

**AN EXPERIMENTAL STUDY TO EVALUATE THE  
EFFECTIVENESS OF AN INTERVENTIONAL PACKAGE ON  
PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE  
AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION  
AT SELECTED SETTINGS, THIRUVALLUR DIST.**

**THESIS**

*Submitted to*

**THE TAMIL NADU Dr.M.G.R MEDICAL UNIVERSITY, CHENNAI**

*for the award of the degree of*  
**DOCTOR OF PHILOSOPHY**  
**IN**  
**NURSING**



*By*

**Prof. (Mrs). VIJAYALAKSHMI.R, M.Sc (NURSING)**

**JANUARY 2017**

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*Under the Guidance of*

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**OMAYAL ACHI COLLEGE OF NURSING**

**JANUARY 2017**

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**CHENNAI – 600 066**

**JANUARY 2017**

## **DECLARATION**

I hereby declare that this thesis entitled “**AN EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF AN INTERVENTIONAL PACKAGE ON PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION AT SELECTED SETTINGS, THIRUVALLUR DIST.**” is my own work carried out under the guideship of **Dr.S.KANCHANA, M.Sc (N), Ph.D, Post Doc., (Research), Principal and Ph.D(N) Research Guide, Omayal Achi College of Nursing** and is approved by the Research Committee, The Tamil Nadu Dr.M.G.R.Medical University, Guindy, Chennai.

I further declare to the best of my knowledge that the thesis does not contain any part of work which has been submitted for the award of any degree either in this University or in any other University / Deemed University, without proper citation.

**Prof.(Mrs). VIJAYALAKSHMI.R, M.Sc. (N)**  
**RESEARCH SCHOLAR**

**Place :**

**Date :**

## **CERTIFICATE**

This is to certify that this thesis entitled **“AN EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF AN INTERVENTIONAL PACKAGE ON PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION AT SELECTED SETTINGS, THIRUVALLUR DIST.** “submitted by **Prof. (Mrs). VIJAYALAKSHMI.R, M.Sc (N).**, for the award of the degree of Doctor of Philosophy in Nursing, is a bonafide record of research done by her during the period of study, under my supervision and guidance and that it has not formed the basis for the award of any other Degree, Diploma, Associateship, Fellowship or other similar title. I also certify that this thesis is her original independent work. I recommend that this thesis should be placed before the examiners for their consideration for the award of Ph.D. Degree in Nursing.

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## ACKNOWLEDGEMENT

First and foremost I feel honoured in undertaking this Ph.D degree program which has been a truly life-changing experience for me and it would not have been possible without the cooperation, support and guidance extended by each and every individual who contributed and paved way for making this research study a milestone in my career.

I am extremely grateful to **Vice Chancellor, Registrar, Controller of Examination, Academic Officer, HODs and other officials of the Research Department of the Tamil Nadu Dr. M.G.R. Medical University, Guindy, Chennai.** for granting me permission and officiating all events in the entire period of the Ph.D programme undertaken from this esteemed University

Its my deep and heartfelt gratitude to honour **Mrs..Valli Alagappan, Managing Trustee and Chairperson of the Governing Council, Mr. A.R. Kasiviswanathan, Trustee and Mrs. Seetha Subbaiah, Member Trustee, Omayal Achi College of Nursing** for having given me the immense opportunity to pursue the Ph.D (N) programme in this renowned institution.

My profound gratitude to **Dr. K.R. Rajanarayanan, MBBS, FRSH (London)** and **Governing Council Member and Research Coordinator ICCR Omayal Achi College of Nursing**, for his valuable guidance, scholarly inputs and consistent encouragement and inspiration to complete my study.

Special mention and extreme gratitude to my enthusiastic Research Guide **Dr.S.Kanchana, M.Sc (N), Ph.D (N), Post Doc. Research, Research Director, ICCR and Principal**, Omayal Achi College of Nursing. This feat was possible only because of her unconditional support with an amicable and positive disposition. She has always made herself available to clarify my doubts despite her busy schedules and I consider it as a great opportunity to do my doctoral programme under her guidance and to learn from her research expertise and passion.

My sincere thanks to my Doctoral Advisory Committee Members, **Dr. Juliet Sylvia M.Sc. (N), Ph.D (N)**, Professor & HOD of Community Health Nursing, Sacred Heart Nursing College, Madurai and **Dr. Rosaline Rachel Pramila M.Sc. (N), Ph.D (N)** Principal, MMM College Of Nursing, Chennai. for their expertise and valuable suggestions in refining this research study.

I thank **Dr. D. Celina M.Sc. (N) Ph.D (N)**, Vice Principal, Omayal Achi College of Nursing, for her guidance throughout the journey of my Ph.D and her motivation in each phase was enthusiastic with full and strong encouragement academically as well morally.

My special and honourable gratitude to all my teachers especially **Dr. Rajkumar** Professor Community Health Department, Meenakshi Medical College Hospital and Research Centre, and **Dr. Revathy Vijayalakshmi** Research Guide, Omayal Achi College Nursing, Chennai. for always being a constant motivation and guidance to conduct the study.

I thank **Ms. Sheeba Suvitha, M.Sc. (N), Mrs, K. Mythili M.Sc. (N) and Mrs. Gifta Vijay, M.Sc.(N) In-Charge**, Omayal Achi Community Health Centre, Arakambakkam, and the support staff for their services and facilitating the smooth conduct of my data collection in the selected villages.

**Dr. P. Jayanthi, Professor and Ph.D (N) Co-ordinator, Ms. P. Nandhini, M.Sc. (N) Nurse Researcher**, the Executive Committee Members of ICCR and the IEC department of Omayal Achi College of Nursing was kind enough to support and contribute towards the successful conduct and completion of the study.

My affectionate gratitude to my OBG department friends **Mrs. Bagavathy, Mrs. Amutha.T, Mrs Beula Jayaselvi, Mrs. Arokia Jaya Deepa, Mrs. Manonmani, Ms. Girija, and Ms. Uthralakshmi** for their moral support and motivation throughout the study period.

I extend my warm gratitude to all the **HOD's and faculty** for their consistent support.

My sincere thanks to all the **subject experts** for their time, expertise, suggestions and validating the tools to suit this research endeavor, the technical expert who calibrated the instrument used for data collection and **Dr. Yayathee** for his support and guidance to write the manuscript.

My gratitude to the **Administrative staff, office staff and the librarians** for all the technical support with preparation of the tool and Tamil translation and of course the



Village leaders and the local volunteers from the selected villages for enabling the smooth conduct of the entire data collection process and encouraging the participants to involve in daily exercise programme.

My genuine thanks to the **Participants** of this study for extending their willingness, timely cooperation and support in making this research live and a work of reality.

My sincere gratitude to **Dr.Vengatesan Satish, Ph.D. Biostatistician**, who has meticulously transformed the gathered data into meaningful analytical tabulations which enabled me to draw inferences and shape this thesis into informative manuscript.

My heartfelt thanks to **Mrs. S.Padmapriya, M.A., B.Ed.**, for editing the tools and this thesis for English and **Mrs.Valarmathi, M.A., B.Ed.**, for Tamil language appropriateness, respectively.

I earnestly thank **Dr.Laycock**, the author of the standardized tool, which was used for data collection in this study.

My sincere thanks to **Mr. G.K. Venkataraman**, Elite Computers, for his technical expertise in shaping the manuscript into its final form.

Finally but by no means, I am deeply indebted to my parents and my father **Mr.A.V Ramanujam and Mrs. Janaki Ramanujam**, god father **Dr. M.C. Vasudevan**

for their love and encouragement and who raise me with a love of science and supported me in all my pursuits with their wisdom, guidance, earnest prayers and blessings.

My loving and overwhelming thanks to my ever loving son **Master R. Adithya**, and my gratitude to my husband **Mr. P.Ravi** for the support and encouragement at all moments enabling the successful completion of my study. Also I would like to thank my friend **Mr. W. Sudhakar** who supported me and incensed me to strive towards my goal.

My heartfelt thanks to **my in-laws and co-sister** for their care concern and managing the periods of my absence with my family which enable to progress smoothly through my study.

I consider it my bounden duty to **thank all those** who have been instrumental in any manner in the entire period of this Ph.D programme, conduct of this study and the preparation of this thesis.

Above all, I owe it all to **Almighty** for granting me the wisdom, health and strength to undertake this research task enabling me to its completion. “Lord I Know it was you” for your presence throughout my career.

## LIST OF ABBREVIATIONS

AOR	-	Adjusted Odd Ratio
AI	-	Anal Incontinence
BMI	-	Body Mass Index
CI	-	Confidence Interval
FI	-	Faecal Incontinence
KAP	-	Knowledge Attitude Practice
KPA	-	Kilo Pascal
LSCS	-	Lower Segment Caesarean Section
LUTS	-	Lower Urinary Tract Symptoms
MCH	-	Maternal Child Health
MRI	-	Magnetic Resonance Imagine
NGO	-	Non Government Organization
NVD	-	Normal Vaginal Delivery
OACHC	-	Omayal Achi Community Health Centre
OBG	-	Obstetrics & Gynaecology Department
OPD	-	Out Patient Department
OR	-	Odds Ratio
PC	-	Personal Computer
PERFECT	-	Power Endurance Repetition Fast Every Contraction Timed
PF	-	Pelvic Floor
PFD	-	Pelvic Floor Dysfunction
PFM	-	Pelvic Floor Muscle
PFME	-	Pelvic Floor Muscle Exercise

PFMS	-	Pelvic Floor Muscle Strength
PFMT	-	Pelvic Floor Muscle Training
POP	-	Pelvic Organ Prolapse
QOL	-	Quality Of Life
SD	-	Standard Deviation
SMS	-	Short Message Service
SUI	-	Stress Urinary Incontinence
UI	-	Urinary Incontinence
UUI	-	Urge Urinary Incontinence

## CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
<b>1</b>	<b>INTRODUCTION</b>	1
1.1	Background of the study	4
1.2	Significance and need for the study	8
1.3	Conceptual framework	15
1.3.1	Conceptual Framework – General Concepts	15
1.3.2	Application of Conceptual Framework	28
<b>2</b>	<b>AIMS AND OBJECTIVES</b>	31
2.1	Title	31
2.2	Statement of the Problem	31
2.3	Objectives	31
2.4	Null Hypothesis	32
2.5	Operational Definitions	32
2.6	Assumptions	34
2.7	Limitations	35
<b>3</b>	<b>REVIEW OF LITERATURE</b>	36
3.1	Overview of pelvic floor muscle dysfunction among women	37
3.2	Studies on Factors contributing to pelvic floor muscle dysfunction among women	41
3.3	Studies on Knowledge and Pelvic floor muscle strength among women	47
3.4	Studies on Interventions for improving knowledge and pelvic floor muscle strength among women.	49
3.5	Summary, Gaps in the existing literature and new information's added by the present study to the literature.	55
<b>4</b>	<b>MATERIALS AND METHODS</b>	57
4.1	Research Approach	57
4.2	Research Design	57
4.3	Variables of Study	58
4.4	Research Setting	59

<b>CHAPTER NO.</b>	<b>TITLE</b>	<b>PAGE NO.</b>
4.5	Population	59
4.6	Sample	60
4.7	Sample size	61
4.8	Sampling Technique	61
4.9	Sample selection criteria	62
4.10	Development of the tool	63
4.11	Intervention tool	68
4.12	Content validity	69
4.13	Reliability of the tool	69
4.14	Ethical Considerations	70
4.15	Pilot Study	72
4.16	Data Collection Procedure	73
4.17	Data Analysis Procedure	77
<b>5</b>	<b>RESULTS AND ANALYSIS</b>	78
5.1	Description of the findings of pelvic floor muscle dysfunction among the rural women	81
5.2	Description of the demographic, obstetrical, clinical and study variables of the women with pelvic floor dysfunction among experimental and control group	83
5.3	Assess and comparison of pre-and post test level of pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction in the experimental and control group	89
5.4	Effectiveness of intervention package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction.	101
5.5	Correlation of knowledge with pelvic floor strength score among the experimental and control group	107
5.6	Association of mean differed pelvic floor muscle strength and knowledge gain scores among women with pelvic floor dysfunction with their selected variables in the experimental and control group.	108

<b>CHAPTER NO.</b>	<b>TITLE</b>	<b>PAGE NO.</b>
<b>6</b>	<b>DISCUSSION</b>	115
<b>7</b>	<b>SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS AND LIMITATIONS</b>	131
	<b>REFERENCES</b>	142
	<b>ANNEXURES</b>	

## LIST OF TABLES

S.No.	Title	Page No.
1.2.1	The Age specific prevalence of pelvic floor dysfunction among American Females	5
5.1.1	Frequency and Percentage distribution of pelvic floor dysfunction among the rural women.	81
5.1.2	Frequency and Percentage distribution of specific pelvic floor dysfunction among the rural women.	82
5.2.1 (a)	Frequency and Percentage distribution of demographic variables age, education, religion and type of family among the experimental and control group	83
5.2.1 (b)	Frequency and Percentage distribution of demographic variables monthly income, occupational status, type of work, and food habit among the experimental and control group	84
5.2.2	Frequency and percentage distribution of obstetrical variables among women with pelvic floor dysfunction with respect to number of child birth, birth spacing, mode of previous child birth, number of vaginal birth	85
5.2.3(a)	Frequency and Percentage distribution of Clinical variables (weight gain, induction of labor, duration of second stage of labor, last child birth and weight of baby of last child birth) among the experimental and control group.	86
5.2.3(b)	Frequency and percentage distribution of clinical variables among women with pelvic floor dysfunction with respect to duration of second stage of labor, weight of the baby, postnatal period, history of perineal tear and its degree	87
5.2.4)	Frequency and Percentage distribution of Study Specific variables among women in the experimental and control group	88
5.3.1(a)	Assessment of pre and post test pelvic floor muscle strength among women with pelvic floor dysfunction in the experimental group.	89



<b>S.No.</b>	<b>Title</b>	<b>Page No.</b>
5.3.1(b)	Assessment of pre and post test pelvic floor muscle strength among women with pelvic floor dysfunction in the control group.	90
5.3.1(c)	Comparison of pre and posttest pelvic floor muscle strength score in the experimental group.	91
5.3.1(d)	Comparison of pre and posttest pelvic floor muscle strength score in the control group.	92
5.3.2(a)	Frequency and Percentage distribution of pre and post test knowledge scores among women in the experimental group.	93
5.3.2(b)	Frequency and Percentage distribution of pre and post test knowledge scores among women in the control group.	94
5.3.2(c)	Frequency and Percentage distribution of question wise pretest knowledge scores among women in the experimental and control group	95
5.3.2(d)	Frequency and Percentage distribution of post-test knowledge scores question wise among women in the experimental and control group	97
5.3.2(e)	Comparison of pre and post test knowledge scores in the experimental group	99
5.3.2(f)	Comparison of pre and post test knowledge scores in the control group	100
5.4.1(a)	Comparison of pretest pelvic floor muscle strength among women with pelvic floor dysfunction between experimental and control group	101
5.4.1(b)	Comparison of post test mean pelvic floor muscle strength among women with pelvic floor dysfunction between experimental and control group	102
5.4.1(c)	Effectiveness of interventional package on pelvic muscle strength score among women in the experimental and control group	103
5.4.2(a)	Comparison of pretest knowledge mean scores between experimental and control group	104

<b>S.No.</b>	<b>Title</b>	<b>Page No.</b>
5.4.2(b)	Comparison of post test knowledge mean scores among women between the experimental and control group	105
5.4.2(c)	Effectiveness of interventional package on knowledge score among the women in the experimental and control group	106
5.5.1	Correlation of knowledge with pelvic floor muscle strength among women with pelvic floor dysfunction among women in the experimental and control group	107
5.6.1(a)	Association of mean differed pelvic floor muscle strength gain score with selected variables (age, education, monthly income and number of child birth) among women in the experimental group	108
5.6.1(b)	Association of mean differed pelvic floor muscle strength gain score with obstetrical and clinical variables (Birth Spacing between two children, BMI, Induction of labor and Family history of pelvic floor dysfunction) in the experimental group	109
5.6.1(c)	Association of mean differed pelvic floor muscle strength gain score with selected variable (Family history of pelvic floor dysfunction) among women in the control group	110
5.6.1(d)	Influencing factors for strength gain score using Multivariate logistic regression among women in the experimental group	110
5.6.2(a)	Association of mean differed Knowledge score with selected variables (Age, Education, type of family, Number of child birth and Birth Spacing between two children) among women in the Experimental group	112
5.6.2(b)	Association of mean differed knowledge score among women with pelvic floor dysfunction with selected obstetrical and clinical variables (BMI, Induction of Labor, Weight of baby and family history of pelvic floor dysfunction) in the Experimental group	113
5.6.2(c)	Influencing factors for knowledge gain score using Multivariate logistic regression among women in the experimental group	114

## LIST OF FIGURES

S.No.	Title
1.3.1	Conceptual Framework Based on– General Concepts
1.3.2	Application of the Conceptual Framework
3.1.1	Illustration of Female Urogenital System (MidSagittal Section)
3.1.2	Pelvic Floor Muscles ( Coccygeus, Piriform, Levator ani and Obturator)
4.16	Schematic representation of data collection
5.2.3 (a)	Percentage distribution of Clinical variable – postnatal period of last child birth, History of perineal trauma and degree of perineal trauma among women in the experimental and control group.
5.3.1 (a)	Pre and post test domain wise pelvic floor muscle strength mean scores among women in the experimental group.
5.3.1 (b)	Pre and post test domain wise pelvic floor muscle strength mean scores among women in the control group.
5.3.2(a)	Pre and post test domain wise mean knowledge score among women in the experimental group.
5.3.2(b)	Pre and post test domain wise mean knowledge score among women in the control group
5.4.1(c)	BOXPLOT compares the pre and post test pelvic floor muscle strength score among women between experiment and control group.
5.4.2(c)	BOXPLOT comparing the pre and post test knowledge score among women between experiment and control group.

## LIST OF ANNEXURES

S. No.	Title
A	Provisional Registration certificate for the award of Ph.D
B	Confirmation of Provisional registration
C	PhD execution plan- Gantt Chart
D	Ethical Clearance Certificate
E	IEC Approval certificate
F	Setting permission letter
G	Plagiarism analysis report
H	Certificates
I	Research publications
J	Content validity Certificate
K	List of content validity experts
L	Vaginal Examination Training Certificate
M	Certificates of English and Tamil editing
N	Informed consent (English and Tamil)
O	Data collection tool (English and Tamil)
P	Intervention tool (English and Tamil)
Q	Ph.D Synopsis Submission Application Form
R	Ph.D Thesis Submission Application Form
S	Photos
M	IEC- Pictorial Booklet

## ABSTRACT

**An experimental study to evaluate the effectiveness of an interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction at selected settings, Thiruvallur Dist.**

**Background:**

**Aim of the study:** To assess the effectiveness of interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction between experimental and control group.

**Materials and methods:** A true experimental design was chosen for the study. The dependent variable was knowledge regarding pelvic floor dysfunction and pelvic floor muscle strength. The independent variable was interventional package comprising of video assisted teaching, demonstration and return demonstration. The study was conducted in 26 villages adopted by the Omayal Achi Community Health Centre (OACHC). A total of 220 women were the samples for the study (110 experimental and 110 control groups). Cluster randomization was adopted to categorize the samples to experimental and control group. Data was collected using structured interview schedule for assessing the knowledge and modified Oxford grading scale was used to assess the PFMS. After 8 weeks of Intervention package administration the post test was assessed.

**Results:** The findings of the study revealed that regarding the PFMS, there was significant improvement in all the components of pelvic floor muscle strength such as power, endurance, repetitions, fast contractions and every contraction timed scores among women in the experimental group, there was also high statistical significant improvement shown in the knowledge scores with a "t" value of 24.93 at  $p < 0.001$  level there by proving that the intervention package had significant effect on the PFMS and knowledge scores.

**Conclusion:** The present study concluded that the interventional package was an effective strategy in improving the pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction and hence will be a simple and effective intervention for utilization for nurses and other primary health care practitioners.

**Keywords:** *Pelvic Floor Muscle Strength, Knowledge on PFD, Pelvic floor dysfunction (PFD), Interventions to improve PFMS, PFME.*

## INTRODUCTION

Women are exposed to a lot of health risks due to various physiological changes happening in reproductive process. One of the important aspects of women's health post-delivery is pelvic floor strength. Pelvic floor forms the core foundation of the lower body

supporting the abdominal parts and acts to maintain the continence of bowel and bladder in females. The pelvic floor controls the constriction and relaxation of the urethral, anal and vaginal orifices.

Globally, Pelvic Floor Dysfunction (PFD) is one of the largest unaddressed issues in women's health care today. It is common and undermines the quality of life (QOL) of at least one-third of adult women of all ages. Patients with Pelvic Floor Dysfunction usually present with symptoms of incontinence which can be urinary or anal, pelvic organ prolapsed or dysfunctional bowel. Pelvic floor dysfunction affects about 25% of the women ages 30-70 around the world while many go undiagnosed and untreated; the symptoms can be frustrating, embarrassing, and lifestyle altering.

Pelvic floor dysfunction is rarely life threatening, but the symptoms can be embarrassing and, if left untreated, it can lead to social isolation, sexual inhibition, restricted employment and leisure opportunities and potential loss of independence. Women with Urinary Incontinence (UI) report physical limitations (playing sports, carrying objects) and changes in social, occupational and domestic activities, which negatively influence the emotional and sexual aspects of life. Moreover, it can cause social and hygienic discomfort, due to the fear of loss of urine, the smell of urine, the need for wearing sanitary pads, and more frequent changes of clothing.

Community based nursing interventions are the need of the hour in managing the problem of pelvic floor dysfunction among the women. PFME is a specific exercise for PFM and is different from exercise of other muscles in the body. Thus, PFME requires a strong commitment from women. Moreover, this form of exercise requires

dedication, endurance, and effort on the part of women to result in effective PFD treatment.

Hence the present study used the promotive/preventive model of community based interventions among women who underwent child birth process and included components of awareness generation and intensive pelvic muscle strengthening activities which would help to prevent the occurrence of pelvic floor dysfunction.

### **OBJECTIVE**

- To assess the effectiveness of interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction between experimental and control group.

### **MATERIALS AND METHODS**

A true experimental design was chosen to conduct this study. The dependent variable was knowledge regarding pelvic floor dysfunction and pelvic floor muscle strength. The independent variable was interventional package comprising of video assisted teaching, demonstration and return demonstration. The study was conducted in 26 villages adopted by the Omayal Achi Community Health Centre (OACHC).

The estimated sample size consisted of 212 women with pelvic floor dysfunction 110 each in the experimental and control group. There were 232 women who had pelvic floor dysfunction, 116 each in experimental and control group. Final sample size used for analysis was 110 in each group. Simple random sampling technique by lottery method

was used to select the villages. Cluster randomization was adopted to categorize the samples to experimental and control group.

Pelvic floor dysfunction was assessed using pelvic floor distress inventory scale which assessed the presence of symptoms for urinary incontinence, bowel incontinence, pelvic organ prolapse, pelvic pain and dyspareunia which was prepared by the investigator. Women who had the presence of either one of the following, urinary incontinence/bowel incontinence/pelvic organ prolapsed pelvic pain/or dyspareunia were included for the study.

Demographic, Clinical, Obstetrical and Study Specific variables were collected from the women who fulfill the sample selection criteria. The knowledge was assessed by using structured interview schedule prepared by the investigator consisted of 5 domains and 25 questions. Muscle strength was assessed by per vaginal examination by the investigator and graded using modified oxford grading scale. Pelvic floor muscle strength was assessed under 5 categories such as Power, Endurance, Repetitions, fast contraction and every contraction timed.

The reliability of the data collection tools was assessed using Cronbach alpha for pelvic floor distress inventory scale, Test-Retest structured interview schedule for knowledge and inter-rater method for Pelvic floor muscle strength. The reliability scores are very high and hence the tools were considered reliable for assessing the effectiveness of interventional package (pelvic floor muscle strength and knowledge) among women at selected villages, Chennai.



After assessment, women in the experimental group were given individual education using video assisted teaching on pelvic floor dysfunction for about 45 minutes with the help of laptop. Later demonstration of exercises was done by the investigator for 30 minutes and return demonstration was done by the women on the same day.

Women were given a pictorial diary to maintain daily and were asked to fix a bhindi daily after performing exercises. They were given reminder through SMS through their mobile phone to perform exercises daily as reinforcement. One volunteer from each village was identified to reinforce the women to perform daily exercises. Women were also given pictorial information booklet as a follow up guide and reinforcement.

In a day the investigator visited an average of 5-6 women during the study period. The investigator visited the women once in 4 weeks for follow up and clarified their doubts. After 8 weeks the investigator performed the post test assessment of knowledge and pelvic floor muscle strength. For credibility of assessing pelvic floor muscle every 10<sup>th</sup> sample was assessed by the gynecologist organized by the investigator. All Women were encouraged to maintain their general health and pelvic floor muscle strength. After the completion of post test, the same intervention package was administered to the women in the control group as wait list control group.

## **RESULTS AND DISCUSSION**

Among the 424 women screened in 26 villages 232(54.7%) of the women had pelvic floor muscle dysfunction. Urinary Incontinence was highly prevalent among 193(82.4%) out of 232 women who had pelvic floor muscle dysfunction. Women in the experimental and control group reported weak pelvic floor muscle strength with mean

scores of 9.07 and 9.27 respectively. Women in the experimental group reported good pelvic floor muscle strength in the post test with mean score of 15.81 while women in control group had a mean score of 9.52.

There was significant difference noted in all the components of pelvic floor muscle strength such as power, endurance, repetitions, fast contractions and every contraction timed scores among women between the experimental and control group with a mean difference of 6.29 which was statistically significant at  $p < 0.001$  level. The knowledge scores also showed a significant mean difference of 12.86 and 't' value of 24.93 which was statistically significant at  $p < 0.001$ .

## **CONCLUSION**

The present study finally concluded that the interventional package was an effective strategy in improving the pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction and hence will be a simple and effective intervention for utilization. This intervention which is community based has shown significant impact with the involvement and engagement of the community at all levels. Hence, it is a key information for research to develop community based sustainable interventions.

# *CHAPTER 1*

## *Introduction*

## CHAPTER – 1

### INTRODUCTION

Nation's health is dependent on the Women's health. Women are the key role players in the family. The family's holistic health is based on the health of the women. Healthy women are determined to deliver a healthy baby who grow as healthy children to become a productive citizen to the healthy nation.

