EFFECTIVENESS OF BIRTHING BALL UPON LABOUR PAIN AND COPING IN PRIMI PARTURIENT WOMEN

By

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A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

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DECLARATION

I hereby declare that the present dissertation entitled "**Effectiveness of birthing ball upon labour pain and coping in primiparturient women"** is the outcome of the original research work undertaken and carried out by me under the guidance of **Dr. Latha Venkatesan** M.Sc (N)., M.Phil (N)., Ph.D (N)., Principal, Apollo College of Nursing, Chennai and **Prof. Lizy Sonia** M.Sc (N)., Ph.D (N)., Vice principal, Apollo College of Nursing, Chennai . I also declare that the material of this has not formed in anyway, the basis for the award of any degree or diploma in this University or any other Universities.

M.Sc., (N) II Year

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SYNOPSIS

An Experimental Study to Assess the Effectiveness of Birthing ball upon Labour pain and Coping during First Stage of Labour in Primiparturient Women at Andhra mahila sabha Hospital, Chennai.

Objectives of the Study

1. To assess the level of labour pain, coping and feto-maternal parameters during the first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
2. To assess the effectiveness of birthing ball by comparing the level of pain, coping and feto-maternal parameters during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
3. To determine the level of satisfaction upon use of birthing ball in experimental group of primiparturient women.
4. To find the association between the selected demographical variables and the level of pain and coping during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
5. To find the association between the selected obstetrical variables and the level of pain and coping during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.

The conceptual framework setup for the study is the model of Modified Wiedenbach's helping art of clinical nursing theory. The variables of the study were birthing ball and labour pain. Null hypothesis were formulated. An extensive review of literature was made based on the opinions of the experts. An experimental study of pre-test and post-test design was used. The study included 60 Primiparturient mothers who were selected by systematic random sampling. The study was conducted at Andramahilasabha hospital, Chennai.

Demographic variable proforma, obstetric variable proforma, Numerical pain intensity scale, Pain Coping Scale, Rating Scale on Satisfaction of birthing ball and modified WHO Partogram were the various tools used by the researcher. The validity was obtained from various experts and reliability was established. The main study was conducted after the pilot study.

The level of labour pain, coping and feto-maternal parameters were assessed for the control and experimental group of primiparturient womens. The birthing ball was provided for 15 minutes in the interval of 2cm, 4cm, 6cm cervical dilatation for the experimental group. Then the level of labour pain, coping and feto-maternal parameters were assessed again for both the groups. The level of satisfaction on use of birthing ball was assessed among the experimental group of primiparturient women after the labour. The data obtained were analyzed using Descriptive and inferential statistics.

Major findings of the study

- All the women were home makers (100%,100%) , didn't received previous knowledge regarding birthing ball (100%,100%) and majority of the women were homogenously distributed between the age group of 21-25years

(70%,60%) had completed their secondary education (60%,70%) with monthly income of 5000-7000 rupees (70%,50%) and living in urban (50%,60%)in the control and experimental group respectively.

- All the women had more than 8 ante natal visits (100%,100%),with none receiving any pain management during labour (100%,100%),didn't developed any fetal and maternal complications during labour(100%,100%) with the APGAR score of the new born (100%,100%) and majority of the women were between the gestational age of 39-40 weeks (70%,70%) under gone normal vaginal delivery (70%,90%) with duration of first stage labour 9-10 hours (60%,70%) and with the duration of second stage of labour 51-60 minutes (70%,90%) in control and experimental group respectively.
- The mean and standard deviation of level of labour pain was higher after therapy (M=5.8, S.D=0.63) when compared with labour pain before therapy (M=5, S.D=0.44) in the control group, where as the mean and standard deviation of the level of labour pain was lower after therapy (M=5, S.D= 0.6) when compared with labour pain before therapy (M=6.1, S.D=0.5) in the experimental group. This was statistically proven at $p<0.01$ level of confidence. Hence the null hypothesis H_{o1} was rejected.
- The mean and standard deviation of coping level in the control group was lower after therapy (M=2, S.D=0.87) than before therapy (M=4.2, S.D=0.84) and the mean and standard deviation of coping level in the experimental group was higher after therapy (M=4.3, S.D=0.69) compared to before therapy (M=3.3, S.D=0.60) which was significant at $p<0.05$ level, thus the null hypotheses H_{01} was rejected.

- The mean and standard deviation of the frequency of uterine contraction in the experimental group was lower after therapy (M=3.9, S.D=0.11) when compared to before therapy (M=2.5, S.D=0.50) and uterine contraction was higher after therapy (M=4, S.D=1.50) compared to before therapy (M=3, SD=0.70) at $p<0.05$ level of significance for control and experimental group respectively. Hence the null hypothesis H_{01} was rejected.
- Majority of the mothers were highly satisfied 96.7% with birthing ball during the first stage of labour and none of them reported low satisfaction.
- No significant association was found between selected demographic and obstetric variables with the level of labour pain, coping and feto-maternal parameters before and after the birthing ball in control and experimental group of primiparturient mothers. Thus the null hypotheses H_{02} and H_{03} were retained.

The above finding reveals that the birthing ball used by the researcher during the first stage of labour among primiparturient women were effective in reducing the perception of labour pain and increasing the coping level during the labour without affecting the feto-maternal parameters.

Recommendations

- The same study can be conducted with larger number of samples.
- A comparison can be made between primi and multigravid.
- A comparison can be made with different stages of labour.
- The same study can be conducted at different setting.
- A comparison can be made between different types of alternative and complementary therapies.

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CHAPTER I

INTRODUCTION

Background of the Study

"Motherhood - a safe experience where,

Pain and joy are one at this moment to live"

- Johan Mac

It's long been assumed that Womanhood brings meaning to our lives. We guide, love, nurture and support our offspring and sometimes feel appreciated in return all elements that can fuel our connectedness and satisfaction in the world. It's easy to find meaningful moments as a mom, but when things are tough that it seems we don't know how to interpret what meaning is.

Child birth is an exciting and meaningful experience in a Women life. From the origin of mankind women are made to undergo labour painwhich is one of the most painful condition. Being pregnant and giving birth is likely crossing a narrow bridge, people can accompany you to the bridge and they can greet you on the other side but you walk that bridge alonebut the journey doesn't end there. Children are the future of a society & special gifts to the world.Changes in our society & world require us to be attentive & value them & their health.

Child bearing is a natural physiological event however that creative process is a challenge that places the baby at risk (Zelling 1996). All mothers are experiencing severe pain associated with child birth.

Chapman describes “labour pain as stimuli of receptive neurons arising from contraction of uterine muscles, which is referred to as the visceral, pelvic and lumbar sacral areas”.

The act of giving birth is the only moment when both pain and pleasure converge in a moment of time. It is in the manner of the sharp point of a needle, astride upon that points are both pleasure and pain, simultaneously assailing the female that is undergoing the miracle of childbirth.

During labour the women experiences some degree of stress as her system response to the physical changes that prepare her to give birth nearly every women in labour experiences some degree of discomfort. Perception of pain is highly unique and differs from one individual to another through the intensity of pain stimuli is same.

During the first stage of labour women usually experiences visceral pain of diffuse abdominal cramping and uterine contraction. In second stage there is a sharper and more continuous somatic pain in the perineum. Pressure or nerve entrapment cost by the fetus head can cause severe back or leg pain. Nulliparous women generally experience more sensory pain during early labour. While multi parous women may experience more intense pain during late first stage and second stage of labour, as s result of rapid fetal decent (Lowe).

An average birth rate for the whole world in the year 2008 was 19.95/year/thousand. There are approximately 6 million pregnancies and 4 million births in United States every year. In India, 128.9 million births occur per year. The birth rate in Tamil Nadu and Chennai in the year 2009 was 16.3/1000 births and

15.3/1000 births respectively. Thus all the women who give to the baby necessitate some type of pain relief methods (Department of Health and Family Welfare, 2009).

Today there are wide ranges of interventions available to help the labouring women to manage pain during labour such as analgesics anaesthetics, entonox. Non pharmacological methods are classified into two; they are psychoprophylaxis methods and psychological methods. Psychoprophylaxis methods are Lamaze technique, support during labour, dual relaxation, breathing techniques positioning birthing balls hot and cold applications, ice immersion, aroma therapy, acupuncture and acupressure (Pennysimkin, 2007).

Anderson & Johnson (2005) conducted randomised controlled studies to identify the use of complementary and alternative therapies for obstetric treatment and health promotion. 54 articles accessing a variety of health modalities meeting the criteria were included. The study concluded that complementary and alternative therapies have evidence of effectiveness for use in obstetric patients.

Worldwide every year approximately 211.4 million women experience the joy of pregnancy based on WHO report in 2010. Where in India approximately 31.3 million women experiences pregnancy annually says UNICEF study (2010).

Birthing ball is wonderful comfort too for pregnancy and labour. It is a large air filled rubber ball about (50-60 cm in diameter) made up of extra though non slip burst proof PVC that is easily wiped and clean. Researches have proved that it has many advantages.

During the clinical postings, the researcher found that women suffered with pain and were in need of some type of pain relief measures during labour. As the pain management by pharmacological method may affect the condition of the baby or the mother, non-pharmacological method which is safe for both was preferred by the researcher for pain relief though there are various types of non-pharmacological measures available to relieve pain, birthing ball was found to be safe, inexpensive and effective for pain relief and coping during labour. Thus the investigator is interested in using birthing ball for labour pain among the primiparturient women.

Need for the Study

Labour pains are the major damper in the joy of having baby the thought of pain that women have such as pictures of pregnant women screaming in pain, that they have seen in hundreds of films, flash through their mind during labour and makes them ill. Labour pains are the fact of life that cannot be avoided, but reduced to some extent by the use non-pharmacological and pharmacological approach.

Birth is the family affair. The reproductive health of the total family is the corner stone of healthy society. Pain and its relief for the women in labour has been the subject of interest since the dawn of mankind. Following the initial second transgression in the Garden of Eden, God set to eve, I will greatly increases your pain in child bearing with pain you will give birth to child.

Reducing the labour pain and providing comfort to the Women is the most important challenge that midwives and physicians face from very beginning .positioning strategies and movement between contractions are one among the alternative therapies

which is found effective in reducing labour pain, adding comfort, improving progress of labour.

Many research studies have proved that ambulation in the first stage of labour has many benefits like improving comfort to the Women and helping for ease of labour by descent of baby by gravity. But the pain of uterine contractions makes ambulation difficult for the women.

Worldwide every year approximately 45%- 60% women experience the joy of pregnancy based on alternative and complementry therapies report in 2010. Where in India approximately 28% women adopting these types of non pharmacological methods during labour says by ACMT association report on 2010.

A randomized controlled trial (2011) was conducted in Spain by Delgado - Garc. to evaluate the effect of use of birthing balls during labour. Totally 34 experimental mothers has been taken for the study and 24 controls are compared. The experimental groups experienced low intense of pain comparing to control group ($P < 0.001$). The findings reported that birthing balls seems to reduce pain during the active phase of labour in Nulliparous women.

Gau& Chang, in the year 2009 has conducted the study to determine the effect of birth ball exercise program during child birth in national TaipeiUniversity of nursing and health sciences, Taiwan. Totally 188 mothers were selected in that 94 mothers are control group and 94 mothers was experimental group. The mothers in the experimental group used in the birthing ball during active phase of labour in various positions to relax

them. There was a significant difference in decreased labour pain in the experimental group compared with control group ($p< 0.001$).

National centre for health statistics (2008) the birth in the United States in 2008 was 685/1000 women ages 15 – 44 in that 58.5/1000 women undergone vaginal delivery. The methods used by the nurse midwives in the US to manage the pain labour showed that the majority about 84% use non drug methods while about 16% use pharmacological methods. Use of birth ball is about 4.2%.

Worldwide about 55% of full term newborns are delivered vaginally, while over 75% of full term newborns in US are delivered vaginally.

In India major rural areas of about 18 – 22 % has cost constraints that they cannot afford for high sophisticated pain relief measures like hydro therapy, whirlpool bath etc.

Statement of the problem

An Experimental Study to Assess the Effectiveness of Birthing ball upon Labour pain and Coping during First Stage of Labour in Primiparturient Women at Andhramahilasabha Hospital, Chennai.

Objectives of the study

1. To assess the level of labour pain, coping and feto-maternal parameters during the first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.

2. To assess the effectiveness of birthing ball by comparing the level of pain, coping and feto-maternal parameters during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
3. To determine the level of satisfaction upon use of birthing ball in experimental group of primiparturient women.
4. To find the association between the selected demographical variables and the level of pain and coping and during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
5. To find the association between the selected obstetric variables and the level of pain and coping during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.

Operational Definitions

Effectiveness

The outcome of the birthing ball as measured in terms of the level of labour pain and feto- maternal parameters of primiparturient Women before and after use of birthing ball.

Birthing ball

In this study, it is a large air filled rubber ball (about 60 cm in diameter) made up of extra tough non slip burst proofPVC that is easily wiped and clean. The women will be sitting over the birthing ball after 2cm of cervical dilatation in a sitting position for 15 minutes in an interval of 2cm, 4cm, and 6cm of cervical dilatation.

Labour Pain

In this study, it is the pain experienced by the Women during the first stage of labour as measured by numeric pain rating scale by interviewing the women.

First stage of labour

In this study, it refers from the starting of true uterine contractions to till full cervical dilatation of the cervix. Approximately the duration of this period for primiparturient woman is 12 to 14 hours.

Feto-maternal parameters

The parameters which are measured by the researcher through modified WHO partograph namely fetal heart rate, maternal blood pressure, duration and frequency of uterine contraction, cervical dilatation before and after use of birthing ball.

Primiparturient Women

In this study, it refers to the Women who is going to deliver the baby for first time between the age of 18-35 with gestational age of 37-42 weeks are in the first stage of labour.

Level of satisfaction

In the study level of satisfaction is a feeling of gratification attain or achieved by birthing ball in primiparturient women as measured by rating scale prepared by researcher.

Assumptions

The study assumes that

- Women have more pain during labour
- Pain in labour is progressive in nature
- The experience of labour pain varies markedly from woman to woman
- Labour Pain can be reducing by using alternative and complementry methods like birthing ball.
- Birthing ball promotes ambulation of the women

Null Hypotheses

H_{01} There will be no significant differences in the level of pain, coping and feto-maternal parameters during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.

H_{02} There will be no significant association between the selected demographic variables and level of labour pain and coping before and after use of birthing ball in the control and experimental group of primiparturient women.

H_{03} There will be no significant association between the selected obstetric variables and level of pain and coping before and after use of birthing ball in the control and experimental group of primiparturient women.

Delimitations

The study was limited to primipaturient women were

- admitted at Andramahilasabha hospital
- with first stage of labour
- between cervical dilatation of 2 to 6 cm
- between age of 18-35 years
- between the gestational age of 37-40 weeks

Conceptual Framework

Conceptual Framework for this study was developed on the basis of Ernestine Widen Backs helping art of clinical nursing theory. She proposed her theory in 1970 as prescriptive theory of nursing. Prescriptive theory directs action towards an explicit goal. It consists of three factors, central purpose, prescriptive & realities. A nurse develops the prescription based on central purpose & implements it according to the realities of the situation.

The attributes adopted in the study are:

Central purpose

The central purpose of the study is to reduce the labour pain perception and promoting the coping ability of the parturient women during first stage of labour.

Perception

The investigator plans the prescription that will fulfill the central purpose by identifying the various measures to achieve the goal. Thus the investigator selected the

method, use of birthing ball, which is considered as safe, effectively reduces the labour pain without serious side effects.

Realities

It includes the following factor

1. Agent : investigator
2. Recipient : primiparturient women
3. Goal : reduction of labour pain perception and promoting coping
4. Method : use of birthing ball
5. Frame work : hospital

Identification

This includes identification of need for reduction of labour pain perception among primiparturient women.

Ministration

Refers to the use of birthing ball during first stage of labour.

Validation

Refers to the evaluation of the effectiveness of birthing ball .a positive outcome represents the satisfaction of primiparturient women with decreased pain perception &increase coping by the use of birthing ball and the intervention is reinforced. The negative outcome represents the dissatisfaction of parturient women with pain perception.

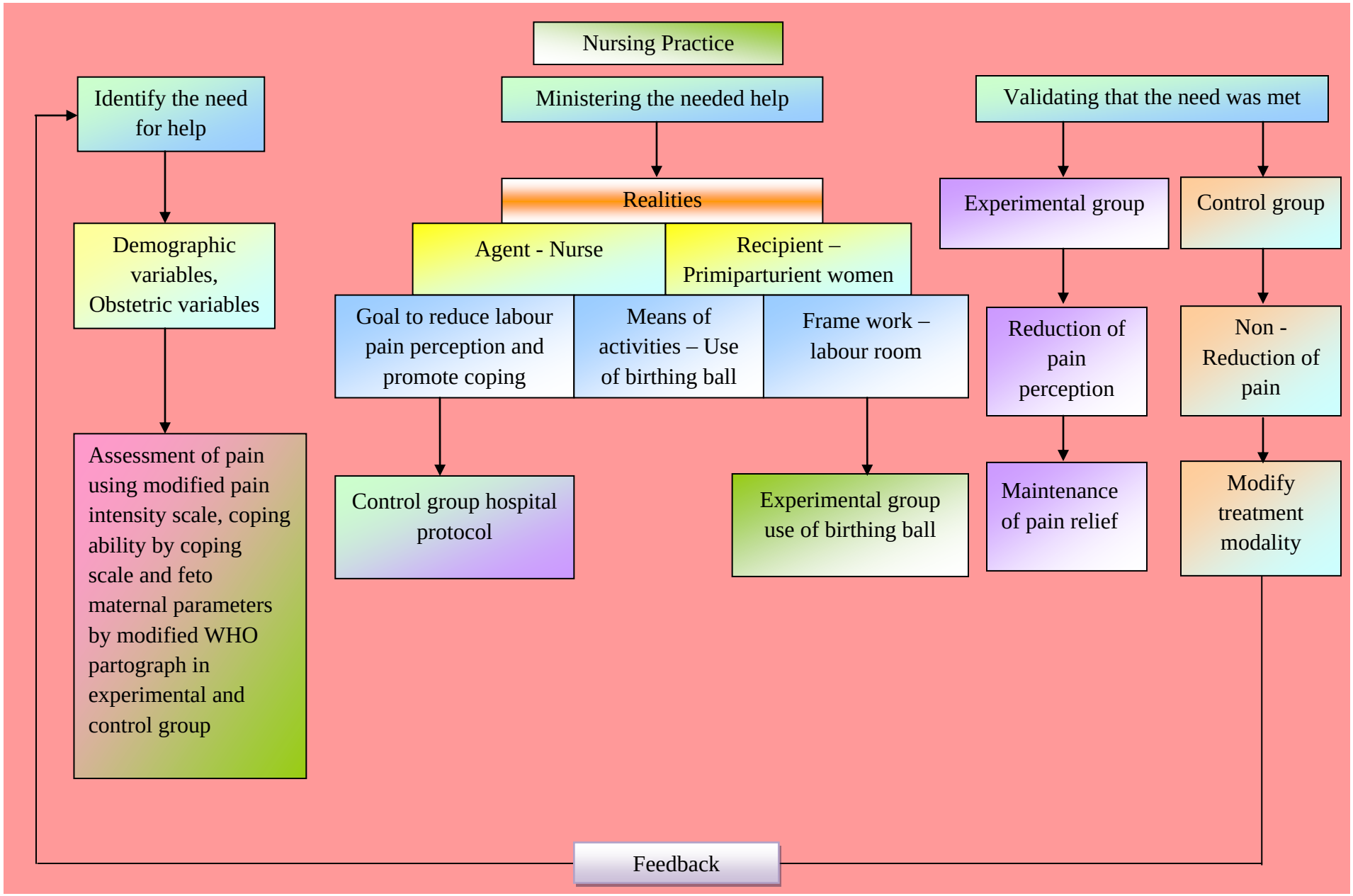

Fig. 1 Conceptual Framework Based on Modified Wibenback'sHelpingArt of Clinical Nursing Theory

Projected Outcome

The study projects that use of birthing ball will have a change in the level of labour pain and coping among the primiparturient women.

