settings.

A similar study can be conducted with other alternative therapies.

## Conclusion

Post operative period is a period in which almost all the patients experience varying degree of pain. The post operative children who used play therapy as a diversional therapy during the post operative period, had experienced lesser pain levels than those who did not use play therapy. Hence play therapy was effective in reducing the pain levels among children who underwent surgeries.

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## **Effectiveness of Music Therapy on Depression among Hemodialysis Clients**

**J. Kavitha**  
Research scholar

### **I. Introduction**

End-Stage renal disease (ESRD) is a chronic, progressive disorder characterized by irreversible and gradual loss of renal function. These patients have to resort to lifelong Renal Replacement Therapies such as hemodialysis, peritoneal dialysis and kidney transplantation. In India among one million populations an estimated incidence of ESRD is approximately 1, 00,000 each year, and in this 90% will be initiated on RRT.

In ESRD patients, psychosocial changes are on the rise which seems to be the immediate concern for the nurse. They will be experiencing many stressors such as fatigue, fluid restriction and food restriction. Those who are not able to cope with these stressors will be depressed and socially isolated.

Hemodialysis is a medical procedure that uses a special machine to filter waste products from the blood and to restore the normal constituents to it. For hemodialysis to be carried out, a large blood vessels with a fast blood flow needs to be accessed. It is well understood that kidney failure and further therapy like Hemodialysis can be challenging both physically and emotionally. These emotional and physical challenges can be the basis for successful adjustment that includes 2 key elements: optimal clinical care and the residual ability to perform. In essence, a hemodialysis patient can live long enough a high quality of life and live independently and productively, if they are able to function well mentally and physically. According to American music therapy association (AMTA) music therapy is an effective and valid treatment for persons who have psychosocial, affective, cognitive and communicative needs. It is a form of sensory stimulation which increases the relaxation.

### **Need for the Study**

WHO (2009) conducted a worldwide study among selected countries to identify the existence of Depression with major disease conditions existing worldwide. The survey findings revealed that depression associated with ESRD and dialysis stood second with a prevalence rate of 16.25 surpassing depression associated with respiratory disease and metabolic disorders.

According to national Institute of Mental Health, nearly 10% patients suffering the depression due to the End Stage Renal Disease. In worldwide 34% patients were suffering from depression among the clients who are on hemodialysis (British Journal of Clinical Psychology). Joseph (2010) conducted a study to identify the presence of significant depressive symptoms common in patients with end-stage renal disease. The results revealed that 20–30% of end stage renal disease patients have significant depressive symptoms. Furthermore, it also highlighted experimentation of cognitive behavioral therapies and alternative therapies like music that has promising effects on reducing depression. Though depression is a major problem, its solution is very handy by alternative therapies. Many alternative therapies have been reduced level of depression who is on hemodialysis. One among is Music therapy. Here the researcher used music therapy to reduce depression among hemodialysis patients.

**Statement of the Problem:** A study to assess the effectiveness of Music therapy on Depression among Hemodialysis clients at Selected Hospitals of Coimbatore district.

### **Objectives**

- To assess the level of depression among clients on hemodialysis.
- To evaluate the effectiveness of Music Therapy on level of depression among clients on hemodialysis.
- To determine the association between the level of depression among clients on hemodialysis with their demographic variables.

### **Hypotheses**

H1: There is a significant difference between mean, pre and post test score on the level of depression among clients on hemodialysis.

H2: There is a significant association between level of depression among clients on hemodialysis and their demographic variables.

**Operational Definitions**

**Effectiveness** - It refers to the outcome of Music Therapy in terms of reducing depression among the clients on hemodialysis.

**Music Therapy** - In this study music refers to the administration of rhythmic and melodious tune recorded on a CD intended to remove distress and the mind will wake up to a sense of relaxation, music therapy given for 20 minutes per day for 5 days.

**Depression**- It refers to a worried state of mood in which clients on hemodialysis feel sad, helpless, hopeless, and worthless as measured by modified Beck's depression scale.