Women's health have become the prime focus of many countries, Although men and women share common health challenges in the current scenario. Women's health requires more attention because of their biological changes. As gender based discrimination prevails in most part of the globe, women's longer lives are not healthy lives, an India is not an exception.<sup>1</sup>

There are health issues which women experience because of their reproductive anatomy. Conception and Childbirth are a natural phenomena which occurs in women's life, which are now seen in health care as a disease because of the social processes and lack of quality healthcare services which has put women's health at risk.<sup>1</sup> The current healthcare system in the developing countries is not tailor made for women and are reactionary to the problems existing.<sup>2</sup>

Women's health is can be determined by level of education, wealth and their residential place. Women who had high quality of education and having good standard of living, having lower level of mortality and better quality of life than women living in poorest conditions.<sup>3</sup> Pregnancy and childbirth complications are considered as a leading

cause of death among women who are between ages 15 to 19 years of age in many developing countries.<sup>4</sup>

Among the health problems of women which affect their quality of life 'Pelvic floor dysfunction' is considered as a prime problem. Pelvic Floor Dysfunction (PFD) means the presence of any one of the symptoms such as 'Urinary Incontinence (UI)', 'Faecal Incontinence (FI)', 'Pelvic Organ Prolapse (POP)', 'sensory or emptying abnormalities of the lower urinary tract', 'defecation dysfunction', 'sexual dysfunction' and 'chronic pain syndromes', which can individually occur or mutually be prevalent. Vaginal delivery has been repeatedly mentioned as one of the main contributing factor. Any factor which weakens the pelvic floor muscle causes dysfunction of these major functions in women. These problems affect the women's health very badly and disrupt the quality of life of women as they get older.<sup>5</sup>

The vaginal birth poses the risk of laxicity of the muscles of the pelvic floor which are stretched during delivery and undergo intense pressure which causes damage and which impacts the functions of the pelvic floor. The women are required to rebuild their pelvic floor muscle strength adopting various strengthening exercises. Reviews have showed that women who have vaginal delivery are having more risk for 'pelvic floor dysfunction' than women who have cesarean birth and also they say that it increases with 'multiple child births'.<sup>6</sup>

National Institute of Health reported that the a scientific team from 'Kaiser Permanente Southern California' and the 'University of California, San Diego Medical Center' strongly affirmed that women undergoing vaginal delivery are at double the

risk of acquiring pelvic floor disorders than their counterparts who undergo cesarean delivery and also nulliparous women .<sup>7</sup>

The major contributing factors to pelvic floor dysfunction among women are overweight and obesity, frequent pregnancy and childbirth, frequent lifting of heavy objects, having surgery or trauma to pelvic floor and difficult bowel patterns. Child birth is considered as a major known risk factor for many years. The strain which caused during child birth process brings about damage to the nerves of the pelvic floor and also causes trauma to the muscle and connective tissue. The muscles traumatized during childbirth affects the core functions of the pelvic floor leading to prolapse, incontinence of urine and feaces etc.<sup>8</sup>

There is a assumption that older aged women will get pelvic floor disorders but the truth is pelvic floor disorders are more prevalent and extremely debilitating among the women in younger ages also. Most often women report them during their older ages as young women feel reporting them would lead to isolation and discrimination in their family.<sup>7</sup>

Pelvic Floor disorders are very common and mostly treatable; since women avoid and delay treatment it affects their quality of life greatly. A survey report highlighted that almost forty percent of the women in the U.S manage their pelvic floor disorders with over the counter treatments such as using pads or they wait until the issue becomes very serious for seeking treatment. Although there are many minimally invasive procedures available to treat the issue women often don't seek healthcare in the early stages.<sup>9</sup> Many women around the world are hesitant to report the symptoms and they believe it to be

untreatable and also are not aware of the treatment options available. In a country like India women are 'accustomed to enduring pain and discomfort'.<sup>10</sup>

Women consider PFD as normal process of aging and live with them without seeking any treatment. Some of the reasons for not taking treatment are fear of hospital, investigations and surgeries, lack of money and time, shyness to report issues related to reproductive system, lack of female doctors in the rural setup and dependency on their spouses for treatment in terms of permission, support and monetary support. Hence, they needed to be educated regarding the importance of PFMS and ways to strengthen it and prevent PFD.<sup>11</sup>

## **1.1 BACKGROUND OF THE STUDY**

Women are open to the elements for lot of health risks due to various physiological changes happening in reproductive process. One of the important aspects of women's health post-delivery is pelvic floor strength. Pelvic floor forms the core foundation of the lower body supporting the abdominal parts and acts to maintain the continence of bowel and bladder in females.<sup>12</sup>

PFD is considered as one of the major unaddressed issues in the health of women. It is common factor which affects the quality of life (QOL) of 1/3<sup>rd</sup> of the adult women population. Women often are reported with symptoms of urinary or anal incontinence, pelvic organ prolapse or dysfunctional bowel. Pelvic floor dysfunction was known to have affected nearly about twenty five percent of the women across 30-70 years of age around the world. Many times they go undiagnosed and untreated leading to poor QOL.<sup>13</sup>

The prevalence rate of women experiencing any one of the pelvic floor dysfunctions in United States was estimated to be 25%. The prevalence included 17.1% of women with moderate-to severe urinary incontinence, 9.4% with fecal incontinence, and 2.9% with prolapse. It was reported that in the United States more than ‘15 Million’ women were found to have ‘stress urinary incontinence (SUI)’ and about ‘16 million’ women were found to have ‘an overactive bladder’. One in 10 women was found to have suffered with Anal Incontinence (AI).<sup>14</sup>

Worldwide statistics regarding urinary incontinence showed that around ‘200 million people’ are affected with some form of ‘PFD’. It was observed that ‘One in four women over the age of 18’ years have experienced episodes of urinary incontinence. It was also found that women wait for ‘6.5 years’ to have a proper diagnosis for such symptoms involuntarily.<sup>14</sup>

The prevalence rate was found to have an increase with aging of the women. The prevalence of having any one pelvic floor dysfunction amongst American females from 20 years and older was presented in Table 1.2.1. The prevalence was increasing and found to be high among women after 50 years of age.<sup>5,10</sup>

**Table 1.2.1: Prevalence of Pelvic Floor Dysfunction among American Females.**

Age in Years	Prevalence of Pelvic Floor Dysfunction
<b>20 – 39</b>	9.7
<b>40 - 59</b>	26.5
<b>60 - 79</b>	36.8
<b>&gt; 80</b>	49.7



A systematic review of the published data on the prevalence, incidence and risk factors of female urinary incontinence (UI) and obstetric treatment of UI in Europe presented a prevalence of 14.1 to 68.8% of women having UI. The prevalence was found to have increased with aging. Significant risk factors for UI during pregnancy were maternal age  $\geq 35$  years and initial body mass index being higher, a family history of UI and parity.<sup>15</sup>

In a large-scale study conducted among 4002 Turkish women the overall prevalence of any of the pelvic floor muscle dysfunction was found to be 67.5% among them the prevalence of each of the disorder was found to be 19.8% for anal incontinence, 50.7% for urinary incontinence.<sup>16</sup>

Female population in India was reported to be at 48.17 % in the year 2016. About 72.2% of the populations live in some 638,000 villages and the rest 27.8% in about 5,480 towns and urban agglomerations. The birth rate (child births per 1,000 people per year) is 22.22 births/1,000 populations. Percentage distribution of population by broad age groups to total population by sex and residence, India, 2011 showed that total female population 15-59 years was 62.8% in rural and 61.3 % in urban 66.9%. In Tamil Nadu total population of female in rural area was 65.4%, in urban 67.8%. Tamil Nadu Percentage distribution of population by marital status of female was 51.0%.<sup>17</sup>

The prevalence rates were found to be high across women in developed and developing countries. In India research studies have reported prevalence rate of 21% with 19.02% of the women experiencing urinary incontinence and 1.99% experiencing pelvic organ prolapse. The prevalence of incontinence was found to be '18.6%' in

another study where the prevalence was reported in 12.5% of primi mothers' as compared to 26.4% in multiple child births'.<sup>10</sup>

A hospital based survey conducted among '3000 women reported that 21.8% women' were incontinent, of the total women having incontinence, highest numbers were found to have stress incontinence 73.8% followed by mixed and urge incontinence'.<sup>18</sup>

A study conducted in Northern India among 500 women admitted in postnatal ward showed prevalence of 40.4% of women with pelvic floor muscle dysfunction among that 192 of them had stress urinary incontinence, 40 had urge urinary incontinence and 70 had mixed incontinence. It was also observed that the symptoms of incontinence during pregnancy increased with advancing gestational age.<sup>19</sup>

In another study conducted among women in Indai regarding the urinary incontinence it was reported that 34.1% had Urinary incontinence had higher impact on emotional and social well-being. Out of them 73.2% of the women had mild incontinence, 19.6% of them had moderate incontinence and 7.2% had severe incontinence. Barriers to treatment of postpartum pelvic floor dysfunction include social stigma, delay in seeking treatment, and beliefs of both women and health care providers about the disease.<sup>20</sup>

Prevalence of pelvic floor dysfunction was reported to be high among the women in the rural areas. Rural areas reported prevalence of 44.2% . The reason being most of the women do lot of heavy lifting activities and give birth to more number of children.

An epidemiological study conducted among 552 women in rural India showed that about 53 (10%) reported episodes of Urinary Incontinence (UI). 57% of the women had symptoms of stress incontinence, 23% of urge, and 20% mixed symptoms.<sup>21</sup>

In a study conducted in rural health facility of West Bengal, India, to understand the urinary incontinence, its risk factors, and quality of life among women aged 50 years and above revealed that about 49 out of 177 women were found having Urinary Incontinence. The most prevalent type of UI was stress UI, followed by had 'mixed UI 32.7%' and had urge UI 16.3%. The study also showed that only '30.6% of the women' sought medical help.<sup>22</sup>

Bladder and bowel problems including incontinence can have a significant effect on a women's quality of life. They may restrict participation in activities; have an impact on employment and educational opportunities and cause embarrassment and distress, which can lead to social isolation and exclusion. It is known that cultural issues and embarrassment prevent women from coming forward. Urinary incontinence is the second most common reason for admission to a nursing home in later life. Due to the sensitive and stigmatized nature of this issue and because they are unaware that effective treatments are available women may take up to 10 years before seeking help.<sup>23</sup>

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

Pregnancy has increased the stress on the pelvic floor throughout the pregnancy and childbirth which causes injury to the muscles making them weak and leading to urinary incontinence. In a survey done by Nygaard et al showed that about 12.8% of women who had never given birth experienced pelvic floor dysfunction, while 18.4% of

those who have had one child, '24.6% of those who have had two children' and '32.4% of women who have had three or more children' reported pelvic floor dysfunction respectively.<sup>9</sup>

The other factors important during child birth are the prolonged second stage of labor and higher birth weights. Prolonged second stage causes increased pressure through 'maternal pushing' which weakens the pelvic floor and also babies with high birth weight also causes more damage to the pelvic floor during vaginal delivery process. The second stage of labor is characterized by 'progressive descent of the fetal head through the completely dilated cervix'. This is achieved by the expulsive forces generated by uterine contractions. During these contractions, 'intrauterine pressure can be as high and thus a prolonged second stage may increase soft tissue injury and neuromuscular damage to the pelvic floor. Both of these mechanisms may be central to the pathophysiology of PFDs.<sup>6</sup>

Systematic reviews showed that women who had vaginal delivery and operative vaginal delivery i.e., using instruments, assistive devices, episiotomy had more odds for developing stress incontinence and pelvic organ prolapse. Several studies supported that the incidence of PFDs varies with the mode of delivery. MacLennan et al., reported pelvic floor dysfunction in 58% of women who had spontaneous vaginal delivery, compared with 43% of those who underwent cesarean section. In a recent study of parous women, history of a vaginal childbirth was associated with twice the risk of developing bothersome symptoms of stress incontinence compared with women delivered exclusively via caesarean section.<sup>24</sup>

Several studies have shown that ‘PFDs’ are more common in parous women compared with nulliparous women of the same age, irrespective of the mode of delivery. Hansen *et al.* reported that urinary incontinence was three-times more common in primiparous women compared with their aged-matched nulliparous counterparts. The effect of parity is most notable in young women between the ages of 20 and 34 years and disappears in women older than 65 years.<sup>25</sup> Similarly, in a study of 4000 Turkish women, the prevalence of various PFDs was significantly higher in parous women compared with nulliparous women.<sup>26</sup>

Among parous women, an increasing number of childbirths further increases the risk of PFDs. Kepenekci *et al.*, reported that Increasing parity also leads to a linear increase in the probability of developing prolapse.<sup>26</sup> In a British study, women with one child were four-times more likely, and those with two children were 8.4-times more likely, to develop ‘pelvic organ prolapse’ when compared with nulliparous women. Similarly, prevalence of fecal incontinence increases with an increase in the number of childbirths.<sup>27</sup>

Kearney *et al.* reported the increased probability of levator ani muscle defects with longer duration of the second stage of labor in primiparous women; these levator defects may be a risk factor for later development of PFDs.<sup>29</sup> Prolonged second stage of labor has been identified as a risk factor for postpartum urinary incontinence in primiparous women. A Japanese study identified duration of the second stage of labor of ‘more than 30 min as a risk factor for pelvic organ descent in primiparous women’. This increase in severe perineal lacerations is most likely a result of obstetric interventions, such as operative vaginal delivery, to manage the prolonged second stage of labor.<sup>30</sup>

Ageing was also associated with urinary incontinence as women age the 'pelvic supporting structures' weaken leading to incontinence. Women with advanced maternal age also were found associated with stress incontinence. Kuh et al. found a strong association between the symptoms of 'stress urinary incontinence' and maternal age of 30 years or older at first vaginal delivery among British women.<sup>31</sup> Foldspang et al. found increased risks of urinary incontinence with increasing age at the time of the last childbirth for women aged 30–44 years.<sup>32</sup> Pregazzi et al. reported an association between urinary frequency and advanced maternal age 14% of women aged 30 years are at high risk for surgery for pelvic organ prolapse compared with 6% of women younger than 30 years.<sup>33</sup> Rortveit and Hunskaar also noted an association between increased prevalence and severity of urinary incontinence in women with delayed childbearing.<sup>34</sup>

Increased body mass index has contributed to 'pelvic floor dysfunction'. The most probable mechanism of 'pelvic floor dysfunction' development among obese women was due to the increase of intra-abdominal pressure that causes weakening of pelvic floor muscles and fascia. The degree of obesity was correlated with a higher prevalence of stress and urge incontinence.<sup>35</sup>

Obesity is considered a strong independent risk factor for both 'pre-existent and new-onset urinary incontinence'. The odds ratio attributable to obesity in urinary incontinence varies between 4 and 5. Each five-unit increase in BMI increases the risk of urinary incontinence by 70% as reported in a systematic review by Subak et al.<sup>36</sup> The mechanism of stress incontinence is more quickly precipitated by obesity due to the increased intra-abdominal pressure associated with the condition. The increased intra-abdominal pressure leads to an increase in vesical pressure and urethral mobility.

Overactive bladder symptoms' are also reported to be higher in patients with obesity, particularly in the premenopausal age group.<sup>37</sup>

Women with mild to moderate pelvic floor dysfunction avoid seeking treatment in India. In a study conducted among 220 women in Northern India with urinary incontinence, 72 % of women never had any treatment and the reason stated were that women felt it was normal and had not taken it seriously and were shy to come out for treatment. The study also reported that urinary incontinence has affected their daily living and quality of life.<sup>38</sup>

In a study conducted among 215 women from rural regions diagnosed with Pelvic Organ Prolapse (POP) showed that most of them had urinary incontinence (159; 73.95%). Women with POP and symptoms of urinary incontinence had poor quality of life scores and women had very low sexual function QoL (median - 61.00) when compared to those not suffering from urinary incontinence (median- 78.00).<sup>39</sup>

Pelvic floor dysfunction' can be easily prevented by women with improved awareness and by performing regular 'pelvic floor muscle strengthening exercises (PFME). The major problem in India and other developing countries was the lack of awareness about the preventing measures and contributing factors of pelvic floor dysfunction. Studies conducted among Asian populations have shown low awareness rate and poor health seeking behavior regarding the various pelvic floor dysfunctions.<sup>40</sup>

Pelvic Floor Muscle Strengthening Exercises (PFME)' commonly known as 'Kegel Exercises' was first introduced by an 'American Gynecologist Dr. Arnold

Kegel'. PFME involves 'selective voluntary contraction and relaxation of specific pelvic floor muscles' which supports the pelvic floor. Kegel exercises was first introduced to treat 'postpartum urinary incontinence' and also for improving the tone of the pelvic floor muscles after child birth process. 'PFME' was considered as a successful intervention for the postpartum women, with regular practice of those exercises it was reported that the cure rates for urinary incontinence was as high as 84%.<sup>41</sup>

'PFME' include teaching the patient to contract the pelvic muscles such as 'levator ani and pubococcygeal muscles' for the 'count of 10 for 5 – 10 times' and also to perform them several times in a day. The patient's are instructed on how to contract the pelvic muscles and also instructed to 'stop the urine stream while voiding urine'. Patients are instructed to identify the right pelvic muscles which prevent urinary and anal incontinence. Women are asked to squeeze the muscles of the anus so as to prevent passing of the gas where they will find the 'pulling' sensation at the anus which will help them in identifying the pelvic floor muscles.<sup>42</sup>

One out of every three women has experienced Stress Urinary Incontinence (SUI) at some point in their life. Most of the women live with it and think it is as normal part of aging and feel embarrassed to seek help. Women won't openly discuss about 'SUI' and not even with the healthcare providers. Initial treatment provided for SUI includes reducing weight and modification in diet. 'Pelvic Floor Muscle Training (PFMT)' conducted under supervision have proved to be a recommended measure for preventing and treating 'SUI'.<sup>43</sup>



Many interventions such as weight management, pelvic strengthening exercises, pelvic floor muscle training and behavioral therapy approaches are found to be useful in managing women with pelvic floor dysfunction. Engagement of women to perform the exercises was considered important for improving the quality of life of the women. Community based nursing interventions are the need of the hour in managing the problem of pelvic floor dysfunction among the women. Strong commitment, dedication, endurance and effort are required from women to perform the 'PFME'. Community based interventions will aid in engaging the women regularly to improve her pelvic floor muscle strength. 'PFME' is a specific exercise for the pelvic floor muscles and is different from exercise of other muscles in the body.

Pelvic Floor Muscle Training (PFMT) was found in several studies to be very much effective in reducing the symptoms of pelvic floor muscle dysfunction. In a study conducted among 140 women visiting Talkha MCH Centre, the effect of PFMT was studied for its effect on urinary incontinence and quality of life. Study results showed a statistically significant positive effect of PFMT on UI and the women's quality of life. The study recommended clinical teaching and in-service education programs for all maternity nurses and nursing educators regarding the UI and PFMT as a preventive as well as treatment modality for UI. Furthermore, community awareness about the positive effect of practicing PFME among incontinent women was recommended.<sup>44</sup>

In another study conducted among 50 women, they were instructed to do pelvic floor muscle exercises for 3 months and their 'quality of life' measured before and 3 months after intervention. The results showed that pelvic floor exercises had

significantly improved the 'quality of life' of the women reducing the symptoms of the pelvic floor dysfunction.<sup>45</sup>

The researcher having specialized in Obstetrical and Gynecological Nursing during her experiences in the outpatient departments and community field visits had found that women during their post delivery period complain of urinary incontinence more frequently along with bowel incontinence and dyspareunia. Although evidences are very individualized the investigator was motivated to develop an integrated interventional package to handle the problem at an early stage between 3 months to 1 year of post-delivery to improve the pelvic floor muscle strength and thereby prevent the urinary incontinence, fecal incontinence, pelvic organ prolapse, sexual dysfunction and chronic pelvic pain which will in turn improve the quality of life of the women.

Hence the present study used the promotive/preventive model of community based interventions among women who underwent child birth process and included components of awareness generation and intensive pelvic muscle strengthening activities which would help to prevent the occurrence of pelvic floor dysfunction.

### **1.3 CONCEPTUAL FRAMEWORK**

#### **1.3.1 GENERAL CONCEPTS OF BETTY NEUMAN'S SYSTEMS MODELS IN NURSING PRACTICE AND WIEDENBACH 'S THEORY –HELPING ART OF CLINICAL NURSING.**

The theoretical framework of this study was based and designed on the concepts of Betty Neuman's "Systems Model in Nursing Practice" and 'Wiedenbach's theory-helping art of clinical nursing'.

The Betty Neuman's "systems model is based on stress and the reactions/potential reaction to stress, with a philosophical basis in wholeness, wellness, client perception and motivation, energy, and environmental interaction (Neuman, 2002c).<sup>46</sup> The key components are the client/client system composed of the physiological, psychological, socio-cultural, development, and spiritual variables that internal and external environments and the three prevention-as-intervention level (primary, secondary, and tertiary) with purpose of achieving optimal wellness (Neuman & reed, 2007).<sup>47</sup> The client in the NSM is viewed as an 'open system in which repeated cycles of input, process, output and feedback constitute dynamic organizational pattern'. Using the system perspective, 'the client may be an individual, a group, a family, a community, or any aggregate'. 'In their development toward growth and survival, open systems continuously become more differentiated and elaborate or complex'.

The ideal is to achieve optimal system stability. As an open system, 'the client system has a propensity to seek or maintain a balance among the various factors, within and outside the system, that seek to disrupt' (Neuman, 2002).<sup>48</sup> Neuman labeled these forces as 'stressors and views them as capable of having either positive or negative effects'. 'Reactions to the stressors may be possible or actual, with identifiable responses and symptoms'.

'The basic structure, or central core, is made up of those basic survival factors common to the species' (Neuman, 2002).<sup>48</sup> These factors include the 'system variables (physiological, psychological, socio-cultural, development, and spiritual), genetic features, and strengths and weakness of the components of the system'. 'If the client system is a human being, the basic structure contains such features as the ability to

maintain body temperature within a normal range, genetic characteristics such as hair colour and response to stimuli, and the functioning of various body systems and their interrelationship'. There are also the baseline characteristics associated with each of the five variables, such as 'physical strength, cognitive ability, cultural perspective, development stage, and value systems'.

Neuman (2002) identified 'system stability as occurring when the energy exchanges with the environment occur without disrupting the characteristics of the system'. Since the 'system is an open system, stability is dynamic'. 'A change in one direction is countered by a compensating movement in the opposite direction'. When the 'system is disturbed from its normal, or stable, state, there is a rapid surge in the amount of energy needed to deal with the disorganization that results from the disturbance'. In stability, the system is able to cope with stressors to attain, retain or maintain optimal health and integrity.

### **Client Variables**

Neuman originally identified 'the recipient or nursing care as individual and patient. In 1982 Neuman used both client, in the chapter title, and patient, in the discussion. By 1989, Neumann used client/client system consistently in recognition of the movement toward collaborative client caregiver relationships.<sup>49-52</sup>

Neuman (2002) viewed the 'individual client holistically and considers the variables (physiological, psychological, socio-cultural, development, and spiritual) simultaneously and comprehensively. The physiological variable refers to the structure and internal and external functions of the body; the psychological variable to mental

process and relationships; the socio-cultural variables to system functions that relate to social and cultural expectations, activities, and influences; the developmental variable to the influence of spiritual beliefs'.<sup>50, 52</sup>

### **Lines of resistance**

The 'lines of resistance protect the basic structure and become activated when the normal line of defense is invaded by environmental stressors'.

### **Normal Line of Defense**

In terms of system stability, 'the normal line of defense represents stability overtime (Neuman, 2002). It is considered to be usual level of stability for the system of the normal wellness state and is used as the baseline for determining deviation from wellness for the client system'.<sup>52</sup>

'Any stressors may invade the normal line of defense when the flexible line of defense offers inadequate protection. When the normal line of defense is invaded or penetrated, the client system reacts. The reaction will be apparent in symptoms of instability or illness and may reduce the system's ability to withstand additional stressors'.

### **Flexible Line of Defense**

'The flexible line of defense is represented in the model diagram as the outer boundary and initial response, or protection, of the system to stressors. The flexible line of defense serves as a cushion and is described as accordion-like as it expands away from

or contacts closer to the normal line of defense' (Neuman, 2002). It protects the normal line of defense and acts as a buffer for the client system's usual stable state.<sup>52</sup>

### **Environment**

Neuman (2002c) defines 'environment as the internal and external factors or influences the client or client system that influences the client on the environment and the environment on the client may be positive or negative at any time'. 'Variations in both the client system and the environment can affect the direction of the reaction'. For example, 'individuals who experience sleep deprivation are more susceptible to viruses of the common cold from the environment than those who are well rested'.<sup>46</sup>

'The internal environment exists within the client system and is intrapersonal. All forces and interactive influences that are exclusively within the boundaries of the client system make up the environment'. 'The external environment exists outside the client system and is inter- and extra personal'. These forces and interactive influences that are outside the system boundaries are identified as external.

In 1989, Neuman first 'identified a third environment, the created environment, which is intra and extra personal'. 'The created environment is developed unconsciously by the client and is symbolic of system wholeness. It is dynamic and depicts the unconscious mobilization of all system variables but particularly the physiological and sociocultural variables.'<sup>50</sup>

### **Stressors**

Neumann (2002c) defines 'stressors as stimuli that produce tensions and have the potential for causing system instability'. Neumann viewed 'stressors, within themselves,

as neutral; it is the client/client system's perception that determines the impact as positive or negative'. 'The system may need to deal with one or more stressors at any given time. It is important to identify the type, nature, and intensity of the stressors; the time of the system's encounter with all the stressors; and the nature of the system's reaction or potential reaction to that encounter, including the amount of energy needed'. The reaction in one subsystem may, in turn, affect the original stressor. Outcomes may be positive with the potential for beneficial system changes that may be temporary or permanent.<sup>46</sup>

Stressors are present both within and outside the system. Neuman (2002c) classifies 'stressors as intra-, inter-, or extra personal in nature'. 'Intrapersonal stressors are those that occur within the client system boundary and correlate with the internal environment'. An example for the client system is 'the autoimmune response'. 'Interpersonal stressors occur outside the client boundary, are proximal to the system, and have an impact on the system boundaries but are at a greater distance from the system than the interpersonal stressors'. An example is 'social policy'. Interpersonal and extra personal stressors correlate with the external environment. The created 'lifestyle includes intra-, inter- and extra personal stressors'. 'The negative lifestyle variables are considered as stressors like poor diet pattern, abnormal anthropometric variables, abnormal vital signs, poor family income, lower education status, smoking, alcohol, low physical exercises, less intake of fruits and vegetables'.