Summary

This chapter has dealt with background of the study, need for the study, statement of the problem, objectives of the study, operational definitions, assumptions, null hypotheses, delimitations and conceptual framework.

Organization of the Report

Further aspects of the study are presented in the following five chapters

In Chapter – II : Review of literature.

In Chapter – III : Research methodology- which includes research approach, design, setting, population, sample and sampling techniques, tool description, content validity and reliability of tools, pilot study, data collection procedure and plan for data analysis.

In Chapter – IV : Analysis and interpretation of data.

In Chapter – V : Discussion.

In Chapter – VI : Summary, conclusion, implications recommendations and limitations

CHAPTER II

REVIEW OF LITERATURE

A critical summary of research on a topic of interest, often prepared to put a research problem in context (Polit, 2010).

The review of literature provides information, ideas, data and evidence to the researcher written from a particular standpoint to fulfill certain aims or express certain views on the nature of the topic and how it is to be investigated and the effective evaluation of these documents in relation to the research being proposed.

The review of literature in this chapter has been presented under the following headings.

- Literature related to labour pain.
- Literature related to pain management in labour.
- Literature related to birthing ball.
- Literature related to birthing ball in labour.

Literature related to Labourpain

In the year 2008 Tzeng and su carried out a correlational design to describe the characteristics of low back pain during labor and to identify the factors relating to intrapartum low back pain in Taiwan women. Ninety-three low-risk women in labor were recruited. Low back pain was repeatedly measured during the latent phase, early active phase, and late active phase of labor. The findings stated that the pattern of pain

in 45.71% women was continuous and massage was chosen as the most effective intervention to alleviate low back pain by 65.3% of women.

Bergstrom, Kieler and Waldenstrom conducted a cohort study on psycho prophylaxis during labour on labour outcome and experience of child birth in Sweden between October 2005 and January 2007. A total of 857 primigravid women were involved in the study and data were collected by questionnaires in mid-pregnancy and three months after birth. The results concluded that use of psycho prophylaxis during labour was associated with a lower risk of emergency caesarean, but an increased risk of augmentation of labour.

A cross-national comparison of Belgian and Dutch childbearing women on pain acceptance and personal control in pain relief in two maternity care models was conducted by Christians et al., from 2004 - 2005 at Belgium. Two questionnaires were filled out by 327 women, one at 30 weeks of pregnancy and one within the first 2 weeks after childbirth. The results showed that Dutch women with a normal hospital birth had positive pain attitudes and are six times less likely to use pain medication during labour, compared to their Belgian counterparts who had negative pain attitudes.

In Germany a longitudinal cohort study on onset of labour, women's experiences and midwives assessment was conducted by Gross et al. (2004) which involved 1170 women among which 611 were nulliparae and 559 were multiparae. The data were collected using standardized questions and the study concluded that the perceptions of women in labour are as important as perinatal factors (induction with oxytocin, herbal remedies and premature rupture of membrane) in determining the duration of first stage of labour and should be taken into account in intrapartum care.

Pain perception as perceived by the parturient is determined by physical and psychological factors. This cross-sectional study was conducted by Olayemi et al., at Ibadan from August 2003 to July 2004 among 765 parturients using a questionnaire with the Box Numerical Scale to assess pain score within 48 hours of delivery. The study concluded that westernization through education tends to increase perception of pain by parturients in this environment.

A study was conducted in United statesto compare maternal satisfaction and pain control in women electing natural childbirth where 24 women participated. Women who requested epidural analgesia for pain during labor reported significantly lower pain scores than those women who had natural childbirth. However, 88% of women who requested an epidural for pain reported being less satisfied with their childbirth experience than those who did not, despite lower pain intensity (Kannan, Jamison &Datta, 2001).

The expected and experienced labour pain of 99 primiparous women, aged from 17-40 years, was compared in the prospective study conducted by Lawrence and Percival in Australia (1995). The Visual Analogue Scales and the Pain Intensity of the McGill Pain Questionnaire were used to assess expected pain prenatally and experienced pain intrapartum and two hours postpartum. A significant difference was found between expected pain and pain experienced during early and transitional labour.

Literature related to Pain Management in Labour

Simet&Levett in the year of 2011 carried out the trial based controlled trial to evaluate the effectiveness of foot reflexology in reducing the pain perception in labour.

They included 6 trials in that 326 women were selected as the study participants. They found 1 trial of massage compared with other 5 trials. They concluded that foot reflexology have a role in labour pain management.

A cross sectional study of Australian midwives knowledge and use of sterile water injection for pain relief in labour conducted in the year of 2011 by Lee &Martensson. Two trials of group of mothers were selected. Totally 88 participants have been selected for the studies control trial met with the hospital protocol and another trial underwent sterile water injection to relieve pain in that they found 57.5% of mothers had reduction of pain during labour.

Levett& Collins conducted the study in the year of 2010 in relaxation technique for pain management in labour. Randomized controlled trials comparing relaxation method with standard care. Totally 1374 women were participated in the study in that 677 women were thought with yoga and 374 women were thought with breathing and relaxation techniques and remaining underwent standard care in the hospital. They concluded that 82.6% of mothers were highly satisfied with relaxation therapies.

A randomized controlled trial (2009) was conducted by Borup et al. with 607 healthy women to compare the effect of acupuncture with transcutaneous electric nerve stimulation (TENS) and traditional analgesics for pain relief and relaxation during delivery with respect to pain intensity, birth experience, and obstetric outcome. The result showed that use of pharmacological and invasive methods was significantly lower in the acupuncture group and it was found to be a good supplement to existing pain relief methods.

Meidan et al., in the year 2008 carried out a prospective controlled trial to evaluate the effectiveness of antenatal perineal massage in increasing the likelihood of delivering with an intact perineum. The study included 234 nulliparous women with a singleton fetus. Women allocated to the study group were instructed to practice a 10 minute perineal massage daily from the 34th week of gestation until delivery. The practice of antenatal perineal massage showed neither a protective nor a detrimental significant effect on the occurrence of perineal trauma.

In Glasgow University, UK, a randomized controlled trial was conducted to compare the efficacy of diamorphine administered by a patient-controlled pump with intramuscular administration for pain relief in labour. The study included primigravidae and multigravidae in labour between 37-42 weeks of gestation. Study group women were attached to the diamorphine pump after intravenous loading dose whereas control group women received intramuscular diamorphine as per hospital protocol. The study concluded that patient-controlled analgesia administration of diamorphine offers no significant advantages over intramuscular administration. (Mclnnes et al., 2004).

Literature related to Birthing ball

Birthing ball was effective in reducing labour pain which was supported by the review using electronic databases caring out in university of Paris, Cho and Lee (2011) evaluating the effect of birthing ball in the life of motherhood. The findings concluded that it provides relaxation for the mother during the period of pregnancy.

In 2010 Anderson carried out the randomized control trial to identify the use of birth balls during labour. It was concluded that various positions used along with the

birthing ball by the mother during labour to support. They found that 63% of mothers were highly satisfied with the birthing ball during labour.

Shahali (2009) conducted the study to assess the effect of birthing ball during antenatal period. The study included 120 Nulliparous women and the intervention group received the birthing ball exercise by videotaping and practiced from 32 – 38 weeks of gestation. The result interpreted that the mean duration of active phase of labour, number of caesarean deliveries, severity of labour pain and amount of oxytocin used were significantly reduced in the intervention group when compared to control group.

Literature related to birthing ball in labour

Delgado – garc conducted the study to determine the effects of use of birthing balls during labour in the year of 2011. A randomized control trial was selected between the age group of 18 – 35 years, nulliparous, at term, no high risk. They performed movements sitting on birthing ball during labour. The outcome of study is the pain perception during the labour period was compared with another trial. There was a significant relationship in pain perception by use of birthing balls ($P < 0.001$).

A study was conducted by swapnasukumaran, in the year 2011 in karnataka.The main objective to examine the effectiveness of birthing ball exercise program during child birth. Totally 40 samples were used for the study. The mothers were used the birthing ball technique in various cervical dilatations. Which showed that Severity of labor pain before birthing ball did not vary between case and control groups but after it, severity of labor pain in the intervention group was lower than the control group (p

<0.001). The severity of labor pain reduced after the intervention in the intervention group ($p < 0.001$), whereas, labor pain increased in the control group ($p < 0.001$).

In 2009 a randomized control trial in Taiwan, an effect of birthing ball exercise on pain and self efficacy during child birth. The main objective to examine the effectiveness of birthing ball exercise program during child birth. 48 interventional group mother and 39 control group mothers used for the study. They concluded that the birthing ball is most effective during labour. 72.8% of mothers have been reduced with pain perception conducted by Tian, & Lin.

A randomized control trial in the year of 2008 in Iran conducted by wester on the effect of birthing ball usage of pain in the active phase of labour. 60 primipara women aged 18 – 35 years were divided into experimental and control groups. Pain scores were measured by visual analog scale. Mean pain score in the birth ball group were significantly lower than the mean pain score in the control group ($P < 0.05$).

Summary

This chapter deals with the review of literature related to the problem stated. The literatures were taken from 18 primary and 2 secondary resources. It helped the researcher to develop tool, collect data organize and analyze the data.

CHAPTER III

RESEARCH METHODOLOGY

This chapter deals with the methodology used by the researcher in this study which includes research approach, research design, setting of the study, population, sample, sampling technique, sampling criteria, selection and development of the tools, psychometric properties of the tools, pilot study, data collection procedure and plan for data analysis.

Research Approach

Polit and Beck (2010) says that a true experimental study should be characterized by manipulation, control and randomization as it helps to give the cause and effect relationship between the variables. As the effectiveness of use of birthing ball is to be assessed upon labour pain in this study, the researcher found experimental approach to be appropriate.

Research Design

A research design incorporates the most important methodological design that a researcher works in conducting a research study (Polit& Beck, 2010).

Time series design with multiple institution of treatment was used in the study. The researcher assessed the pain level with the pain intensity scale, coping level with the pain coping scale, feto-maternal parameters with modified WHO partograph before intervention for both the control and experimental group of primiparturient women. The researcher then provided birthing ball for 15 minutes in the cervical dilatation of 2 cm,

4 cm, 6 cm for the experimental group of primiparturient women during the active phase of labour and reassessed the pain level, coping level and feto maternal parameters for both the group after each intervention. Then the level of satisfaction on birthing ball was assessed from the experimental group of primiparturient women.

R O1XO2, O3X O4, O5X O6

R O1 - O2, O3- O4, O5- O6,

R - Randamization

O1O3O5 - Assessment before use of birthing ball at 2cm, 4cm, 6cm of cervical dilatation

X - Administration of birthing ball

O2 O4O6 - Assessment after useof birthing ball at 2cm, 4cm, 6cm of cervical dilatation

Variables

Variable is an attribute that varies, that is takes on different values (polit, 2010).

Independent variable

The variable that is believed to cause or influence the dependent variable is called independent variable. In this study use of birthing ball is the independent variable. Birthing ballis used for 15 minutes of period at the interval of 2cm, 4cm, 6cm cervical dilatation to assess the change in the pain level and coping level.

Dependent variable

The variable hypothesized to depend on or be caused by independent variable is the dependent variable. Labour pain is the dependent variable in this study. The level of labour pain is assessed at the interval of cervical dilatation of 2 cm, 4 cm, 6 cm before and after use of birthing ball during the active phase of first stage of labour.

Extraneous variables

A variable that confounds the relationship between the independent and dependent variables and that needs to be controlled either in the research design or through statistical procedures is the extraneous variables. Demographic variables and obstetric variables were extraneous variables in this study.

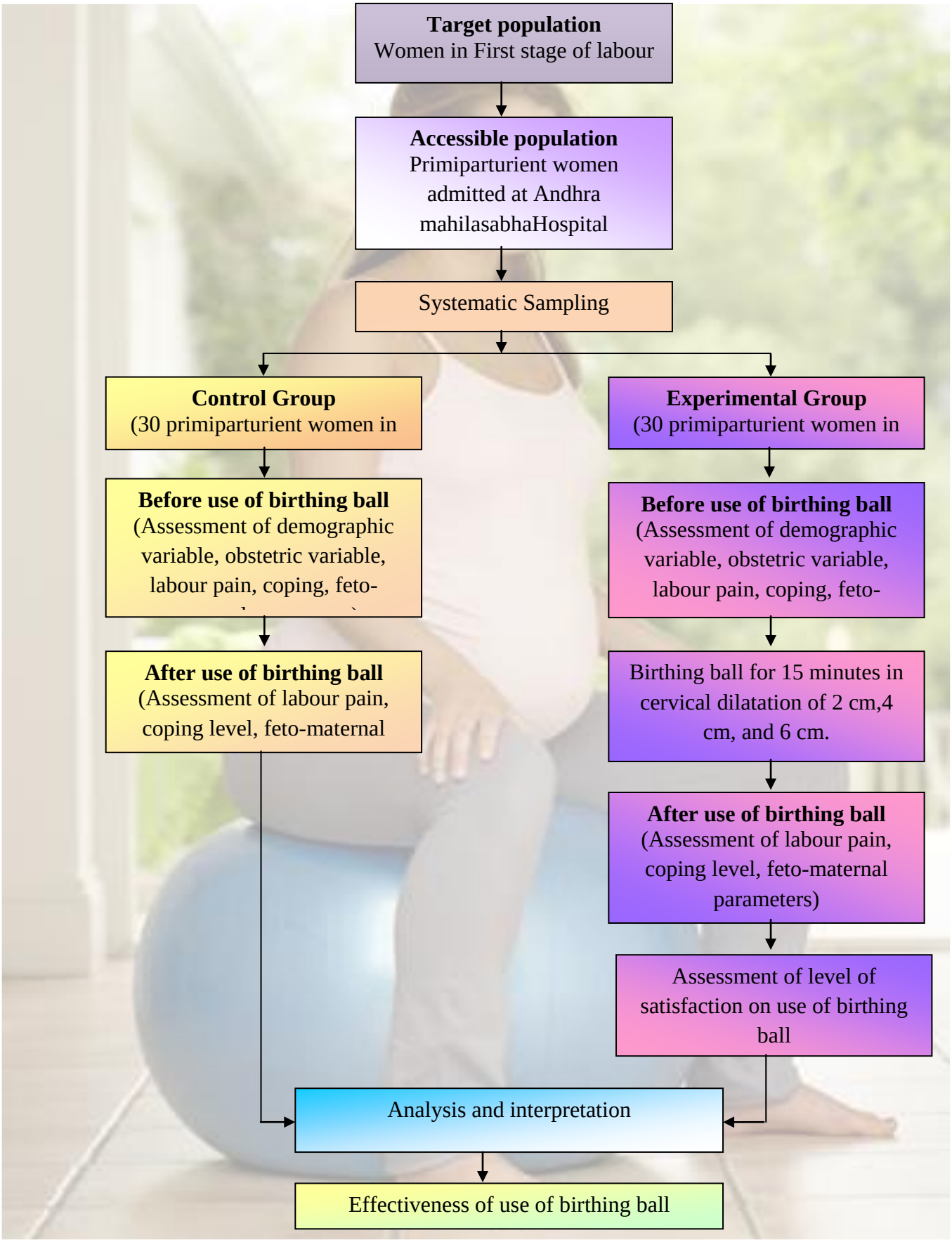

Fig 2. Schematic Representation of the Research Design

Research Setting

The study was conducted at Andhra mahilasabhaHospital located at Mylapore which is anurban area of Chennai. The hospital is 350 bedded which has labour room with three labour table and equipments like CTG machine, warmer and life saving drugs and equipments for Obstetric and Medical Emergencies. On an average 80 – 100 primigravidae undergo normal vaginal delivery every month. The hospital also has postnatal ward, post operative ward, NICU, operation theatre, laboratory and other diagnostic facilities like scanning. They also provide Immunization and conduct teaching programmes for the staffs and the patients and do referral to government agencies in need.

Population

Population is the entire set of individuals or objects having some common characteristics (Polit and Beck, 2010). The target population is the entire population in which a researcher is interested and to which he or she would like to generalize the study results. In this study the target population was all the primiparturient women in the first stage of labour. The accessible population is the aggregate of cases that conform to designated criteria and that are accessible as subjects for a study. In this study the accessible population was all the primiparturient women admitted at Andhra mahilasabhaHospital, Chennai.

Sample

According to Polit and Beck (2010) sample is a subset of population elements. A sample of 60 primiparturient women in the first stage of labour was selected among

which 30 primiparturient women was randomly assigned to the control group and 30 primiparturient women was assigned to the experimental group.

Sampling Technique

Sampling is the process of selecting a portion of the population to represent the entire population so that inferences about the population can be made (Polit and Beck 2010). Systematic random sampling was used in this study for the women who satisfy the inclusion criteria where the odd number parturient women were assigned to control group and the even number parturient women were assigned to the experimental group.

Sampling Criteria

Inclusion criteria

The study includes primiparturient women who were

- Women with first stage of labour
- Women available during the time of data collection
- Who are willing to participate in the study
- Between age of 18-35 years
- Women with in the gestational age of 37-40 weeks
- With the cervical dilatation of 2 cm – 6 cm

Exclusion criteria

The study excluded

- Women with second and third stage of labour
- Who are not willing to participate
- Women introduced with cerviprime gel

- Women who adopted some other non pharmacological method
- Women who are posted for Lower segmental caesarean section
- Women with underline disease such as pregnancy induced hypertension, diabetes mellitus.

Selection and Development of Study Instruments

The instruments for this study were developed to evaluate the effectiveness of use of birthing ball upon labour pain through extensive review of literature. The instruments used in this study were demographic variable proforma, obstetric variable proforma, modified pain intensity scale, pain coping scale, modified WHO Partograph and rating scale on satisfaction of use of birthing ball upon labour pain.

Demographic variable proforma for primiparturient women

Demographic variable proforma consists of age, educational qualification, occupation, type of work, area of residence, type of family and previous knowledge about birthing ball.

Obstetric variable proforma for primiparturient women

Obstetric variable proforma consists of gestational age in weeks, number of antenatal visits, pain management during first stage of labour, type of delivery, indications of abnormal delivery, duration of first stage of labour, duration of second stage of labour, duration of third stage of labour, APGAR score of the newborn.

Modified pain intensity scale for primiparturient women

Pain intensity scale was used to assess the level of labour pain during the first stage of labour among the primiparturient women before and after use of birthing ball which was collected by the researcher through interview.