**Hemodialysis clients:** Clients who are admitted for Hemodialysis.

**Assumptions**

- Music Therapy may reduce depression
- Music Therapy has no side effects on clients on hemodialysis who experience depression
- Music Therapy may help to improve the emotional health and well being among clients on hemodialysis.

**Delimitations**

- The study was delimited to clients on hemodialysis.
- The study was delimited to a period of 6 weeks

**II. Methodology**

**Research Approach:** evaluative approach

**Research design :** A pre experimental one group pretest posttest design

**Variables :**

Dependent variable : Depression  
Independent variable : Music Therapy

**Setting of the Study :** selected private hospitals of Coimbatore district.

**Population :** for this study, target population is clients on hemodialysis with depression. The accessible population includes clients on hemodialysis with depression in selected hospitals.

**Sample :** In other words it is the process of obtaining information about the entire population by examining only a part of it. Clients admitted for hemodialysis in selected hospitals, during data collection period. The sample size was 30.

**Sampling Technique:** non probability convenience sampling was used to select sample.

**Criteria for sample selection**

**Inclusion Criteria**

- Clients who were admitted with renal failure and on dialysis.
- Clients who had symptoms of sadness, loss of interest, changes of sleeping pattern, worthlessness.
- Clients between the age group of 20- 80 years.
- Irrespective of sex.
- Clients who can read either English or Tamil.

**Exclusion criteria**

- Clients with sensory deficit
- Clients who were on antidepressants

**Description of the Tool**

Modified "Beck's Depression inventory scale" was used to assess the level of depression. The tool consisted two parts.

**Part: I:** It consisted of demographic variables of clients on hemodialysis.(Age, Gender, Marital status, Type of Family, Education, Occupation, Income, Frequency of dialysis, Sleeping pattern, Duration of illness, Duration of dialysis, Type of vascular access.)



**Part: II:** It consisted of Modified Beck's depression inventory to assess the level of depression. The modified Beck's depression inventory consisted of 21 items to assess the level of depression.

**Intervention (Music Therapy):**

Music Therapy can alter brain patterns and offer therapeutic help for patients suffering depression who is on hemodialysis. There are a number of clinical research studies showing the benefits of this therapy. It refers to target oriented use of certain music ragas such as SindhuBhairavi, Kalayani raga, to restore maintain and improve emotional health and well being among clients on hemodialysis. In this study music refers to the administration of rhythmic and melodious tune recorded on a CD intended to remove distress and the mind will wake up to a sense of relaxation, music therapy given for 20 minutes per day for 5 days. Before administering Music Therapy the investigator got the consent form from the subjects and informed regarding Music Therapy and its benefits on depression.

**Validity:** Five experts in Nursing and two experts in Medicine evaluated the content validity of the instruments. Nursing experts were from medical surgical nursing and medical experts were from medical and nephrology department.

**Reliability:** Reliability was established through cron bach's alpha method.

**Data Collection Procedure:** The data collection procedure was done for 6 weeks Permission to conduct the study was obtained from the Administrative Director of each hospital, Head of the department and unit in-charge of nephrology ward. 30 sample on hemodialysis were selected for the study by using non probability purposive sampling technique. The subjects were informed by the nature and purpose of the study. pre-test was conducted by using beck's depression scale. On second day Music Therapy was given to subjects for about 20 minutes once a day for 5 consecutive days. After that on the 5th day posttest was done by using the Beck's depression scale.

### III. Findings And Discussion

The response were analyzed by using descriptive statistics (Mean, Standard Deviation, Frequency and Percentage) and inferential statistics (Paired "t" test and Chi Square). Discussion on the findings was arranged based on the objectives of the study.