## **Health**

Neuman (2002c) identified 'health as optimal system stability, harmony among the five variables, or the optimum state of wellness at a given time'. 'Health is seen as a

continuum from wellness to illness'. 'Health is also described as dynamic, with changing levels occurring within a normal range for the client system over time'. 'The levels vary because of basic structure factors and the client system's response and adjustments to environmental stressors'. Wellness may be 'determined by identifying the actual or potential effects of invading stressors on the system's available energy levels. The client system may move toward wellness (negentropy) when more energy is available or can be generated, than it is needed'.<sup>46</sup>

### **Reaction**

'Neuman does point out that reactions and outcomes may be positive or negative, and discusses system movement toward negentropy or entropy'.

### **Prevention-as-Intervention**

'Primary, secondary and tertiary prevention-as-intervention are used to retain, attain, and maintain system balance. One or more prevention strategies -as-intervention may be used simultaneously'.

### **Primary prevention**

'Primary prevention-as-intervention occurs before the system reacts to a stressor; it includes health promotion and maintenance of wellness'. 'Primary prevention focuses on strengthening the flexible line of defense through preventing stress and reducing stress factors'. This intervention occurs when the risk or hazard is identified but before the reaction occurs. Strategies that might be used include immunization, health education, exercise, and lifestyle changes. Neuman (2002) indicated that 'health promotion is an area of major concern to client and caregiver and that, in the ideal



situation, health promotion, as a component of primary prevention-as-intervention, should work with both secondary and tertiary prevention-as-intervention to promote optimal wellness'.<sup>52</sup>

### **Secondary Prevention**

'Secondary prevention as intervention occurs after the system reacts to a stressor and is provided in terms of existing symptoms'. Secondary prevention focuses on 'strengthening the internal lines of resistance and thus protects the basic structure through appropriate treatment of symptoms'. 'The intent is to regain optimal system stability and to conserve energy in doing so'. 'If secondary prevention is successful and reconstitution does not occur, the basic structure will be unable to support the system the use of analgesics or of positioning to decrease pain'. In this study secondary prevention represents 'mobilization of internal and external resource to improve the knowledge and increase the muscle strength purposeful manipulation of stressors i.e. intervention package'. In which 'package (cognitive domain) motivates and educates and involves the client / client system to achieve health care goals. Regular exercise schedule (affective domain) promotes the pelvic floor muscle strength.'

### **Tertiary Prevention**

'Tertiary prevention as intervention occurs after the system has been treated through secondary prevention strategies'. 'Its purpose is to maintain wellness or protect the client system reconstitution through supporting existing strengths and continuing to conserve energy'. 'Tertiary prevention may begin at any point after system stability has begun to be re-established (reconstruction has begun)'. 'Tertiary prevention tends to lead back to primary prevention'.

## **Reconstruction**

Reconstitution begins at any point following initiation of treatment for invasion of stressors. Neuman (2002c) defined reconstitution as ‘the return to and maintenance of the system stability’. ‘Reconstitution may expand the normal line of defense beyond its previous level to a higher level of wellness, stabilize the system at a lower level of wellness, or return it to the level that existed before the illnesses. ‘It depends on successful mobilization of client resources to prevent further reaction to the stressor and stressor and represents a dynamic state of adjustment’.

## **Nursing**

Neuman (2002c) also discussed ‘nursing as a part of model’. ‘The major concern of nursing is to help the client system attain, maintain, or retain system stability’. ‘The goal of optimal wellness is achieved when the system has the greatest possible degree of stability at any given time’. This may be accomplished through ‘accurate assessment of both the actual and the potential effects of stressor invasion and assisting the client system to make those adjustments necessary for the optimal wellness through primary, secondary, and tertiary prevention as intervention’. In supporting system stability, ‘the nurse provides linkage between the client system, the environment, health, and nursing’.

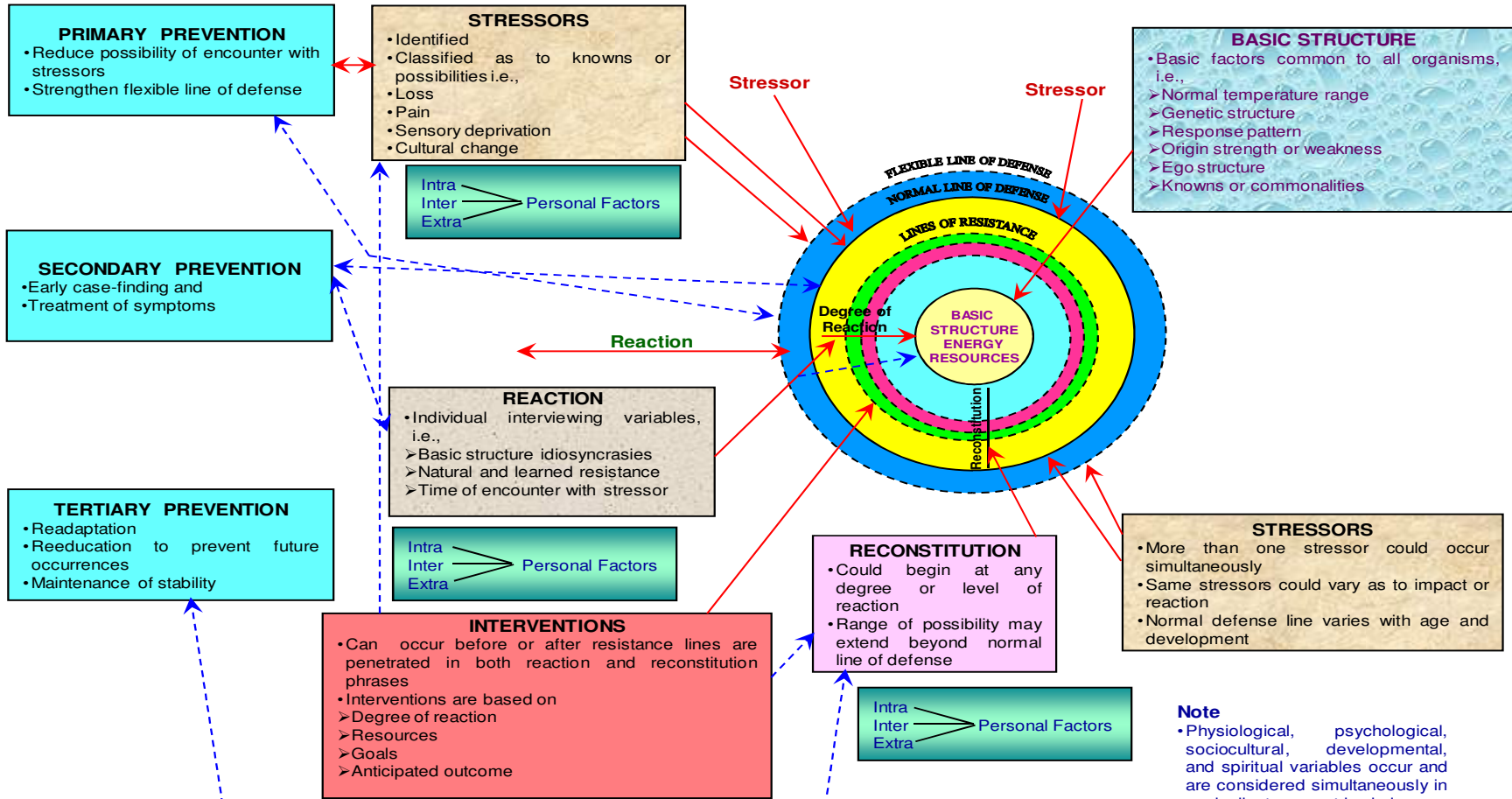


Fig.1.3.1(a): BETTY NEUMAN'S SYSTEMS MODEL(2002)-GENERAL CONCEPT

## **GENERAL CONCEPTS OF WIEDENBACH 'S THEORY – HELPING ART OF CLINICAL NURSING.**

### **Basic assumptions -**

The theory proposes a 'prescriptive theory for nursing, described as a conceiving of a desired situation and the ways to achieve it'.

'Patient is any individual receiving help of some kind in the form of instruction or advice from health care personnel'. Need for help is 'the measure desired by the individual to restore or extend the ability to cope with various life situations'. 'Nurse is the functioning human being who not only acts but also thinks and feels'. 'The information that is received by the human mind is knowledge and Nurses help in sound decision through judgement'. 'Decisions are made in relation to cause and effect'. The nursing skills are used to achieve patient centered purpose.

Wiedenbach theory is also known as a prescriptive theory-situation producing theory.<sup>53-55</sup>

- **Central purpose** (nurses philosophy of care)

'It is the overall goal towards which a nurse strives. It transcends the immediate task or assignment directing towards achievement towards patient's good'.

'Three principles of nursing philosophy practiced are reverence for life, respect for dignity, worth, autonomy of a human being, resolution to act dynamically'.

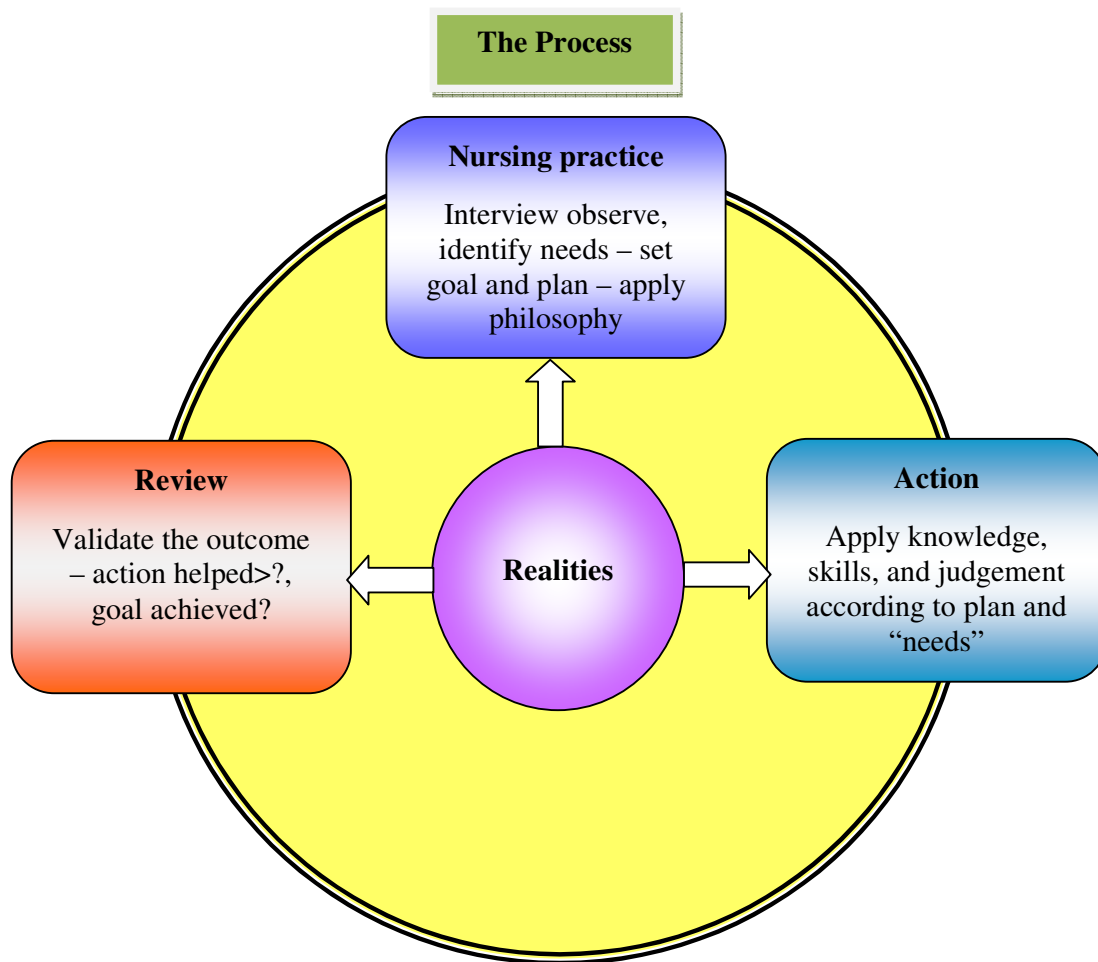
- **Prescription** - Refers to the plan of care for the patient.

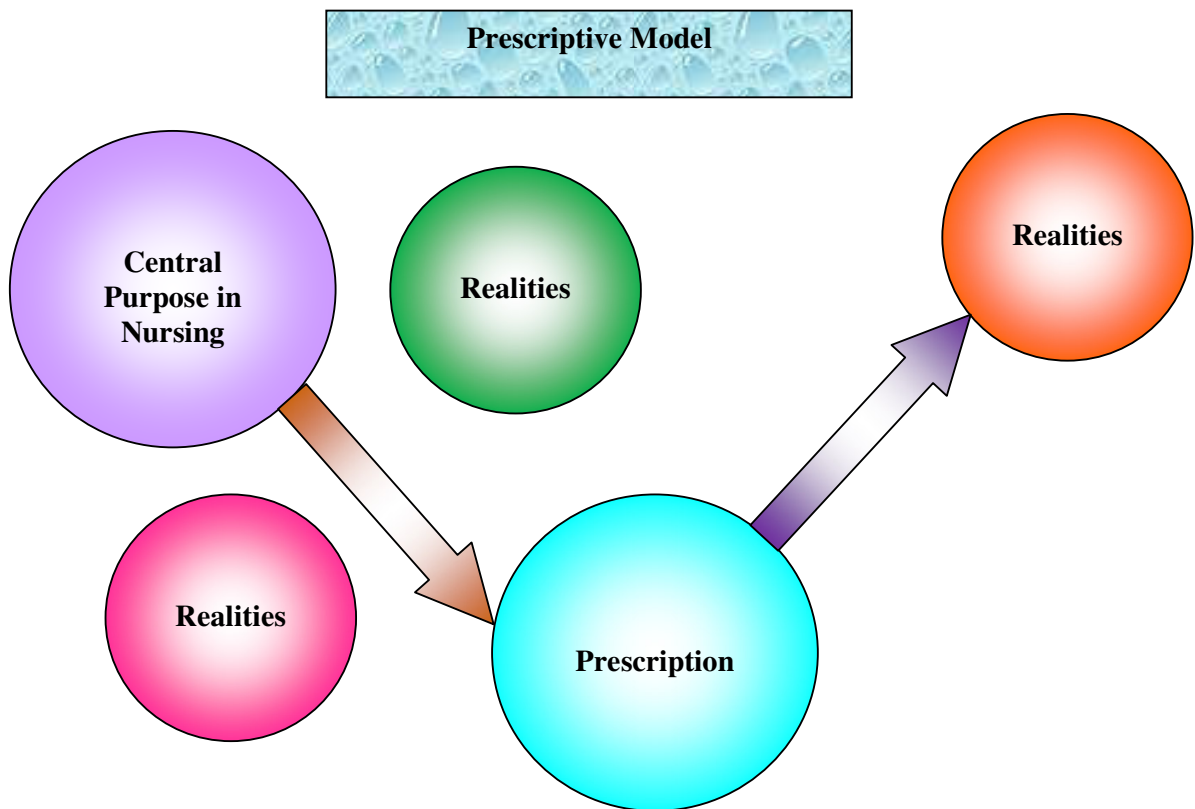
The fulfillment of the central purpose which is the directive for the activity.

'Two actions specified are voluntary actions (intended response) and involuntary (unintended response)'

- **Realities** - The immediate situation that influences the fulfillment of the central purpose. ‘The five realities identified are agent, recipients, goal, activities/means and framework’.

‘Nursing is an art based on goal directed care and it includes the three components namely identification a need for help, ministering needed help and validation of action taken’.





**Fig.1.3.1(b): Wiedenbach Theory – General Concepts**

- **Identification of a need for help** – ‘The nurse perceives patient behavior as consistent or inconsistent with the nurse concept of comfort or capability’.
  - Patient experiences comfort - There is no problem
  - Patient not experiencing comfort - There may be a problem
  - Patient confirms discomfort - There exists a problem
  - Patient doesn't confirm discomfort-There is a problem but doesn't want to reveal.
  - The nurse explores the comfort and discomfort and helps with the patient in resolving the problem.

- **Ministering needed help** - Refers to the provision of needed help

‘The nurse plans help based on available resources. Three voluntary actions takes place namely mutually understood and agreed upon action, recipient directed action and practitioner directed action’.

- **Validation of action taken** – ‘Refers to the collection of evidence which shows patient needs have been met and his/her functional ability has been restored as a direct result of action’.

Outcomes of this theory are ‘nurse perceiving patient’s behaviour as consistent or inconsistent with the concept of comfort’. ‘If patient experiences evidence of comfort, the need is met. If discomfort is experienced the need is not met’. Then the nurse should ascertain

- whether the need for help is identified
- whether the nurse has met the need in an acceptable way
- to start again by identifying the need and taking appropriate action.

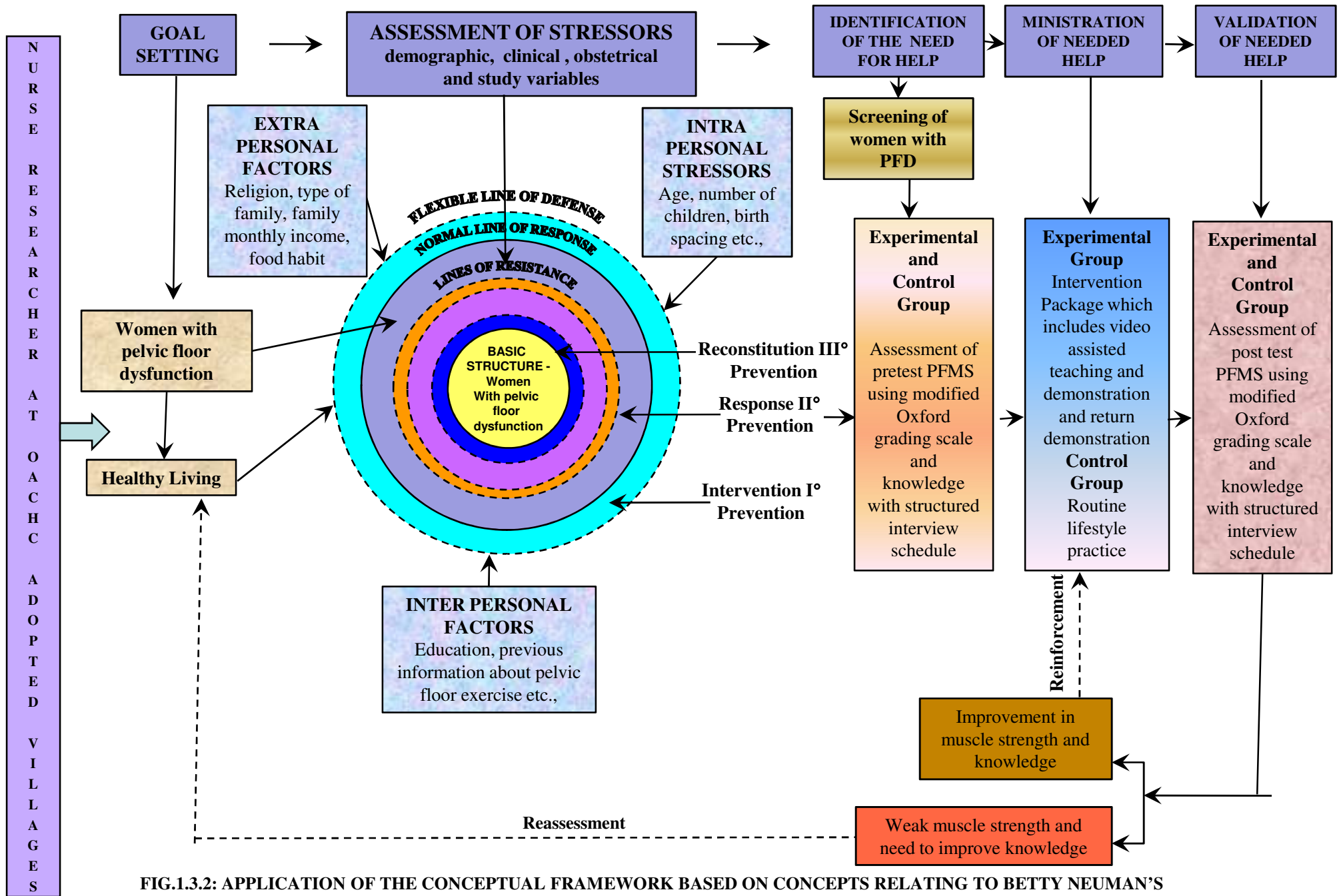
### **1.3.2. APPLICATION OF THE CONCEPTUAL FRAMEWORK**

The researcher in the Omayal Achi Community Health Centre adopted villages, based on the Betty Neumans system model set the goal for women 3 months to 1 year post delivery. The researcher assessed the intra personal, interpersonal and extra personal stressors which constantly interact and counteract with the basic structure of the women between 3 months to 1 year post delivery. All these three level of stressors interact with the flexible line of defense and invades the normal line of defense and also tries to intrude into basic structure. But the researcher integrates the Wiedenbach helping art for

the secondary prevention level. For the identification of need for the help the researcher screen the pelvic floor dysfunction and assess the pretest pelvic floor muscle strength and knowledge on pelvic floor dysfunction for the both the group.

The second step is the ministering of the needed help, that is, intervention package administered by the researcher to the experimental group only. The third step validating the needed help was explored by the post test of pelvic floor muscle strength and knowledge on pelvic floor dysfunction and exercises for the both the group. If there is improvement in the mean knowledge and pelvic floor muscle strength the researcher reinforces and enhances the intervention, if there is negative outcome the researcher restart by reassessment.





**FIG.1.3.2: APPLICATION OF THE CONCEPTUAL FRAMEWORK BASED ON CONCEPTS RELATING TO BETTY NEUMAN'S SYSTEM MODEL AND WIEDENBACH PRESCRIPTIVE THEORY**

## *CHAPTER 2*

### *Aims and Objectives*

## **CHAPTER – 2**

### **AIMS AND OBJECTIVES**

#### **2.1. TITLE**

An experimental study to evaluate the effectiveness of an interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction at selected settings, Thiruvallur Dist.

#### **2.2. STATEMENT OF THE PROBLEM**

An experimental study to evaluate the effectiveness of an interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction at selected settings, Thiruvallur Dist.

#### **2.3. OBJECTIVES**

1. To assess and compare the pre and post test pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction between experimental and control group.
2. To assess the effectiveness of interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction between experimental and control group.
3. To correlate the mean differed knowledge score with pelvic floor muscle strength score among women with pelvic floor dysfunction in experimental and control group.

4. To associate the mean differed pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction with selected variables in experimental group and control group.

## **2.4 NULL HYPOTHESES**

**NH<sub>1</sub>:** There is no significant difference in the pre and posttest pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction between the experimental and control group at  $p < 0.05$ .

**NH<sub>2</sub>:** There is no significant relationship between the mean differed knowledge with pelvic floor muscle strength among women with pelvic floor dysfunction in the experimental and control group at  $p < 0.05$ .

**NH<sub>3</sub>:** There is no significant association between the mean differed pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction with selected variables in experimental and control group at  $p < 0.05$ .

## **2.5 OPERATIONAL DEFINITIONS**

### **2.5.1. Effectiveness**

It refers to the outcome of interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction which is measured using per vaginal examination using modified Oxford grading scale and the structured knowledge questionnaire respectively with a time interval of 8 weeks.

### **2.5.2. Interventional package**

It refers to the set of interventions regarding information and exercise on pelvic floor muscle strength prepared by the investigator to achieve the desired outcome. The

Interventional package was administered individually at their home and return demonstrated by the individual women. The Pelvic Floor Muscle Strength and the knowledge on Pelvic Floor Dysfunction is given: The knowledge on PFD and PFMS was given by video assisted teaching.

- **Video assisted teaching** with the help of using laptop, the anatomy and physiology of pelvic floor; causes of pelvic floor muscle weakness; effect of pelvic floor muscle weakness; medical and surgical management; prevention of complications and importance of maintaining a healthy pelvic floor was taught. This individual teaching package is for nearly 45 minutes and was conducted at the households of the women.
- **Exercise program is planned using Demonstration and video assistance through laptop** given for Kegel's exercise, abdominal clams core stabilizer exercise, bladder control spinal rotation exercise, side leg circles exercise, rolling knee step exercise and bridging exercises, alternate arm pulses exercise, spinal twist exercises were demonstrated by the investigator and return demonstration by individual women is for 30 minutes.
- **Reinforcement** Every woman was given pictorial diary with calendar to fix a bhindi in the column if they perform exercises. They were given reminders through SMS using mobile phone to perform exercises. Reinforcement was given through the form of booklet and community level volunteers identified by the investigator to reinforce them to do regular exercises.

### **2.5.3. Knowledge**

It refers to the awareness and ability of the women to respond to the questions on anatomy and physiology of pelvic floor, causes of pelvic floor muscle weakness, effect

of pelvic floor muscle weakness, medical and surgical management, prevention of complications and importance of maintaining a healthy pelvic floor which was elicited by using a structured interview schedule devised by the investigator consisted of 25 questions.

#### **2.5.4. Pelvic floor muscle strength**

It refers to the ability of the women to contract pelvic floor muscle which was assessed by per vaginal examination (digital technique) Power, Endurance, Repetition, Fast contraction, Every Contraction Timed (PERFECT) and muscle strength was graded based on modified oxford grading scale.

#### **2.5.5. Women with pelvic floor dysfunction:**

It refers to the mothers who were between 3 months to 1 year post delivery period and residing in the villages with presence of any one of the symptoms of urinary incontinence/ bowel incontinence / pelvic organ prolapse / pelvic pain / dyspareunia which was assessed by pelvic floor distress inventory.

### **2.6. ASSUMPTIONS**

- Women after child birth may experience pelvic floor muscle weakness which contributes to urinary and bowel incontinence, pelvic organ prolapse, pelvic pain and dyspareunia in the later stages of her life.
- Performing regular pelvic floor muscle strengthening exercises may enhance the pelvic floor muscle strength and prevent the problems.
- Knowledge on functions of pelvic floor muscles may help the women to prevent the pelvic floor dysfunctional problems.

## **2.7. DELIMITATIONS**

- The study was delimited only to 26 villages adopted by Omayal Achi Community Health Centre in Thiruvallur district.