Pain coping scale for primiparturient women

Pain coping scale was used to assess the pain coping level of the primiparturient women before and after use of birthing ball during the first stage of labour.

Modified WHO partograph for primiparturient women

This graph consists of fetal heart rate, maternal heart rate, maternal blood pressure, cervical dilatation, frequency and duration of uterine contraction.

Rating scale on satisfaction of use of birthing ball upon Labour Pain

This scale was designed by the researcher to assess the satisfaction level of the participants regarding use of birthing ball during first stage of labour which is assessed after the delivery.

The satisfaction score were classified as follows:

Score	**Percentage**	**Interpretation**
≤10	≤25%	Dissatisfied
11 – 12	26 – 50%	Just satisfied
21 – 30	51 – 75%	Moderately satisfied
31 – 40	76 – 100%	Highly satisfied

Psychometric Properties of the Instruments

Validity of the Instruments

Validity is the degree to which an instrument measures what it is intended to measure (Polit, 2010).

Content validity of the tool was obtained from nursing personnel. The suggestions given by the validators regarding rating scale was made in the final preparation of the tool.

Reliability of the Instruments

Reliability is the degree of consistence or dependability with which an instrument measures an attribute (Polit 2010). The reliability was found using Pearson's correlation formula.

1. Pain intensity scale for primiparturient women – 0.9 (inter rater technique).
2. Pain coping scale for primiparturient women – 0.9 (inter rater technique).
3. Rating scale on satisfaction on use of birthing ball upon labour pain – 0.9 (test – retest method).

Pilot Study

Pilot study is a small scale version or trial run done in preparation for a major study (Polit, 2004). The purpose of the pilot study was to find out the feasibility and practicability of study design.

The pilot study was conducted at Andhra MahilaSabha Hospital, Chennai by selecting 10 primiparturient women with 5 women in the control group and 5 women in the experimental group using systematic sampling in order to assess the methodology and tool. The level of labour pain, coping and feto-maternal parameters were assessed using Modified Pain Intensity Scale, Pain coping scale and Modified WHO Partograph respectively for both the control and experimental group before therapy. Birthing ball was provided for mothers during the cervical dilation of 2cm, 4cm, and 6cm for 15 minutes. Again the pain level, coping level and feto- maternal parameters were assessed for both the group. The level of satisfaction on use of birthing ball was assessed from

the experimental group after delivery. After the pilot study, it was found to be feasible and effective and the study instruments were found to be appropriate.

Protection of Human Rights

The study was conducted

- After the approval of ethical committee of Apollo Hospitals
- After obtaining permission from Mrs.lakshmi ,Administrator of Andhra MahilaSabha Hospital.
- The participants were explained about the study and obtained written consent after providing assurance and developing confidence.
- Confidentiality of the data throughout the study.

Data Collection Procedure

Data collection is gathering information about something which the researcher has chosen to explore or investigate (Crookes and Davies, 1998).

The researcher was trained for one week in giving birthing ball and certified before data collection. Protection of human rights was maintained and the data was collected day and night from June 17 to July 30.

The participants were selected using systematic random sampling among which 30 women were assigned to the control group and 30 women to the experimental group and the data was collected from the participants through interview and through medical records. The labour pain level was assessed by the Numerical pain intensity scale, Coping level with coping scale and Feto-maternal parameters using Modified WHO

partograph before each intervention for both control and experimental group of primiparturient women.

Yoga mate has been placed on the floor over that birthing ball has been kept. Now the mother made to sat over the ball. The researcher hold the mother and started initially with breathing techniques for 1 to 10 counts after that the fro and through movement has been provided with the gentle back massage. Birthing ball was provided for 15 minutes in the interval of cervical dilation of 2cm, 4cm, and 6cm for experimental group of primiparturient women. The pain level, coping level and fetomaternal parameters were assessed after intervention and with the cervical dilatation of 2cm, 4cm, and 6cm for both groups with the same tools. The level of satisfaction on use of birthing ball was assessed in the experimental group of primiparturient women using rating scale after delivery.

Problems Faced During Data Collection

- Few primiparturient women felt that they were disturbed every time to fill the scale.
- Few primiparturient women felt fear to sat over the birthing ball.

Plan for Data Analysis

Data analysis is the systematic organization, synthesis of research data and testing of hypothesis using those data (Polit and Beck, 2010).

Analysis were carried out using Descriptive statistics like Frequency distribution, Percentage, Mean, Standard deviation and Inferential statistics like Independent ‘t’ test.

The association between the demographic variables, obstetric variables and dependent variables were analyzed with the help of chi-square test.

Summary

This chapter dealt with the research approach, research design, setting, population, sample, sampling technique, sampling criteria, development of study instruments, reliability and validity of the instruments, production of human rights, pilot study, data collection procedure and plan for data analysis.

CHAPTER IV

ANALYSIS AND INTERPRETATION

Data analysis is conducted to reduce, organize and give meaning to the data. The results obtained from data analysis require interpretation to be meaningful. Interpretation of data involves examining the results from data analysis forming conclusions, considering the implications for nursing, exploring the significance of the findings and suggesting further studies (Polit and Beck, 2010).

The data was collected from 60 primiparturient women among which 30 were in the control group and 30 were in the experimental group. The data were analyzed using descriptive and inferential statistics based on the objectives and hypothesis. The data analysis was completed after transferring all the data to the master coding sheet.

Organization of findings

The findings of the study were organized and presented under the following headings.

- Frequency and percentage distribution of demographic variables, obstetric variables, level of labour pain, level of coping, level of satisfaction before and after use of birthing ball in the control and experimental group of primiparturient women.
- Comparison of mean and standard deviation of level of labour pain, level of coping and feto-maternal parameters before and after use of birthing ball in the control and experimental group of primiparturient women.
- Association between selected demographic variables and the level of labour pain and coping, selected obstetric variable and the level of labour pain and coping before and after use of birthing ball in the control and experimental group of primiparturient women.

Table 1

Frequency and Percentage Distribution of Demographic Variables in Control and Experimental Group of Primiparturient Women During First Stage of Labour.

Demographic variables	Control Group(n=30)		Experimental Group(n=30)	
	n	p	n	p
Age in years				
≤20	6	20	3	10
21-25	21	70	18	60
26-30	3	10	9	30
≥31	-	-	-	-
Occupation				
Employed	-	-	-	-
House wife	30	100	30	100
Area of residence				
Urban	15	50	18	60
Rural	15	50	12	40
Semi-rural	-	-	-	-
Type of Family				
Nuclear	24	80	30	100
Joint	6	20	-	-
Any other	-	-	-	-
Income per month in rupees				
≤ 5000	-	-	-	-
5001 – 7000	21	70	15	50
7001 – 9000	9	30	15	50
≥ 9001	-	-	-	-

Previous information received about birthing ball				
Yes	-	-	-	-
No	-	-	-	-
If Yes, Source of information				
Media	-	-	-	-
Neighbours	-	-	-	-
Health professionals	-	-	-	-
Family members	-	-	-	-

It can be revealed from table 1 that All the women were home makers (100%,100%) , didn't received previous knowledge regarding birthing ball (100%,100%) and majority of the women were homogenously distributed between the age group of 21-25years (70%,60%) with monthly income of 5000-7000 rupees (70%,50%) and living in urban (50%,60%)in the control and experimental group respectively.

Fig. 3 reveals that most of women were completed their secondary education (60%, 70%) in control experimental group.

Fig.4 showed that majority of them were moderate workers (40%, 60%) and none of them were heavy worker in both control and experimental group respectively.

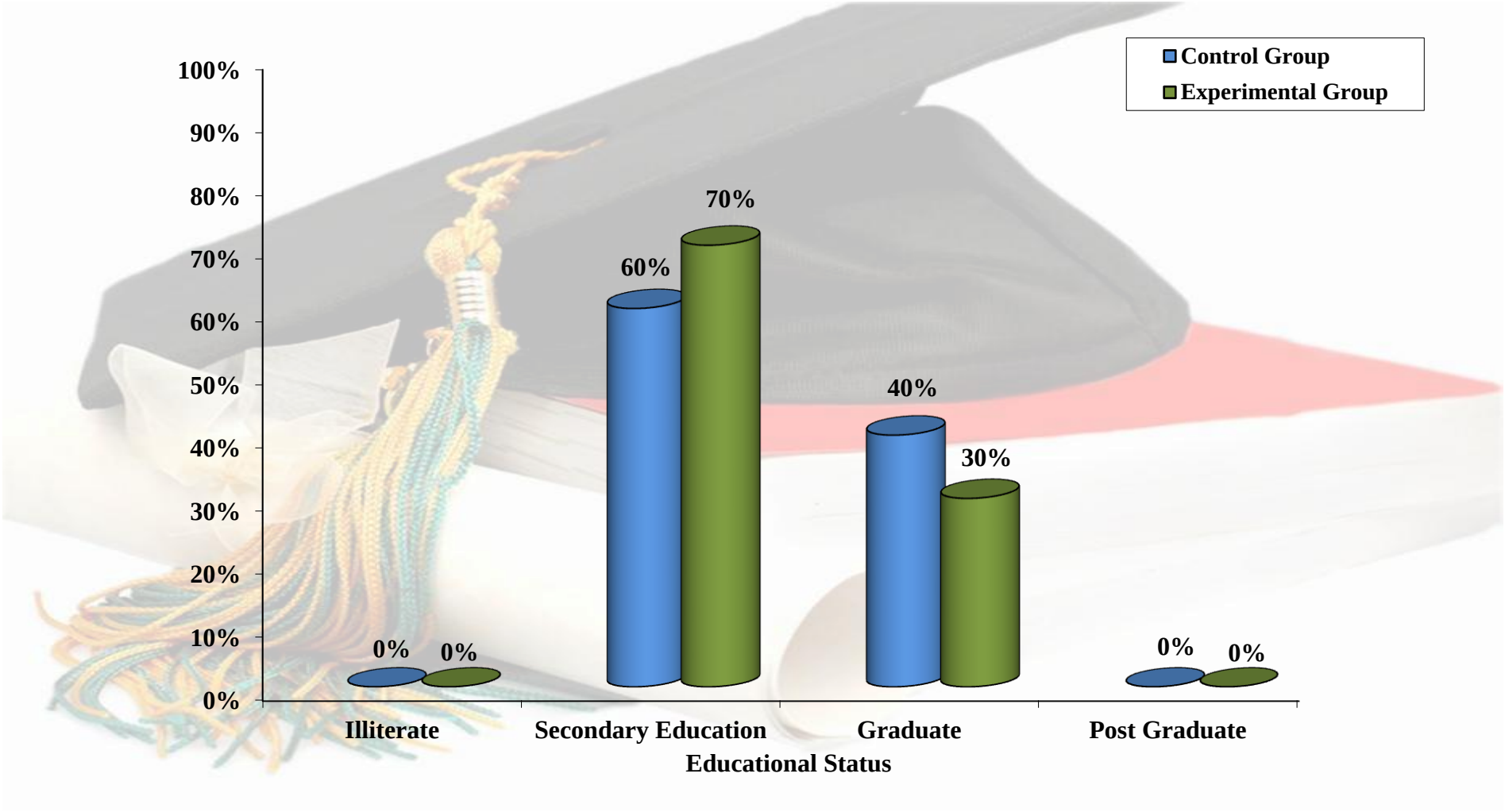

Fig.3 Percentage Distribution of Educational Status in Control and Experimental Group of Primiparturient Women

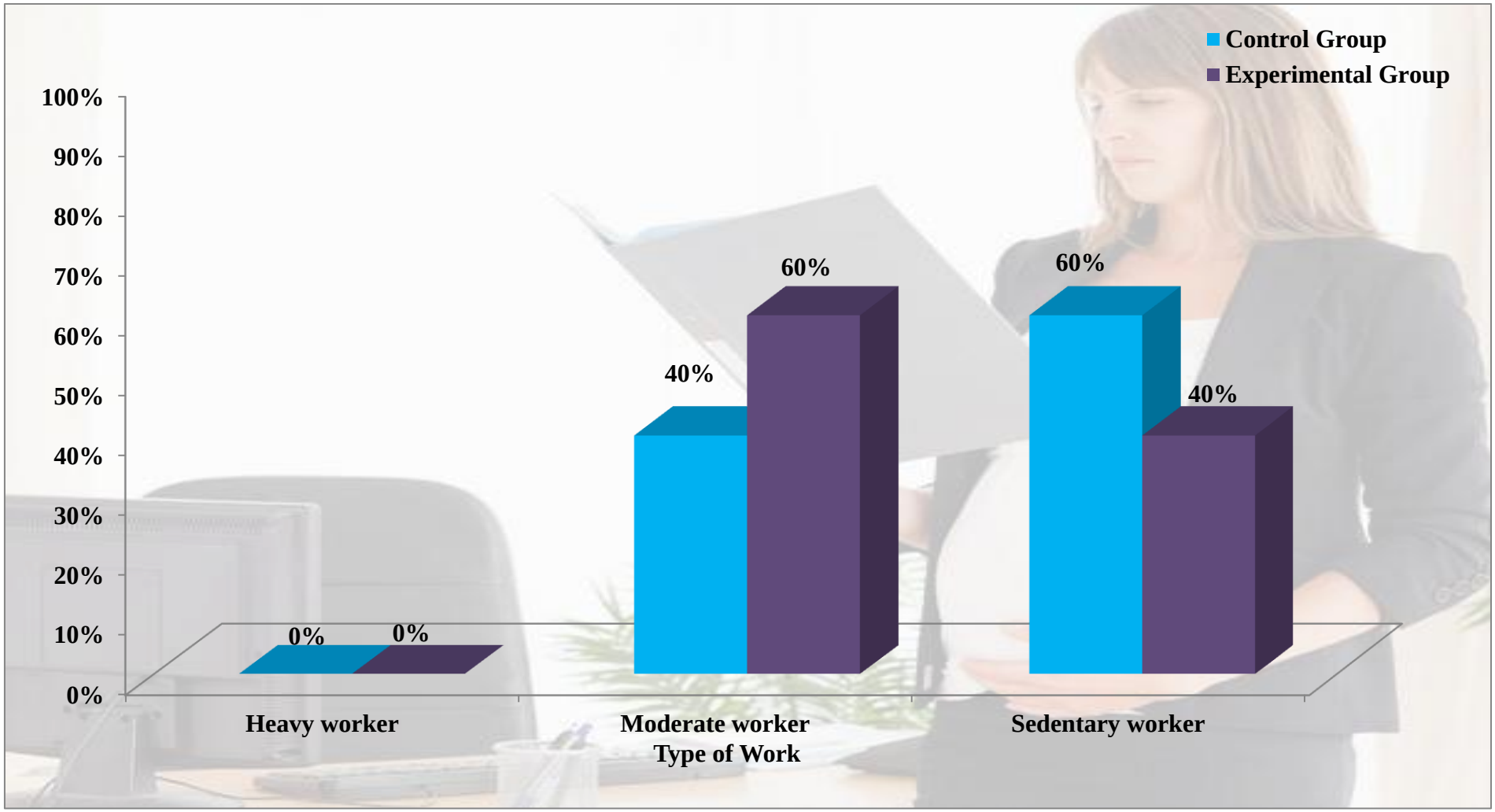

Fig. 4 Percentage Distribution of Type of Work in Control and Experimental Group of Primiparturient Women

Table2

Frequency and Percentage Distribution of Obstetric Variables in Control and Experimental Group of Primiparturient Women during First Stage of Labour.

Obstetric Variables	Control Group (n=30)		Experimental Group (n=30)	
	n	p	n	p
Gestational age in weeks				
37 -38 weeks	9	30	9	30
39 – 40 weeks	21	70	21	70
41 – 42 weeks	-	-	-	-
Pain management during first stage of labour				
Systemic analgesia	-	-	-	-
Inhalation analgesia	-	-	-	-
Epidural analgesia	-	-	-	-
None	30	100	30	100
Type of delivery				
Normal vaginal delivery	21	70	27	90
Forceps delivery	-	-	-	-
Vacuum delivery	-	-	-	-
Lower segmental caesarean section	9	30	3	10
If abnormal delivery, Indication				
Obstructed labour	-	-	-	-
Prolonged labour	9	30	3	10
Fetal distress	-	-	-	-

Any other	-	-	-	-
Maternal complications during labour				
Postpartum hemorrhage	-	-	-	-
Dysfunctional labour	-	-	-	-
None	30	100	30	100
Any other	-	-	-	-
Fetal complications				
Prolapsed cord	-	-	-	-
Respiratory distress syndrome	-	-	-	-
Mechonium aspiration syndrome	-	-	-	-
None	30	100	30	100
Any other	-	-	-	-
Duration of second stage of labour				
31 – 40 minutes	-	-	-	-
41 – 50 minutes	-	-	-	-
51 – 60 minutes	21	70	27	90
> 1 Hour	-	-	-	-
APGAR score of the new born at birth				
0 – 3	-	-	-	-
4 – 6	-	-	-	-
7 – 10	30	100	30	100

The data presented in Table 2 depicts that All the women were didn't developed any fetal and maternal complications during labour(100%,100%),with none receiving any pain management during labour (100%,100%) with the APGAR score of the new born 7-10 (100%,100%), and majority of the women were between the gestational age of 39-40 weeks (70%,70%) under gone normal vaginal delivery (70%,90%) with the duration of second stage of labour 51-60 minutes (70%,90%) in control and experimental group respectively

Fig.5 infers that all of the women had more than 8 antenatal visits in the control and experimental group.

Fig.6 represents that most of the women had first stage of labour between 9 – 10 hours (60%, 90%) in both control and experimental group.