Major findings of the study are

- With respect to the demographic variables 40% of the clients were in the age group of 41-60 years, and 60-80 years, 50% of them were males and females, 63% of them were married, 77% of them were hailing from nuclear family, 40% of them had studied up to secondary education, 40% of them were private employees, 50% of them earned an income between Rs3000/-5000/, 67% of clients undergoing hemodialysis were twice in week, 53% of them slept between 3-6 hours/day, 73% of clients undergoing hemodialysis 3-6 years of duration of illness, 60% of clients undergoing hemodialysis 2-3 hours of duration of dialysis, 80% of them had AV fistula, 76% of them were not practicing other complementary therapies.
- With regard to effectiveness of Music Therapy on level of depression among clients undergoing hemodialysis, the mean post test score of depression was less than mean pre test score. The Obtained "t" value 12.72 was significant at  $P < 0.001$  level.
- With regard to the association between the levels of depression with their selected demographic variables, the study finding revealed a significant association between the levels of depression with education and type of vascular access.

The first objective of the study was to assess the level of depression among clients on Hemodialysis. Among this group, in the pretest 9(30%) clients had mild level of depression, 12(40%) had borderline level of depression and 9(30%) had moderate level of depression. The study finding was supported by the findings of the study done by Klanc et al, (2009) assessed the prevalence of depression among hemodialysis patients in an University hospital at Mostar. Data collection using the Beck's depression scale recorded higher prevalence of depression of 51.8%. Thus the researchers concluded that the clients on hemodialysis had a significantly moderate level of depression in comparison with general population. The second objective was to evaluate the effectiveness of Music therapy in terms of depression among clients on hemodialysis. The study revealed that pretest mean depression score was 18.8, standard deviation 3.43. In the post test mean depression score was 11.2, standard deviation 2.03 and mean difference was 7.6, t value was 12.72. It was significant at  $P < 0.001$  level. The findings of the study was supported by Moradipinnah et al (2009) conducted a case-control study to examine the effect of ragas (Mohana, Kalyani and Sindhubhairavi) on the level of depression experienced by patients on

hemodialysis, as measured by the 21-item Depression Scale. Differences in pre- and post-intervention scores demonstrated that there were significant decreases in mean scores of depression ( $P=0.02$ ) in the intervention group, who listened to 20 minutes of relaxing music, as compared with the control group who had 20 minutes of simple bed rest. Hence the stated hypothesis H1 (There is a significant difference between pre and post test score on the level of depression among clients on hemodialysis) was accepted. It revealed that Music Therapy was effective in terms of depression among clients on hemodialysis was effective.

The third objective was to determine the association between the level of depression among clients on hemodialysis with their demographic variables. The study revealed that in pretest there was a significant association between education (13.28\*), type of vascular access (11.23\*) with the level of depression among clients on hemodialysis. In the posttest there was no significant association between level of depression among clients on hemodialysis and demographic variables.

#### IV. Summary And Conclusion

**Conclusion:** The main conclusion drawn from this present study was that majority of the clients undergoing hemodialysis had mild borderline and moderate level of depression. After administration of Music Therapy the sample became familiar and found them comfortable and expressed satisfaction.

#### Implications of the Study

##### Nursing Practice

- The study findings clearly point out that the administration of Music therapy was effective in reducing the level of depression among clients undergoing hemodialysis. Nurses can be inserted on the use of Music Therapy as non threatening medium of relaxation therapy and it is easy to administer and inexpensive one
- It helps to encourage the use of music therapy as a form of mind and body relaxation technique and it has no adverse effects on clients undergoing hemodialysis.
- The study finding helps the nurse to know the importance of Music Therapy in reducing the level of depression and helps to motivate the clients with depression undergoing hemodialysis.

##### Nursing Administration

- Nurse administrator can plan for in service education programs on the use of complementary therapy in reduction of major symptoms among chronic illness
- Nurse or Administrator should motivate the nursing personnel to apply the mind and body relaxation into practice.

##### Nursing Research

- The study findings can be added to the research review regarding the effectiveness of Music Therapy on reducing depression.
- The study finding can be set as the baseline data to carry out worth.
- As evidence from the review of literature more research needs to be conducted on the effectiveness of Music Therapy along with other routine practice.