## *CHAPTER 3*

### *Review of Literature*



## **CHAPTER – 3**

### **REVIEW OF LITERATURE**

This chapter was dealt with the theoretical literature about pelvic floor muscle dysfunction and critical literature review about the existing empirical literature on various aspects involved in the present study such as the factors contributing to pelvic floor muscle dysfunction, pelvic floor muscle strength, knowledge of pelvic floor muscle strength and various interventions which improved knowledge and strength of pelvic floor muscle. Review of literature section also presented the theoretical framework which guided the research work.

Review of literature was done extensively and research articles were searched from major online databases and websites using key words related to the concepts used in the present study. Systematic Reviews and Meta Analysis studies were given prime importance followed by studies with good sample size and international repute. After extensive review relevant articles were collected and included in the review.

This chapter was organized into the following sections,

**Section 3.1:** Overview of Pelvic Floor Muscle Dysfunction among women

**Section 3.2:** Studies on factors contributing to pelvic floor muscle dysfunction among women

**Section 3.3:** Studies on knowledge and pelvic floor muscle strength among women

**Section 3.4:** Studies on interventions for improving knowledge and pelvic floor muscle strength among women.

**Section 3.5:** Gaps in literature

**Section 3.6:** What the study adds.

## **SECTION 3.1: OVERVIEW OF PELVIC FLOOR MUSCLE DYSFUNCTION AMONG WOMEN**

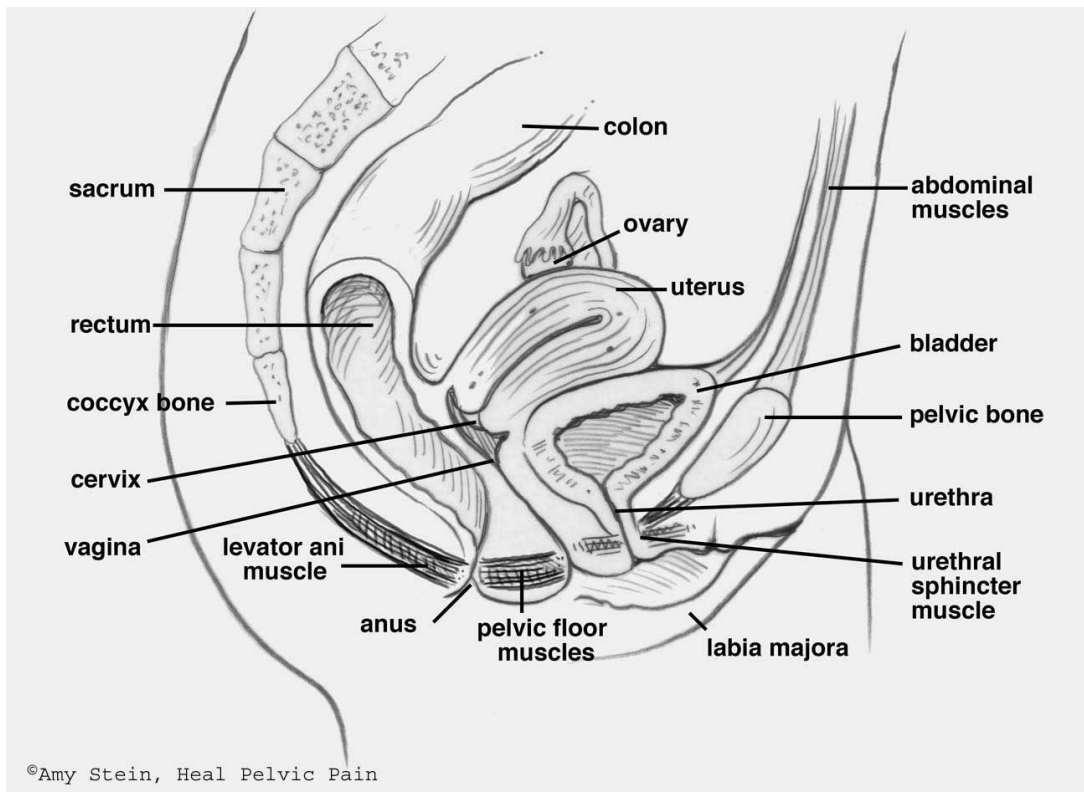
### **3.1.1. Anatomy and Function of the Pelvic Floor**

The pelvic floor is a complex integrated collection of ‘innervated ligaments, muscles and extracellular matrix’ found in both males and females. Its primary role is to provide support to the pelvic organs and to protect the bladder, urethra, reproductive organs, and the rectum. Three orifices weaken the pelvic floor in females: ‘the vagina, the urethra and the anus’. Therefore, the musculature and ligamentous structures in this area must be strong and supportive to prevent pelvic floor disorders. This region is composed of six layers of tissue: ‘the pelvic peritoneum, the visceral layer of pelvic fascia, the deep muscles, the superficial muscles, and the subcutaneous fat and skin’. Both the superficial and deep layers of muscles play an important role in providing ‘hammock-like support to the pelvic organs’.<sup>56</sup>

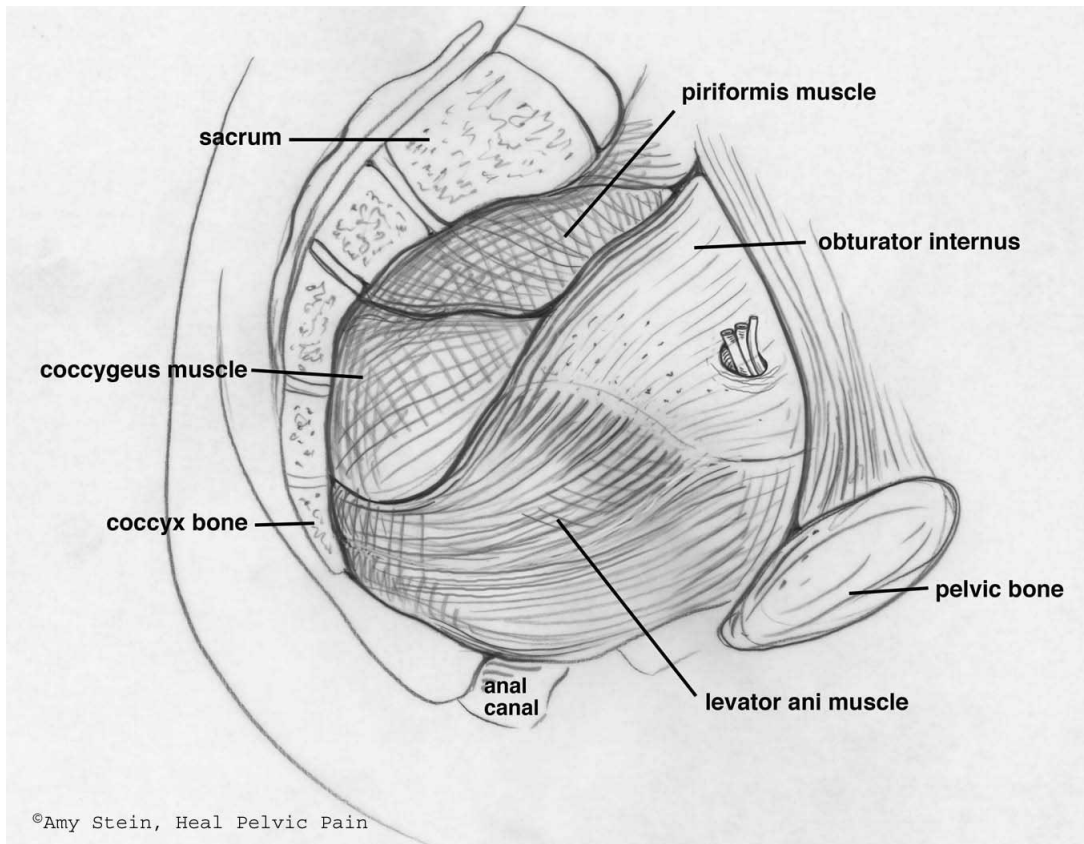
The superficial layer consists of five structures: ‘transverse perineal muscle, bulbocavernosus muscle, ischioocavernosus muscle, external anal sphincter, and the membranous sphincter of the urethra’. The strength of these muscles maintain the pelvic floor structure and directly support the urethral, vaginal and anal sphincters. The deep muscles of the pelvic floor are commonly known as the ‘levator ani muscles’. Strength in these muscles provides the primary support of the pelvic region.<sup>57</sup>

The levator ani consists of three different muscles: ‘the pubococcygeus, the iliococcygeus and the ishiococcygeus’. ‘The levator ani and coccygeus muscles originate on the inner surface of the side of the lesser pelvis and insert into the inner surface of the coccyx bone’.

A critical function of the muscles is to provide stabilization when there is an increase in 'intra-abdominal pressure caused by vomiting, coughing, urination, and defecation'. The deep muscles indirectly support the uterus, directly support the vagina, and play a vital role in childbirth.<sup>58</sup>



**Fig.3.1.1: Illustration of Female Urogenital System (MidSagittal Section) [12]**



**Fig.3.1.2: Pelvic Floor Muscles ( Coccygeus, Piriform, Levator ani and Obturator) <sup>12</sup>**

Evaluation of muscle strength and endurance provides information on the severity of muscle weakness and forms the basis of patient specific exercise programmes. PERFECT is an acronym to remind all health professionals of the need to assess the main components of ‘Pelvic Floor Muscle (PFM) contractility’. This assessment scheme was developed to provide a simple, reliable method of PFM evaluation and involves four components, as shown in table 1.<sup>59</sup>

**Table 1: The PERFECT assessment scheme**

P	Power (pressure)
E	Endurance
R	Repetitions
F	Fast
E	Every
C	Contraction
T	Timed

Power is measured on a modified Oxford scale (table 2).

**Table 2: Proposed modified Oxford grading scheme [60]**

<i>Grading</i>	<i>Muscle response</i>
0	Nil
1	Flicker
2	Weak
3	Moderate
4	Good
5	Strong

*Grade 0* No discernible muscle contraction.

*Grade 1* A flicker or pulsation is felt under the examiner's finger.

*Grade 2* An increase in tension is detected, without any discernible lift.

*Grade 3* Muscle tension is further enhanced and characterized by lifting of the muscle belly and also elevation of the posterior vaginal wall. A grade 3 and stronger can be observed as an in-drawing of the perineum and anus.

*Grade 4* Increased tension and a good contraction are present which are capable of elevating the posterior vaginal wall against resistance (digital pressure applied to the posterior vaginal wall).

*Grade 5* Strong resistance can be applied to the elevation of the posterior vaginal wall; the examining finger is squeezed and drawn into the vagina (like a hungry baby sucking a finger).

The PERFECT assessment scheme, although a subjective method, has been shown to be reliable and reproducible. ‘The first component P (power/pressure, but actually evaluating strength) graded the pressure exerted on the finger from 0 to 5, with intermediate scoring permitted (for example 3+), giving a greater flexibility than the scoring of 1 to 4’. ‘The Oxford grading system is well understood in physical medicine and the modifications described herein have proved to be an effective way of assessing PFM strength’.<sup>62</sup>

### **SECTION 3.2: STUDIES ON FACTORS CONTRIBUTING TO PELVIC FLOOR MUSCLE DYSFUNCTION AMONG WOMEN**

Several studies have reported many factors contributing to ‘pelvic floor muscle dysfunction’. Most common factors reported were age of the women, multiparity, mode of delivery, history of pelvic surgery, pregnancy, chronic cough, obesity, spinal cord disorders, family history, and genetics. Pregnancy related factors include pregestational body mass index (BMI), BMI at term, weight gain, smoking during pregnancy, duration of the first and second stages of labor, spontaneous or operative delivery, perineal lacerations, weight of the newborn, maneuvers and episiotomy, as well epidural

analgesia. Some of the other include past histories of previous lower abdominal surgeries such as laparoscopic and hysteroscopic procedures, uterine curettage, and UI surgeries.

The below reviews are reports of several studies which have explained the contribution of these factors towards development of pelvic floor dysfunction among women.

A study was conducted among 90 women the 'influence of various risk factors on pelvic floor muscle strength' was studied. The study examined the influence of factors such as age of women, nature of job, weight and height of the women, number of child births and previous history of gynecological surgeries on pelvic floor muscle strength. The Pelvic floor muscle strength was measured by using vaginal dynamometer. The study reported results using univariate regression analysis which proved that increased maternal age, demanding job, increased body weight, multiple deliveries and previous history of gynecological surgeries to have significant positive with the weak pelvic floor muscle strength.<sup>62</sup>

A cohort study was conducted among 458 women seeking gynecological care and was classified as exposed with family history of pelvic floor dysfunction and unexposed without family history of pelvic floor dysfunction. Chi-square was used to assess confounding and logistic regression to determine risk. The results showed that among the 458 women almost half (47.3%) them had family history of PFD, among those 52.5% had pelvic organ prolapsed. of the 458 participants reported a positive family history. Of these, 52.5% had prolapse which was significantly higher than the 28.9% rate of prolapse in women without a family history ( $p < 0.001$ ). The risk for getting PFD was 1.4 times

higher among women who had known family history. The study also presented that women who had vaginal deliveries, incontinence had higher risk for organ prolapse.<sup>63</sup>

In another study conducted among 128 women were the mean 'pelvic floor muscle strength' was measured to be low presented with prevalence of 7.8 % with Urinary Incontinence and 5.5 % with Anal Incontinence. The analysis of the data showed that child's birth weight, increased parity, and urinary incontinence during pregnancy had significant association with weak pelvic floor muscle strength.<sup>64</sup>

A large scale study was conducted among 1586 women with median age of them being 41 years showed a prevalence of 67.5 % with at least one type of pelvic floor dysfunction. The prevalence of each of the pelvic floor dysfunction were found as 19.8% with anal incontinence, 50.7 5 majority with urinary incontinence, 33.2 % with constipation and 26.8% with obstructed defecation. Analysis of risk factors showed that the age of the women as one of the major contributing factor associated with the development of pelvic floor dysfunction. Vaginal delivery and higher parity also was found to increase the risk of developing of pelvic floor dysfunction.<sup>65</sup>

In a Chinese population-based cross-sectional study conducted among 5300 women it was found that obesity which was determined by Body Mass Index (BMI) was found to be a strong risk factor for developing pelvic floor dysfunction. [66] The association of BMI and waist circumference with urinary incontinence was evaluated in another study were the waist circumference of the women was associated with stress urinary incontinence. Comparing normal women with obese women it was showed that women with increased body weight have 2.11 times higher odds for getting pelvic floor



dysfunction. [67] In another population based, cross-sectional, Internet-based survey, Body mass index of the women was significantly associated with a higher risk for urinary incontinence. Obesity was considered as a major risk factor for women to develop stress urinary incontinence and mixed type of urinary incontinence.<sup>68</sup>

A prospective longitudinal study was conducted among 330 women within 12 months of postpartum with urinary incontinence where the association between vaginal or cesarean delivery and urinary incontinence (UI) was studied. The study reported that women who underwent vaginal delivery (29.1 to 40.2%) had a significant higher prevalence of any type of urinary incontinence at 4-6 weeks postpartum and at 3, 6, and 12 months than women who had cesarean section( 14.2 to 25.5%).The study also showed that women had vaginal delivery(15.9 to 25.4%) had stress urinary incontinence (SUI) at 4-6 weeks and 3 and 12 months compared to women with cesarean delivery (6.4-15.6%) and women who had vaginal delivery (7.9 to 18.55) had moderate or severe UI at 3-5 days, 4-6 weeks, and 6 months compared with women who had cesarean section ( 4.3-11.3%).<sup>69</sup>

In a large scale multicenter prospective study conducted in six Italian OBG departments among 960 nulliparous women who delivered at term showed that at end of 3 months post delivery 21.6% and 16.3% of women had urinary incontinence and anal incontinence respectively. Odds ratio calculated from the study showed that women with incontinence during pregnancy to have 4.6 times more risk for getting urinary incontinence after 3 months post delivery, women with family history of urinary or anal incontinence to have 2.6 for Urinary incontinence and 2.4 times for anal incontinence

respectively 3 months post delivery. The study also presented the obstetric factors such as vaginal delivery to have strong odds of 3.3 times to have urinary incontinence.<sup>70</sup>

In another study prevalence of incontinence was studied among 359 women who attended the Gyneac and postnatal OPD it was observed that prevalence of incontinence to be as 18.6% among which 12.5% were primis and 26.4% were multis. The study also reported the relation of various factors contributing to incontinence as advanced age and having normal vaginal delivery. The study showed that among the women 16 % of them had urinary incontinence who had LSCS where 19.8% of women who had normal vaginal delivery had urinary incontinence.<sup>71</sup>

A cohort longitudinal study conducted among 1011 women 5 – 10 years after first delivery showed that women who had spontaneous vaginal birth had high odds of 2.9 times for having stress incontinence when compared with women who had cesarean delivery. Operative vaginal birth also was found to have significantly increased odds for getting pelvic floor disorders, especially prolapse with very high odds of 7.5.<sup>72</sup>

A descriptive cross-sectional multicenter study was conducted among 495 women showed relationship of several factors for having higher odds ratio (OR) for getting urinary incontinence. The factors and their odds are level of education (OR- 2.99), being a black women (OR – 2.32), women with more than 3 children (OR- 4.93), Obese women (OR – 4.22) and women who had normal vaginal delivery (OR – 2.59).<sup>73</sup>

An epidemiological study was conducted among 552 women in rural India showed that about 53 (10%) reported episodes of Urinary Incontinence (UI). The prevalence of UI showed significant association with increasing age ( $P < 0.01$ ). Fifty-

seven percent of the women had symptoms of stress incontinence, 23% of urge, and 20% mixed symptoms. Obstetrical factors associated with UI included high parity ( $P < 0.003$ ), young age at first childbirth ( $P < 0.01$ ), forceps delivery ( $P < 0.001$ ), and prolonged labor ( $P < 0.001$ ).<sup>21</sup>

In a study conducted in rural health facility of West Bengal, India to understand the Urinary incontinence, its risk factors, and quality of life among women aged 50 years and above showed that about Forty-nine (27.7%) out of 177 women were found having Urinary Incontinence (UI). The most prevalent type of UI was 'stress UI (51.0%), followed by mixed UI (32.7%) and urge UI (16.3%)'. In bivariate analysis, study participants who were 'illiterate, having a history of prolonged labor, having a history of gynecological operation, Normal Vaginal Deliveries (NVDs) (>3), diabetic, having chronic cough, having constipation, and having Lower Urinary Tract Symptoms (LUTS) had shown significantly greater odds of having UI.' In multivariable 'illiteracy (adjusted odds ratio [AOR] - 2.41 [1.02–5.69]), NVDs (AOR - 3.37 [1.54–7.37]), a history of gynecological operation (AOR - 3.84 [1.16–12.66]), chronic cough (AOR - 2.69 [1.21–5.99]), LUTS (AOR - 2.63 [1.15–6.00])' remained significant adjusted with other significant variable in bivariate analysis. Those with 'mixed UI had 5.33 times higher odds having unfavorable QoL'. 'Only 30.6% sought medical help'. Treatment-seeking behavior shown negative correlation with QoL while fecal incontinence and LUTS shown positive correlation.<sup>22</sup>

### **SECTION 3.3: STUDIES ON KNOWLEDGE AND PELVIC FLOOR MUSCLE STRENGTH AMONG WOMEN**

The following studies presented the aspects of knowledge of women regarding pelvic floor dysfunction and also on pelvic floor muscle strength.

A cross-sectional survey conducted among 212 nulli parous women using a validated 36 item questionnaire with visual analog scale scoring from 0 to 10. The study findings showed a mean knowledge score of 2.4 with standard deviation of 2.01. Among the women studied about 93% had insufficient knowledge and were unaware of pelvic floor training and various ways of preventing pelvic floor dysfunction. Using a VAS scale (0 to 10), the women rated their knowledge about the pelvic floor as a mean of 2.4 (SD 2.01). The study also brought out the fact that women have concern for having increased awareness regarding pelvic floor dysfunction and its management.<sup>74</sup>

In Knowledge, Attitude, Practice (KAP) study conducted among 56 antenatal regarding pelvic floor muscle exercises (PFME) showed a 19.6% prevalence of urinary incontinence. 51.8% of the women only had good knowledge, 96.4% had good attitude and only 10.7 % were practicing the PFME. The study results showed inadequate knowledge and poor practice of PFME for improving the pelvic floor muscle strength. The study also brought a strong positive correlation between the knowledge and practice which clearly stated that improving the knowledge of women regarding pelvic floor muscle strength will lead to increased practice which will prevent pelvic floor dysfunction.<sup>75</sup>

In another study conducted among 115 women knowledge, attitude and behavior of women regarding pelvic floor muscle strength exercise was explored. The study findings showed that 52% of the women had weak pelvic floor muscle which was evaluated by vaginal palpation. Women lacked adequate knowledge regarding pelvic floor muscle strength exercises but had a good positive attitude toward them. 29.9 % of the participants only practiced pelvic floor muscle exercises. The study also brought a strong positive correlation between the Knowledge, attitude and behavior toward PFM exercises. There was also a significant positive correlation between pelvic floor muscle strength and knowledge, attitude and behavior toward PFM exercises. The findings of the study suggested that interventions focusing pelvic floor dysfunctions.<sup>76</sup>

A study was conducted among 120 women to know the impact of knowledge, prior instruction, frequency of performance, and ability to correctly perform pelvic muscle exercises (PMEs) in a group of asymptomatic women. The study observations showed that majority of women 94 (77%) have heard of pelvic muscle exercises mostly from a nonmedical source. 44(36%) of the women stated that they had instructions to follow pelvic floor muscle exercises regularly, among them 42 (96%) of them had received verbal instruction only. Among the study participants 34 (28%) of the women only were performing pelvic floor muscle exercises regularly. Among the participants 82(68%) of the women were able to perform adequate pelvic muscle contraction on examination. The study findings showed that women had poor knowledge, mostly received verbal instruction and very few have practice the pelvic floor muscle exercises.<sup>77</sup>

In a study conducted among 666 parous women the ‘effect of vaginal childbirth and other obstetric exposures on pelvic muscle strength 6–11 years after delivery’ was studied. The study also investigated ‘the relationship between pelvic muscle strength and

pelvic floor disorders'. The observations of the study showed that in 'comparison with women who delivered all of their children by cesarean, peak muscle strength and duration of contraction were reduced among women with a history of vaginal delivery. 'Pelvic muscle strength was observed reduced after history of forceps delivery . After vaginal delivery,' reduced pelvic muscle strength was associated with symptoms of anal incontinence ( $P=.028$ ) and pelvic organ prolapse on examination.<sup>78</sup>

A prospective study was conducted among 100 women to 'compare the pelvic floor muscle strength of nulliparous and primiparous women'. 'Pelvic floor muscle strength' was measured both subjectively and objectively in the study. 'Transvaginal digital palpation' was used as subjective measure and objectively measured by 'portable perinometer'. The observations of the study showed that 'there was a significant difference between the groups ( $p = 0.0004$ )'. Among primiparous women 'transvaginal digital palpation evaluation showed significant impairments of pelvic floor muscle strength at the 36th week of pregnancy ( $p = 0.0006$ ) and 45 days after vaginal delivery ( $p = 0.0001$ ) compared to nulliparous women'. Objective evaluations of pelvic floor muscle strength in primiparous women 'revealed a significant decrease 45 days after vaginal delivery compared to nulliparous patients'.<sup>79</sup>

### **SECTION 3.4: STUDIES ON INTERVENTIONS FOR IMPROVING KNOWLEDGE AND PELVIC FLOOR MUSCLE STRENGTH AMONG WOMEN.**

The below reviews are studies which are focused towards the improvement of pelvic floor dysfunction knowledge and pelvic floor muscle strength, thereby preventing or managing the pelvic floor dysfunction.