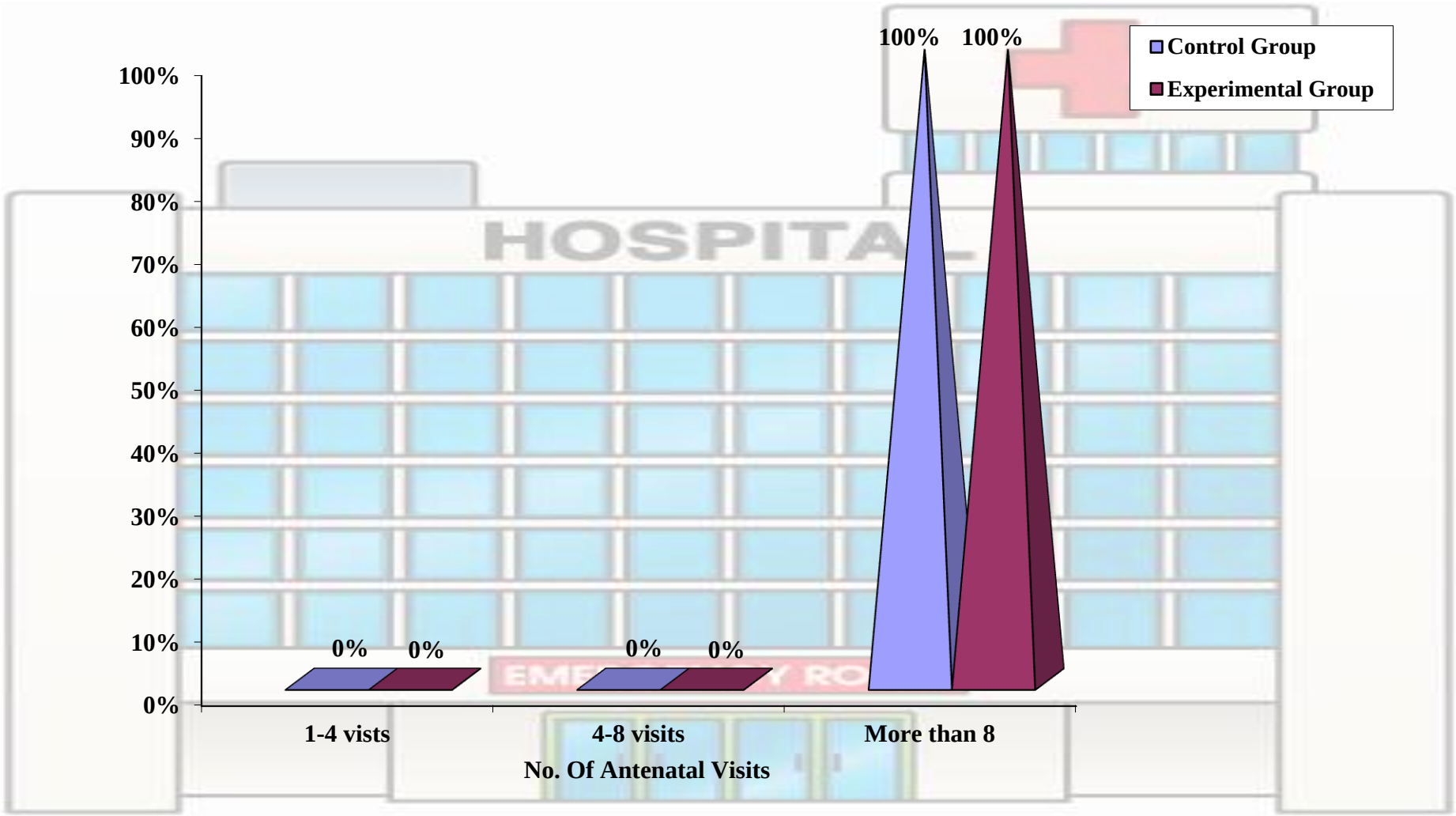

Fig. 5 Percentage Distribution of No. of Antenatal Visits in Control and Experimental Group of Primiparturient Women

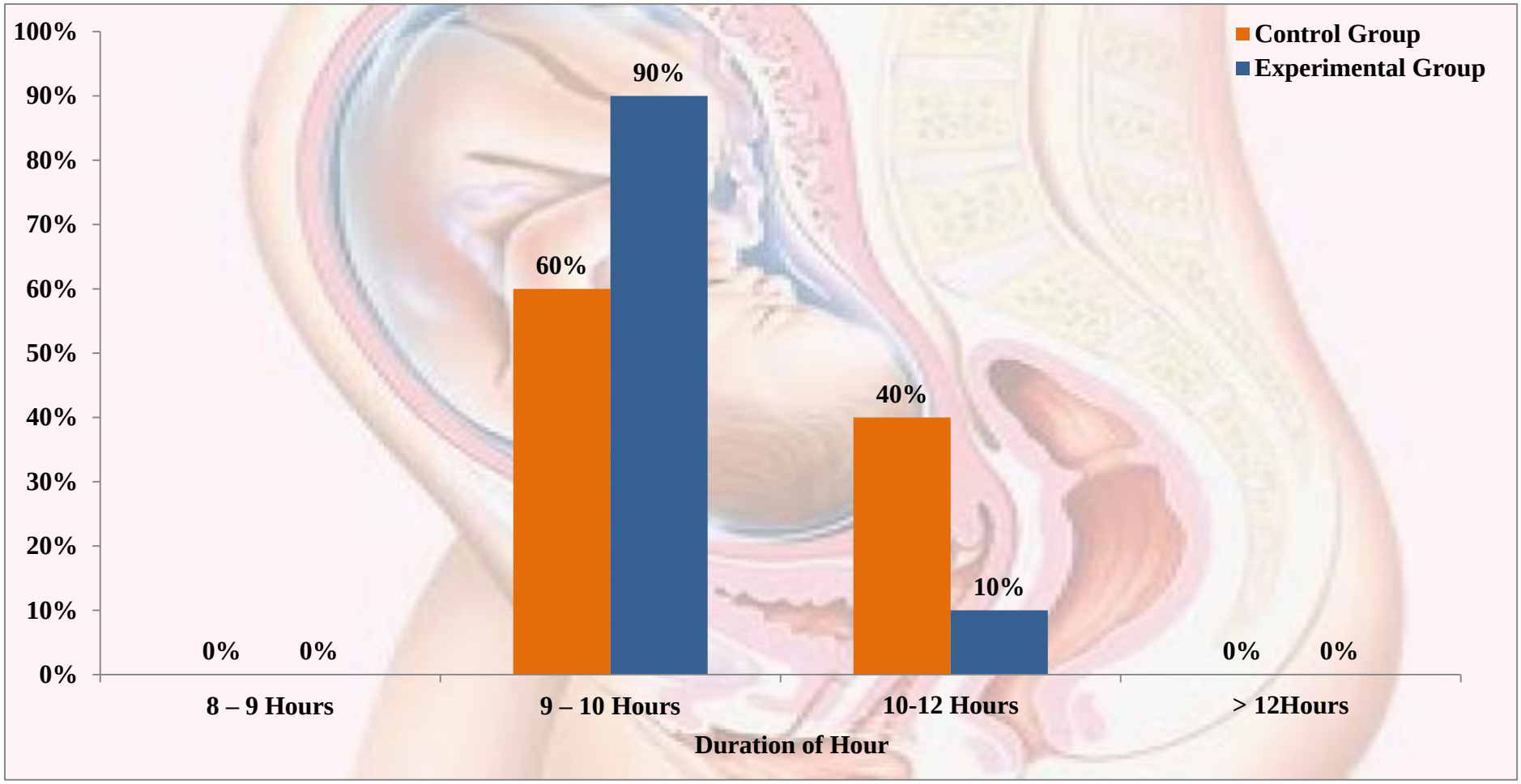

Fig. 6 Percentage Distribution of duration of first stage of labour in Control and Experimental Group of Primiparturient Women

Table 3

Frequency and Percentage Distribution of Level of labour pain Before and After use of birthing ball in Control group and Experimental group of Primiparturient Women during First stage of labour.

(N=60)

Level of labour pain	Before therapy		After therapy	
	n	**p**	**n**	**P**
Control Group				
No pain	-	-	-	-
Mild pain	-	-	-	-
Moderate pain	-	-	3	10
Severe pain	30	100	27	90
Worst possible pain	-	-	-	-
Experimental Group				
No pain	-	-	-	-
Mild pain	-	-	-	-
Moderate pain	-	-	27	90
Severe pain	30	100	3	10
Worst possible pain	-	-	-	-

Table 3 reveals that majority of the primiparturient women in the control group had severe pain (100% & 90%) before and after therapy respectively whereas majority of the primiparturient women in the experimental group had moderate pain (90%) after therapy when compared with before therapy where all the women had severe pain (100%).

Table 4

Frequency and Percentage Distribution of Level of Coping Before and afteruse of birthing ball in Control and Experimental Group of Primiparturient Women.

(N=60)

Level of pain coping	Before therapy		After therapy	
	n	p	n	p
Control group				
No need to cope	-	-	-	-
Easy	-	-	-	-
Able to do 3 R's	-	-	5	16.7
Needs lots of help	30	100	25	83.3
Can't do it	-	-	-	-
Experimental group				
No need to cope	-	-	-	-
Easy	-	-	-	-
Able to do 3 R's	-	-	26	86.7
Needs lot of help	30	100	4	13.4
Can't do it	-	-	-	-

It can be interpreted from Table 4 that majority of the primiparturient women in the control group need lot of help after therapy (83.3%) and all of them needed lot of help (100%) before therapy. But majority of the primiparturient women in the experimental group were able to do 3R‟s- Rhythm, Ritual and relaxation (86.7%) after therapy when compared with before therapy where all the primiparturient women need lot of help (100%).

Table 5

Comparison of Mean and Standard Deviation of Level of Labor Pain Before and After use of birthing ball in Control and Experimental Group of Primiparturient Women.

Level of labour pain	Before therapy n=30		't' value	After therapy n=30		't' value
	Mean	SD		Mean	SD	
Control group	5.5	0.44	0.50	5.8	0.63	6.7
Experimental group	6.1	0.5		5	0.6	

****p<0.01**

Table 5 depicts that the mean pain level in the control group was high after therapy (M=5.8, SD=0.63) compared to before therapy (M=5.5, S.D=0.44) whereas the mean pain level was low (M=5, SD=0.6) after therapy in the experimental group when compared with before therapy (M=6.1, SD=0.5). The level of confidence was 99% and it showed the effectiveness of birthing ball upon labour pain. Hence the null hypothesis H_{01} was rejected.

Table 6

Comparison of Mean and Standard Deviation of Level of Coping Before and After use of birthing ball in Control and Experimental Group of Primiparturient Women.

Level of coping	Before therapy n=30		't' value	After therapy n=30		't' value
	Mean	SD		Mean	SD	
Control group	4.2	0.84	0.91	2	0.87	5.6
Experimental group	3.3	0.60		4.3	0.69	

***p<0.05**

Table 6 infers that the mean coping level was low after therapy (M=2.00, SD=0.87) in comparison with before therapy (M=4.2, SD=0.84) in the control group whereas the mean coping level was high after therapy (M=4.3, SD=0.69) in comparison with before therapy (M=3.3, SD=0.60) in the experimental group.Thus the effectiveness of birthing ball was statistically proved at 95% level of confidence.

Table7

Comparison of Mean and Standard Deviation of Feto Maternal Parameters Before and After use of birthing ball in Control and Experimental Group of Primiparturient Women.

(N=60)

Feto maternal parameters	**Before therapy**		**'t' value**	**After therapy**		**'t' value**
	M	**SD**		**M**	**SD**	
Control group						
Fetal heart rate	148	2.45	0.89	147.6	3.34	2.53
Cervical dilatation	4	2.84	1.3	4	3.01	1.6
Uterine contraction	2.5	0.50	6.25	3.9	0.11	5
Systolic blood pressure	120	3.1	3.70	119	2.24	1.85
Diastolic blood pressure	76.2	3.2	1.3	76.2	3.23	5.14
Experimental group						
Fetal heart rate	149	4.57	0.89	150	4.38	2.53
Cervical dilatation	4	2.84	1.3	4	3.01	1.6
Uterine contraction	3	0.70	6.25	4	1.50	5
Systolic blood pressure	118	3.1	3.70	117.5	4.14	1.85
Diastolic blood pressure	75.1	3.6	1.3	70	3.38	5.14

It can be depicted from the Table 7 that thecervical dilatation and uterine contraction were increased in after therapy in comparison with before therapy in control (M=4, SD=2.84, M=4, SD=3.01), (M=2.5, SD=0.50, M=3.9, SD=0.11) and experimental (M=4, SD=2.84, M=4, SD=3.01), (M=3, SD=0.70, M=4, SD=1.50) group of primparturient women which shows that birthing ball is effective .

Table 8

Frequency and Percentage Distribution of Level of Satisfaction on use of birthing ball in Experimental Group of Primiparturient Women.

Level of satisfaction	Experimental group (n=30)	
	n	p
Highly satisfied	29	96.7
Moderately satisfied	1	3.3
Just satisfied	-	-
Dissatisfied	-	-

The data from the Table 8 shows that majority of the participants in experimental group were highly satisfied (96.7%) with the use of birthing ball during the first stage of labour and none of them were reported dissatisfaction towards the intervention.

Table 9

Association between the Selected Demographic Variables and Level of Labour Pain Before and after use of Birthing ball in Control Group of Primiparturient Women.

(N=30)

Demographic variables	Before Therapy			After Therapy		
	Upto mean n	Above mean n	χ^2 Value	Upto mean n	Above mean n	χ^2 Value
Age in years						
<25	10	17	0.15	16	11	0.06
>25	2	1	(df=1)	2	1	(df=1)
Educational status						
Secondary	7	13	0.61	10	8	0.4
Up to post graduate	5	5	(df=1)	8	4	(df=1)
Type of work						
Moderate	4	7	0.09	5	7	2.8
Sedentary	8	11	(df=1)	13	5	(df=1)
Area of residence						
Urban	5	10	0.06	8	7	0.6
Rural	7	8	(df=1)	10	5	(df=1)
Monthly income						
<7000	9	13	0.025	14	7	1.3
>7000	13	5	(df=1)	4	5	(df=1)
Type of Family						
Nuclear	9	15	0.32	15	9	0.31
Joint	3	3	(df=1)	3	3	(df=1)

From the data presented in Table 9 revealed that there was no significant association between the selected demographic variables namely age in years, educational status, type of work, area of residence, monthly income and type of family in the control group of primiparturient women. Hence null hypothesis H_{02} was retained.

Table 10

Association between the Selected Demographic Variables and Level of Labour Pain Before and after use of Birthing ball in Experimental Group of Primiparturient Women.

(N=30)

Demographic variables	Before Therapy			After Therapy		
	Upto mean n	Above mean n	χ^2 Value	Upto mean n	Above mean n	χ^2 Value
Age in years						
<25	9	13	0.2	13	9	0.2
>25	4	4	(df=1)	4	4	(df=1)
Educational status						
Secondary	7	14	2.9	12	9	0.01
Up to post graduate	6	3	(df=1)	5	4	(df=1)
Type of work						
Moderate	8	10	0.02	11	7	0.36
Sedentary	5	7	(df=1)	6	6	(df=1)
Area of residence						
Urban	5	13	4.4	10	8	0.023
Rural	8	4	(df=1)	7	5	(df=1)
Monthly income						
<7000	8	7	1.2	8	6	0.002
>7000	5	10	(df=1)	9	7	(df=1)

From the data presented in Table 10 revealed that there was no significant association between the selected demographic variables namely age in years, educational status, type of work, area of residence and monthly income in the experimental group of primiparturient women. Hence null hypothesis H_{02} was retained.

Table 11

Association between the Selected Obstetric Variables and Level of Labour Pain Before and after use of birthing ball in Control Group of Primiparturient Women.

(N=30)

Obstetric variables	Before Therapy		χ^2 Value	After Therapy		χ^2 Value
	Upto mean n	Above mean n		Upto mean n	Above mean n	
Gestational age						
37-38	14	7	2.9 (df=1)	13	8	0.11 (df=1)
39-40	4	5		5	4	
Ante natal visits						
Up to 8 visits	0	0	0 (df=1)	0	0	0 (df=1)
More than 8 visits	25	5		25	5	
Pain management during labour						
Analgesia	0	0	0 (df=1)	0	0	0 (df=1)
None	23	7		23	7	
Type of delivery						
Normal vaginal delivery	15	7	2.3 (df=1)	12	10	1.02 (df=1)
Lower segmental caesarean section	3	5		6	2	
If abnormal delivery, Indication						
Fetal distress	0	0	1 (df=1)	0	0	1 (df=1)

Prolonged Labour	6	3		6	3	
Maternal complications during labour						
Post Partum Haemorrhage	0	0	0 (df=1)	0	0	0 (df=1)
None	22	8		22	8	
Fetal complications during labour						
Respiratory Distress Syndrome	0	0	0 (df=1)	0	0	0 (df=1)
None	18	12		18	12	
Duration of first stage of labour						
9-10	13	5	2.8 (df=1)	11	7	0.02 (df=1)
10-12	5	7		7	5	
Duration of second stage of labour						
51-60 mins	23	7	0 (df=1)	11	7	0.02 (df=1)
> 1 Hour	0	0		7	5	
APGAR score						
0-6	0	0	0 (df=1)	0	0	0 (df=1)
7-10	20	10		20	10	

It could be inferred from the Table 11 that there was no significant association between the selected Obstetric variables namely gestational age, antenatal visits, pain management during labour, type of delivery, indication for lower segmental cesarean section, maternal complications during labour, fetal complications during labour, duration of first stage of labour, duration of second stage of labour and APGAR score in Control group. Hence the null hypothesis H_{03} was retained.

Table 12

Association between the Selected Obstetric Variables and Level of Labour Pain Before and after use of birthing ball in Experimental Group of Primiparturient Women.

(N=30)

Obstetric variables	Before Therapy			After Therapy		
	Upto mean n	Above mean n	χ^2 Value	Upto mean n	Above mean n	χ^2 Value
Gestational age						
37-38	10	11	0.5 (df=1)	12	9	0.01 (df=1)
39-40	3	6		5	4	
Ante natal visits						
Up to 8 visits	0	0	0 (df=1)	0	0	0 (df=1)
More than 8 visits	6	24		25	5	
Pain management during labour						
Analgesia	0	0	0 (df=1)	0	0	0 (df=1)
None	6	24		23	7	
Type of delivery						
Normal vaginal delivery	12	15	0.14 (df=1)	15	12	0.14 (df=1)
Lower segmental caesarean section	1	2		2	1	
If abnormal delivery, Indication						
Fetal distress	0	0	0	0	0	0

Prolonged Labour	0	3	(df=1)	0	3	(df=1)
Maternal complications during labour						
PostPartum Haemorrhage	0	0	0 (df=1)	0	0	0 (df=1)
None	6	24		22	8	
Fetal complications during labour						
Respiratory Distress Syndrome	0	0	0 (df=1)	0	0	0 (df=1)
None	6	24		18	12	
Duration of first stage of labour						
9-10	0	0	0 (df=1)	11	7	0.02 (df=1)
10-12	6	21		7	5	
Duration of second stage of labour						
51-60 mins	0	0	0 (df=1)	11	7	0.02 (df=1)
> 1 Hour	6	21		7	5	
APGAR score						
0-6	0	0	0 (df=1)	0	0	0 (df=1)
7-10	6	24		20	10	

It could be inferred from the Table 12 that there was no significant association between the selected Obstetric variables namely gestational age, antenatal visits, pain management during labour, type of delivery, indication for lower segmental cesarean section, maternal complications during labour, fetal complications during labour, duration of first stage of labour, duration of second stage of labour and APGAR score in experimental group. Hence the null hypothesis H_{03} was retained.

Table 13

Association between the Selected Demographic Variables and Level of Coping Before and after use of Birthing ball in Control Group of Primiparturient Women.

(N=30)

Demographic variables	Before Therapy			After Therapy		
	Upto mean n	Above mean n	χ^2 Value	Upto mean n	Above mean n	χ^2 Value
Age in years						
<25	23	4	0.7	16	9	0.5
>25	2	1	(df=1)	4	1	(df=1)
Educational status						
Secondary	16	2	1	13	5	0.6
Up to post graduate	9	3	(df=1)	7	5	(df=1)
Type of work						
Moderate	9	3	1	7	6	1.7
Sedentary	16	2	(df=1)	13	4	(df=1)
Area of residence						
Urban	11	4	2.16	10	5	0
Rural	14	1	(df=1)	10	5	(df=1)
Monthly income						
<7000	24	1	0.7	16	5	2.9
>7000	1	4	(df=1)	4	5	(df=1)

From the data presented in Table 13 revealed that there was no a significant association between the selected demographic variable like, age in years, educational status, type of work ,area of residence and monthly income in rupees in control group of primiparturient women**..** Hence null hypothesis H_{02}wasretained.