#### V. Recommendations

- A similar study can be conducted in different settings such as hospital, community and rehabilitation centre.
- A similar study can be conducted among large sample size.
- Effectiveness of this Music Therapy can be compared with other complementary therapies.
- A similar study can be done to see the effect of music therapy in other chronic illness.

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## **Effectiveness of Music Therapy on Depression among Hemodialysis Clients**

**J. Kavitha**  
Research scholar

### **I. Introduction**

End-Stage renal disease (ESRD) is a chronic, progressive disorder characterized by irreversible and gradual loss of renal function. These patients have to resort to lifelong Renal Replacement Therapies such as hemodialysis, peritoneal dialysis and kidney transplantation. In India among one million populations an estimated incidence of ESRD is approximately 1, 00,000 each year, and in this 90% will be initiated on RRT.

In ESRD patients, psychosocial changes are on the rise which seems to be the immediate concern for the nurse. They will be experiencing many stressors such as fatigue, fluid restriction and food restriction. Those who are not able to cope with these stressors will be depressed and socially isolated.

Hemodialysis is a medical procedure that uses a special machine to filter waste products from the blood and to restore the normal constituents to it. For hemodialysis to be carried out, a large blood vessels with a fast blood flow needs to be accessed. It is well understood that kidney failure and further therapy like Hemodialysis can be challenging both physically and emotionally. These emotional and physical challenges can be the basis for successful adjustment that includes 2 key elements: optimal clinical care and the residual ability to perform. In essence, a hemodialysis patient can live long enough a high quality of life and live independently and productively, if they are able to function well mentally and physically. According to American music therapy association (AMTA) music therapy is an effective and valid treatment for persons who have psychosocial, affective, cognitive and communicative needs. It is a form of sensory stimulation which increases the relaxation.

### **Need for the Study**

WHO (2009) conducted a worldwide study among selected countries to identify the existence of Depression with major disease conditions existing worldwide. The survey findings revealed that depression associated with ESRD and dialysis stood second with a prevalence rate of 16.25 surpassing depression associated with respiratory disease and metabolic disorders.

According to national Institute of Mental Health, nearly 10% patients suffering the depression due to the End Stage Renal Disease. In worldwide 34% patients were suffering from depression among the clients who are on hemodialysis (British Journal of Clinical Psychology). Joseph (2010) conducted a study to identify the presence of significant depressive symptoms common in patients with end-stage renal disease. The results revealed that 20-30% of end stage renal disease patients have significant depressive symptoms. Furthermore, it also highlighted experimentation of cognitive behavioral therapies and alternative therapies like music that has promising effects on reducing depression. Though depression is a major problem, its solution is very handy by alternative therapies. Many alternative therapies have been reduced level of depression who is on hemodialysis. One among is Music therapy. Here the researcher used music therapy to reduce depression among hemodialysis patients.

**Statement of the Problem:** A study to assess the effectiveness of Music therapy on Depression among Hemodialysis clients at Selected Hospitals of Coimbatore district.

### **Objectives**

- To assess the level of depression among clients on hemodialysis.
- To evaluate the effectiveness of Music Therapy on level of depression among clients on hemodialysis.
- To determine the association between the level of depression among clients on hemodialysis with their demographic variables.

### **Hypotheses**

H1: There is a significant difference between mean, pre and post test score on the level of depression among clients on hemodialysis.

H2: There is a significant association between level of depression among clients on hemodialysis and their demographic variables.



**Operational Definitions**

**Effectiveness** - It refers to the outcome of Music Therapy in terms of reducing depression among the clients on hemodialysis.

**Music Therapy** - In this study music refers to the administration of rhythmic and melodious tune recorded on a CD intended to remove distress and the mind will wake up to a sense of relaxation, music therapy given for 20 minutes per day for 5 days.

**Depression**- It refers to a worried state of mood in which clients on hemodialysis feel sad, helpless, hopeless, and worthless as measured by modified Beck's depression scale.