Hafrun et al conducted a study among 150 women followed by immediate childbirth process where the effect of pelvic floor muscle strength was assessed after giving pelvic floor muscle training using various approaches such as using the biofeedback method, with and without supporting visits and to compare with a conventional method. Women were randomized into one of the three groups. The study findings showed that women who performed pelvic floor muscle exercise with biofeedback technique had shown significant improvement in the pelvic floor muscle Strength. There was no significant difference between the three groups in pelvic floor muscle (PFM) contraction at end of 6-months.<sup>80</sup>

Maryam et al conducted an intervention study among 91 women with urinary incontinence and evaluated the effect of pelvic floor muscle training with and without assistance device. The assistant device used was Kegel master. 41 women were given pelvic floor muscle training using assisted device and 50 women participated in pelvic floor muscle training without device. Assisted device group had intervention such as after complete training, Kegel master device was used twice daily for 15 min each session, for a total duration of 12 weeks. In the other group women had training followed by Kegel exercises which included perineal muscle contractions for 6–8 s with 6 s rest in between twice daily for 15 min each session and for a total duration of 12 weeks. At end of the study 85 women out of 91 women completed the study (46 in the group 2 and 39 in group 2). There was a significant improvement observed in the pelvic floor muscle strength among both the groups at 1<sup>st</sup> and 3<sup>rd</sup> month after the intervention. There was no significant difference observed between the two groups. Study findings recommended the practice of pelvic floor muscle training with or without assistive device to improve the pelvic floor muscle strength.<sup>81</sup>

In a study conducted to know the acceptance and adherence to an intervention that included teaching Pelvic Floor (PF) muscle exercises to 38 women who received a functional assessment of the PF musculature and behavioural guidance were interviewed by telephone two months later. Twenty-four women (63.1%) adhered to the recommended exercises. The reports of the participants demonstrated that they accepted the intervention and it showed a positive impact on diverse aspects such as knowledge, sex life, and encouragement to practice physical exercise and PF exercises, and improvement in urinary loss symptoms.<sup>82</sup>

A systematic review was conducted to understand the effect of various interventions in improving the pelvic floor muscle strength among women excluding the pelvic floor muscle training. Women with stress or mixed urinary incontinence were only focused in the search of studies. The review was done based on seven randomised controlled trials amongst which three studies was based on abdominal training, two studies based on the Paula method, and two studies based on Pilates exercise. The observation of the reviews showed no convincing evidence for the effect of these exercise regimens on pelvic floor muscle strength. The systematic review concluded stating that there is no alternative to pelvic floor muscle training and it remains the strong option for improving the pelvic floor muscle strength among women with pelvic floor dysfunction.<sup>83</sup>

Another randomized trial was done among 287 women were the effect of pelvic floor muscle training and watchful waiting on pelvic floor symptoms was studied. Among the 287 women 145 women were randomized to pelvic floor muscle training group and 142 women to watchful waiting group. The study period was for three months



and at end 250 women completed the follow up. The study observations showed that women who had pelvic floor muscle training 57% (85 out of 145) reported improvement in the pelvic floor dysfunction symptoms while in the watchful waiting group 13%(18 out of 142) had improvement. The study findings proved the effect of pelvic floor muscle training in improving the wellbeing of the women by reducing the burden of pelvic floor dysfunction symptoms.<sup>84</sup>

In a study conducted among 114 Taiwanese women were the effect of pelvic floor muscle training (PFMT) on urinary incontinence (UI) severity and their knowledge and attitude were investigated. The study observations showed that women who had the intervention had shown significant improvement in reduction of urinary incontinence severity and the intervention also had a significant improvement in their knowledge and but not in their attitude.<sup>85</sup>

Another interventional study conducted among 82 women with urinary incontinence where the intervention was pelvic floor muscle exercises for 7 days a week for a period of 6 months, where the midwife was making a visit once in every 6 weeks for follow-up and reinforcement PFM exercises. Bristol female lower urinary tract symptoms questionnaire was used to measure strength of pelvic floor and urinary incontinence symptoms. Women were randomized into two groups one group had the above said home based intervention and the later group had only written instruction of the exercises. The study observations showed that the women who had home based intervention had significant improvement in pelvic floor muscle strength and also reduced urinary incontinence symptoms.<sup>86</sup>

A comparative study was conducted among 57 women with urinary incontinence where two different interventions were tested on the improvement of urinary incontinence symptoms. First group had 15 minutes of electrical stimulation followed by 25 minutes of pelvic floor muscle training. Other group had 10 min of deep abdominal muscle exercises, once a day, 5 days a week for 8 weeks. Pad test for urinary incontinence, 3 questionnaires assessment on the symptoms associated with UI were used to measure the effect. The study findings showed that women who had deep abdominal training has not improved the pelvic floor muscle strength and reduction of urinary continence symptoms while women who had pelvic floor muscle training showed significant improvement.<sup>87</sup>

One to one instruction on pelvic floor muscle training was given to 471 women with urinary incontinence on 3 occasions. Women were assessed for urinary incontinence symptoms. The study findings showed a significant improvement in reducing the symptoms after one year follow up.<sup>88</sup>

The efficacy and safety of 'extracorporeal biofeedback combined with pelvic floor muscle training (PFMT) for the treatment of female stress urinary incontinence (SUI)' was studied among 106 women with stress urinary incontinence. The intervention was conducted for 12 weeks where the effect was measured using pad test and oxford scale for pelvic floor muscle strength. The observations of the study showed that '52.1% women showed significant reduction in pad weight over the time period'. 'The strength of the pelvic floor also was significantly increased after the 12-week treatment'.<sup>89</sup>

A study was conducted to compare the effect of ‘traditional (Kegel exercises) and integrated pelvic floor exercise regimes (Comprised of exercises targeting each and every pelvic muscle and for specific pelvic floor dysfunctions) for treating pelvic floor dysfunction in women’. The pelvic floor exercise with different regimes as mentioned earlier was taught to both the groups. After every ‘30 days the patient was asked to come for treatment progression based on muscle power evaluation the treatment protocol was changed’. ‘After the period of 90 days the post-test values was measured using PFD-Q and pelvexiser’. The results of the study showed statistically significant improvement in the ‘quality of life and reduction in the pelvic floor dysfunction symptoms ( $P < 0.001$ )’ and ‘improvement in pelvic floor muscle strength ( $P < 0.001$ ) in group-B treated with integrated pelvic floor exercise compared to group-A treated with traditional pelvic floor exercise’.<sup>90</sup>

A secondary analysis study was conducted based on the data from two independent randomized control trials which included community-dwelling women, >50 years of age, where the effectiveness of ‘pelvic floor muscle training and acupuncture in reducing urinary incontinence was studied’. The first study examined the effectiveness of ‘pelvic floor muscle training in reducing urinary incontinence in homebound and non-homebound men and women age 60 years and older’. The second study examined the ‘efficacy of acupuncture in treating urinary incontinence in women > 25 years’. Two-hundred fifteen women aged 50 years were included in the analysis, ‘148 (69%) from the PFMT study and 67 (31%) from the acupuncture study’. After controlling for group differences, ‘PFMT ( $M = 56.6\%$ ) was more effective than acupuncture ( $M = 26.0\%$ ,  $p = .01$ ) in reducing UI’. ‘A higher proportion of women in the PFMT group were satisfied with their progress than in the acupuncture group ( $p < .001$ )’.<sup>91</sup>

A systematic review was conducted to summarise current literature and to describe the trends in the use of 'pelvic floor muscle exercise in the management of urinary incontinence in women'. The study review confirmed that 'pelvic floor muscle exercise is particularly beneficial in the treatment of urinary stress incontinence in females'. Studies have shown up to '70% improvement in symptoms of stress incontinence following appropriately performed pelvic floor exercise'. This improvement was evident across all age groups. There was evidence that 'women perform better with exercise regimes supervised by specialist physiotherapists or continence nurses, as opposed to unsupervised or leaflet-based care'. There was 'evidence for the widespread recommendation that pelvic floor muscle exercise helps women with all types of urinary incontinence'.<sup>92</sup>

## **SUMMARY OF LITERATURE**

Studies have showed high prevalence rates of women suffering from various forms of pelvic floor dysfunctions affecting their quality of life. Studies have reported the clear risk factors which contributed to development of pelvic floor dysfunction. Studies have also reported poor awareness, health seeking behavior and decreased pelvic floor muscle strength among women. Studies have also showed the effect of interventions in improving the problems of women with pelvic floor dysfunctions with significant highlight on using pelvic floor muscle training exercises.

## **SECTION 3.5: GAPS IN THE LITERATURE**

Indian studies were very much limited and studies reporting prevalence among rural areas were much limited. Community based interventional studies by nurses or primary practitioner is limited. Studies towards pelvic floor problem prevention were

also limited around the world. Interventional studies were not much reported in the Indian settings.

### **SECTION 3.6: WHAT THE STUDY ADDS**

The study would add to the rural statistics of women with pelvic floor dysfunctions. The community based nursing interventions model would guide in preventing the pelvic floor dysfunctions among the women in the community. The findings would add to the evidenced based nursing practice for women with pelvic floor muscle dysfunction.

# *CHAPTER 4*

## *Materials and Methods*

## **CHAPTER – 4**

### **MATERIALS AND METHODS**

#### **RESEARCH METHODOLOGY**

The present study was conducted to assess the effectiveness of interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction at selected settings, Thiruvallur district.

This part of the study includes description of the research design, variables, setting of the study, population, sample, sampling technique, sample size, development of tool, content validity, reliability, ethical considerations, data collection procedure and statistical analysis used.

#### **4.1 RESEARCH APPROACH**

A Quantitative research approach was used for the study considering the nature of the problem being studied as the variables under the study are quantitative in nature.

#### **4.2 RESEARCH DESIGN**

A true experimental design was used for the study, randomization of groups was done at the village level. The investigator administered the interventional package on pelvic floor muscle strength to women and a comparison group was included to test the effectiveness of the intervention.

### Schematic representation of the study design

Randomization of villages Screening using pelvic floor distress inventory- Women with pelvic floor muscle dysfunction	Group	Pretest O <sub>1</sub>	Intervention ×	Posttest (after 8 weeks) O <sub>2</sub>
	Experimental	Pre test pelvic floor muscle strength and knowledge	Intervention package  Video assisted teaching, Demonstration and Return demonstration of PFMS	Post test pelvic floor muscle strength and knowledge
Control	Routine life style practices			

### 4.3. VARIABLES OF STUDY

#### 4.3.1 Background Variables

Age, education, type of family, monthly income, religion, type of occupation, type of work, food habit, number of child birth, birth spacing between kids, mode of child birth, height, weight, weight gain during pregnancy, birth weight of the baby.

#### 4.3.2 Independent variables

Interventional package comprising of video assisted teaching, demonstration and return demonstration on improving the pelvic floor muscle strength and knowledge of the women on pelvic floor dysfunction.



### **4.3.3 Dependent Variables**

The depended variable comprised of knowledge regarding pelvic floor dysfunction and pelvic floor muscle strength.

### **4.3.4 Extraneous Variable**

The variables considered as extraneous through various reviews and researchers experience were number of vaginal delivery, number of LSCS, BMI, induction of labor, duration of second stage of labor, post-natal period, history of perineal trauma, previous information about pelvic floor exercise.

## **4.4 RESEARCH SETTING**

The study was conducted in Thiruvallur district of Tamilnadu which has 14 blocks and 526 villages. Among the 55 villages adopted by Omayal Achi Community Health Centre (OACHC) 26 villages namely Kathavoor, Melpakkam, Vellachery, Koduvalli, Indranagar, Karani, Gowdipuram, Thotakaran Street, Poochiathipedu, Egapara Chathiram, Vinunagar, Kanniammannagar and Kalaingar Nagar (Experimental) and Morai, Elangonagar, Bharathinagar, Veltech, Vellanoor, Kanadapalayam, Alamathy, Vaniyamchathiram, Mittnamalli, Singlikuppam, Ayilacheri, Morai, Annanagar and Veerapuram (Control) were selected for the study. These villages were located at about 5 kms radius within the Omayal Achi Community Health Centre.

## **4.5 POPULATION**

### **4.5.1 Target Population**

Comprised of all women between 3 months to 1 year post delivery status and having either of the symptoms of urinary incontinence, bowel incontinence, pelvic organ prolapse, pelvic pain or dyspareunia residing in the villages.

#### **4.5.2 Accessible Population**

Comprised of all women between 3 months to 1 year post-delivery status either with urinary incontinence, bowel incontinence, pelvic organ prolapses, pelvic pain or dyspareunia in the 26 selected villages adopted by Omayal Achi Community health centre which comprised a total of 424 women.

#### **4.6. SAMPLE**

The samples of the study consisted of women between 3 months to 1 year post-delivery status who were identified using pelvic floor distress inventory and fulfilled the inclusive criteria.

#### **4.7. SAMPLE SIZE**

The sample size for the present study was calculated based on the pilot study and prevalence rate of pelvic floor dysfunction in the rural areas after the survey. The calculated sample size using the effect size of 0.40 at power 0.80 and 0.05 level of significance was estimated to be 106 in each group. The final sample size estimated for the study was 212 women with pelvic floor dysfunction 110 each in the experimental and control group. There were 232 women who had pelvic floor dysfunction, 116 each in experimental and control group. Final sample size used for analysis was 110 in each group.

The sample size was estimated by sample size calculation.

#### **Formula for Comparing Two Independent Group Means**

$$\text{Samples per group} = f(\alpha, \beta) \times \frac{2 \times SD^2}{(d)^2}$$

**Where,**

**f** ( $\alpha$ ,  $\beta$ ) - the power of the study. The power for the study was taken as 90 %

**SD** – Standard deviation of the outcome of interest, here knowledge was taken.

**d** - Is the effect size i.e. the smallest difference in means that it would be clinically meaningful to detect.

#### **4.8 SAMPLING TECHNIQUE**

Probability sampling technique was used to select the samples. Simple random sampling technique by Lottery Method was used to select the villages. Cluster randomization was adopted to categorize the samples to experimental and control group. A total of 424 women were in 26 villages from 3 months to 1 year post-delivery status. There were 232 women who had pelvic floor dysfunction. The number of villages and samples taken in each village is presented below;

**Table 4.8: Sample enumeration list village wise**

<b>S. No</b>	<b>Name of the village</b>	<b>Number of women screened</b>	<b>Number of women with PFD</b>
1.	Kathavoor	17	8
2.	Melpakkam	12	7
3.	Vellachery	15	6
4.	Koduvalli	12	7
5.	Indranagar	15	8
6.	Karani	18	8
7.	Gowdipuram	10	5
8.	Thotakkaran street	13	7
9.	Poochiathipedu	12	6

<b>S. No</b>	<b>Name of the village</b>	<b>Number of women screened</b>	<b>Number of women with PFD</b>
10.	Egampara chathiram	15	7
11.	Vinu Nagar	11	8
12.	Kanniammana nagar	46	28
13.	Kalaingar nagar	13	8
14.	Morai	11	5
15.	Elangonagar	14	8
16.	Bharathinagar	13	6
17.	Veltech	28	13
18.	Vellanoor	37	28
19.	Kanadapalayam	17	9
20.	Alamathy	8	5
21.	Vaniyanchathiram	19	9
22.	Mittanamalli	18	8
23.	Singlikuppam	13	7
24.	Ayilacheri	9	5
25.	Morai annanagar	8	5
26.	Veerapuram	20	11
	Total	424	232

#### **4.9. SAMPLE SELECTION CRITERIA**

##### **4.9.1 Inclusive Criteria**

- Women who are willing to participate in the study
- Women who can understand Tamil
- Women between 3 months to 1 year post-delivery status with pelvic floor dysfunction.

#### **4.9.2 Exclusive Criteria**

- Women who had already undergone pelvic floor exercise training programme.
- Women who had undergone any surgery in the pelvis.
- Women with severe medical and surgical conditions (Stroke, Colostomy)
- Women with postpartum complication (wound gaping, infection, cervical tear)

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

The tool consisted of four sections

##### **4.10.1 Section A: Screening tool to assess pelvic floor dysfunction**

Pelvic floor dysfunction was assessed using pelvic floor distress inventory scale which assessed the presence of symptoms for urinary incontinence, bowel incontinence, pelvic organ prolapse, pelvic pain and dyspareunia which was prepared by the investigator. This tool was used for inclusion of women to the main study data collection. The tool consisted of 15 items with “yes” or “no” options. ‘Yes’ for an item was taken as positive for having pelvic floor dysfunction. Women who had the presence of either one of the following, urinary incontinence/bowel incontinence/pelvic organ prolapsed/pelvic pain or /dyspareunia were included for the study.

##### **4.10.2 Section B: Demographic, Clinical, Obstetrical and Study Specific variables**

- **Demographic variables**

Age, education, type of family, monthly income, religion, type of occupation, type of work, food habit, post natal period, previous information about pelvic floor exercise.

- **Obstetrical variables:**

Number of child birth, birth spacing between kids, weight gain during pregnancy, induction of labour, duration of second stage of labour.

- **Clinical Variables:**

Height in centimeter, weight in Kilogram and Body Mass Index (BMI)

- **Study specific variables:**

Mode of child birth, number of vaginal delivery, number of LSCS, birth weight of the baby, history of perineal trauma.

#### **4.10.3 Section C: Tool to assess the knowledge**

Assessment of knowledge on anatomy and physiology of pelvic floor, functions of pelvic muscles, causes of pelvic floor muscle weakness, effect of pelvic floor muscle weakness, medical and surgical management which was tested by using a structured interview schedule prepared by the investigator. Knowledge questionnaire consisted of 5 domains and 25 questions. Each right answer was scored 1 and wrong answer was scored 0. Scores were interpreted.

#### **4.10.4 Section D: Tool to assess pelvic floor muscle strength**

Muscle strength was assessed by per vaginal examination by the investigator and graded using modified Oxford grading scale. Pelvic floor muscle strength was assessed under 5 categories such as Power, Endurance, Repetitions, fast contraction and every timed contraction timed as given in table 4.10.1. For credibility of assessing the PFM every 10<sup>th</sup> sample was assessed by the gynaecologist organized by the investigator.

## **PROCEDURE FOR VAGINAL EXAMINATION OF THE PELVIC FLOOR**

- **Pre requisites:**

- Explain the procedure to the client
- Provide privacy
- Provide good lighting
- Explain the client to remove the inner garments and wash the perineum
- Make the client in supine with knee flexed
- Expose the lower part keep the pillow or sheet under the buttocks
- Assure her to stop the procedure at anytime during the procedure if she has any discomfort while performing.

- **Articles:**

- Hand scrub
- Examination glove
- Lubricant

- **Procedure:**

- 1. Inspection:**

- Observe for external genital – color of the skin, perineal scar, status of the vaginal introitus , any signs of descent at rest without load.
- Explain to the client to contract the muscles of the pelvic floor (lifting up inside and closing the vagina and drawing the anus in) observe the perineum and labia.
- Posterior displacement of the clitoris, narrowing and inward movement of the introitus, shortening and drawing upward and forward of the perineum, retraction of the anus and increased wrinkling around the anus.

- Ask the client to cough assess for reflex contraction, urinary leakage, and signs of descent

(Signs of descent include loss of labial contact, opening of the introitus, gaping of the vagina, descent of the perineum, and prolapsing vaginal walls.)

## **2. Palpation:**

- Separate the labia
- Insert index finger palpate slowly internally along the posterior side of the vagina to about 5cm
- Palpate the lateral vaginal walls by turning the finger from the 3-o'clock to 9-o'clock position. (looking for scars, tenderness and changes in sensation)
- Assess the muscular volume and contours of the levator ani on the left and right and differences between the sides are noted. (wasting of the pubococcygeus is unilateral and more prominent on the right. Healthy pelvic floor muscles feel full and tensely elastic and exert pressure on the palpating finger when contracted)
- Feel the anterior and posterior vaginal wall for bulging of the tissue. (uterine prolapse can be felt when the tip of the finger meets the cervix prematurely)

## **3. Muscle function:**

- Ask the client to contract and relax the muscles of the pelvic floor several times  
Note for any narrowing of the vagina or any elevation of the levator ani, and upward and forward movement.( evaluate for client is able to relax voluntarily and completely)
- Ask the client to cough (to increase the intraabdominal pressure) evaluate for client is able to contract the pelvic floor before or while coughing.



- Components of levator ani can be palpated individually:
- Keep the finger in dorsal vaginal wall can discern (perceive) a cranial/ventral movement
- Keep the finger in lateral vaginal wall can feel the action of the pubococcygeus
- Palmar surface of the examining finger rests behind the urethra and vesicourethral junction to check whether the bladder neck is elevated during the contraction of the pelvic floor
- Assess for gluteals, adductors and rectus abdominis for contraction.

**Table 4.10.1: Oxford scale for grading pelvic floor muscle strength [60]**

Grade	Characteristics
0	No discernible contraction
1	Barely palpable, flickering contraction, not visible on inspection of the perineum
2	Weak, distinctly palpable contraction, felt as slight pressure on the examining finger
3	Moderate muscle strength, distinct pressure on the examining finger, and palpable upward and forward movement, visible on the perineal surface
4	Good muscle strength, elevation possible against slight resistance, circular pressure can be felt around the examining finger. During simultaneous examination by the index and middle finger these are pressed against each other
5	Very strong muscle strength, contraction possible against vigorous resistance, with suction-type effect on the examining finger. During simultaneous examination by the index and middle finger, these are pressed against each other despite resistance.

### **PERFECT Scheme**

P Power	The power/strength of the maximum voluntary contraction (MVC) is determined from the modified Oxford scale
E Endurance	The duration of the contraction is noted, up to 10 seconds.
R Repetitions	This represents the number of times the maximum voluntary contraction (a product of power and endurance) can be repeated, with 4 seconds rest between each contraction, until the muscles fatigue.
F Fast	Fast-twitch muscle fibres are only recruited when speed or power are required, thus necessitating the need to assess the number of fast (1 second) contractions the patient can perform before the, muscle fatigues.
ECT	Every contraction timed.

#### **4.11. INTERVENTION TOOL**

Interventional package consisted of video assisted teaching, demonstration and return demonstration techniques provided by the investigator to strengthen the pelvic floor muscle and to improve the knowledge of the women regarding pelvic floor dysfunction.

- Video assisted teaching was given using laptop for 45 minutes which included anatomy and physiology of pelvic floor, causes of pelvic floor muscle weakness, effect of pelvic floor muscle weakness, medical and surgical management, and prevention of complications and importance of maintaining a healthy pelvic floor. This individual teaching was conducted at households of the women.
- Exercise programme was also provided through video assisted teaching using a laptop, demonstration and return demonstration on Kegel exercise, abdominal clams core

stabilizer exercise, bladder control spinal rotation exercise, side leg circles exercise, rolling knee step, push up exercises and bridging exercises were demonstrated by the investigator and return demonstrated by the women.

- The interventional package was administered individually at their home and return demonstrated by the individual women. Every woman was given a pictorial diary with calendar to fix a bhindi in the column if they performed the exercises. They were given reminders through SMS using mobile phone to perform exercises. Reinforcement was given through the form of booklet and community level volunteers identified by the investigator to reinforce them to do regular exercises.

#### **4.12. CONTENT VALIDITY**

Content validity was obtained from 5 medical experts (Community medicine, Obstetrics and Gynecology, physiotherapist) and 7 nursing experts (Obstetrics & Gynecology Nursing). Based on the experts opinion, information's such as obstetrical, clinical and study specific variables were included. Knowledge questionnaire items were minimized to 25 from 40 items.

#### **4.13. RELIABILITY**

The reliability of the data collection tools was assessed using Cronbach alpha for pelvic floor distress inventory scale, Test-Retest for knowledge questionnaire and inter-rater method for Pelvic floor muscle strength. The reliability scores for pelvic floor distress inventory  $r$  was 0.80, the correlation coefficient  $r$  – value obtained was 0.88 for the knowledge questionnaire and 0.82 for the modified oxford grading scale. These reliability scores were very high and hence the tools were considered reliable for

assessing the effectiveness of interventional package (pelvic floor muscle strength and knowledge) among women at selected villages, Chennai.

#### **4.14. ETHICAL CONSIDERATIONS**

Ethics is defined as the ability to distinguish between right and wrong and to act accordingly. The investigator adhered to the following ethical principles in this study:

- 1) **Beneficence:** This refers to minimizing harm and maximizing benefits.
- a) **The right to freedom from harm and discomfort-** the women were protected from any form of harm or discomfort.
  - The investigator was adequately qualified and authorized to carry out the study.
  - The study proposal and plan was granted formal ethical approval by the International Centre for Collaborative Research (ICCR) which is the official Ethics Review Board of Omayal Achi College of Nursing, Chennai.
  - Consent was obtained from the Head of Omayal Achi College of Nursing, Chennai, the in-charge of the Omayal Achi Community Health Centre (OACHC), and the concerned village leaders.
  - The data collection and risk assessment was a done after the consent from the women.
  - No intensive questions were asked to the women during data collection.
  - No coercion was used in encouraging the women to adhere to the lifestyle modification especially dietary choices, control of habits.
  - The women were informed that they could discontinue their participation if they perceived any stress or fatigue due to their involvement.

- Referral to the OACHC for appropriate health care was arranged for women who may have severe pelvic floor dysfunction.

**b) The right to protection from exploitation.**

- The women were not subjected to any form of exploitation
- Complete information on the role and expectations of the women in the study was explained to them prior to the obtaining consent.

2) **Respect for Human Dignity-** The women were given autonomy to decide the participants to continue in the study.

**a) The right to self determination**

- The women were given the choice of voluntarily deciding whether to take part in the study.
- They were also allowed to clarify their doubts regarding the purpose of the study and the nature of their involvement in it.
- Freedom to withhold any information or to withdraw from the study at anytime of their choice was also informed to them.

**b) The right to full disclosure**

- The investigator had fully described the nature of the study, the women's right to refuse participation, the investigator's responsibilities and potential benefits of improved the muscle strength.
- Written informed consent signed by the participant, a witness and the investigator was ensured before the data collection.
- The women were appreciated for their involvement and assured of communication of the findings of this study after its completion.

c) **Justice-** This refers to the need for fair treatment of the research subject

d) **The right to fair treatment**

- The women were selected based on their conformity to the inclusive criteria and not based on any vulnerability.
- The personal and cultural beliefs, habits and lifestyles of all the women were respected and they were treated equally.
- The contact information of the researcher was given to the women for any desired clarifications.
- Equality and justice to the women in the control group was ensured by the administering the intervention to them at the end of the final posttest.

e) **The right to privacy**

- The researcher limited queries to the items specified in the data collection tool and no intrusive or embarrassing questions were put to the women.
- They were assured of anonymity and strict confidentiality of their identity or the information shared by them during reporting, presentation or publication of this research work.

#### **4.15 PILOT STUDY**

Pilot study was conducted in eight villages, four in experimental and four in control group clustered after simple randomization. A total of 40 women were selected 20 in each group based on the sample selection criteria. All eligible women were screened and completion of the study was time consuming. Women who were between 3 months post delivery to one year were 10-20 women in each village and women who had

low to moderate risk were 5-10 in each village. The results indicated that tools used; structured interview schedule and modified Oxford grading scale were highly reliable and appropriate for assessing the knowledge and pelvic floor muscle strength respectively. The pilot study findings showed that the method of administering the interventional package, the teaching methods selected and the proposed analytical measures were suitable for the study. The comparison within and between the groups interpreted that there was a statistical significance. The overall plan was effective, feasible and practicable to be applied in the main study.

#### **4.16 DATA COLLECTION PROCEDURE**

Formal consent was obtained from the Head of Omayal Achi College of Nursing, Chennai, the in-charge of the Omayal Achi Community Health Centre and the concerned village leaders. The villages were selected by probability sampling that is simple random sampling (lottery method). Cluster randomization was utilized to categorize the experimental and control group samples. The villages included for the pilot study were excluded.

The investigator visited the villages one by one and got the list of the women (3 months post labour to 1 year) from balwadi workers and village health nurse. Then the investigator met the women individually at their households, they were seated comfortably with adequate privacy. To obtain the true and free responses the women were explained regarding the purpose and usefulness of the study. The investigator assured the clients about anonymity and confidentiality. The background data of the women was then collected, and they were screened for pelvic floor dysfunction using the pelvic floor distress inventory.

All eligible women were assessed for their knowledge on pelvic floor dysfunction using structured interview schedule which took about 20 minutes and pelvic floor muscle strength was assessed using per vaginal examination done after ensuring privacy, which took approximately 15 minutes.