Table 14

Association between the Selected Demographic Variables and Level of Coping Before and after use of Birthing ball in Experimental Group of Primiparturient Women.

(N=30)

Demographic variables	Before Therapy			After Therapy		
	Upto mean n	Above mean n	χ^2 Value	Upto mean n	Above mean n	χ^2 Value
Age in years						
<25	18	5	0.14	15	6	0.61
>25	5	2	(df=1)	6	3	(df=1)
Educational status						
Secondary	15	5	0.1	14	7	0.4
Up to post graduate	8	2	(df=1)	7	2	(df=1)
Type of work						
Moderate	13	4	0.001	13	6	0.1
Sedentary	10	3	(df=1)	8	3	(df=1)
Area of residence						
Urban	14	4	0.03	11	5	0.03
Rural	9	3	(df=1)	10	4	(df=1)
Monthly income						
<7000	12	3	0.9	11	4	0.2
>7000	11	4	(df=1)	10	5	(df=1)

From the data presented in Table 14 revealed that there was no significant association between the selected demographic variables namely age in years, educational status, type of work, area of residence and monthly income in the Experimental group of primiparturient women. Hence null hypothesis H_{02} was retained.

Table 15

Association between the Selected Obstetric Variables and Level of CopingBefore and after use of birthing ball in Control Group of Primiparturient Women.

(N=30)

Obstetric variables	Before Therapy			After Therapy		
	Upto mean n	Above mean n	χ^2 Value	Upto mean n	Above mean n	χ^2 Value
Gestational age						
37-38	22	3	2.34 (df=1)	15	6	0.71 (df=1)
39-40	3	2		5	4	
Ante natal visits						
Up to 8 visits	0	0	0 (df=1)	0	0	0 (df=1)
More than 8 visits	25	5		25	5	
Pain management during labour						
Analgesia	0	0	0 (df=1)	0	0	0 (df=1)
None	23	7		23	7	
Type of delivery						
Normal vaginal delivery	23	2	0.7 (df=1)	15	5	3 (df=1)
Lower segmental caesarean section	2	3		5	5	
If abnormal delivery, Indication						
Fetal distress	0	0	1	0	0	1

Prolonged Labour	6	3	(df=1)	6	3	(df=1)
Maternal complications during labour						
Post Partum Haemorrhage	0	0	0 (df=1)	0	0	0 (df=1)
None	22	8		22	8	
Fetal complications during labour						
Respiratory Distress Syndrome	0	0	0 (df=1)	0	0	0 (df=1)
None	18	12		18	12	
Duration of first stage of labour						
9-10	23	2	0.7 (df=1)	14	4	2.5 (df=1)
10-12	2	3		6	6	
Duration of second stage of labour						
51-60 mins	23	7	0 (df=1)	11	7	0.02 (df=1)
> 1 Hour	0	0		7	5	
APGAR score						
0-6	0	0	0 (df=1)	0	0	0 (df=1)
7-10	20	10		20	10	

It could be inferred from the Table 15 that there was no significant association was found with other Obstetric variables like gestational age, antenatal visits, pain management during labour,type of delivery , indication for lower segmental cesarean section, maternal complications during labour, fetal complications during labour, duration of first stage of labour, duration of second stage of labour and APGAR score in Control group of primiparturient women. Hence the null hypothesis $H_{03}$was retained.

Table 16

Association between the Selected Obstetric Variables and Level of CopingBefore and after use of birthing ball in Experimental Group of Primiparturient Women.

(N=30)

Obstetric variables	Before Therapy			After Therapy		
	Upto mean n	Above mean n	χ^2 Value	Upto mean n	Above mean n	χ^2 Value
Gestational age						
37-38	16	5	0.01 (df=1)	15	6	0.1 (df=1)
39-40	7	2		6	3	
Ante natal visits						
Up to 8 visits	0	0	0 (df=1)	0	0	0 (df=1)
More than 8 visits	25	5		25	5	
Pain management during labour						
Analgesia	0	0	0 (df=1)	0	0	0 (df=1)
None	23	7		23	7	
Type of delivery						
Normal vaginal delivery	22	5	1.8 (df=1)	20	7	2.13 (df=1)
Lower segmental caesarean section	1	2		1	2	
If abnormal delivery, Indication						
Fetal distress	0	0	1	0	0	1

Prolonged Labour	6	3	(df=1)	6	3	(df=1)
Maternal complications during labour						
Post Partum Haemorrhage	0	0	0 (df=1)	0	0	0 (df=1)
None	22	8		22	8	
Fetal complications during labour						
Respiratory Distress Syndrome	0	0	0 (df=1)	0	0	0 (df=1)
None	18	12		18	12	
Duration of first stage of labour						
9-10	23	2	0.7 (df=1)	14	4	2.5 (df=1)
10-12	2	3		6	6	
Duration of second stage of labour						
51-60 mins	23	7	0 (df=1)	11	7	0.02 (df=1)
> 1 Hour	0	0		7	5	
APGAR score						
0-6	0	0	0 (df=1)	0	0	0 (df=1)
7-10	20	10		20	10	

It could be inferred from the Table 16 that there was no significant association between the selected Obstetric variables namely gestational age, antenatal visits, pain management during labour, type of delivery, indication for lower segmental cesarean section, maternal complications during labour, fetal complications during labour, duration of first stage of labour, duration of second stage of labour and APGAR score in Experimental group of primiparturient women. Hence the null hypothesis H_{03} was retained.

Summary

This chapter dealt with the analysis and the interpretation of the data collected by the researcher. From the analysis it can be inferred that the level of labour pain was low and level of coping was high after therapy in the experimental group than the control group. Thus it shows that the birthing ball was effective in reducing labour pain perception during the first stage of labour among the primiparturient women.

CHAPTER V

DISCUSSION

Statement of the Problem

An Experimental Study to Assess the Effectiveness of Birthing ball upon Labour pain and Coping during First Stage of Labour in Primiparturient Women at Andhramahilasabha Hospital, Chennai.

Objectives of the Study

1. To assess the level of labour pain, coping and feto-maternal parameters during the first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
2. To assess the effectiveness of birthing ball by comparing the level of pain, coping and feto-maternal parameters during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
3. To determine the level of satisfaction upon use of birthing ball in experimental group of primiparturient women.
4. To find the association between the selected demographical variables and the level of pain and coping during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
5. To find the association between the selected Obstetric variables and the level of pain and coping during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.

This study was carried out for the primiparturient women in labour who have with the cervical dilatation of 2, 4, 6 cm at Andharamahilasabha hospital. The level of labour pain, coping level and feto-maternal parameters were assessed for the control and experimental group of primiparturient women and birthing ball was provided for the experimental group of primiparturient women with the cervical dilatation of 2,4,6 cm and pain level, coping level and feto-maternal parameters were assessed again for both the groups. The level of satisfaction upon birthing ball was assessed among the experimental group of women after the labour.

The discussion is presented under the following headings:

- Demographic variables and Obstetric variables of control and experimental group of primiparturient women.
- Mean and standard deviation of level of labour pain, coping level before and after use of birthing ball among control and experimental group of primiparturient women.
- Assessment of level of satisfaction upon birthing ball among the experimental group of primiparturient women.
- Association between selected demographic variables and level of labour pain and coping after use of birthing ball among control and experimental group of primiparturient women.
- Association between selected obstetric variables and level of labour pain and coping after use of birthing ball among control and experimental group of primiparturient women.

Demographic variables of primiparturient women

Most of the women in both the control and experimental group were between the age group of 21– 25 years (70%, 60%) which shows that most of them are aware about the right age of reproduction. It is also noted that none of the mothers in control group and experimental group delivered after 30 years of age which emphasizes that there is less risk of developing complications during the antenatal period. This view was supported by Bakker et al (2011) that women with two extremes of age group were prone to have adverse pregnancy outcome which is comparatively low between 20 – 30 years of age.

The educational qualification of the women shows that most of them in the control and experimental group had only secondary education (60%, 70%) and also 30% of the women in the experimental group were graduates. As women with inadequate education may have inadequate information regarding health care practices, the researcher felt that doing higher education helps mother in better understanding about labour process and better coping and thus all the women should be encouraged to do their higher education in addition to schooling.

Majority of them in both the control and experimental group were from urban area(50%,60%) respectively and even though the women were distributed in different areas of residence they seek good medical advice and are aware about the advantages of taking adequate antenatal care and thus reducing the incidence of complications during delivery.

Among the women of both the control and experimental group, majority of them belong to nuclear family (80%, 100%) respectively. The researcher feels that as the responsibility to care other family members were less in the nuclear families, it promotes the mother to seek antenatal care with the support of their spouse. A study conducted by deck et al in 2010 says that among nuclear families, women with better marital relationships are more likely than others to use antenatal care services and to deliver in a health-care facility.

None of the women in the control and experimental group received previous information about birthing ball (100%, 100%) which shows that they were not familiar with the various pain relief measures. Hence it is the duty of the nurse midwives to explain the women about various methods available for pain relief during labor.

Obstetric variables of the primiparturient women

Majority of the women in the control and experimental group were between 39 – 40 weeks of gestation (70%, 70%), 37-38 weeks of gestation (30%, 30%) during delivery. This proves that risk of preterm labour and maternal complications was reduced with regular antenatal checkups and screening methods and the health care workers assists mother in delivering the baby at the right time without leading to post term labour. This view was supported by Aaron et al., (2008) in the study conducted at the Department of Obstetrics and Gynecology that maternal complications were high beyond 40 weeks of gestation.

All the women (100%, 100%) in both the control and experimental group attended more than 8 antenatal visit emphasizes that all of them were aware about the

importance of regular antenatal checkup thus reducing the abnormal deliveries. It is felt by the researcher that recent advances in the health care services improved the outcome of labour through increased antenatal visits.

There is no maternal and fetal complication in control (100%) and experimental 100%) group of primiparturient women. Thus the researcher identified that gestational age >40, regular antenatal visit reduces feto maternal complication during labour.

All the newborns in the control and experimental group had Apgar score of 7 – 10 (100%, 100%) and none of them had Apgar less than three in both the group. It is the researchers view that reducing the duration of labour has influence on improving the fetal outcome**.**

Mean and Standard Deviation of pain level before and after use of birthing ball in the control and experimental group of primiparturient women

All the women in the control group had severe pain (100%) before use of birthing ball and majority of them also had severe pain (40%) after birthing ball. The mean and standard deviation of the pain level was high in after use of birthing ball (M=5.8, SD=0.63) in the control group when compared with pain level before use of birthing ball (M=5.5, SD=0.44). Whereas all the women in the experimental group had severe pain (100%) but majority had only moderate pain (90%) after use of birthing ball. Thus the mean and standard deviation of the pain level before and after use of birthing ball were (M=6.1, SD=0.50) and (M=5, SD=0.60) inexperimental group of primparturient women.

This shows that the birthing ball was effective in reducing the level of labour pain perception. Many women need some type of pain relieving measures to deal with pain during childbirth. The management of labour pain is a primary responsibility of the nurse. Interventions to reduce pain perception are one of the essential aspects of nursing care that must be considered during a woman's labour. Because of its strong effect on pain management, birthing ball can be used by the nurse midwife in assisting the mother with labour pain.

Similar study was conducted by SwapnaSukumaran, in the year 2011 which showed that Severity of labor pain before birthing ball did not vary between case and control groups, but after it severity of labor pain in the intervention group was lower than the control group ($p < 0.001$). The severity of labor pain reduced after the intervention in the intervention group ($p < 0.001$), whereas, labor pain increased in the control group ($p < 0.001$).

Mean and Standard deviation of coping level before and after use of birthing ball in the control and experimental group of primiparturient women

All the women needed lot of help before use of birthing ball (100%) and majority of them still needed lot of help after use of birthing ball (83.3%) in the control group. But majority of the women in the experimental group were able to do 3 R's after use of birthing ball (86.7%) with all of them in need of lot of help before use of birthing ball (100%). The mean and standard deviation of coping level in the control group after use of birthing ball (M=2.00, SD=0.87) was lower when compared with before use of birthing ball (M=4.2, SD=0.84) whereas the mean and standard deviation of coping

level after use of birthing ball(M=4.3, SD=0.69) was higher in the experimental group compared to before use of birthing ball (M=3.3, SD=0.60).

A study conducted by Davidason in 2009 among women describes that they used different coping methods which included physiological, psychological, spiritual and cognitive methods to cope during labour. Thus it is the responsibility of every nurse midwife to understand the importance of using various coping methods during labour.

Feto maternal parameters of the primiparturient women

Among the feto maternal parameters of the primigravid women a there is no significant difference was found in the uterine contraction and cervical dilatation. There is no much difference in mean and standard deviation of uterine contraction and cervical dilatation before (M=2.5, SD=0.50), (M=4, SD=2.84) and after use of birthing ball (M=3.9, SD=0.11), (M=4,SD=3.01) in the control group. Whereas the mean and standard deviation of uterine contraction and cervical dilatation in the experimental group was progressed highly (M=3, SD=0.70, M=4, SD=2.84) compared to use of birthing ball (M=4, SD=1.50, M=4. SD=3.01).

This shows that use of birthing ballincreases the uterine contraction and cervical dilatation for the primiparturient women. A study conducted by SwapnaSukumaran in 2011 shows that there is a significant relationship among and cervical dilatation and uterine dilatation.

Level of satisfaction on use of birthing ball among primiparturient women

Majority of the women were highly satisfied (96.7%) with use of birthing ball and none of them had unsatisfaction towards the therapy. This interprets that was highly

effective in reducing the labor pain perception and improving the coping of the women. Though there are many techniques to reduce the labor pain perception, most of them are invasive or has adverse effects on the mother or the baby. But use of birthing ball is a type of non-invasive procedure that has good effect on reducing the labor pain perception without affecting the mother or the baby. Thus the midwives should understand the importance of using pain relief methods which is harmless and they should be encouraged in practicing such therapies.

Association between selected demographic variables and level of labour pain and coping before and after use of birthing ballin the control and experimental group of primiparturient women

In both the control and experimental group of primiparturient women no significant association was found between demographic variables and the level of labour pain which proves that demographic variables has no influence over the pain perception. Hence some type of pain relief methods has to be provided for the women in reducing the pain.

Similarly no association was found between demographic variables and the level of coping in both the control and experimental group of primiparturient women. This shows that demographic variables may not alter the coping level of the women and hence it is the responsibility of the nurse midwife to help the mother in coping with the labour pain.

No association could be found between demographic variables and level of labour pain and coping after use of birthing ballas all the women experienced severe

pain and needed lot of help in the control and experimental group respectively. This was supported by a study conducted by Kanagadurga (2012) on assessing the effect Scalp acupressure where was no association between the age, education, area of residence with that of the labour pain.

Association between selected obstetric variables and level of labour pain and coping before and after use of birthing ballin the control and experimental group of primiparturient women

No significant association was found between the obstetric variables and the level of labour pain in both the control and experimental group of primiparturient women and similarly no association between the obstetric variables and level of coping was found in both the groups which emphasizes that obstetric variables has no influence over the pain perception and coping level of the women and necessitates provision of external agent in reducing the labour pain perception and improving the coping level. As everybody in the control and experimental group experienced moderate pain in before use of birthing ball no statistics could be applied to find the association between selected obstetric variables and the level of labour pain and coping.

Summary

This chapter has dealt about the discussion of various aspects of the study findings. This emphasized on the demographic variables and obstetric variables of the primiparturient women. It has also dealt about the mean and standard deviation of level of labour pain, coping and feto maternal parameters before and after use of birthing ballin control and experimental group, association between selected demographic

variables with level of labour pain and coping after use of birthing balland association between selected obstetric variables with the level of labour pain and coping after use of birthing ballin both the control and experimental group of primiparturient women with supporting studies.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS AND LIMITATIONS

Summary

This study was conducted by the researcher to find the effectiveness of use of birthing ball upon labour pain and coping during first stage of labour in primiparturient women.

Objectives of the study

1. To assess the level of labour pain, coping and feto-maternal parameters during the first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
2. To assess the effectiveness of birthing ball by comparing the level of pain, coping and feto-maternal parameters during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
3. To determine the level of satisfaction upon use of birthing ball in experimental group of primiparturient women.
4. To find the association between the selected demographical variables and the level of pain and coping during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.
5. To find the association between the selected Obstetric variables and the level of pain and coping during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.

Null Hypotheses

H_{01} There will be no significant differences in the level of pain, coping and feto maternal parameters during first stage of labour before and after use of birthing ball in the control and experimental group of primiparturient women.

H_{02} There will be no significant association between the selected demographic variables and level of labour pain and coping before and after use of birthing ball in the control and experimental group of primiparturient women.

H_{03} There will be no significant association between the selected obstetric variables and level of pain and coping before and after use of birthing ball in the control and experimental group of primiparturient women.

The major findings of the study were

Demographic variables of primiparturient women

All the women were home makers (100%,100%) , didn't received any previous knowledge regarding birthing ball (100%,100%) and majority of the women were homogenously distributed between the age group of 21-25years (70%,60%) had completed their secondary education (60%,70%) with monthly income of 5000-7000 rupees (70%,50%) and living in urban (50%,60%)in the control and experimental group respectively.

Obstetric variables of the primiparturient women

All the women had more than 8 ante natal visits (100%,100%),with none receiving any pain management during labour (100%,100%),didn't developed any fetal

and maternal complications during labour(100%,100%) with the APGAR score of the new born (100%,100%) and majority of the women were between the gestational age of 39-40 weeks (70%,70%) under gone normal vaginal delivery (70%,90%) with duration of first stage labour 9-10 hours (60%,70%) and with the duration of second stage of labour 51-60 minutes (70%,90%) in control and experimental group respectively.

Level of pain in the primiparturient women

All the women in the control group had severe pain (100%) before use of birthing ball and majority of them also had severe pain (40%) after birthing ball. The mean and standard deviation of the pain level was high in after use of birthing ball (M=5.8, SD=0.63) in the control group when compared with pain level before use of birthing ball (M=5.5, SD=0.44). Whereas all the women in the experimental group had severe pain (100%) but majority had only moderate pain (90%) after use of birthing ball. Thus the mean and standard deviation of the pain level before and after use of birthing ball were (M=6.1, SD=0.50) and (M=5, SD=0.60) in experimental group of primparturient women.

Level of coping in the primiparturient women

All the women needed lot of help before use of birthing ball (100%) and majority of them still needed lot of help after use of birthing ball (83.3%) in the control group. But majority of the women in the experimental group were able to do 3 R's after use of birthing ball (86.7%) with all of them in need of lot of help before use of birthing ball (100%). The mean and standard deviation of coping level in the control group after

use of birthing ball (M=2.00, SD=0.87) was lower when compared with before use of birthing ball (M=4.2, SD=0.84) whereas the mean and standard deviation of coping level after use of birthing ball(M=4.3, SD=0.69) was higher in the experimental group compared to beforeuse of birthing ball (M=3.3, SD=0.60).