**Hemodialysis clients:** Clients who are admitted for Hemodialysis.

**Assumptions**

- Music Therapy may reduce depression
- Music Therapy has no side effects on clients on hemodialysis who experience depression
- Music Therapy may help to improve the emotional health and well being among clients on hemodialysis.

**Delimitations**

- The study was delimited to clients on hemodialysis.
- The study was delimited to a period of 6 weeks

**II. Methodology**

**Research Approach:** evaluative approach

**Research design :** A pre experimental one group pretest posttest design

**Variables :**

Dependent variable : Depression  
Independent variable : Music Therapy

**Setting of the Study :** selected private hospitals of Coimbatore district.

**Population :** for this study, target population is clients on hemodialysis with depression. The accessible population includes clients on hemodialysis with depression in selected hospitals.

**Sample :** In other words it is the process of obtaining information about the entire population by examining only a part of it. Clients admitted for hemodialysis in selected hospitals, during data collection period. The sample size was 30.

**Sampling Technique:** non probability convenience sampling was used to select sample.

**Criteria for sample selection**

**Inclusion Criteria**

- Clients who were admitted with renal failure and on dialysis.
- Clients who had symptoms of sadness, loss of interest, changes of sleeping pattern, worthlessness.
- Clients between the age group of 20- 80 years.
- Irrespective of sex.
- Clients who can read either English or Tamil.

**Exclusion criteria**

- Clients with sensory deficit
- Clients who were on antidepressants

**Description of the Tool**

Modified "Beck's Depression inventory scale" was used to assess the level of depression.

The tool consisted two parts.

**Part: I:** It consisted of demographic variables of clients on hemodialysis.(Age, Gender, Marital status, Type of Family, Education, Occupation, Income, Frequency of dialysis, Sleeping pattern, Duration of illness, Duration of dialysis, Type of vascular access.)

**Part: II:** It consisted of Modified Beck's depression inventory to assess the level of depression. The modified Beck's depression inventory consisted of 21 items to assess the level of depression.

**Intervention (Music Therapy):**

Music Therapy can alter brain patterns and offer therapeutic help for patients suffering depression who is on hemodialysis. There are a number of clinical research studies showing the benefits of this therapy. It refers to target oriented use of certain music ragas such as SindhuBhairavi, Kalayani raga, to restore maintain and improve emotional health and well being among clients on hemodialysis. In this study music refers to the administration of rhythmic and melodious tune recorded on a CD intended to remove distress and the mind will wake up to a sense of relaxation, music therapy given for 20 minutes per day for 5 days. Before administering Music Therapy the investigator got the consent form from the subjects and informed regarding Music Therapy and its benefits on depression .

**Validity:** Five experts in Nursing and two experts in Medicine evaluated the content validity of the instruments. Nursing experts were from medical surgical nursing and medical experts were from medical and nephrology department.

**Reliability:** Reliability was established through cron bach's alpha method.

**Data Collection Procedure:** The data collection procedure was done for 6 weeks Permission to conduct the study was obtained from the Administrative Director of each hospital, Head of the department and unit in-charge of nephrology ward. 30 sample on hemodialysis were selected for the study by using non probability purposive sampling technique. The subjects were informed by the nature and purpose of the study. pre-test was conducted by using beck's depression scale. On second day Music Therapy was given to subjects for about 20 minutes once a day for 5 consecutive days. After that on the 5th day posttest was done by using the Beck's depression scale.

### III. Findings And Discussion

The response were analyzed by using descriptive statistics (Mean, Standard Deviation, Frequency and Percentage) and inferential statistics (Paired "t" test and Chi Square). Discussion on the findings was arranged based on the objectives of the study.