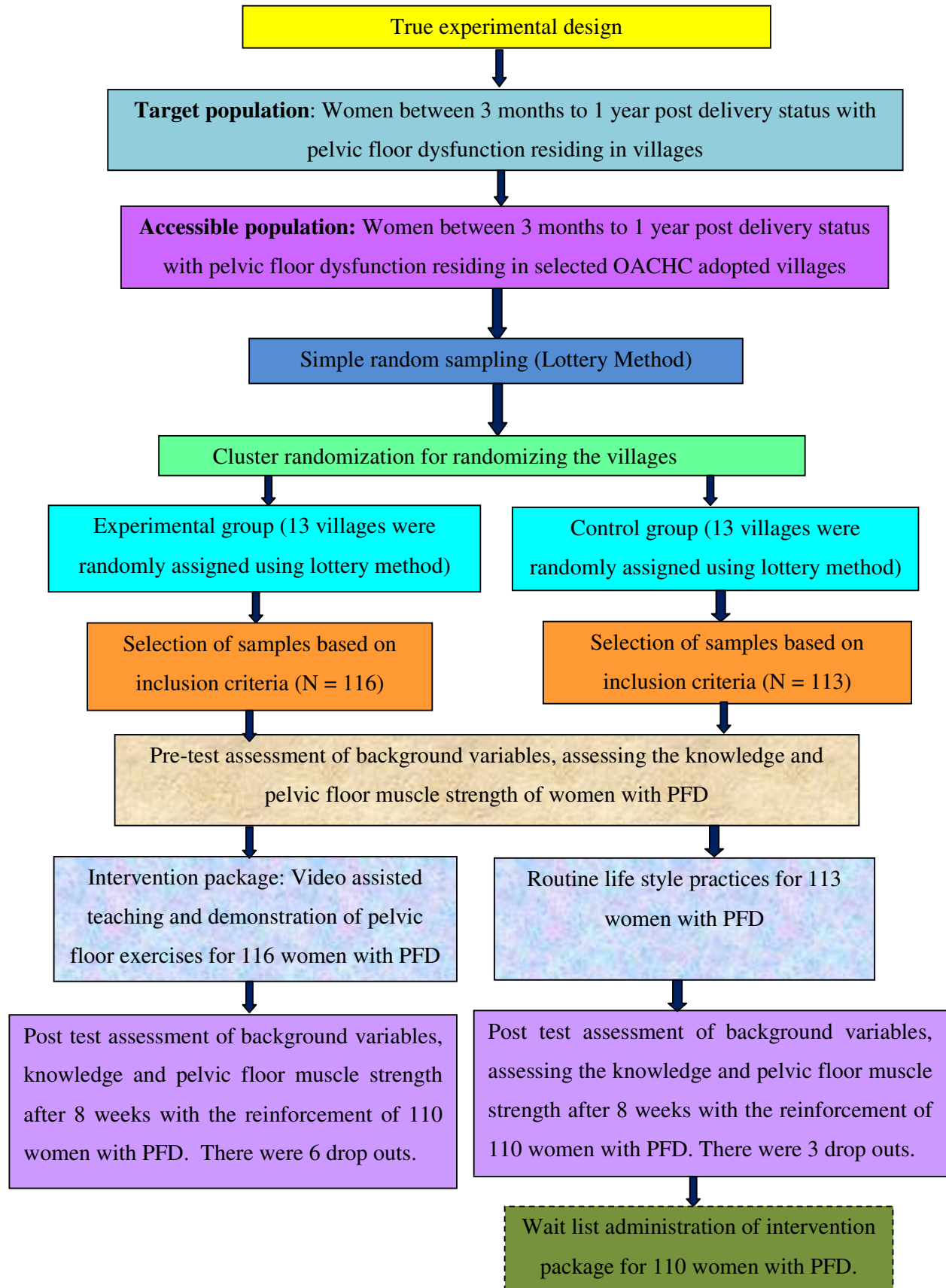
After assessment, women in the experimental group were given individual education using video assisted teaching on pelvic floor dysfunction for about 45 minutes with the help of laptop. Later demonstration of exercises was done by the investigator for 30 minutes and return demonstration was done by the women on the same day.

Women were given a pictorial diary to maintain daily and were asked to fix a bhindi daily after performing exercises. They were given reminder through SMS through their mobile phone to perform exercises daily as reinforcement. One volunteer from each village was identified to reinforce the women to perform daily exercises. Women were also given pictorial information booklet as a follow up guide and reinforcement.

In a day the investigator visited an average of 5-6 women during the study period. The investigator visited the women once in 4 weeks for follow up and clarified their doubts. After 8 weeks the investigator performed the post test assessment of knowledge and pelvic floor muscle strength. For credibility of assessing pelvic floor muscle every 10<sup>th</sup> sample was assessed by the gynecologist organized by the investigator. All Women were encouraged to maintain their general health and pelvic floor muscle strength. After the completion of post-test, the same intervention package was administered to the women in the control group as wait list control group.



A total of 116 and 113 samples were included for the experimental and control group respectively. However due to change in residences and non-adherence to the exercise pattern there was an attrition of 6 from experimental group and 3 from control group samples. Hence a total of 220 women were the final sample size for the study.



**Fig.4.16: Schematic representation of data collection procedure**

#### **4.17 DATA ANALYSIS PROCEDURE**

Data was analyzed using Univariate, Bivariate and Multivariate statistical methods. Demographic variables in categorical/dichotomous were given in frequencies with their percentages. Knowledge and pelvic muscle strength score was given in mean and standard deviation. Association between level of Knowledge, strength score and demographic variables were analyzed using chi square test. Association between Knowledge, strength gain score and demographic variables were analyzed using one-way analysis of variance and student independent t-test. Difference between pretest and posttest was analyzed using student paired t-test. Difference between experiment and control was analyzed using student independent t-test. Correlation between Knowledge, strength score was analyzed using Karl Pearson correlation coefficient.

Influencing factors for gain score was analysed using univariate and multivariate logistic regression methods and respective odds ratio with 95% confidence interval was given. Differences between pretest and posttest score was analyzed using percentage with 95% CI and mean difference with 95% CI. Simple bar diagram, Multiple bar diagram, box plot and Scatter plot diagram with regression estimate were used to represent the data.  $P < 0.05$  was considered statistically significant.

# *CHAPTER 5*

## *Results and Analysis*

## **CHAPTER – 5**

### **RESULTS AND ANALYSIS**

The data gathered from the women in the experimental and control group about their background variables, knowledge on pelvic floor dysfunction and pelvic floor muscle strength was analyzed to assess the effectiveness of interventional package. The descriptive analysis of the data is presented first followed by the inferential analysis to determine causal relationship.

Data was entered Excel sheet and analyzed using Statistical Package for Social Science / PC+ Version.20. The findings of the present study are organized and presented under the following sections with tables and figures.

#### **ORGANIZATION AND PRESENTATION OF DATA:**

The substantive summary of the analysis is organized under the following sections.

**Section 5.1: Description of pelvic floor muscle dysfunction among rural women.**

**Section 5.2: Description of the demographic, obstetrical, clinical and study variables of the women with pelvic floor dysfunction in experimental and control group**

**5.2.1:** Description of demographic variables among the women with pelvic floor dysfunction in experimental and control group

**5.2.2:** Description of obstetrical variables among the women with pelvic floor dysfunction in experimental and control group

**5.2.3:** Description of clinical variables among the women with pelvic floor dysfunction in experimental and control group

**5.2.4:** Description of study specific variables among the women with pelvic floor dysfunction in experimental and control group

**Section 5.3: Assessment and comparison of pre and post test pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction in the experimental and control group**

**5.3.1:** Assessment of pre and post test pelvic floor muscle strength among women with pelvic floor dysfunction in the experimental and control group.

**5.3.2:** Assessment of pre and post test knowledge scores among the women with pelvic floor dysfunction in experimental and control group

**Section 5.4: Effectiveness of intervention package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction.**

**5.4.1:** Effectiveness of intervention package on pelvic floor muscle strength among women with pelvic floor dysfunction.

**5.4.2:** Effectiveness of intervention package on knowledge among women with pelvic floor dysfunction.

**Section 5.5: Correlation of knowledge with pelvic floor strength score among women in the experimental and control group**

**Section 5.6: Association of mean differed pelvic floor muscle strength and knowledge gain scores among women with pelvic floor dysfunction with their selected variables in the experimental group.**

**5.6.1:** Association of mean differed pelvic floor muscle strength gain scores among women with pelvic floor dysfunction with their selected variables in the experimental group.

**5.6.2:** Association of mean differed knowledge gain scores among women with pelvic floor dysfunction with their selected variables in the experimental group.

**SECTION 5.1: DESCRIPTION OF PELVIC FLOOR MUSCLE DYSFUNCTION  
AMONG RURAL WOMEN**

**Table 5.1.1: Frequency and Percentage distribution of pelvic floor dysfunction among the rural women**

**N=424**

<b>Total Number of Women Screened in 26 Villages</b>	<b>Total number of women found with pelvic floor muscle dysfunction  N (%)</b>	<b>Total Number of women with normal pelvic floor  N (%)</b>
424	232 (54.7)	192 (45.3)

The above table 5.1.1 depicted that among the 424 women screened, 232 (54.7%) women were identified to have risk for pelvic floor muscle dysfunction, 45.3% of women had normal pelvic floor muscle strength.



**Table 5.1.2: Frequency and percentage distribution of specific pelvic floor dysfunction among the rural women**

**N=232**

<b>Type of Pelvic Floor Dysfunction</b>	<b>Frequency (N)</b>	<b>Percentage (%)</b>
Urinary Incontinence	193	82.4
Bowel Incontinence	116	50.0
Pelvic Organ Prolapse	3	01.4
Pelvic Pain	218	93.2
Sexual Dysfunction	128	54.6

The above table 5.1.2 showed that among the 232 women identified with pelvic floor dysfunction, 93.2% of the women had reported pelvic pain followed by 82.4% of women having urinary incontinence. Only 1.4% of them had reported to have pelvic organ prolapse.

**SECTION 5.2: DESCRIPTION OF THE DEMOGRAPHIC, OBSTETRICAL, CLINICAL AND STUDY VARIABLES OF THE WOMEN WITH PELVIC FLOOR DYSFUNCTION IN EXPERIMENTAL AND CONTROL GROUP**

**5.2.1: Description of demographic variables among the women with pelvic floor dysfunction in experimental and control group**

**Table 5.2.1(a): Frequency and Percentage distribution of demographic variables age, education, religion and type of family among the experimental and control group**

N=220

Demographic Variables	Group				Chi square test
	Experimental (n=110)		Control (n=110)		
	n	%	n	%	
<b>Age in Years</b>					
< 20	5	04.5	6	05.5	$\chi^2=0.81$ P=0.67 DF=2 NS
21 -30	82	74.5	76	69.0	
>-30	23	21.0	28	25.5	
<b>Education</b>					
No formal education	8	07.3	6	05.5	$\chi^2=3.30$ P=0.65 DF=5 NS
Primary school	10	09.1	15	13.6	
Middle school	42	38.2	47	42.7	
High school	32	29.0	25	22.7	
Undergraduate	10	09.1	12	10.9	
Postgraduate and more	8	07.3	5	04.6	
<b>Religion</b>					
Christian	22	20.0	28	25.5	$\chi^2=1.01$ P=0.60 DF=2 NS
Hindu	84	76.4	79	71.8	
Muslim	4	03.6	3	02.7	
<b>Type of family</b>					
Joint Family	54	49.1	63	57.2	$\chi^2=1.41$ P=0.47 DF=2 NS
Nuclear Family	46	41.8	39	35.5	
Extended Family	10	09.1	8	07.3	

NS – Not Significant

The above table 5.2.1(a) showed that in both the group most of the women were between 21 – 30 years of age, had middle school education, belonged to Hindu religion and were living in joint family.

**Table 5.2.1(b): Frequency and Percentage distribution of demographic variables monthly income, occupational status, type of work, and food habit among the experimental and control group**

N=220

Demographic Variables	Group				Chi square test
	Experimental (N=110)		Control (N=110)		
	N	%	N	%	
<b>Monthly income in Rs.</b>					$\chi^2=3.95$ P=0.41 DF=4 NS
15188-30374	5	04.5	8	07.3	
11362-15187	21	19.1	15	13.6	
7594-11361	40	36.4	34	30.9	
4556-7593	33	30.0	44	40.0	
1521-4555	11	10.0	9	08.2	
<b>Occupational status</b>					$\chi^2=2.05$ P=0.56 DF=3 NS
Employed - full time	9	08.2	6	05.5	
Employed - part time	12	10.8	9	08.2	
Unemployed	83	75.5	85	77.2	
Daily labour	6	05.5	10	09.1	
<b>Type of work</b>					$\chi^2=0.88$ P=0.64 DF=2 NS
Sedentary	83	75.5	85	77.3	
Moderate	13	11.8	9	08.2	
Heavy	14	12.7	16	14.5	
<b>Food habit</b>					$\chi^2=1.02$ P=0.32 DF=1 NS
Vegetarian	4	03.6	3	02.7	
Non – Vegetarian	106	96.4	107	97.3	

NS – Not Significant

The above table 5.2.1(b) showed that most of the women had monthly income between Rs.7594-11361 among the experimental group and between Rs.4556-7593 among the control group, most of them were unemployed, were doing sedentary work and their food habit was non-vegetarian.

Tables 5.2.1(a) and 5.2.1(b) depicted no statistical significant difference between experimental and control group thus it inferred they are homogenous group.

### 5.2.2: Description of obstetrical variables among the women with pelvic floor dysfunction in experimental and control group

**Table 5.2.2: Frequency and percentage distribution of obstetrical variables among women with pelvic floor dysfunction with respect to number of child birth, birth spacing, mode of previous child birth, number of vaginal birth**

Obstetrical Variables		Group				Chi square test
		Experimental (N=110)		Control (N=110)		
		N	%	N	%	
<b>Number of child birth</b>	One	48	43.6	42	38.2	$\chi^2=3.27$ P=0.35 DF=3 NS
	Two	39	35.5	48	43.6	
	Three	19	17.3	13	11.8	
	> Three	4	3.6	7	6.4	
<b>Birth spacing between two children</b>	< 1 year	8	16.3	11	12.9	$\chi^2=4.81$ P=0.30 DF=4 NS
	1 - 2 years	32	65.3	44	51.8	
	2 - 3 years	3	6.1	13	15.3	
	3- 4 years	4	8.2	9	10.6	
<b>Mode of previous child birth</b>	> 4 years	2	4.1	8	9.4	$\chi^2=2.22$ P=0.52 DF=2 NS
	Normal Vaginal Delivery	60	54.5	56	50.9	
	Vaginal delivery with forceps instrument	11	10.0	7	6.4	
	Vaginal delivery with vacuum instrument	3	2.7	2	1.8	
<b>Number of vaginal birth</b>	Normal vaginal delivery with episiotomy	36	32.7	45	40.9	$\chi^2=1.10$ P=0.77 DF=3 NS
	One	64	58.2	68	61.8	
	Two	39	35.5	34	30.9	
	Three	4	3.6	3	2.7	
	> Three	3	2.7	5	4.5	

NS - Not Significant

The above table 5.2.2 showed that most of the women had one child in experimental and two children in control group, with regard to birth spacing most of the women had spacing of 1-2 years between each child and had normal vaginal delivery with episiotomy in both groups, with regard to number of vaginal delivery, most of the women have undergone two vaginal delivery in both the groups.

Table 5.2.2 depicted no statistical significant difference between experimental and control group thus it inferred they are homogenous group.

### 5.2.3: Description of clinical variables among the women with pelvic floor dysfunction in experimental and control group

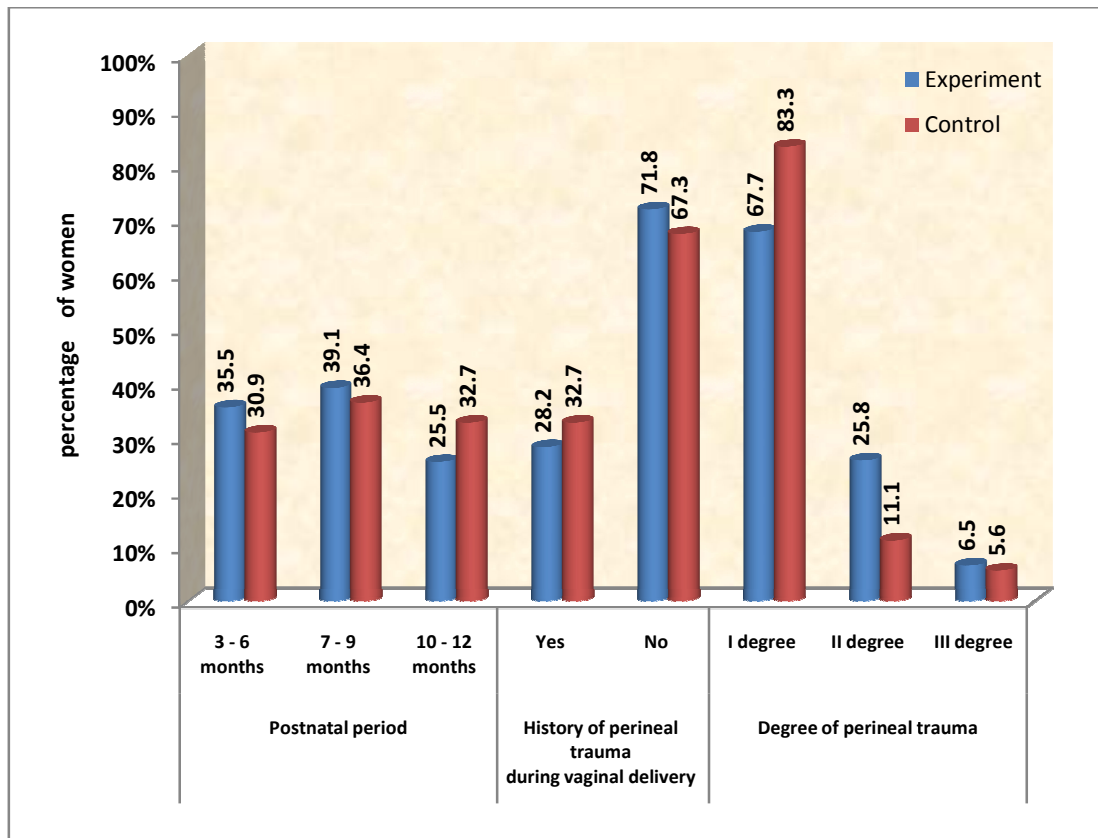
**Table 5.2.3(a): Frequency and Percentage distribution of Clinical variables (weight gain, induction of labor, duration of second stage of labor, last child birth and weight of baby of last child birth) among the experimental and control group.**

N=220

Clinical Variables	Group				Chi square test
	Experimental (N=110)		Control (N=110)		
	N	%	N	%	
<b>Weight gain (kgs) during last pregnancy</b>					$\chi^2=5.09$ P=0.17 DF=3 NS
< 5	11	10.0	15	13.6	
6 -10	65	59.1	53	48.2	
11 -15	26	23.6	25	22.7	
16 -20	8	07.3	17	15.5	
<b>Induction of labour of last child birth</b>					$\chi^2=0.20$ P=0.66 DF=1 NS
Medical Induction	77	70.0	80	72.7	
Nil	33	30.0	30	27.3	
<b>Duration of second stage labour of last child birth</b>					$\chi^2=0.09$ P=0.76 DF=1 NS
Less than One Hour	49	57.0	41	59.4	
More than One Hour	37	43.0	69	40.6	
<b>Weight of baby of last child birth in Kgs</b>					$\chi^2=2.83$ P=0.41 DF=3 NS
< 2	11	10.0	10	09.1	
2 - 3	69	62.7	72	65.5	
3 - 4	28	25.5	22	20.0	
> 4	2	01.8	6	05.5	
<b>Present BMI in kg/m<sup>2</sup></b>					$\chi^2=4.02$ P=0.26 DF=3 NS
Underweight	13	11.8	12	10.9	
Normal	59	53.7	64	58.2	
Over weight	23	20.9	13	11.8	
Obese	15	13.6	21	19.1	

NS – Not Significant

The above table shows the clinical variables of the study participants in the experimental and control group. Most of the women had 6-10 kgs weight gain during last pregnancy, had medical induction of labour, had less than one hour second stage among experimental and more than one hour second stage for control group, had baby with 2-3 kgs and were having normal BMI.



**Fig.5.2.3(a): Percentage distribution of Clinical variable – postnatal period of last child birth, History of perineal trauma and degree of perineal trauma among women in the experimental and control group.**

**Table 5.2.3(b): Frequency and percentage distribution of clinical variables among women with pelvic floor dysfunction with respect to duration of second stage of labor, weight of the baby, postnatal period, history of perineal tear and its degree**

**N = 220**

Clinical Variables		Group				Chi square test
		Experimental (N=110)		Control (N=110)		
		N	%	N	%	
<b>Duration of second stage labour</b>	Less than One Hour	49	57.0	41	59.4	$\chi^2=0.09$ P=0.76 DF=1 NS
	More than One Hour	37	43.0	69	40.6	
<b>Weight of baby in KG</b>	< 2	11	10.0	10	9.1	$\chi^2=2.83$ P=0.41 DF=3 NS
	2 – 3	69	62.7	72	65.5	
	3 – 4	28	25.5	22	20.0	
	> 4	2	1.8	6	5.5	
<b>Postnatal period in months</b>	3 - 6	39	35.5	34	30.9	$\chi^2=1.45$ P=0.48 DF=2 NS
	7 - 9	43	39.1	40	36.4	
	10 - 12	28	25.5	36	32.7	
<b>History of perineal trauma during vaginal delivery</b>	Yes	31	28.2	36	32.7	$\chi^2=0.53$ P=0.46 DF=1 NS
	No	79	71.8	74	67.3	
<b>Degree of perineal trauma</b>	I degree	21	67.7	30	83.3	$\chi^2=2.56$ P=0.27 DF=2 NS
	II degree	8	25.8	4	11.1	
	III degree	2	6.5	2	5.6	

NS – Not Significant

The table 5.2.3(b) illustrated that majority of the women's duration of second stage of labour was < 1 hour in both the groups. Weight of the baby was between 2-3 kg in experimental group and between 2-3 and 3-4 kg in control group. The majority of the women were in the postnatal period of 7-9 months, one third of them had the history of perineal trauma during delivery and more numbers of women had I degree of perineal tear in both the groups.

Tables 5.2.3(a) and 5.2.3(b) depicted no statistical significant difference between experimental and control group thus it inferred they are homogenous group.

#### 5.2.4: Description of study specific variables among the women with pelvic floor dysfunction in experimental and control group

**Table 5.2.4: Frequency and Percentage distribution of Study Specific variables among women in the experimental and control group**

**N=220**

Study Specific Variables	Group				Chi square test
	Experimental (N=110)		Control (N=110)		
	n	%	n	%	
<b>Family history of pelvic floor dysfunction</b>					$\chi^2=1.28$ P=0.26 DF=1 NS
Yes	42	38.2	34	30.9	
No	68	61.8	76	69.1	
<b>If Yes Family relationship</b>					$\chi^2=0.00$ P=1.00 DF=1 NS
I degree	42	100	34	100.0	
<b>Type of pelvic floor dysfunction among the family member</b>					$\chi^2=0.25$ P=0.88 DF=2 NS
Urinary incontinence	26	61.9	22	64.7	
Bowel incontinence	8	19.0	7	20.6	
Pelvic organ prolapses	8	19.0	5	14.7	
<b>Previous Source of information</b>					$\chi^2=0.30$ P=0.58 DF=1 NS
Yes	6	05.5	8	07.3	
No	104	94.5	102	92.7	
<b>If yes specify</b>					$\chi^2=0.0$ P=1.00 DF=1 NS
Health care personnel	6	100	8	100	
<b>Are you doing any type of exercises</b>					$\chi^2=0.0$ P=1.00 DF=1 NS
No	110	100	110	100	

**NS – Non Significant**

The above table 5.2.4 showed that few of the women were having family history of pelvic floor dysfunction in both groups, few of them who had a family history had the first degree relation, few women had urinary incontinence in the family, Most of them had not received any previous information regarding pelvic floor dysfunction in experimental group, only few received information through health care personnel and none of them are not doing any type of exercises in both groups. No statistical significant difference between experimental and control group was seen, thus it inferred they are homogenous group.



**SECTION 5.3: ASSESSMENT AND COMPARISON OF PRE AND POST TEST PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION IN THE EXPERIMENTAL AND CONTROL GROUP**

**5.3.1: Assessment of pre and post test pelvic floor muscle strength among women with pelvic floor dysfunction in the experimental and control group.**

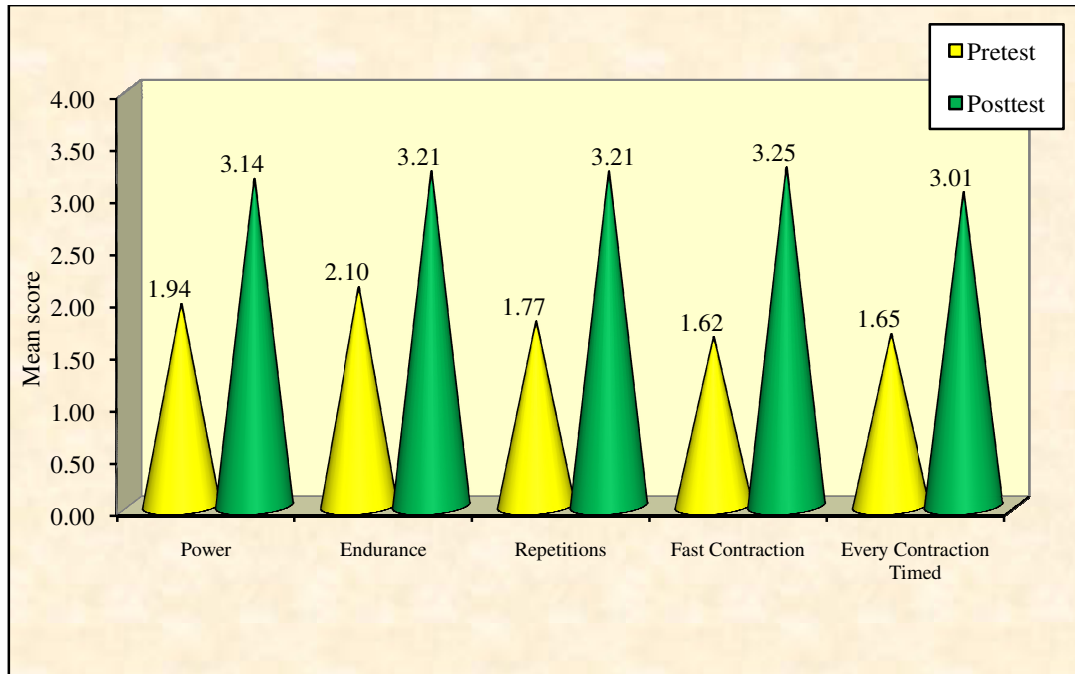
**Table 5.3.1(a): Assessment of pre and post test pelvic floor muscle strength among women with pelvic floor dysfunction in the experimental group.**

**N = 110**

Domains	Experimental Group			
	Pretest		Posttest	
	Mean	%	Mean	%
Power	1.94	38.8	3.14	62.8
Endurance	2.10	42.0	3.21	64.2
Repetitions	1.77	35.4	3.21	64.2
Fast Contraction	1.62	32.4	3.25	65.0
Every Contraction Timed	1.65	33.0	3.01	60.2
<b>Overall</b>	<b>9.07</b>	<b>36.3</b>	<b>15.81</b>	<b>63.2</b>

The above table 5.3.1(a) showed that the pre and post test mean pelvic floor muscle strength score domain wise in the experimental group women. The mean scores in all the domains have improved in the posttest. The overall mean score of 9.07 in the pretest has improved to 15.81 in the posttest.