Feto maternal parameters of the primiparturient women

Among the feto-maternal parameters of the primiparturient women there is no significant difference was found in the uterine contraction and cervical dilatation. There is no much difference in mean and standard deviation of uterine contraction and cervical dilatation before (M=2.5, SD=0.50), (M=4, SD=2.84) and after use of birthing ball (M=3.9, SD=0.11),(M=4,SD=3.01) in the control group. Whereas the mean and standard deviation of uterine contraction and cervical dilatation in the experimental group was progressed highly (M=3, SD=0.70,M=4,SD=2.84) compared to use of birthing ball (M=4, SD=1.50.MD=4,SD=3.01).

Level of satisfaction on birthing ball among primiparturient women

Majority of the mothers were highly satisfied 96.7% with birthing ball during the first stage of labour and none of them reported low satisfaction.

Association between selected demographic variables and level of labour pain and coping in primiparturient women

No association was found between demographic variables and the level of labor pain and coping after use of birthing ball in both the control and experimental group of

primiparturient women. This shows that demographic variable has no influence in the pain perception and coping level. As all the women in the control and experimental group had severe pain and needed lot of help before use of birthing ball no statistics could be applied to find the association between demographic variables and level of labour pain and coping before use of birthing ball.

Association between selected obstetric variables and level of labour pain and coping inprimiparturient women

No significant association was found between the obstetric variables and the level of labour pain in both the control and experimental group of primiparturient women and similarly no association between the obstetric variables and level of coping was found in both the groups which emphasizes that obstetric variables has no influence over the pain perception and coping level of the women and necessitates provision of external agent in reducing the labour pain perception and improving the coping level. As everybody in the control and experimental group experienced moderate pain in before use of birthing ball no statistics could be applied to find the association between selected obstetric variables and the level of labour pain and coping.

Conclusion

This study shows that use of birthing ball was effective in reducing the labour pain perception and improving the coping level. The experimental group of women who received birthing ball had decreased pain perception and was highly satisfied with the therapy. The birthing ball is a non – invasive procedure and has no adverse effects on the mother and the fetus and hence the midwives could be encouraged to use this as a pain relief method during labour.

Implications

Nursing Practice

The parturient women of the experimental group felt less pain perception and improved coping with the use of birthing ball during the first stage of labour than the control group proving it to be effective to use. The intensity of labour pain, the length of time labour lasts and women's response to the pain vary widely. The environment in which the women give birth and the support they receive from their care givers and companions will also affect their reaction to pain and their ability to cope. Many women opt to use some form of pain relieving method to help them cope during labour. Hence it becomes a necessity for the midwives to have adequate knowledge and skill about various non-pharmacological methods. Though there is availability of various non-pharmacological methods, use of birthing ball technique is noninvasive, safe and effective. Thus nurses should use birthing ball as noninvasive, safe and effective treatment modalities in their practices.

Nursing Education

The nursing profession has a long history of viewing and caring for individuals in a holistic manner. A national conference conducted by National Institutes of Health of Alternative Medicine and the Uniformed Services University of Health Sciences concluded that nursing and medical education should include information about complementary and alternative therapies. Nurse educators should consider the inclusion of complementary and alternative therapies in nursing curricula with increasing frequency and motivation by major part of the public for the use of these therapies.

Inherent in the nurses role is the ability to assess, intervene and evaluate preventive, supportive, and restorative functions of a patients physical, emotional, mental and spiritual domains. This should be emphasized to the nursing students through educating them about the various therapies that helps the patients in providing care to meet the above aspects.

Nursing Administration

With the advent of various technologies in the field of nursing, nurses are expected to be skillful in various aspects of providing care for which student nurses has to be trained in it through their education. Thus it is the responsibility of the nurse administrators to include the concept of alternative and complementary therapies in the nursing curricula. The nursing staffs and the nursing students should be encouraged by the nurse administrators to learn various nursing modalities in caring patients and could conduct certifying courses which would help them to practice alternative and complementary therapies.

Nursing Research

The competence of a registered nurse to perform the skills of complementary and alternative therapies begins with nursing education and ends with nursing practice which requires an evidence to give assurance that the knowledge and practice gained by the nurse are safe and provides comfort for the patients. Thus major research has to be promoted and conducted by the nurse researchers to prove the effectiveness of alternative and complementary therapies in nursing profession.

Recommendations

- The same study can be conducted with larger number of samples.
- A comparison can be made between primi and multi gravidae.
- A comparison can be made with different stages of labour.
- The same study can be conducted at different setting.
- A comparison can be made between different types of alternative and complementary therapies.

Limitations

- The study findings cannot be generalized due to small sample size.
- Simple random sampling was not possible due to practical difficulties.
- Quazi experimental research could not be possible due to practical difficulties.

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APPENDIX -I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

Apollo College of Nursing

(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0269/12 ***11.06.12***

To

The Medical Director
Andhra Mahila Sabha,
11, Durgabai deshmukh Road
Adyar
Chennai – 600 028.

Respected Sir / Madam,

Sub.: *To request permission for research study – Reg.*

Greetings! *As part of the curriculum requirement our 2nd year M. Sc. (N) student*

Ms. ***A.Selva Karthigha*** *has selected the following title for her research study.*

"An experimental study to assess the effectiveness of birthing ball upon labour pain during the first age of labour and coping among primiparturient women at selected hospital, Chennai."

So I kindly request your goodselves to permit her to conduct study in your esteemed institution.

Thanking You,

Dr. LATHA VENKATESAN
PRINCIPAL

IS/ISO 9001:2000

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095.
Ph. : 044 - 2653 4387 Tele fax : 044 - 2653 4923 / 044- 2653 4386

APPENDIX -II

LETTER PERMITTING TO CONDUCT THE STUDY

ANDHRA MAHILA SABHA
DURGABAI DESHMUKH GENERAL HOSPITAL & RESEARCH CENTRE
ISO 9001 : 2000 Certified Hospital

Late Dr. Smt. Durgabai Deshmukh
Founder President
Smt. Rajalakshmi Sunkavally
President
Smt. Sarojini Ramaswamy
Vice-President

Dr. Rathina Sabapathy
Chairman
Smt. I. Lakshmi Murthy
Secretary
Dr. Mrs. ~~Bela Surykumar~~ N. GOMATHY
Medical Superintendent

To
The Principal
Apollo College of Nursing
Vanagaram to Ambattur Main Road,
Ayanambakkam ,
Chennai-600095

20.07.12

Madam,

Ref: Your Letter No.CO/0269/12 Dated: 11.06.12

The Secretary of the Durgabai Deshmukh General Hospital Research Centre Andhra Mahila Sabha is please to permit Ms.Selva Karthiga M.Sc Nursing IIND Year Student of your college to conduct research study in this hospital without determent to the normal function of the department. She has completed her project work from 12-06-2012 to 21-07-2012.

She conducted her project work in an excellent manner with good dedications and punctual timing and in present way.

We offer our best wishes to her for very successful and fruitful career .
Thanking you,
Your's truly
For Durgabai Deshmukh General Hospital &Research Centre

21/7/12

DR.N.GOMATHY
MEDICAL SUPERINTENDENT

No. 11, Dr. Durgabai Deshmukh Road, Raja Annamalai Puram, Chennai - 600 028.
Phone : 2493 8311 Fax : ~~24617611~~ 24611384 E-mail : ddghrc@sify.com ddghrc@hotmail.com

APPENDIX – III

LETTER SEEKING PERMISSION TO USE THE PAIN AND COPING SCALE

Rediffmail

Mailbox of seljai@rediffmail.com

Print Cancel

From: karthigha latha divya<seljai@rediffmail.com>

To: <npis@medpedia.com>

Subject: **requesting permission**

Date: Mon, 15 jun2012 18:57:10 IST

Respected madam,
i am Ms.SELVAKARTHIGHA a post graduate nursing student at apollo college of nursing.i would like to do my research in obstetrics under the title"An experimental study to assess the effectiveness of birthing ball upon pain and coping in primiparturient women in selected hospitals."for which i am in need of using a numerical pain intensity scale and coping scale.may i get permission to use the above said scales which is published in your website.this would help me to to proceed wiyh my study and i would be highly grateful to you.

thanking you.

yours sincerly
a.selvakarthigha

Print Cancel

APPENDIX-IV

ETHICAL COMMITTEE PERMISSION TO CONDUCT THE STUDY

Ethics Committee

Apollo HOSPITALS
TOUCHING LIVES

30th August 2012

To,

Ms. A.Selva Karthigha,
2nd Year M.Sc (Nursing),
Department of Obstetrics and Gynaecological Nursing,,
Apollo College of Nursing,
Chennai.

Ref: Effectiveness of Birthing Ball upon first stage labour pain and coping among primiparturient women.

Sub: Approval of the above referenced project and its related documents.

Dear Ms. A.Selva Karthigha,

Ethics Committee-Apollo Hospitals has received the following document submitted by you related to the conduct of the above-referenced study.

- Project proposal.
- Participant consent form.

The Ethics Committee-Apollo Hospitals reviewed and discussed the study proposal documents submitted by you related to the conduct of the above referenced study at its meeting held on 29th August 2012.
The following Ethics Committee Members were present at the meeting held on 29th August 2012.

Name	Profession	Position in the committee
Mr. S. S. Narayanan	Ethicist	Chairman
Dr. Rema Menon	Clinician	Member Secretary
Dr. Radha Rajagopalan	Clinician	EC-Member
Dr. Krishnakumar	Clinician	EC-Member
Dr. Vijaya Kumar	Clinician	EC-Member
Dr. Clive Fernandes	Consultant Clinical Pharmacologist	Basic Medical Scientist
Dr. Nalini Roa	Social Worker	EC-Member
Ms. N. Suseela	Retired English Teacher	Layperson
Ms. Maimoona Badsha	Lawyer	Lawyer

Apollo Hospitals Enterprise Limited
21, Greams Lane, Off Greams Road, Chennai - 600 006
Tel : 91 - 44 - 2829 3333 Extn : 6008, 91 - 44 - 2829 5465 Extn : 6639 Fax : 91 - 44 - 2829 4449
E - Mail : ecapollochennai@gmail.com

Ethics Committee

Apollo HOSPITALS
TOUCHING LIVES

Dr. Paul Dilipkumar	Clinician	EC-Member
Dr. V. Balaji	Clinician	EC-Member
Dr. M. A. Raja	Consultant Medical Oncologist	EC-Member

After due ethical and scientific consideration, the Ethics Committee has approved the above presentation submitted by you.

The EC review and approval of the report is only to meet their academic requirement and will not amount to any approval of their conclusions / recommendations as conclusive, deserving adoption and implementation, in any form, in any healthcare institution.

The Ethics Committee is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

With Regards,

Date:
30/8/12

Dr. Rema Menon,
Ethics Committee-Member Secretary,
Apollo Hospitals, Chennai,
Tamil Nadu, India.

Dr. REMA MENON
MEMBER SECRETARY
ETHICS COMMITTEE, APOLLO HOSPITALS
APOLLO HOSPITALS ENTERPRISE LIMITED
CHENNAI-600 006, TAMILNADU

Apollo Hospitals Enterprise Limited
21, Greams Lane, Off Greams Road, Chennai - 600 006
Tel : 91 - 44 - 2829 3333 Extn : 6008, 91 - 44 - 2829 5465 Extn : 6639 Fax : 91 - 44 - 2829 4449
E - Mail : ecapollochennai@gmail.com

APPENDIX-V

LETTER REQUESTING OPINIONS AND SUGGESTIONS OF EXPERTS FOR ESTABLISHING CONTENT VALIDITY OF RESEARCH

From

Ms. Selva Karthigha.A.

M.Sc., (Nursing) II Year,

Apollo College of Nursing,

Chennai-95.

To

Forwarded Through:

Dr. Latha Venkatesan,

Principal,

Apollo College of Nursing.

Sub: Request for opinions and suggestions of experts for content validity of Research tool.

Respected Sir/ Madam

Greetings! As a part of the Curriculum Requirement the following research title is selected for the study.

"An experimental study to assess the effectiveness of birthing ball upon labour pain and coping during first stage of labour in primi parturient women at Selected Hospitals, Chennai".

I will be highly privileged to have your valuable suggestions with regard to the establishment of Content Validity of Research tool. So, I request you to validate my Research tool and give suggestions about the tool.

Yours Sincerely,

(Ms. Selva Karthigha.A)

APPENDIX VI

CERTIFICATE FOR CONTENT VALIDITY TO WHOMSOEVER IT MAY CONCERN

This is to certify that tools and content for the research study developed by II year M.Sc. (Nursing) student of Apollo College of Nursing for her dissertation "An Experimental Study to Assess the Effectiveness of Birthing ball upon Labour pain and Coping during First Stage of Labour in Primiparturient Women at Andhra mahila sabha Hospital, Chennai," was validated

Signature of the Expert

APPENDIX – VII

LIST OF EXPERTS FOR CONTENT VALIDITY

1. **Dr. Latha Venkatesan,** M.Sc (N)., M.Phil (N)., Ph.D (N).,
   Principal and Professor,
   Apollo college of Nursing,
   Chennai-95.

2. **Prof. Lizy Sonia, A.,** M.Sc. (N), Ph.D (N).,
   Vice Principal & Professor in Nursing,
   HOD of Medical Surgical Nursing,
   Apollo College of Nursing,
   Chennai-95.

3. **Mrs. Jaslina Gnanarani, J.,** M.Sc. (N), Ph.D (N).,
   Reader,
   Department of Medical Surgical Nursing,
   Apollo College of Nursing, Chennai.

4. **Mrs. Vijayalakshmi,** M.Sc. (N), Ph.D (N).,
   Professor,
   Department of Mental Health Nursing,
   Apollo College of Nursing, Chennai.

5. **Mrs. Nesa sathya Sachi,** M.Sc. (N),
   professor,
   Department of Child Health Nursing,
   Apollo College of Nursing, Chennai.

6. **Mrs. Pappy Yuvarani,** M.Sc.(N),
   Reader,
   Dept. of Obstetrics and Gynecological nursing,
   Apollo College of Nursing, Chennai.

7. **Mrs. Saraswathy,** M.Sc. (N),
   Lecturer,
   Dept. of Obstetrics and Gynecological nursing,
   Apollo College of Nursing, Chennai.

8. **Ms.Kavitha,** M.Sc.(N),
   Lecturer,
   Dept. of Obstetrics and Gynecological nursing,
   Apollo College of Nursing, Chennai.

APPENDIX-VIII

CERTIFICATE FOR USE OF BIRTHING BALL

Institute Of Alternative And Complimentary Therapy
Affiliated to Dr. Vijay's Health Science and Research Foundation
Chennai, India

Date: 06.06.2012

Whomsoever may be concern

This is to certify that **Ms.A.Selvakarthigha** a student of M.Sc.Nursing from Apollo College of Nursing, Chennai-95, has done her training in **Use of Birthing Ball for Labour Pain** for one week in our institute. The Project work entitled *" An Experimental Study to Assess the Effectiveness of birthing ball upon Labour Pain during first stage of labour in Primigravid women at Selected Hospitals, Chennai".* During that period, she had been trained in that topic, she acquitted herself well.. She was prompt in her duty and her conduct has been good.

INSTITUTE OF ALTERNATIVE AND COMPLIMENTARY THERAPY Since 2005

Dr.E.VijayaKumar., MPT., MD(Acu)., MIAP., DYT., FIMT

Address: 42/3, G.N.G Street, Varadharajapuram, Amabttur, Chennai -53, Mobile: +91 99406 79698

Apollo HOSPITALS
TOUCHING LIVES

27.7.2012

TO WHOM SO EVER IT MAY CONCERN

This to certify Ms. Selva Karthiga. A, 2nd Year, M.Sc Nursing. Apollo College of Nursing, Chennai had undergone training in Birthing Ball for labour pain for one week (in Institute of Alternative & Complementary therapy). She is eligible to practice for her Research purpose and the technique is effective.

Dr. Raj Prasanna MPT

M.RAJ PRASANNA
HOD-Physiotherapy & Rehabilitation

Apollo hospitals, 21, Greams Lane, Off Greams Road, Chennai 600 006, India T : +91 44 2829 0200, 3333
Emergency : +91 44 2829 4343 F : +91 44 2829 4429
E : enquiry@apollohospitals.com Website : www.apollohospitals.com

APPENDIX –IX

CERTIFICATE FOR ENGLISH EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation **"An experimental study to assess the effectiveness of birthing ball upon labour pain and coping during the first stage of labour in primiparturient women at a selected hospital, Chennai"** by Ms.A.Selvakarthigha M.sc (N) IInd year, Apollo College Of Nursing was edited for English language appropriateness by

Signature

V. USHA
Asst. Prof. of English
Guru Nanak College
Velachery, Chennai - 600 042.

APPENDIX-X

CERTIFICATE FOR TAMIL EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the tool for Demographic variable proforma, participant consent form , modified pain intensity scale, pain coping scale and rating scale on satisfaction by Ms.A.Selvakarthigha, M.sc (N) IInd year student, Apollo College Of Nursing for her dissertation **"An experimental study to assess the effectiveness of birthing ball upon labour pain and coping during the first stage of labour in primiparturient women at a selected hospital, Chennai"** was edited for Tamil language appropriateness by

Signature

ச.ஸ்ரீபதிநாயுடு, M.A.B.Ed.
பட்டதாரி ஆசிரியர்,
அரசுஉயர்நிலைப்பள்ளி,
சிட்லபாக்கம், சென்னை - 64

APPENDIX-XI

RESEARCH PARTICIPANT CONSENT FORM

Dear Participant,

I am Selva Karthigha.A M.Sc. Nursing student of Apollo College of Nursing, Chennai. As a part of my study, I have selected a Research Project on "**An experimental study to assess the effectiveness of birthing ball upon labour pain and coping in primiparturient women during first stage of labour in selected hospital Chennai."**

I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in your response. The information collected will be kept confidential and anonymity will be maintained.

Signature of the Researcher

I, ……, hereby give my consent to participate in the study.

Signature of the Participant

ஆராய்ச்சியில் பங்கு பெறுவோருக்கான ஒப்புதல் படிவம்

அன்பிற்குரிய பங்கு பெறுவோரே!

செல்வகார்த்திகா எனும் நான் ,அப்பொலோ செவிலியர் கல்லூரியின் இரண்டாம் படிப்பின் ஒரு பகுதியாக, பிரசவிக்கும் தாய்மார்களின் முதல் கட்ட பிரசவ வலியின் போது வலியை குறைக்கும் பொருட்டு பிறப்பு பந்து சிகிச்சை மேற்கொண்டு ஓர் ஆய்வு செய்ய உள்ளேன். இவ்வாய்வு பிரசவ நேரத்தின் போது வலியை குறைக்க பெரிதும்பயன்படும்.

இவ்வாய்வில் தாங்கள் கலந்து கொண்டு தங்களின் பதில்களை உண்மையாகவும், வெளிப்படையாகவும் கூறுமாறு தங்களை தாழ்மையுடன் கேட்டுக் கொள்கிறேன். தங்களின் பதில்கள் இரகசியமாக பாதுகாக்ப்படும் என உறுதியளிக்கிறேன்.

ஆய்வாளரின் கையொப்பம்

_____ எனும் நான் இவ்வாய்வில் கலந்துகொள்ள சம்மதிக்கிறேன்.

பங்கு பெறுவோரின் கையொப்பம்

APPENDIX-XII

DEMOGRAPHIC VARIABLES PERFORMA FOR PRIMI PARTURIENT WOMEN

Purpose:

This profoma is used by the researcher to collect the information on demographic variables of primi parturient women such as age in years, educational status, occupation, type of work, type of family, family income per month in rupees, and previous information regarding birthing ball.