Major findings of the study are

- With respect to the demographic variables 40% of the clients were in the age group of 41-60 years, and 60-80 years, 50% of them were males and females, 63% of them were married, 77% of them were hailing from nuclear family, 40% of them had studied up to secondary education, 40% of them were private employees, 50% of them earned an income between Rs3000/-5000/, 67% of clients undergoing hemodialysis were twice in week, 53% of them slept between 3-6 hours/day, 73% of clients undergoing hemodialysis 3-6 years of duration of illness, 60% of clients undergoing hemodialysis 2-3 hours of duration of dialysis, 80% of them had AV fistula, 76% of them were not practicing other complementary therapies.
- With regard to effectiveness of Music Therapy on level of depression among clients undergoing hemodialysis, the mean post test score of depression was less than mean pre test score. The Obtained "t" value 12.72 was significant at  $P < 0.001$  level.
- With regard to the association between the levels of depression with their selected demographic variables, the study finding revealed a significant association between the levels of depression with education and type of vascular access.

The first objective of the study was to assess the level of depression among clients on Hemodialysis. Among this group, in the pretest 9(30%) clients had mild level of depression, 12(40%) had borderline level of depression and 9(30%) had moderate level of depression. The study finding was supported by the findings of the study done by Klanc et al. (2009) assessed the prevalence of depression among hemodialysis patients in an University hospital at Mostar. Data collection using the Beck's depression scale recorded higher prevalence of depression of 51.8%. Thus the researchers concluded that the clients on hemodialysis had a significantly moderate level of depression in comparison with general population. The second objective was to evaluate the effectiveness of Music therapy in terms of depression among clients on hemodialysis. The study revealed that pretest mean depression score was 18.8, standard deviation 3.43. In the post test mean depression score was 11.2, standard deviation 2.03 and mean difference was 7.6, t value was 12.72. It was significant at  $P < 0.001$  level. The findings of the study was supported by Moradipinnah et al (2009) conducted a case-control study to examine the effect of ragas (Mohana, Kalyani and Sindhubhairavi) on the level of depression experienced by patients on

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#### **IV. Summary And Conclusion**

**Conclusion:** The main conclusion drawn from this present study was that majority of the clients undergoing hemodialysis had mild borderline and moderate level of depression. After administration of Music Therapy the sample became familiar and found them comfortable and expressed satisfaction.

#### **Implications of the Study**

##### **Nursing Practice**

- The study findings clearly point out that the administration of Music therapy was effective in reducing the level of depression among clients undergoing hemodialysis. Nurses can be inserted on the use of Music Therapy as non threatening medium of relaxation therapy and it is easy to administer and inexpensive one
- It helps to encourage the use of music therapy as a form of mind and body relaxation technique and it has no adverse effects on clients undergoing hemodialysis.
- The study finding helps the nurse to know the importance of Music Therapy in reducing the level of depression and helps to motivate the clients with depression undergoing hemodialysis.

##### **Nursing Administration**

- Nurse administrator can plan for in service education programs on the use of complementary therapy in reduction of major symptoms among chronic illness
- Nurse or Administrator should motivate the nursing personnel to apply the mind and body relaxation into practice.

##### **Nursing Research**

- The study findings can be added to the research review regarding the effectiveness of Music Therapy on reducing depression.
- The study finding can be set as the baseline data to carry out worth.
- As evidence from the review of literature more research needs to be conducted on the effectiveness of Music Therapy along with other routine practice.

#### **V. Recommendations**

- A similar study can be conducted indifferent settings such as hospital, community and rehabilitation centre.
- A similar study can be conducted among large sample size.
- Effectiveness of this Music Therapy can be compared with other complementary therapies.
- A similar study can be done to see the effect of music therapy in other chronic illness.

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**Doula care among parturient**

A Thesis Submitted to  
**The Tamil Nadu Dr. M.G.R Medical University,  
Chennai**



By  
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In fulfillment of the requirement for the award of  
**Doctor of Philosophy in Nursing**



Under the Guidance of  
**PROF. DR.A. CHARLES STEPHEN RAJA SINGH M.S., M.Ch.,**  
RESEARCH GUIDE

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## XII STUDY SETTING