N = 110



**Fig.5.3.1(a): Pre and post test domain wise pelvic floor muscle strength mean scores among women in the experimental group.**

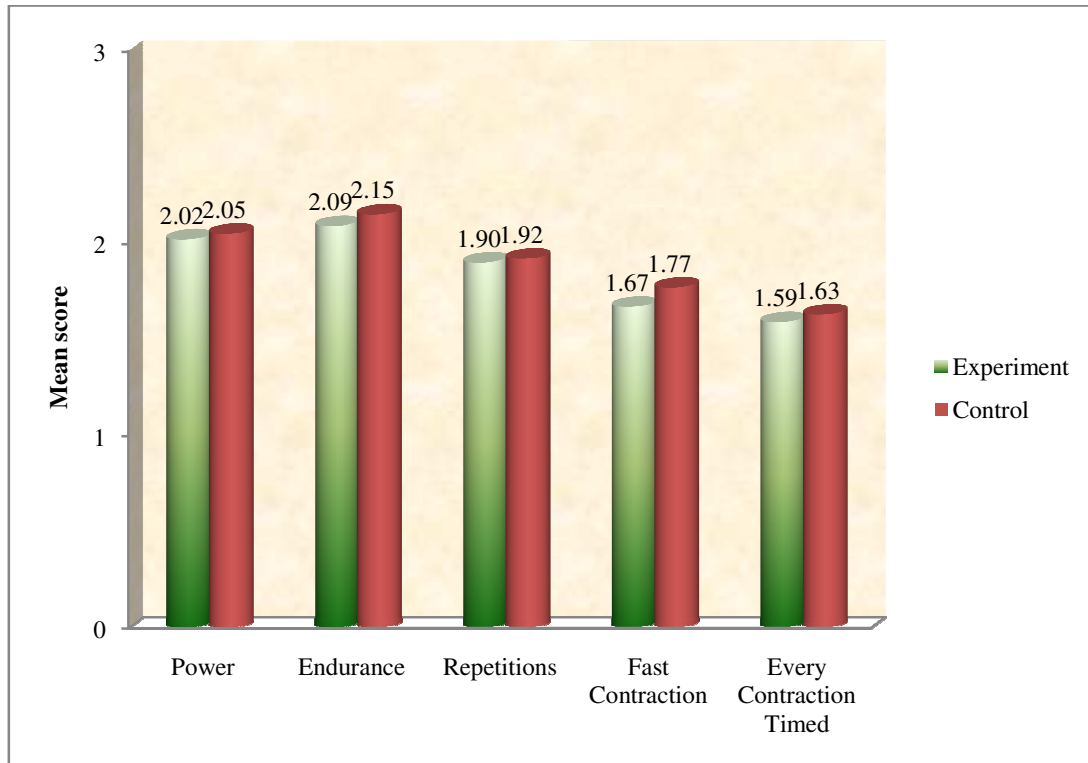
**Table 5.3.1(b): Assessment of pre and post test pelvic floor muscle strength among women with pelvic floor dysfunction in the control group.**

**N = 110**

Domains	Control group			
	Pretest		Posttest	
	Mean	%	Mean	%
Power	2.02	40.4	2.05	41.0
Endurance	2.09	41.8	2.15	43.0
Repetitions	1.90	38.0	1.92	38.4
Fast Contraction	1.67	33.4	1.77	35.4
Every Contraction Timed	1.59	31.8	1.63	32.6
<b>Overall</b>	<b>9.27</b>	<b>37.1</b>	<b>9.52</b>	<b>38.1</b>

The above table 5.3.1(b) showed the pre and post test mean pelvic floor muscle strength score domain wise among the control group women. There was no improvement in the total mean score observed in the post test.

N = 110



**Fig.5.3.1(b): Pre and post test domain wise pelvic floor muscle strength mean scores among women in the control group.**

**Table 5.3.1(c): Comparison of pre and posttest pelvic floor muscle strength score in the experimental group.**

**N = 110**

Domains	Pretest		Posttest		Mean Difference	Student paired t-test
	Mean	SD	Mean	SD		
Power	1.94	0.62	3.14	0.58	1.2	t=14.37 p=0.001***
Endurance	2.10	0.63	3.21	0.58	1.11	t=15.33 p=0.001***
Repetitions	1.77	0.44	3.21	0.65	1.44	t=17.91 p=0.001***
Fast Contraction	1.62	0.65	3.25	0.61	1.63	t=20.48 p=0.001***
Every Contraction Timed	1.65	1.04	3.01	0.57	1.36	t=12.46 p=0.001***
<b>Overall</b>	<b>9.07</b>	<b>1.53</b>	<b>15.81</b>	<b>1.76</b>	<b>6.74</b>	<b>t=31.02</b> <b>p=0.001***</b>

\*\*\* = High statistical significance at  $p < 0.001$

The above table depicts that there was a statistical significant improvement in the Pelvic floor muscle strength among women in the experimental group during the posttest. There was an overall mean difference of 6.74 in the posttest there by showing an overall improvement in the pelvic floor muscle strength among the women in pelvic floor dysfunction.

**Table 5.3.1(d): Comparison of pre and posttest pelvic floor muscle strength score in the control group.**

**N = 110**

Domains	Pretest		Posttest		Mean	Student paired
	Mean	SD	Mean	SD	Difference	t-test
Power	2.02	0.45	2.05	0.48	0.03	t=1.34P=0.18 NS
Endurance	2.09	0.52	2.15	0.53	0.06	t=1.71 P=0.09 NS
Repetitions	1.90	0.59	1.92	0.62	0.02	t=0.37 P=0.70 NS
Fast Contraction	1.67	0.67	1.77	0.73	0.10	t=1.77 P=0.08 NS
Every Contraction Timed	1.59	0.64	1.63	0.68	0.04	t=0.89 P=0.37 NS
<b>Overall</b>	<b>9.27</b>	<b>1.94</b>	<b>9.52</b>	<b>2.25</b>	<b>0.25</b>	<b>t=1.45 P=0.14 NS</b>

**NS – Not Significant**

The above table 5.3.1(d) shows that the women in the control group did not show any change in the pelvic floor muscle strength score in the posttest.

**5.3.2: Assessment of pre and post test knowledge scores among the women with pelvic floor dysfunction in experimental and control group**

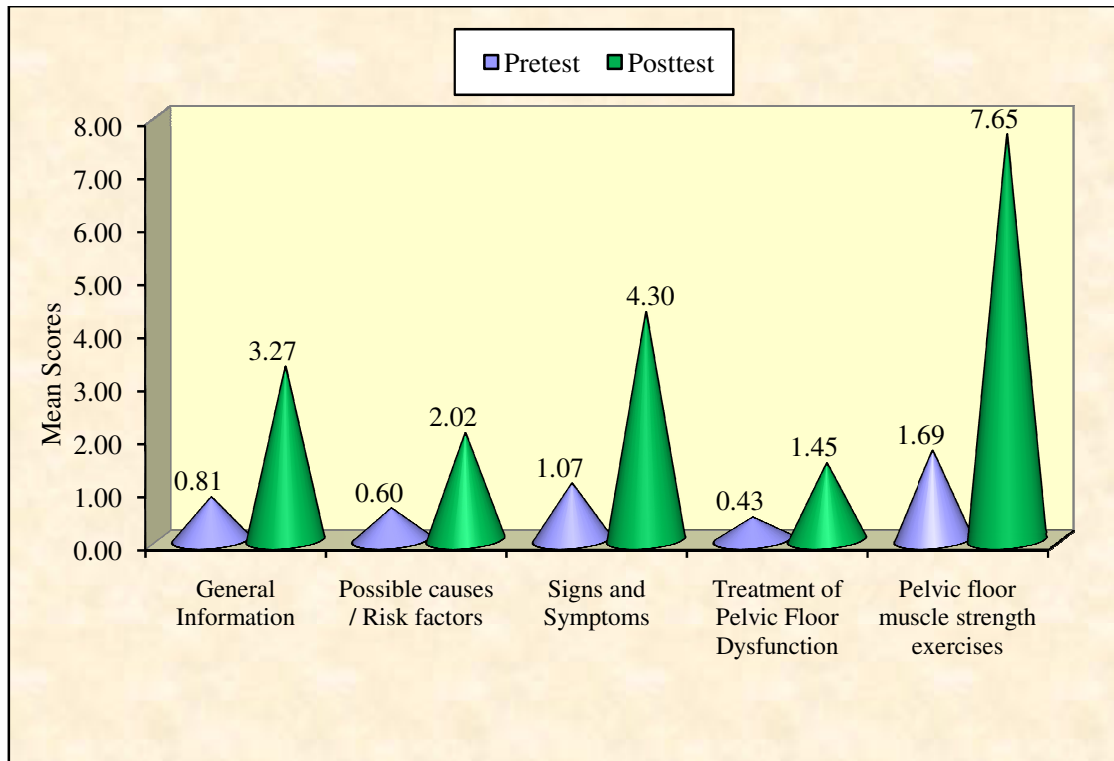
**Table 5.3.2(a): Frequency and Percentage distribution of pre and post test knowledge scores among women in the experimental group.**

**N=110**

Domains	Experimental Group			
	Pretest		Post Test	
	Mean	%	Mean	%
General Information	0.81	20.3	3.27	81.8
Possible causes / Risk factors	0.60	20.0	2.02	67.3
Signs and Symptoms	1.07	17.8	4.30	71.7
Treatment of Pelvic Floor Dysfunction	0.43	21.5	1.45	72.5
Pelvic floor muscle strength exercises	1.69	16.9	7.65	76.5
<b>Overall</b>	<b>4.60</b>	<b>18.4</b>	<b>18.69</b>	<b>74.8</b>

The table 5.3.2(a) reveals the domain wise knowledge scores in the pre and posttest, the overall mean scores have improved from 4.60 in the pretest to 18.69 in the posttest for women in the experimental group after the intervention package.

N = 110



**Fig.5.3.2(a): Pre and post test domain wise mean knowledge score among women in the experimental group.**



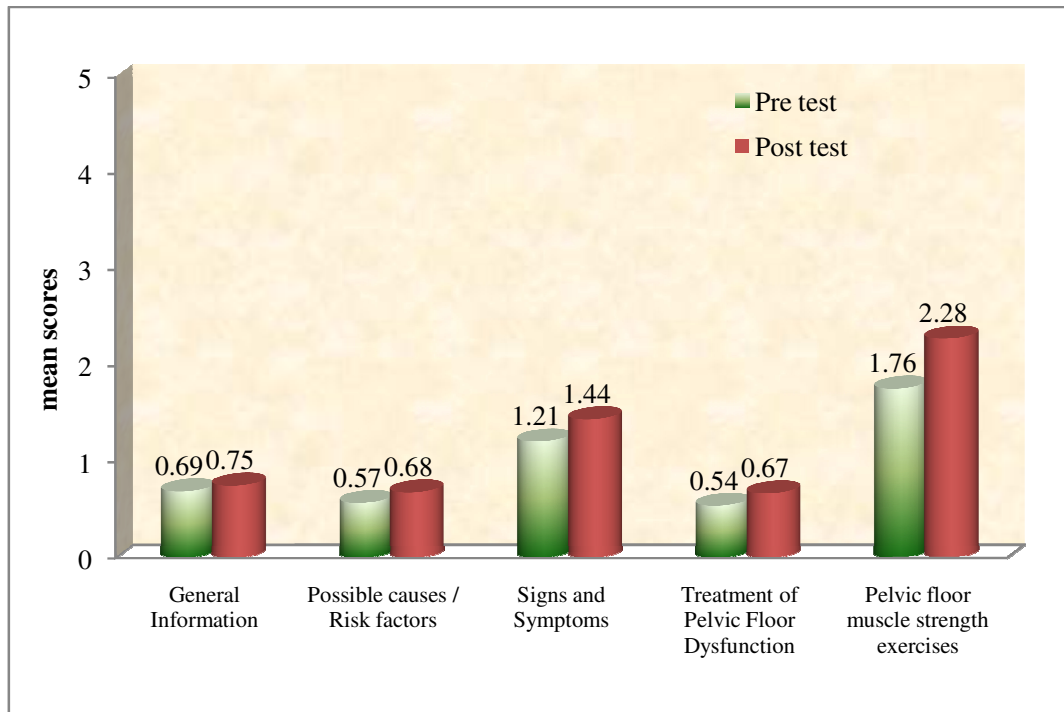
**Table 5.3.2(b): Frequency and Percentage distribution of pre and post test knowledge scores among women in the control group.**

**N=110**

Domains	Control Group			
	Pretest		Post Test	
	Mean	%	Mean	%
General Information	0.69	17.3	0.75	18.8
Possible causes / Risk factors	0.57	19.0	0.68	22.7
Signs and Symptoms	1.21	20.2	1.44	24.0
Treatment of Pelvic Floor Dysfunction	0.54	27.0	0.67	33.5
Pelvic floor muscle strength exercises	1.76	17.6	2.28	22.8
<b>Overall</b>	<b>4.77</b>	<b>19.1</b>	<b>5.83</b>	<b>23.3</b>

The above table 5.3.2(b) shows that the overall mean score showed no significant improvement between the pre and posttest mean knowledge scores among the women in the control group.

N = 110



**Fig.5.3.2(b): Pre and post test domain wise mean knowledge score among women in the control group**

**Table 5.3.2(c): Frequency and Percentage distribution of question wise pretest knowledge scores among women in the experimental and control group**

**N=220**

Knowledge Questionnaire	Experimental (N=110)				Control (N=110)			
	Yes		No		Yes		No	
	n	%	n	%	n	%	n	%
Pelvic floor is complex layer of muscles	22	20.0	88	80.0	19	17.3	91	82.7
Uncontrolled urine and faeces called pelvic floor dysfunction	21	19.1	89	80.9	18	16.4	92	83.6
Pelvic floor supports the pelvic and abdominal organs	25	22.9	84	77.1	20	18.2	90	81.8
Pelvic floor muscle is soft, flabby and weak during postnatal period	21	19.1	89	80.9	19	17.3	91	82.7
Vaginal birth is a common risk factor for pelvic floor dysfunction	26	23.6	84	76.4	26	23.6	84	76.4
Prolonged second stage of labor contributes pelvic floor dysfunction	20	18.2	90	81.8	19	17.3	91	82.7
Previous trauma to the pelvic region is a risk for pelvic floor dysfunction	20	18.2	90	81.8	18	16.4	92	83.6
Leaking of urine and faeces are signs and symptoms of pelvic floor dysfunction	19	17.3	91	82.7	25	22.7	85	77.3
Losing control of urine and wind to identify the pelvic floor dysfunction	16	14.5	94	85.5	20	18.2	90	81.8
Feeling of heaviness, pulling and dragging are symptoms of prolapsed of pelvic organ	25	22.7	85	77.3	24	21.8	86	78.2
Accidentally leaking urine is a common sign of with pelvic floor dysfunction	17	15.5	93	84.5	20	18.2	90	81.8
Functions of pelvic floor muscle can be evaluated through history collection	28	25.5	82	74.5	27	24.5	83	75.5
Perineometer is a device used to assess the pelvic floor contraction	13	11.8	97	88.2	17	15.5	93	84.5
Pelvic floor muscle can be strengthened by exercises	16	14.5	94	85.5	23	20.9	87	79.1
Self-care, vaginal cones and electrical stimulation used to treat pelvic floor dysfunction	31	28.2	79	71.8	36	32.7	74	67.3
Pelvic floor Exercise is to improve the pelvic floor dysfunction	18	16.4	92	83.6	21	19.1	89	80.9
Circulatory exercises are advisable for pelvic floor dysfunction	15	13.6	95	86.4	19	17.3	91	82.7
Uterine prolapsed can be prevent by muscle strengthening exercises	25	22.7	85	77.3	27	24.5	83	75.5
Exercises to be performed 5-10 times a day	52	47.3	58	52.7	47	42.7	63	57.3

Knowledge Questionnaire	Experimental (N=110)				Control (N=110)			
	Yes		No		Yes		No	
	n	%	n	%	n	%	n	%
Exercises to be performed anytime of the day	18	16.4	92	83.6	18	16.4	92	83.6
Bladder to be emptied before exercises	11	10.0	99	90.0	11	10.0	99	90.0
Abdominal core stabilizer exercise is used to strengthen the pelvic floor exercises	11	10.0	99	90.0	11	10.0	99	90.0
Spinal rotation exercise helps to maintain the bladder control and prevent bladder weakness	18	16.4	92	83.6	18	16.4	92	83.6
Urinary incontinence and bowel incontinence is prevented by Kegel's exercises	11	10.0	99	90.0	11	10.0	99	90.0
Kegel exercise is performed by contracting and releasing the urethra, vagina and rectum muscle	7	6.4	103	93.6	11	10.0	99	90.0

The above table 5.3.2 (c) shows the frequency and percentage distribution of pretest knowledge scores among women in the experimental and control group. Mostly similar observations noted in both the groups with few differences in certain items.

**Table 5.3.2(d): Frequency and Percentage distribution of post-test knowledge scores question wise among women in the experimental and control group**

**N=220**

Knowledge Questionnaire	Experimental (N=110)				Control(N=110)			
	Yes		No		Yes		No	
	n	%	n	%	n	%	n	%
Pelvic floor is a complex layer of muscles	97	88.2	13	11.8	22	20.0	88	80.0
Uncontrolled urine and faeces called pelvic floor dysfunction	94	85.5	16	14.5	19	17.3	91	82.7
Pelvic floor support the pelvic and abdominal organs	93	84.5	17	15.5	24	21.8	86	78.2
Pelvic floor muscle is soft, flabby and weak during postnatal period	76	69.1	34	30.9	18	16.4	92	83.6
Vaginal birth is a common risk factor for pelvic floor dysfunction	77	70.0	33	30.0	30	27.3	80	72.7
Prolonged second stage of labor contributes to pelvic floor dysfunction	68	61.8	42	38.2	23	20.9	87	79.1
Previous trauma to the pelvic region is a risk of developing pelvic floor dysfunction	77	70.0	33	30.0	22	20.0	88	80.0
Leaking of urine and faeces are signs and symptoms of pelvic floor dysfunction	83	75.5	27	24.5	29	26.4	81	73.6
Losing control of urine and wind to identify the pelvic floor dysfunction	83	75.5	27	24.5	24	21.8	86	78.2
Feeling of heaviness, pulling and dragging are symptoms of prolapsed of pelvic organ	87	79.1	23	20.9	28	25.5	82	74.5
Accidentally leaking urine is common sign of with pelvic floor dysfunction	74	67.3	36	32.7	24	21.8	86	78.2
Functions of pelvic floor muscle can be evaluated through history collection	81	73.6	29	26.4	31	28.2	79	71.8
Perineometer is a device used to assess the pelvic floor contraction	65	59.1	45	40.9	22	20.0	88	80.0
By exercises pelvic floor muscle can be strengthened	78	70.9	32	29.1	31	28.2	79	71.8
Self-care, vaginal cones and electrical stimulation used to treat pelvic floor dysfunction	82	74.5	28	25.5	43	39.1	67	60.9
Pelvic floor Exercise is to improve the pelvic floor dysfunction	82	74.5	28	25.5	25	22.7	85	77.3
Circulatory exercises are advisable for pelvic floor dysfunction	81	73.6	29	26.4	30	27.3	80	72.7
Uterine prolapse can be prevented by muscle strengthening exercises	84	76.4	26	23.6	36	32.7	74	67.3

Knowledge Questionnaire	Experimental (N=110)				Control(N=110)			
	Yes		No		Yes		No	
	n	%	n	%	n	%	n	%
Exercises to be performed 5-10 times a day	84	76.4	26	23.6	58	52.7	52	47.3
Exercises to be performed anytime of the day	80	72.7	30	27.3	22	20.0	88	80.0
Bladder to be emptied before exercises	96	87.3	14	12.7	15	13.6	95	86.4
Abdominal core stabilizer exercise is used to strengthen the pelvic floor exercises	82	74.5	28	25.5	15	13.6	95	86.4
Spinal rotation exercise helps to maintain the bladder control and prevent bladder weakness	90	81.8	20	18.2	21	19.1	89	80.9
Urinary incontinence and bowel incontinence is prevented by Kegel's exercises	77	70.0	33	30.0	15	13.6	95	86.4
Kegel exercise is performed by contracting and releasing the urethra, vagina and rectum muscle	85	77.3	25	22.7	14	12.7	96	87.3

The above table 5.3.2 (d) presented the frequency and percentage distribution of post-test knowledge scores among women in the experimental and control group. Majority of the women in the experimental group had significant improvement in the knowledge scores among all items than the control group women.

**Table 5.3.2(e): Comparison of pre and post test knowledge scores in the experimental group**

**N=110**

Domains	Pretest		Posttest		Mean	Student paired
	Mean	SD	Mean	SD	Difference	t-test
General Information	0.81	1.09	3.27	0.93	2.46	t=18.64 p=0.001***
Possible causes / Risk factors	0.60	0.84	2.02	0.93	1.42	t=11.12 p=0.001***
Signs and Symptoms	1.07	1.02	4.30	1.51	3.23	t=20.02 p=0.001**
Treatment of Pelvic Floor Dysfunction	0.43	0.52	1.45	0.66	1.02	t=14.65 p=0.001***
Pelvic floor muscle strength exercises	1.69	1.12	7.65	2.50	5.96	t=26.42 p=0.001***
<b>Overall</b>	<b>4.60</b>	<b>1.90</b>	<b>18.69</b>	<b>5.01</b>	<b>14.09</b>	<b>t=28.92 p=0.001***</b>

\*\*\* High statistical significance at  $p < 0.001$

The above table 5.3.2(e) showed that the pre and post test mean domain wise knowledge scores among women in the experimental group. The women had a pretest mean score of  $4.60 \pm 1.90$  and after the intervention the post mean score was  $18.69 \pm 5.01$ . The mean improvement score was 14.09, showed a high statistical significant difference.

**Table 5.3.2(f): Comparison of pre and post test knowledge scores in the control group**

**N=110**

Domains	Pretest		Posttest		Mean Difference	Student paired t-test
	Mean	SD	Mean	SD		
General Information	0.69	0.79	0.75	0.79	0.06	t=1.71 p=0.09 NS
Possible causes / Risk factors	0.57	0.72	0.68	0.82	0.11	t=0.44 p=0.68 NS
Signs and Symptoms	1.21	0.92	1.44	1.19	0.23	t=1.82 p=0.07 NS
Treatment of Pelvic Floor Dysfunction	0.54	0.54	0.67	0.59	0.13	t=0.47 p=0.67 NS
Pelvic floor muscle strength exercises	1.76	1.54	2.28	1.48	0.52	t=1.51p=0.13 NS
<b>Overall</b>	<b>4.77</b>	<b>2.20</b>	<b>5.83</b>	<b>2.04</b>	<b>1.06</b>	<b>t=1.74 p=0.08 NS</b>

**NS- Not significant**

The above table 5.3.2(f) showed that the pre and post test mean domainwise knowledge scores among women in the experimental group. The women had a pretest mean score of  $4.77 \pm 2.20$  and after the intervention the post mean score was  $5.83 \pm 2.04$ . The mean difference score was 1.06, which did not have any significant difference.



**SECTION 5.4: EFFECTIVENESS OF INTERVENTION PACKAGE ON PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION.**

**5.4.1: Effectiveness of intervention package on pelvic floor muscle strength among women with pelvic floor dysfunction.**

**Table 5.4.1(a): Comparison of pretest pelvic floor muscle strength among women with pelvic floor dysfunction between experimental and control group**

**N=220**

Domains	Group				Mean difference	Student independent t-test
	Experimental (N=110)		Control (N=110)			
	Mean	SD	Mean	SD		
Power	1.94	0.62	2.02	0.45	0.08	t=1.11 p=0.26 NS
Endurance	2.10	0.63	2.09	0.52	0.01	t=0.12 p=0.91 NS
Repetitions	1.77	0.44	1.90	0.59	0.13	t=1.81 p=0.07 NS
Fast Contraction	1.62	0.65	1.67	0.67	0.05	t=0.61 p=0.53 NS
Every Contraction Timed	1.65	1.04	1.59	0.64	0.14	t=0.47 p=0.63 NS
<b>Overall</b>	<b>9.07</b>	<b>1.53</b>	<b>9.27</b>	<b>1.94</b>	<b>0.20</b>	<b>t=0.84 p=0.39</b> NS

**NS – Not Significant**

The above table 5.4.1(a) showed the comparison of pretest mean and standard deviation scores of the pelvic floor muscle strength between the experimental and control group. No significant statistical difference was noted in the pretest scores between the experimental and control group women. This indicated that the muscle strength was weak before intervention in both experimental and control group.