Instruction:

The investigator will collect data by interviewing the participants and with hospital records by making a tick mark to fill the details.

Sample Number

1. Age in years

1.1 ≤ 20 ☐

1.2 21-25 ☐

1.3 26-30 ☐

1.4 ≥ 31 ☐

2. Educational Status

2.1 Illiterate ☐

2.2 Primary Education ☐

2.3 High School ☐

2.4 Higher secondary education ☐

3. Occupation

3.1 Employed ☐

3.2 House wife ☐

4. Type of work

4.1 Heavy worker ☐

4.2 Moderate worker ☐

4.3 Sedentary worker ☐

5. Area of residence

5.1 Urban ☐

5.2 Rural ☐

5.3 Semi-urban ☐

6. Type of family

6.1 Nuclear ☐

6.2 Joint ☐

6.3 Any other ☐

7. Family income per month in Rupees

7.1 ≤ Rs.5000 ☐

7.2 Rs.5001-7000 ☐

7.3 Rs.7001-9000 ☐

7.4 ≤ Rs.9001 ☐

8. Previous information received about birthing ball

8.1 Yes ☐

8.2 No ☐

9. Source of information

9.1 Media ☐

9.2 Neighbours ☐

9.3 Health professionals ☐

9.4 Family members ☐

பொது விவர ஆய்வறிக்கை

நோக்கம்:

ஆய்வாளரால் பயன்படுத்தப்படும் இவ்வாய்வறிக்கையானது தங்களின் வயது, கல்வித்தகுதி, தொழில், வேலையின் தன்மை, வசிப்பிடம், குடும்பத்தன்மை, மாதவருமானம் மற்றும் பிறப்பு பந்து குறித்து முன் அறிவு போன்ற தகவல்களை சேகரிக்க பயன்படுகிறது.

குறிப்பு

கீழ்வரும் தகவல்கள் ஆய்வாளரால் நேர்முக கலந்துரையாடல் மூலமும், மருத்துவமனை குறிப்பேடுகளின் வாயிலாகவும் சேகரிக்கப்படும்.

மாதிரி எண்:

1. ஆண்டின் படி வயது

1.1 ≤ 20 ☐

1.2 21-25 ☐

1.3 26-30 ☐

1.4 ≥ 31 ☐

2. கல்வித்தகுதி

2.1 கல்வியற்றவர் ☐

2.2 உயர்க்கல்வி ☐

2.3 பட்டப்படிப்பு ☐

2.4 பட்ட மேற்படிப்பு ☐

3. தொழில்

3.1 வேலைக்கு செல்பவர் ☐

3.2 குடும்ப பராமரிப்பாளர் ☐

4. வேலையின் தன்மை

4.1 கடின வேலை ☐

4.2 மிதமான வேலை ☐

4.3 குறைந்தபட்ச வேலை ☐

5. வசிப்பிடம்

5.1 நகரப்பகுதி ☐

5.2 கிராமப்பகுதி ☐

5.3 நகர்புறப்பகுதி ☐

6. குடும்பதன்மை

6.1 சிறுகுடும்பம் ☐

6.2 கூட்டுக்குடும்பம் ☐

6.3 மற்றவை ☐

7. குடும்பமாத வருமானம் ரூபாயில்

7.1 $\leq$ 5000 ☐

7.2 5001-7000 ☐

7.3 7001-9000 ☐

7.4 $\geq$ 9001 ☐

8. பிறப்பு பந்து சிகிச்சை குறித்து முன்விவரம் உண்டா?

8.1 ஆம் ☐

8.2 இல்லை ☐

9. ஆம் எனில், தகவல் அறிந்த ஊடகம்

9.1 தொலை தொடர்பு சாதனங்கள் ☐

9.2 நண்பர்கள் ☐

9.3 மருத்துவ அனுபவர்கள் ☐

9.4 குடும்ப உறுப்பினர்கள் ☐

APPENDIX-XIII

OBSTETRIC VARIABLE PERFORMA FOR PRIMI PARTURIENT WOMEN

Purpose:

This profoma is used by the researcher to collect the information on obstetric variables of primiparturient women such as gestational age, number of antenatal visits, pain management, type of delivery, maternal complications during labour, duration of first age of labour, duration of second stage of labour and Apgar score of the newborn.

Instruction:

After delivery the researcher will be filling this profoma by referring the hospital records. The information collected will be kept confidential and anonymity will be maintained.

Sample Number

1. Gastational age in weeks

1.1 37 - 38 weeks ☐

1.2 39 - 40 weeks ☐

1.3 41 - 42 weeks ☐

2. Number of antenatal visits till date

2.1 1 - 4 visits ☐

2.2 4 – 8 visits ☐

2.3 more than 8 visits ☐

3. Pain Management during first stage of labour

3.1 Systemic analgesia ☐

3.2 Inhalation analgesia ☐

3.3 Epidural analgesia ☐

3.4 None ☐

4. Type of delivery

4.1 Normal vaginal delivery ☐

4.2 Forceps delivery ☐

4.3 Vacuum delivery ☐

4.4 Lower Segmental Caesarean Section ☐

5. If abnormal delivery, indication

5.1 Obstructed labour ☐

5.2 Prolonged labour ☐

5.3 Fetal distress ☐

5.4 Shoulder Dystocia ☐

6. Maternal complications during labour

6.1 Post Partum Haemorrhage ☐

6.2 Dysfunctional labour ☐

6.3 None ☐

6.4 Any other ☐

7. Fetal Complication

7.1 Prolapsed cord ☐

7.2 Respiratory Distress Syndrome ☐

7.3 Mechonium aspiration syndrome ☐

7.4 None ☐

7.5 Any other ☐

8. Duration of first stage of labour

8.1 8 - 9 hours ☐

8.2 9– 10 hours ☐

8.3 10 – 12 hours ☐

8.4 > 12 hours ☐

9. Duration of second stage of labour

9.1 31 – 40 minutes ☐

9.2 41 – 50 minutes ☐

9.3 51 – 60 minutes ☐

9.4 >1 hour ☐

10. APGAR score of the newborn at 5 minutes of birth

10.1 0 – 3 ☐

10.2 4 – 6 ☐

10.3 7 – 10 ☐

APPENDIX-XIV

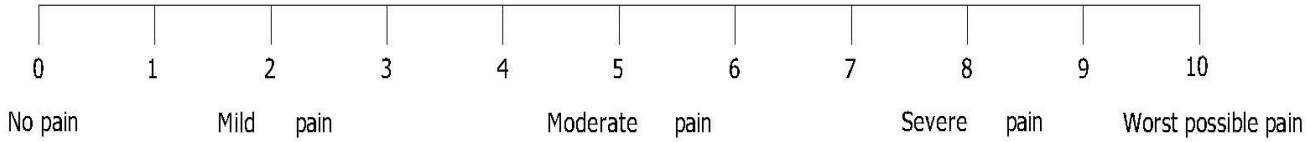
MODIFIED PAIN INTENSITY SCALE FOR PRIMI PARTURIENT WOMEN

Purpose:

The modified pain intensity scale will be used to measure the intensity of the pain among primiparturient women before and after the use of birthing ball during the first stage of labour.

Instruction:

The investigator will access the level of pain felt by the participant by asking them.



Score		Level of pain
0	-	No pain
1-3	-	Mild pain
4-6	-	Moderate Pain
7-9	-	Severe Pain
10	-	Worst possible pain

Pain Assessment

Cervical dilatation	2cm	4cm	6cm
Assessment of pain Before therapy			
After therapy			

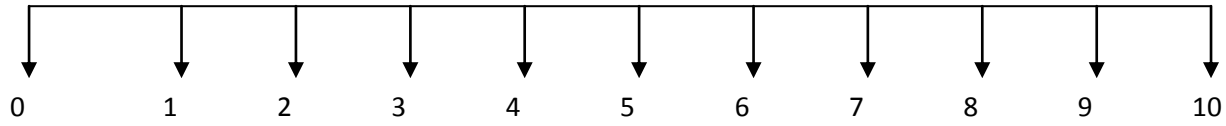
வலித்தன்மை அளவுகோல்

நோக்கம்

வலித்தன்மை அளவுகோல் பிரசவிக்கும் தாய்மார்களிடம் முதல்கட்ட பிரசவ வலியின் போது பிறப்பு பந்து சிகிச்சைக்கு முன்னும், சிகிச்சைக்கு பின்பும் வலியின் அளவை தெரிந்து கொள்ள பயன்படுகிறது.

குறிப்பு

ஆய்வாளர், பிரசவிக்கும் தாய்மார்களிடம் கேட்டறிதலின் மூலம் வலியின் அளவை குறிப்பிடுவார்.



வலி இல்லை குறைந்த வலி மிதமான வலி கடுமையான வலி உச்சகட்ட வலி

வலி மதிப்பீடு

மதிப்பென்		**வலியின் அளவு**
0	-	வலி இல்லை
1-3	-	குறைந்த வலி
4-6	-	மிதமான வலி
7-9	-	கடுமையான வலி
10	-	உச்சகட்டவலி

கர்ப்பப்பை வாய்நீட்டிப்பு	**2cm**	**4cm**	**6cm**
வலியின் அளவு சிகிச்சைக்கு முன்			
வலியின்அளவு சிகிச்சைக்கு பின்			

APPENDIX-XV

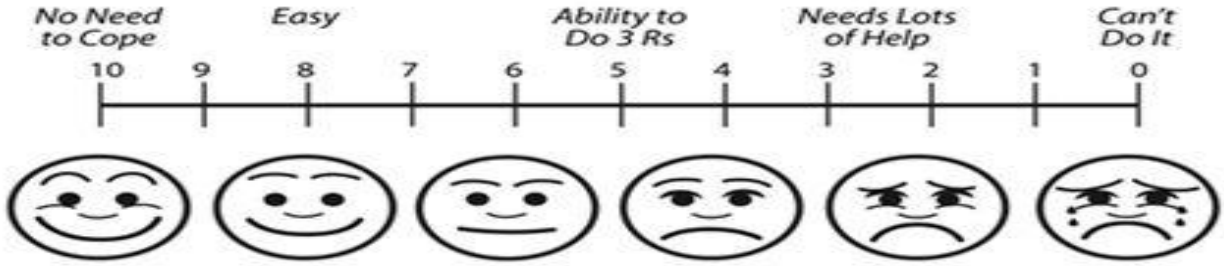
PAIN COPING SCALE FOR PRIMI PARTURIENT WOMEN

Purpose:

The scale will be used to measure the pain coping of primiparturient women before and after use of birthing ball as scored by the researcher.

Instruction:

Please indicate your level of coping ability during uterine contraction. This response will be kept confidential.



Pain Coping

Scores	**Level of Pain**
0	Can´t do it
1-3	Needs of lot
4-6	Able to do 3 R´s
7-9	Easy
10	No need to cope

Cervical dilatation	2cm	4cm	6cm
Assessment of pain coping Before therapy			
After therapy			

(3R's –Rhythm, Ritual, Relaxation)

வலிதாங்கு அளவுகோல்

நோக்கம்

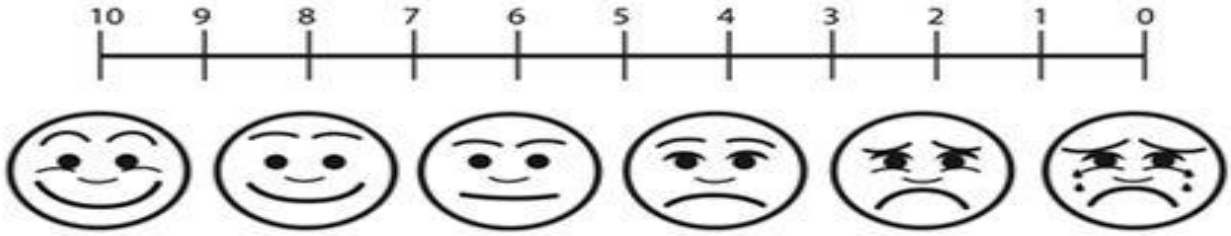
இவ்வளவுகோள் பிரசவிக்கும் தாய்மார்களிடம் முதல் கட்ட பிரசவ வலியின் போது பிறப்பு பந்து சிகிச்சைக்கு முன்னும், சிகிச்சைக்கு பின்னும் வலிதாங்கும் நிலையை தெரிந்து கொள்ள பயன்படுகிறது.

குறிப்பு

பிரசவ வலியின் போது தங்களின் வலிதாங்கும் நிலையை குறிப்பிடவும். தங்களின் பதில்கள் பிறரிடம் பகிர்ந்து கொள்ளப்பட மாட்டாது.

வலி மதிப்பீடு

வலி தாங்கும் அவசியமில்லை	**எளிதாக செய்ய முடியும்**	**3 வதத்தில் செய்ய முடியும்**	**உதவியுடன் செய்ய முடியும்**	**செயலின்மை**



மதிப்பென்		**வலியின் அளவு**
0	-	செயலின்மை
1-3	-	உதவியுடன் செய்ய முடியும்
4-6	-	3விதத்தில் செய்ய முடியும்
7-9	-	எளிதாக செய்ய முடியும்
10	-	வலிதாங்கும் அவசியம் இல்லை

கர்ப்பப்பை வாய் நீட்டிப்பு	**2cm**	**4cm**	**6cm**
வலியின் அளவு சிகிச்சைக்கு முன்			
வலியின் அளவு சிகிச்சைக்கு பின்			

(3விதம்: தாளம், சடங்கு, இளைப்பாறுதல்)

APPENDIX-XVI

MODIFIED WHO PARTOGRAPH FOR PRIMIPARTURIENT WOMEN

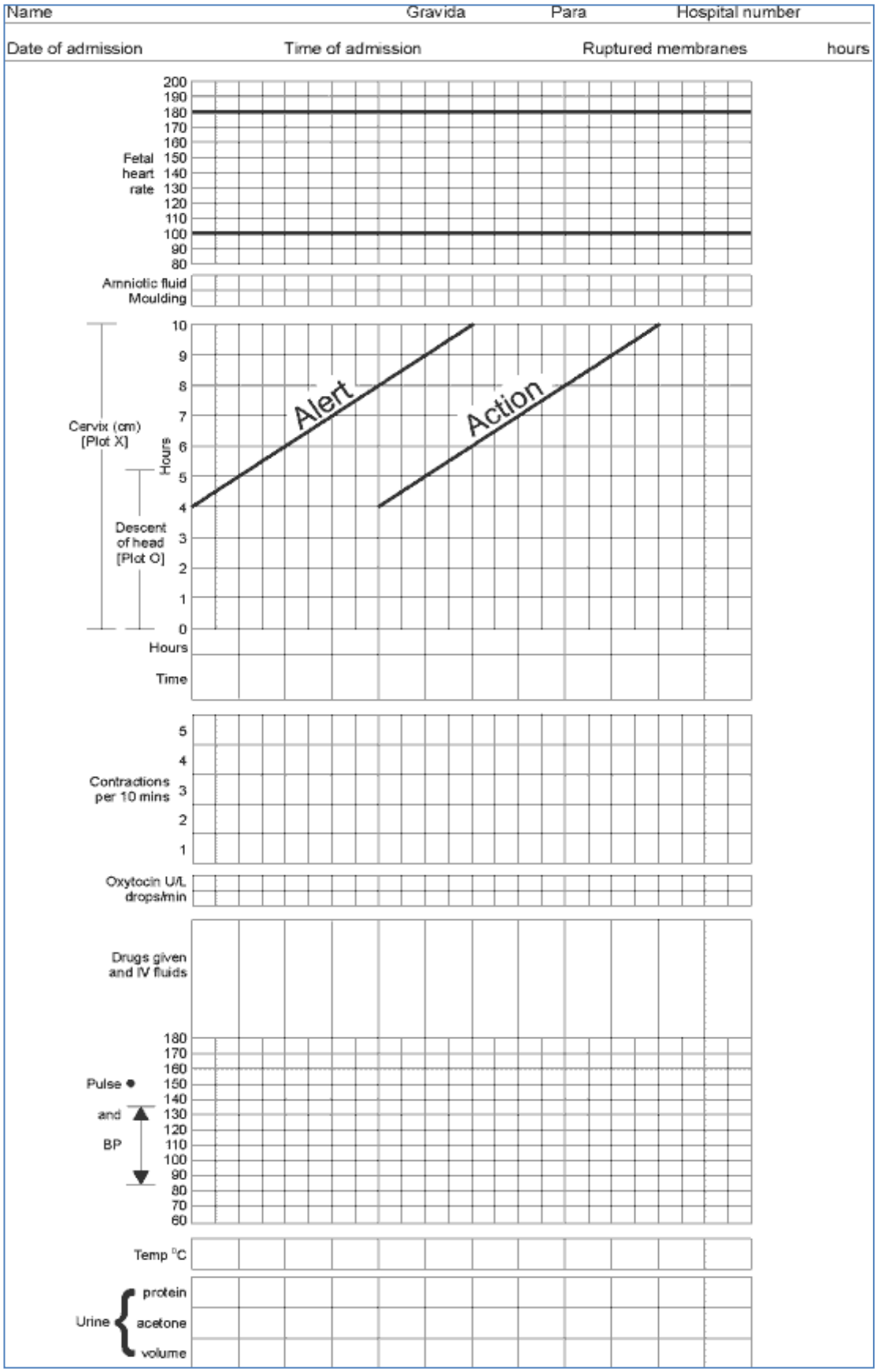
Purpose:

This partogram is used to record the information such as fetal heart rate, cervical dilatation, cervical effacement, contractions, drugs given during first stage of labour, maternal pulse rate and blood pressure, maternal temperature, urine protein, acetone and urine volume.

Instruction:

The researcher monitors the maternal and fetal condition to record in this partogram.

Modified WHO Partograph



RATING SCALE ON SATISFACTION OF USE OF BIRTHING BALL DURING FIRST STAGE OF LABOUR

S.No	Content	Items	Total items	Percentage
1	Characteristics of researcher	1, 2, 3	3	30%
2	Method of administration	4, 5, 6, 7	4	40%
3	Effectiveness of therapy	8, 9, 10	3	30%
		Total	10	100%

APPENDIX-XVII

RATING SCALE ON SATISFACTION OF USE OF BIRTHING BALL UPON LABOUR PAIN

Purpose

This scale is prepared by the researcher. Rating scale is designed to assess the level of satisfaction of the primiparturient women regarding use of birthing ball and the effectiveness of the therapy .this is assessed by researcher after delivery.

Instructions

Kindly read the items .responses extended from highly satisfied to dissatisfy. Describe your satisfaction regarding birthing ball during first stage of labour. Give your responses freely and frankly. These responses will be kept confidential.

S.No	Items	Highly satisfied 4	Moderately satisfied 3	Just satisfied 2	Dissatisfied 1
1	**Characteristics of researcher** Are you satisfied with the explanation given by the researcher well in advance regarding birthing ball				
2	Are you satisfied with the presence of investigator in need				
3	Do you feel satisfied with the method of evaluation by the researcher				

4	**Method of application** Are you satisfied with the duration of giving birthing ball				
5	Are comfortable with the method using birthing ball				
6	Whether the frequency of birthing ball use is satisfactory				
7	Are you satisfied with the hygienic measures of the therapy				
8	**Effectiveness of the therapy** Are you satisfied with the effectiveness of the therapy				
9	Are you satisfied with the cost of the therapy				
10	Are you able to feel relaxed and satisfied with birthing ball technique				

The total score is converted into percentage and graded as given below.

Score interpretation

Score	**Percentage**	**Interpretation**
≤10	≤25%	Dissatisfied
11-12	26-50%	Just satisfied
21-30	51-75%	Moderately satisfied
31-40	76-100%	Highly satisfied

பிறப்புபந்து சிகிச்சையின் திருப்தியை கண்டறியும் அளவுகோல்

நோக்கம்:

இவ்வளவு கோல் பிரசவத்தின் பின் பிரசவித்தரிடமிருந்து பிறப்பு பந்து சிகிச்சையால் ஏற்பட்ட திருப்தி நிலையை கண்டறிய ஆய்வாளரால் பயன்படுத்தப்படுகிறது.

குறிப்பு

பின்வரும் 10 வினாக்களுக்கு தங்களின் பதில்களை வெளிப்படையாக கூறவும். தங்களின் பதில்கள் இரகசியமாக பாதுகாக்கப்படும். இவ்வளவு கோலில் பதில்கள் மிகுந்த திருப்தி முதல் திருப்தி இல்லை என்பது வரை கொடுக்கப்பட்டுள்ளது.

வி.எண்	கேள்விகள்	மிகுந்த திருப்தி	மிதமான திருப்தி	ஓரளவு திருப்தி	திருப்தி இல்லை
1.	**<u>ஆராய்ச்சியாளரின் பண்புகள்</u>** ஆராய்ச்சியாளரின் பிறப்பு பந்து குறித்து கொடுத்த விளக்கம் திருப்திகரமாக உள்ளதா?				
2.	தேவையின் போது ஆய்வாளரின் துணை திருப்தியாக இருந்ததா?				
3.	ஆய்வாளர் பயன்படுத்திய ஆய்வறிக்கை திருப்தியாக இருந்ததா?				
4.	**<u>பயன்பாட்டு முறைகள்</u>** பிறப்பந்து கொடுத்த நேரம் உங்களுக்கு திருப்திகரமாக இருந்ததா?				

5.	பிறப்பு பந்தினை உயயோகப்படுத்திய முறை தங்களுக்கு வசதியாக இருந்ததா?				
6.	பிறப்பு பந்து உபயோகத்தின் இடைவெளி தங்களுக்கு திருப்தியாக இருந்ததா?				
7.	சிகிச்சை நடவடிக்கைகளின் தூய்மை தங்களுக்கு எந்த அளவு திருப்திகாரமாக இருந்தது?				
8.	**<u>சிகிச்சையின் பலன்கள்</u>** சிகிச்சையின் பலன்கள் எந்த அளவிற்கு திருப்திகரமாக இருந்தது?				
9.	சிகிச்சையின் செலவு தங்களுக்கு திருப்திகரமாக இருந்ததா?				
10.	நீங்கள் ஓய்வாக மற்றும் திருப்திகரமாக சிகிச்சையின் நுட்பத்தை உணர்ந்தீகளா?				

APPENDIX -XVIII

MANUAL OF USE OF BIRTHING BALL

Manual on use of birthing ball

Birthing ball

It is a large air filled rubber ball (about 60 cm in diameter) made up of extra tough non slip burst proof PVC that is easily wiped and clean.

Benefits of use of birthing ball

The general benefits include

- Release of muscular tension
- Promote circulation of blood
- Relieves pain improves general health
- Promotes comfort

The benefits in labour includes

- Reduces labour pain
- Induces labour
- Improves coping
- Promotes good contractions
- Promotes cervical dilatation
- Aids in progress of labour with reducing the duration of labour.

Contraindications

The birthing ball should not be used in the following conditions

- Mother with rupture of membrane
- Mother who underwent previous caesarean section
- Mother with burns or infections

Mechanism of action

It allows the women to rock back and forth seated on a soft surface. It stimulates the peripheral nervous system and energy channels thus leading to the release of natural endorphins in the body resulting in decreased pain perception. The impulse from the brain reaches the cervix leading to progress in the cervical dilatation.

Steps for use of Birthing Ball

- Place a yoga mat on the floor and keep the birthing ball

- Make the mother to sat over the ball comfortably

- Hold the mother and started initially with breathing techniques for 1 to 10 counts after that the fro and through movement with the gentle back massage.

- Birthing ball was provided for 15 minutes in the cervical dilatation of 2cm, 4cm and6cm.

APPENDIX -XIX

PLAGIARISM ORIGINALITY REPORT

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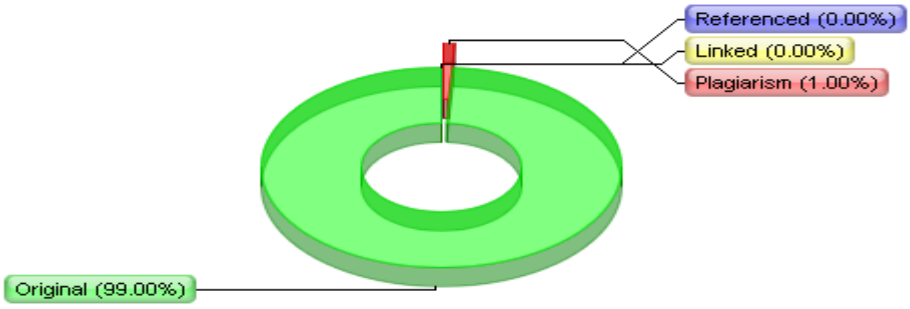
Plagiarism Detection Chart:



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Referenced 0% / Linked 0%

Original - 99% / 1% - Plagiarism

APPENDIX-XX

DATA CODE SHEET

AG - Age in years
- 1.1 ≤ 20
- 1.2 21-25
- 1.3 26-30
- 1.4 ≥ 31

EDU- Educational Status
- 2.1 Illiterate
- 2.2 Primary Education
- 2.3 High School
- 2.4 Higher secondary education

OCC- Occupation
- 3.1 Employed
- 3.2 House wife

TOW- Type of work
- 4.1 Heavy worker
- 4.2 Moderate worker
- 4.3 Sedentary worker

AOR- Area of residence
- 5.1 Urban
- 5.2 Rural
- 5.3 Semi-urban

TOF- Type of family
- 6.1 Nuclear
- 6.2 Joint
- 6.3 Any other

MI- Family income per month in Rupees
- 7.1 ≤ Rs.5000
- 7.2 Rs.5001-7000
- 7.3 Rs.7001-9000
- 7.4 ≤ Rs.9001

PI- Previous information received about birthing ball
- 8.1 Yes
- 8.2 No

SI- Source of information
- 9.1 Media
- 9.2 Neighbours
- 9.3 Health professionals

GA- Gastational age in weeks
- 1.1 37 - 38 weeks
- 1.2 39 - 40 weeks
- 1.3 41 - 42 weeks

AN- Number of antenatal visits till date
- 2.1 1 - 4 visits
- 2.2 4 – 8 visits
- 2.3 more than 8 visits

PN- Pain Management during first stage of labour
- 3.1 Systemic analgesia
- 3.2 Inhalation analgesia
- 3.3 Epidural analgesia
- 3.4 None

TOD- Type of delivery
- 4.1 Normal vaginal delivery
- 4.2 Forceps delivery
- 4.3 Vacuum delivery
- 4.4 LSCS

IND- If abnormal delivery, indication
- 5.1 Obstructed labour
- 5.2 Prolonged labour
- 5.3 Fetal distress
- 5.4 Shoulder Dystocia

MC- Maternal complications during labour
- 6.1 PPH
- 6.2 Dysfunctional labour
- 6.3 None
- 6.4 Any other

FC- Fetal Complication
- 7.1 Prolapsed cord
- 7.2 RDS
- 7.3 Mechonium aspiration syndrome
- 7.4 None
- 7.5 Any other

DFL- Duration of first stage of labour

8.1 8 - 9 hours
8.2 9 – 10 hours
8.3 10 – 12 hours
8.4 > 12 hours

DSL-Duration of second stage of labour

9.1 31 – 40 minutes
9.2 41 – 50 minutes
9.3 51 – 60 minutes
9.4 >1 hour

APG- APGAR score of the newborn at 5 minutes of birth

10.1 0 – 3
10.2 4 – 6
10.3 7 – 10

CG – control group

EG – experimental group

BT-- before therapy

AT – after therapy

CD – cervical dilation

UC – uterine contraction

SBP – systolic blood pressure

DBP – diastolic blood pressure

FHR – fetal heart rate

LOS – level of satisfaction

APPENDIX-XXI

MASTER CODE SHEET

CG	DEMOGRAPHIC VARIABLES									OBSTETRIC VARIABLES										PAIN		COPING		FETO MATERNAL PARAMETERS									
	AGE	EDN	OCC	TOW	AOR	TOF	MI	PI	SI	GA	AV	PM	TOD	IND	MC	FC	DFL	DSL	APG	BT	AT	BT	AT	CD		UC		SBP		DBP		FHR	
																								BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
1	1.2	2.2	3.2	4.3	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	6	6	4	4	4	3	4	120	120	80	80	142	142
2	1.1	2.3	3.2	4.2	5.1	6.1	7.3	8.2	-	1.2	2.3	3.4	4.4	5.2	6.3	7.3	8.3	-	10.3	6	6.7	6	3	4	4	3	4	120	120	80	80	148	146
3	1.2	2.2	3.2	4.3	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.4	5.2	6.3	7.3	8.2	-	10.3	5.7	6.7	3	1	4	4	3	4	120	120	70	73	148	146
4	1.2	2.2	3.2	4.2	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.4	5.2	6.3	7.3	8.2	-	10.3	5.7	6	2	2	4	4	3	4	120	110	70	70	150	148
5	1.2	2.2	3.2	4.3	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.4	5.2	6.3	7.3	8.3	-	10.3	5	5	4	2	4	4	3	4	120	120	80	70	148	152
6	1.1	2.2	3.2	4.3	5.2	6.1	7.3	8.2	-	1.2	2.3	3.4	4.4	5.2	6.3	7.3	8.3	-	10.3	5	6	4	2	4	4	3	4	120	120	80	76	148	146
7	1.2	2.3	3.2	4.3	5.1	6.2	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	6.7	4	2	4	4	3	4	120	120	70	76	142	146
8	1.1	2.2	3.2	4.2	5.2	6.1	7.3	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	6.7	4	2	4	4	3	4	110	110	70	70	148	150
9	1.2	2.3	3.2	4.3	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	6	4	2	4	4	3	4	120	120	80	80	150	152
10	1.1	2.2	3.2	4.2	5.2	6.1	7.2	8.2	-	1.1	2.3	3.4	4.4	5.2	6.3	7.3	8.3	-	10.3	5	5	4	3	4	4	3	4	120	120	80	76	148	146
11	1.3	2.2	3.2	4.3	5.2	6.2	7.3	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	6	4	1	4	4	3	4	120	120	80	76	148	148
12	1.2	2.3	3.2	4.3	5.2	6.1	7.2	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.3	9.3	10.3	6	6.7	4	1	4	4	3	4	120	120	80	80	142	148
13	1.2	2.2	3.2	4.2	5.2	6.2	7.2	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	6.7	4	1	4	4	3	4	120	120	80	76	148	150
14	1.2	2.2	3.2	4.3	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	6	4	1	4	4	3	4	120	120	80	70	148	150
15	1.3	2.3	3.2	4.3	5.1	6.1	7.2	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.3	9.3	10.3	5	5	4	1	4	4	3	4	110	110	80	73	150	150
16	1.2	2.3	3.2	4.3	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	6	4	1	4	4	3	4	120	120	80	80	148	146
17	1.2	2.3	3.2	4.3	5.1	6.2	7.3	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	6.7	4	3	4	4	3	4	120	120	70	73	148	148
18	1.1	2.2	3.2	4.3	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.4	5.2	6.3	7.3	8.3	-	10.3	5.7	6.7	5	3	4	4	3	4	110	110	80	80	142	146
19	1.2	2.2	3.2	4.3	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	6	4	1	4	4	3	4	120	120	70	73	148	148
20	1.2	2.3	3.2	4.3	5.2	6.1	7.2	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	5	4	3	4	4	3	4	120	120	80	80	148	150
21	1.2	2.2	3.2	4.2	5.2	6.2	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.3	9.3	10.3	5	6	4	2	4	4	3	4	120	120	70	76	150	152
22	1.3	2.2	3.2	4.2	5.1	6.1	7.3	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	6.7	6	3	4	4	3	4	110	110	80	76	148	150
23	1.1	2.2	3.2	4.2	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.3	9.3	10.3	5.7	6.7	4	1	4	4	3	4	110	110	70	76	150	152
24	1.2	2.3	3.2	4.3	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.4	5.2	6.3	7.3	8.2	-	10.3	5.7	6	4	2	4	4	3	4	120	120	80	70	142	144
25	1.2	2.3	3.2	4.2	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.3	9.3	10.3	5	5	4	3	4	4	3	4	120	120	80	70	142	144
26	1.2	2.3	3.2	4.3	5.1	6.2	7.3	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	6	4	2	4	4	3	4	120	120	80	80	142	144
27	1.2	2.2	3.2	4.2	5.1	6.1	7.3	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.3	9.3	10.3	6	6.7	3	1	4	4	3	4	110	120	70	70	148	148
28	1.2	2.2	3.2	4.2	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	6.7	4	2	4	4	3	4	120	113	80	76	148	150
29	1.2	2.2	3.2	4.3	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	6	4	1	4	4	3	4	120	120	80	76	142	146
30	1.2	2.3	3.2	4.2	5.1	6.1	7.3	8.2	-	1.1	2.3	3.4	4.4	5.2	6.3	7.3	8.3	-	10.3	5	5	6	3	4	4	3	4	120	113	80	73	142	144

EG	DEMOGRAPHIC VARIABLES									OBSTETRIC VARIABLES										PAIN		COPING		FETO MATERNAL PARAMETERS										LOS
	AGE	EDN	OCC	TOW	AOR	TOF	MI	PI	SI	GA	AV	PM	TOD	IND	MC	FC	DFL	DSL	APG	BT	AT	BT	AT	CD		UC		SBP		DBP		FHR		
																								BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	
1	1.2	2.2	3.2	4.3	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	5	5	4	4	4	3	4	120	120	80	80	142	142	36
2	1.2	2.3	3.2	4.2	5.2	6.1	7.3	8.2	-	1.1	2.3	3.4	4.4	5.2	6.3	7.3	8.2	-	10.3	5	4	7	6	4	4	3	4	120	120	80	80	148	146	36
3	1.3	2.2	3.2	4.2	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	5.7	4	3	4	4	3	4	120	120	70	73	148	146	36
4	1.2	2.3	3.2	4.3	5.1	6.1	7.3	8.2	-	1.2	2.3	3.4	4.4	5.2	6.3	7.3	8.2	-	10.3	6.7	5.3	5	4	4	4	3	4	120	110	70	70	150	148	36
5	1.3	2.2	3.2	4.2	5.2	6.1	7.3	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	5	5	4	4	4	3	4	120	120	80	70	148	152	36
6	1.2	2.2	3.2	4.3	5.1	6.1	7.3	8.2	-	1.2	2.3	3.4	4.4	5.2	6.3	7.3	8.2	-	10.3	6	5	4	3	4	4	3	4	120	120	80	76	148	146	36
7	1.3	2.2	3.2	4.2	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	4	4	3	4	4	3	4	120	120	70	76	142	146	37
8	1.2	2.2	3.2	4.3	5.2	6.1	7.3	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	5.7	4	3	4	4	3	4	110	110	70	70	148	150	36
9	1.2	2.2	3.2	4.2	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6.7	5.3	5	4	4	4	3	4	120	120	80	80	150	152	36
10	1.3	2.2	3.2	4.2	5.2	6.1	7.3	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	5	4	3	4	4	3	4	120	120	80	76	148	146	36
11	1.3	2.2	3.2	4.2	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	4	4	3	4	4	3	4	120	120	80	76	148	148	36
12	1.1	2.3	3.2	4.2	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	5.7	4	3	4	4	3	4	120	120	80	80	142	148	36
13	1.1	2.2	3.2	4.2	5.1	6.1	7.3	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6.7	5.3	5	4	4	4	3	4	120	120	80	76	148	150	36
14	1.2	2.3	3.2	4.2	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	5	4	3	4	4	3	4	120	120	80	70	148	150	37
15	1.2	2.2	3.2	4.3	5.1	6.1	7.3	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	5	4	3	4	4	3	4	110	110	80	73	150	150	36
16	1.2	2.3	3.2	4.3	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	4	4	3	4	4	3	4	120	120	80	80	148	146	36
17	1.3	2.3	3.2	4.3	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	5.7	4	3	4	4	3	4	120	120	70	73	148	148	36
18	1.2	2.2	3.2	4.2	5.1	6.1	7.3	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6.7	5.3	4	3	4	4	3	4	110	110	80	80	142	146	36
19	1.2	2.2	3.2	4.2	5.1	6.1	7.2	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.1	9.3	10.3	6	5	4	3	4	4	3	4	120	120	70	73	148	148	36
20	1.3	2.2	3.2	4.3	5.1	6.1	7.3	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	5	4	3	4	4	3	4	120	120	80	80	148	150	36
21	1.2	2.2	3.2	4.2	5.2	6.1	7.3	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	4	4	3	4	4	3	4	120	120	70	76	150	152	36
22	1.2	2.2	3.2	4.3	5.2	6.1	7.3	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5.7	5.7	4	3	4	4	3	4	110	110	80	76	148	150	36
23	1.3	2.2	3.2	4.2	5.2	6.1	7.3	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.1	9.3	10.3	6.7	5.3	4	3	4	4	3	4	110	110	70	76	150	152	36
24	1.3	2.2	3.2	4.3	5.2	6.1	7.2	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	5.3	5	4	4	4	3	4	120	120	80	70	142	144	37
25	1.2	2.2	3.2	4.2	5.1	6.1	7.3	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	5	4	3	4	4	3	4	120	120	80	70	142	144	36
26	1.2	2.3	3.2	4.2	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	5	4	3	4	4	3	4	120	120	80	80	142	144	36
27	1.2	2.2	3.2	4.3	5.1	6.1	7.3	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.1	9.3	10.3	5.7	4	4	3	4	4	3	4	110	120	70	70	148	148	36
28	1.1	2.3	3.2	4.3	5.1	6.1	7.2	8.2	-	1.1	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6.7	5.7	3	2	4	4	3	4	120	113	80	76	148	150	36
29	1.2	2.2	3.2	4.2	5.1	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	6	5.3	4	3	4	4	3	4	120	120	80	76	142	146	36
30	1.2	2.3	3.2	4.2	5.2	6.1	7.2	8.2	-	1.2	2.3	3.4	4.1	-	6.3	7.3	8.2	9.3	10.3	5	5	4	3	4	4	3	4	120	113	80	73	142	144	36

APPENDIX XXII

PHOTOGRAPHS DURING USE OF BIRTHING BALL