**Table 5.4.1(b): Comparison of post test mean pelvic floor muscle strength among women with pelvic floor dysfunction between experimental and control group**

**N=220**

Domains	Group				Mean difference	Student independent t-test
	Experimental (N=110)		Control (N=110)			
	Mean	SD	Mean	SD		
Power	3.14	0.58	2.05	0.48	1.09	<b>t=15.20 p=0.001***</b>
Endurance	3.21	0.58	2.15	0.53	1.05	<b>t=14.15 p=0.001***</b>
Repetitions	3.21	0.65	1.92	0.62	1.29	<b>t=15.03 p=0.001***</b>
Fast Contraction	3.25	0.61	1.77	0.73	1.47	<b>t=16.31 p=0.001***</b>
Every Contraction Timed	3.01	0.57	1.63	0.68	1.38	<b>t=16.44 p=0.001***</b>
<b>Overall</b>	<b>15.81</b>	<b>1.76</b>	<b>9.52</b>	<b>2.25</b>	<b>6.29</b>	<b>t=23.13 p=0.001***</b>

**\*\*\*High statistical significance at  $p < 0.001$**

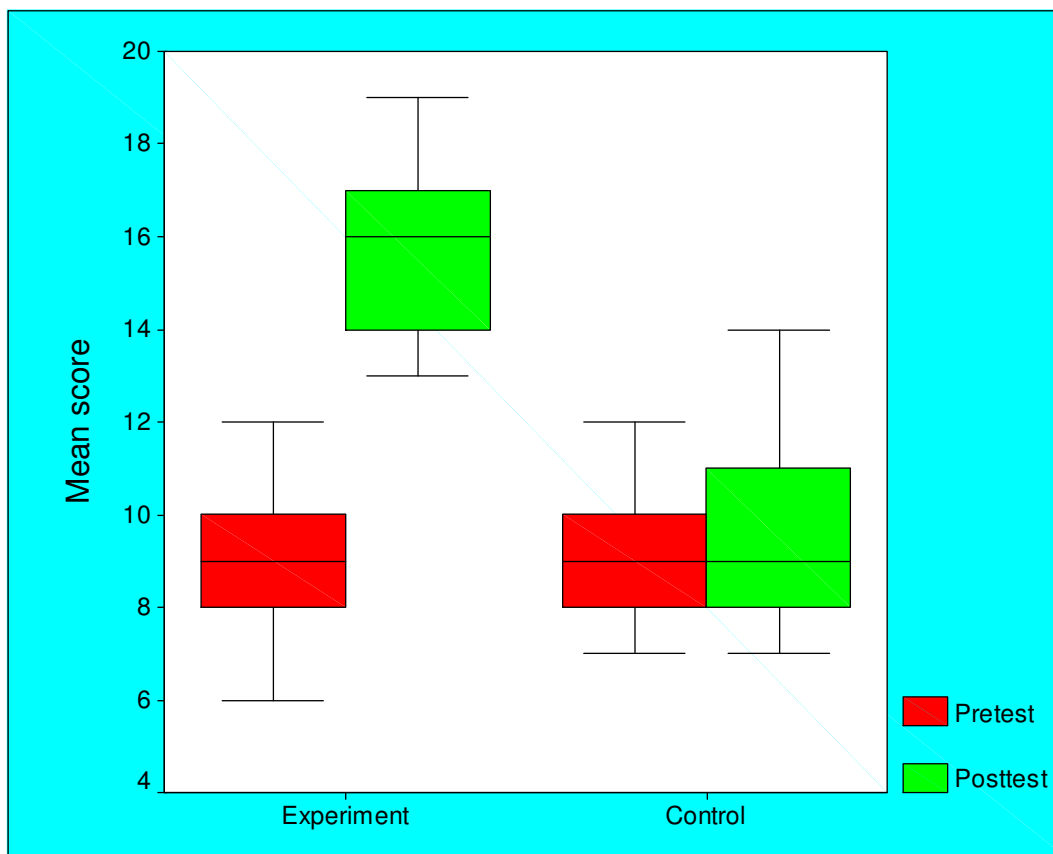
The above table 5.4.1(b) showed the posttest mean and standard deviation scores of the pelvic floor muscle strength between the experimental and control group. High level of statistical significant difference was found between the experimental and control group after the intervention in all domains. The overall Pelvic floor muscle strength mean difference score was 6.29 which had high statistical significant difference at  $p < 0.001$  level. The intervention package has been very effective in enhancing the pelvic floor muscle strength of women.

**Table 5.4.1(c): Effectiveness of interventional package on pelvic muscle strength score among women in the experimental and control group**

**N=220**

<b>Group</b>	<b>Assessment</b>	<b>Maximum score</b>	<b>Mean <math>\pm</math>SD</b>	<b>Strength gain score with 95% CI</b>	<b>% of strength gain score with 95% CI</b>
<b>Experiment (n=110)</b>	<b>Pretest</b>	25	9.07 $\pm$ 1.53	6.74	26.9(25.2% -
	<b>Post-test</b>	25	15.81 $\pm$ 1.76	(6.30 -7.17)	28.7%)
<b>Control (n=110)</b>	<b>Pretest</b>	25	9.27 $\pm$ 1.94	0.25	1.0% (0.3% -
	<b>Post-test</b>	25	9.52 $\pm$ 2.25	(0.09-0.58)	2.3%)

The above table 5.4.1(c) depicted that the pelvic floor muscle strength gain in the experimental group was 6.74 in comparison with control group women i.e., 0.25. Similarly the percentage of strength gain score for experimental group was 26.9 whereas for control group it was 1%. This inferred that the interventional package had improved the pelvic floor muscle strength of women in the experimental group.



\*\*\* High statistical significance at  $p < 0.001$

**Fig,5.4.1(c): BOXPLOT compares the pre and post test pelvic floor muscle strength score among women between experiment and control group.**

**5.4.2: Effectiveness of intervention package on knowledge among women with pelvic floor dysfunction.**

**Table 5.4.2(a): Comparison of pretest knowledge mean scores between experimental and control group**

**N=220**

Domains (No. of Items)	Group				Mean Difference	Student independent t-test
	Experimental (N=110)		Control (N=110)			
	Mean	SD	Mean	SD		
General Information	0.81	1.09	0.69	0.79	0.12	t=0.92 p=0.35, NS
Probable causes / Risk factors	0.60	0.84	0.57	0.72	0.03	t=0.25 p=0.80, NS
Signs and Symptoms	1.07	1.02	1.21	0.92	0.14	t=1.04 p=0.22, NS
Treatment of Pelvic Floor Dysfunction	0.43	0.52	0.54	0.54	0.11	t=1.53 p=0.13, NS
Pelvic floor muscle strength exercises	1.69	1.12	1.76	1.54	0.17	t=0.40 p=0.69, NS
<b>Overall</b>	<b>4.60</b>	<b>1.90</b>	<b>4.77</b>	<b>2.20</b>	<b>0.17</b>	<b>t=0.62</b> <b>p=0.53, NS</b>

**NS – Not Significant**

The above table 5.4.2(a) presented the comparison of pre-test mean and standard deviation scores of the knowledge domain wise and total scores between the experimental and control group. There was no statistical significant difference noted between the scores among women in the experimental and control group.

**Table 5.4.2(b): Comparison of post test knowledge mean scores among women between the experimental and control group**

**N=220**

Domains	Group				Mean Difference	Student independent t-test
	Experimental (N=110)		Control (N=110)			
	Mean	SD	Mean	SD		
General Information	3.27	0.93	0.75	0.79	2.52	<b>t=21.65</b> <b>p=0.001***</b>
Probable causes / Risk factors	2.02	0.93	0.68	0.82	1.33	<b>t=11.29</b> <b>p=0.001***</b>
Signs and Symptoms	4.30	1.51	1.44	1.19	2.86	<b>t=15.59</b> <b>p=0.001***</b>
Treatment of Pelvic Floor Dysfunction	1.45	0.66	0.67	0.59	0.78	<b>t=9.25</b> <b>p=0.001***</b>
Pelvic floor muscle strength exercises	7.65	2.50	2.28	1.48	5.36	<b>t=19.34</b> <b>p=0.001***</b>
<b>Overall</b>	<b>18.69</b>	<b>5.01</b>	<b>5.83</b>	<b>2.04</b>	<b>12.86</b>	<b>t=24.93</b> <b>p=0.001***</b>

**\*\*\* High statistical significance at  $p < 0.001$**

The above table 5.4.2(b) presented the comparison of the posttest mean and standard deviation domain wise knowledge scores. There was high statistical significant difference in all domains observed between the experimental and control group after the intervention. Thus inferred the intervention package had significantly improved the knowledge of women in the experimental group, who were administered the intervention package.

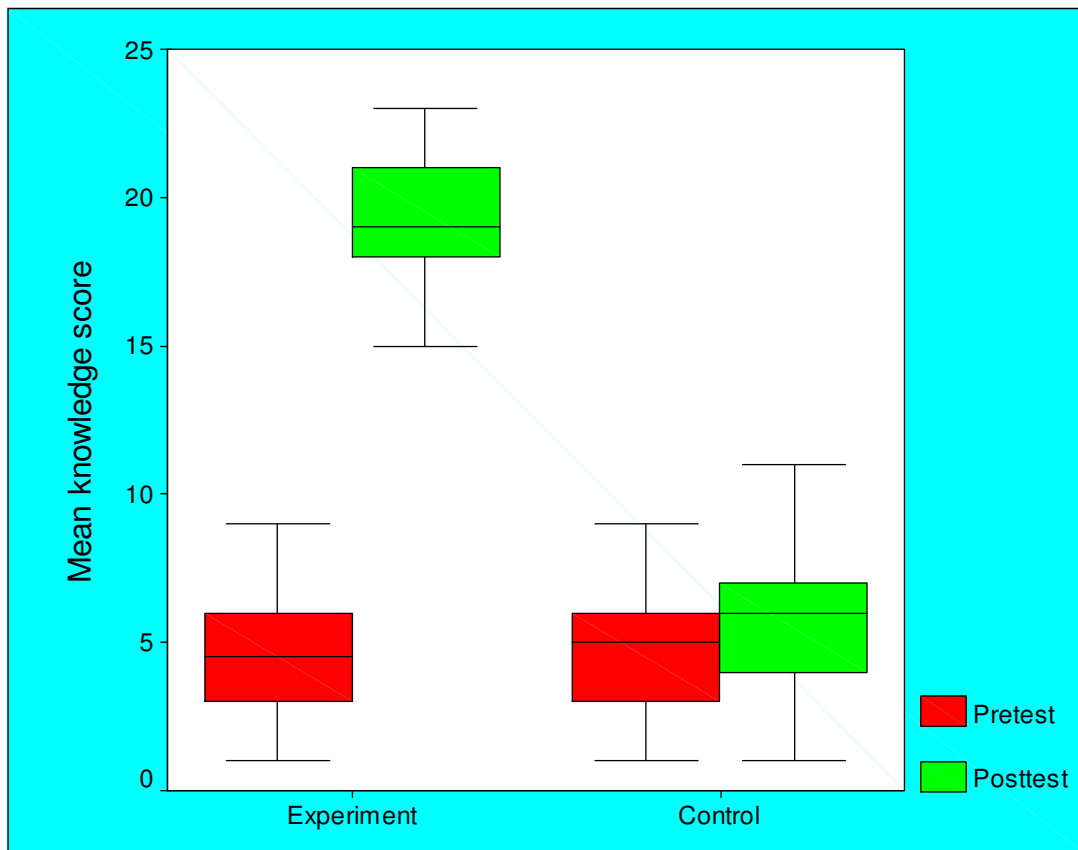
**Table 5.4.2(c): Effectiveness of interventional package on knowledge score among the women in the experimental and control group**

**N=220**

<b>Group</b>	<b>Assessment</b>	<b>Maximum Score</b>	<b>Mean <math>\pm</math> SD</b>	<b>Knowledge gain score with 95% CI</b>	<b>% of Knowledge gain score with 95% CI</b>
<b>Experimental (N=110)</b>	<b>Pre-test</b>	25	4.60 $\pm$ 1.90	14.09	56.4
	<b>Post test</b>	25	18.69 $\pm$ 5.01	(13.13 -15.06)	(52.5% - 60.2%)
<b>Control (N=110)</b>	<b>Pre-test</b>	25	4.77 $\pm$ 2.20	1.06	4.2
	<b>Post test</b>	25	5.83 $\pm$ 2.04	(0.82-1.29)	(3.3% - 5.2%)

The above table 5.4.2(c) presented is the mean and standard deviation scores for knowledge along with gain score and percentage after the intervention with 95% Confidence Interval (CI). The experimental group had 56.4 % knowledge gain score after the intervention. Whereas the control group gain score was only 4.2%. Thus inferred the interventional package had improved the knowledge among women in the experimental group women.

N = 220



\*\*\* High statistical significance at  $p < 0.001$

Figure 5.4.2(c): BOXPLOT comparing the pre and post test knowledge score among women between experiment and control group.



**SECTION 5.5: CORRELATION OF KNOWLEDGE WITH PELVIC FLOOR STRENGTH SCORE AMONG WOMEN IN THE EXPERIMENTAL AND CONTROL GROUP**

**Table 5.5.1: Correlation of knowledge with pelvic floor muscle strength among women with pelvic floor dysfunction among women in the experimental and control group**

**N=220**

Group	Variable	Mean difference± SD	Karl Pearson correlation coefficient
<b>Experiment (N=110)</b>	<b>Knowledge</b>	13.00±5.20	<b>r=0.47 p=0.001*** S</b>
	<b>Strength</b>	6.05±2.37	
<b>Control (N=110)</b>	<b>Knowledge</b>	1.60±4.40	r=0.18 p=0.26 NS
	<b>Strength</b>	0.60±1.72	

**\*\*\* Very High Significant at  $p \leq 0.001$ , NS - Not significant**

The above table 5.5.1 presented the correlation of mean differed scores of knowledge and pelvic floor muscle strength among women in the experimental and control group. There was significant positive correlation observed between the knowledge and pelvic floor muscle strength among women in the experimental group. This high positive correlation indicates that as the knowledge of women regarding the pelvic floor muscle strength and dysfunction increases there is an improvement in the pelvic floor muscle strength. Hence the interventional package on PFMS had a significant impact on the practice of the pelvic floor strengthening exercises.

**SECTION 5.6: ASSOCIATION OF MEAN DIFFERED PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE GAIN SCORES AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION WITH THEIR SELECTED VARIABLES IN THE EXPERIMENTAL AND CONTROL GROUP.**

**5.6.1: Association of mean differed pelvic floor muscle strength gain scores among women with pelvic floor dysfunction with their selected variables in the experimental group.**

**Table 5.6.1(a): Association of mean differed pelvic floor muscle strength gain score with selected variables (age, education, monthly income and number of child birth) among women in the experimental group**

**N=110**

Demographic variables	n	PFM Strength						One-way ANOVA F-test/t-test
		Pretest		Post-test		Gain score		
		Mean	SD	Mean	SD	Mean	SD	
<b>Age in years</b>								
< 20	5	9.40	1.14	14.80	2.05	5.40	2.61	<b>F=3.74 p&lt; 0.05*S</b>
21 -30	82	9.09	1.62	15.13	1.66	6.04	2.17	
>-30	23	8.96	1.30	16.38	1.94	7.42	2.53	
<b>Education</b>								
No formal education	8	9.83	2.92	14.88	1.46	5.05	2.41	<b>F=2.67 p&lt; 0.05*S</b>
Primary school	10	9.75	0.89	15.38	1.41	5.63	1.06	
Middle school	42	9.02	1.51	15.74	1.84	6.71	2.04	
High school	32	8.70	.82	15.50	1.84	6.80	2.15	
Undergraduate	10	9.03	1.28	16.00	1.78	6.97	2.70	
Postgraduate and more	8	8.30	1.87	16.90	1.45	8.60	2.96	
<b>Monthly income</b>								
Rs.15188-30374	5	8.75	1.39	16.55	1.41	7.80	2.28	<b>F=3.76 p=0.01**S</b>
Rs.11362-15187	21	9.09	1.84	15.97	1.70	6.88	2.00	
Rs.7594-11361	40	9.19	0.93	14.81	1.91	5.62	1.77	
Rs.4556-7593	33	9.60	1.67	15.40	1.34	5.80	1.45	
Rs.1521-4555	11	9.73	1.79	14.73	1.68	5.00	2.49	
<b>Number of child birth</b>								
One	48	8.79	1.53	15.65	2	6.85	2.29	<b>F=3.35 p&lt; 0.05*S</b>
Two	39	9.44	1.54	17.28	2	7.84	2.36	
Three	19	9.05	1.58	15.16	2	6.11	2.11	
> Three	4	9.00	0.82	14.50	2	5.50	2.38	

\* significant at  $P \leq 0.05$  \*\* highly significant at  $p \leq 0.01$

The above table 5.6.1(a) presented the association of mean differed pelvic floor muscle strength gain scores with the selected variables. Women those who are >30 years, and had post graduate degree and had the monthly income of 15188-30374 and had two children gained more strength than others.

**Table 5.6.1(b): Association of mean differed pelvic floor muscle strength gain score with obstetrical and clinical variables (Birth Spacing between two children, BMI, Induction of labor and Family history of pelvic floor dysfunction) in the experimental group**

**N=110**

Obstetric and Clinical Variable		n	PFM Strength						One-way ANOVA F-test/t-test
			Pretest		Post-test		Gain score		
			Mean	SD	Mean	SD	Mean	SD	
<b>Birth spacing between two children</b>	< 1 year	8	9.50	1.31	16.50	1	5.00	1.51	<b>F=2.89 p&lt; 0.05*S</b>
	1 - 2 years	32	9.41	1.72	15.88	2	7.86	2.63	
	2 - 3 years	3	10.67	1.15	16.33	1	6.06	2.11	
	3- 4 years	4	8.50	0.58	15.25	2	5.75	2.06	
	> 4 years	2	9.50	0.71	15.50	1	6.00	1.41	
<b>BMI</b>	Underweight	13	9.46	1.61	16.15	2	6.10	1.55	<b>z=3.45 p&lt; 0.05*S</b>
	Normal	59	9.00	1.36	16.81	2	7.81	2.40	
	Over weight	23	9.39	1.99	16.04	1	6.65	2.48	
	Obese	15	8.53	1.19	14.93	2	6.40	2.06	
<b>Induction of labor</b>	Medical Induction	77	9.17	1.69	16.82	2	7.65	2.36	<b>t=2.12 p=0.04* S</b>
	Nil	33	8.85	1.06	15.49	2	6.64	2.11	
<b>Family history of pelvic floor dysfunction</b>	Yes	42	9.33	1.84	17.00	2	7.67	2.49	<b>t=2.87 p=0.01** S</b>
	No	68	8.91	1.29	15.29	2	6.38	2.16	

\* significant at  $p \leq 0.05$  \*\* highly significant at  $p \leq 0.01$

The above table 5.6.1(b) presented the association of mean differed pelvic floor muscle strength gain scores with the selected variables among women in the experimental group. Women those who had 1-2 years of birth space, normal BMI and had medical induction and had the family history of pelvic floor dysfunction gained more pelvic floor muscle strength than others.

**Table 5.6.1(c): Association of mean differed pelvic floor muscle strength gain score with selected variable (Family history of pelvic floor dysfunction) among women in the control group**

**N=110**

Study Specific Variable		n	PFMS						One-way ANOVA F-test/t-test
			Pre-test		Post-test		Gain score		
			Mean	SD	Mean	SD	Mean	SD	
Family history of pelvic floor dysfunction	Yes	42	9.24	1.84	9.68	2	0.44	2.03	<b>t=2.87 p&lt;0.01** S</b>
	No	68	9.29	1.99	9.45	2	0.16	1.64	

**\*\* highly significant at  $p \leq 0.01$**

The above table 5.6.1(c) presented the association of mean differed pelvic floor muscle strength gain scores with the selected variable among women in the control group. Women with family history of pelvic floor dysfunction had significant association at  $p < 0.01$  level and hence had more gain score than others.

All other variables were not significantly associated with the mean differed pelvic floor muscle strength score.

**5.6.1(d): Influencing factors for strength gain score using Multivariate logistic regression among women in the experimental group**

Influencing factors	Univariate analysis		Multivariate analysis	
	p-value	Unadjusted OR(95 % CI)	p-value	Adjusted OR(95 % CI)
Age (>30 years Vs < 30 years)	0.01**	3.7(1.2 -11.6)	0.01*	3.1(1.1 – 10.4)
Education(Above primary Vs upto primary)	0.01**	4.4(1.2 -17.1)	0.04*	1.5(1.0- 17.9)
Income(>Rs.11362 Vs > <11362)	0.01**	3.4(1.4 -8.3)	0.03*	2.2(1.3 -12.8)
No. of child birth ( $\geq 2$ Vs <2)	0.01**	2.9(1.2 -6.8)	0.60	1.2(0.6- 11.2)
Birth spacing (> 1year Vs < 1 year)	0.01**	5.4(1.2 -28.1)	0.01**	2.6(1.1 -12.2)
BMI (Normal Vs others)	0.01**	3.1(1.3 -7.3)	0.05*	1.8.(1.4 – 6.2)
Induction of labour (Medical induction Vs nil)	0.02*	2.7(1.1 -6.9)	0.38	1.4. (0.1 – 7.7)
Family history of pelvic floor dysfunction (Yes Vs No)	0.01**	3.0(1.3 -7.3)	0.33	1.6. (0.3 – 8.8)

The above table 5.6.1(d) presented the multivariate logistic regression in comparison with univariate analysis for having more strength gain score. Women with above 30 years of age, who had above primary education, with income above Rs.11362, having more than 2 children, had a birth spacing more than a year, had medical induction during last child birth and having family history of pelvic floor dysfunction reported more strength gain score in univariate analysis while number of child birth, induction of labour and family history was not significant with multivariate analysis. The unadjusted odds for having more strength gain score was given along with 95% confidence interval.

**5.6.2: Association of mean differed knowledge gain scores among women with pelvic floor dysfunction with their selected variables in the experimental group.**

**Table 5.6.2(a): Association of mean differed Knowledge score with selected variables (Age, Education, type of family, Number of child birth and Birth Spacing between two children) among women in the Experimental group**

**N=110**

Demographic Variable	n	Knowledge score						One-way ANOVA F-test/t-test
		Pretest		Post-test		Gain score		
		Mean	SD	Mean	SD	Mean	SD	
<b>Age in years</b>								<b>F=3.16</b> <b>p&lt; 0.05*S</b>
< 20	5	5.40	2.70	14.63	4.77	09.23	5.20	
21 -30	82	5.30	1.72	17.70	5.77	12.39	5.31	
>-30	23	4.35	1.86	19.17	4.74	14.82	4.81	
<b>Education</b>								<b>F=2.86</b> <b>p&lt; 0.05*S</b>
No formal education	8	3.75	1.04	14.88	9.60	11.13	9.23	
Primary school	10	4.13	2.17	17.63	6.00	13.50	5.90	
Middle school	42	5.02	1.60	18.55	5.64	13.52	5.56	
High school	32	5.20	1.81	19.80	2.15	14.60	3.27	
Undergraduate	10	4.22	2.17	19.25	3.13	15.03	3.71	
Postgraduate and more	8	4.50	2.37	20.30	1.49	15.80	2.74	
<b>Type of family</b>								<b>F=4.23</b> <b>p&lt; 0.05*S</b>
Joint Family	54	4.70	1.64	20.50	1.72	15.80	2.30	
Nuclear Family	46	4.74	2.16	19.20	4.47	14.46	4.63	
Extended Family	10	4.46	1.72	16.72	5.73	12.26	5.79	
<b>Number of child birth</b>								<b>Z=4.08</b> <b>p&lt; 0.05*S</b>
One	48	4.58	2	18.13	5	13.54	5.41	
Two	39	3.28	2	19.69	5	16.41	5.34	
Three	19	5.42	2	19.95	4	14.53	4.07	
> Three	4	4.00	2	19.50	3	15.50	4.36	
<b>Birth spacing between two children</b>								<b>Z=3.23</b> <b>p&lt; 0.05*S</b>
< 1 year	8	3.75	1	21.25	1	17.50	1.07	
1 - 2 years	32	4.75	2	18.06	6	13.31	6.16	
2 - 3 years	3	5.67	2	22.50	0	16.83	2.08	
3- 4 years	4	3.75	2	19.25	3	15.50	2.89	
> 4 years	2	4.00	3	19.00	4	15.00	1.41	

\* significant at  $p \leq 0.05$

The above table 5.6.2(a) presented the association of knowledge mean differed gain scores with the selected variables among women in the experimental group showed women who are aged > 30 years, had post graduated and living in the joint family and had 2 children and had <1 year of birth spacing had more knowledge mean gain score than others.

**Table 5.6.2(b): Association of mean differed knowledge score among women with pelvic floor dysfunction with selected obstetrical and clinical variables (BMI, Induction of Labor, Weight of baby and family history of pelvic floor dysfunction) in the Experimental group**

**N=110**

Obstetric and Clinical Variable		n	Knowledge Gain Score						One-way ANOVA F-test/t-test
			Pretest		Post-test		Gain score		
			Mean	SD	Mean	SD	Mean	SD	
<b>BMI</b>	Underweight	13	4.08	1.26	17.18	1.34	13.10	1.44	<b>z=3.46</b> <b>p&lt; 0.05*S</b>
	Normal	59	4.14	1.88	20.58	4.81	16.44	4.80	
	Over weight	23	4.00	1.98	18.57	4.79	14.57	5.19	
	Obese	15	3.87	1.85	17.20	7.35	13.33	7.24	
<b>Induction of labor</b>	Medical Induction	77	4.27	1.71	19.90	5.26	15.63	5.28	<b>t=2.21</b> <b>p&lt; 0.05*S</b>
	Nil	33	4.91	2.30	18.19	4.46	13.28	4.71	
<b>Weight of baby in Kgs.</b>	< 2	11	3.55	1.37	11.09	8.85	7.55	8.82	<b>z=9.15</b> <b>p&lt; 0.01**S</b>
	2 - 3	69	4.71	1.86	19.12	4.07	14.41	4.40	
	3 - 4	28	4.54	1.91	20.54	1.73	16.00	2.29	
	> 4	2	7.50	3.54	20.00	1.41	12.50	4.95	
<b>Family history of pelvic floor dysfunction</b>	Yes	42	4.02	1.76	19.83	4.42	15.81	4.68	<b>t=2.37</b> <b>p&lt; 0.05*S</b>
	No	68	4.96	1.91	18.39	5.38	13.43	5.34	

\* significant at  $p \leq 0.05$  \*\* highly significant at  $p \leq 0.01$

The above table 5.6.2(b) presented the association of mean differed knowledge gain scores with the selected variables among women in the experimental group. Women those who had normal BMI and had medical induction and had the baby with 3-4 kg of birth weight and had the family history of pelvic floor dysfunction had more knowledge mean gain score than others.

There was no statistical significant association noted with any of the variables with the knowledge gain score among women in the control group.

**Table 5.6.2(c): Influencing factors for knowledge gain score using Multivariate logistic regression among women in the experimental group**

**N = 110**

Influencing factors	Univariate analysis		Multivariate analysis	
	p-value	Unadjusted OR(95% CI)	p-value	Adjusted OR(95% CI)
Age(>30 years Vs < 30 years)	0.01**	4.9(1.5 -16.6)	0.02*	3.2(1.1 – 15.4)
Education(Above primary Vs Upto primary)	0.02*	3.9(1.1 -15.6)	0.04*	1.7(1.1- 5.9)
Type of family(Joint family Vs > nuclear family)	0.02*	2.5(1.1 -5.9)	0.02*	2.2(1.3 -5.8)
No.of child birth ( $\geq 2$ Vs <2)	0.02*	2.5(1.1 -5.8)	0.60	1.3(0.4- 8.2)
Birth spacing (> 1year Vs < 1 year)	0.01**	5.4(1.2 -28.1)	0.02*	2.8(1.3 -15.2)
BMI(Normal Vs others)	0.01**	3.1(1.3 -7.3)	0.03*	1.5.(1.2 – 5.7)
Induction of labour(Medical induction Vs nil)	0.01**	3.2(1.2 -8.5)	0.18	1.5.(0.3 – 5.7)
Weight of baby(> 3 kg Vs < 3kg)	0.01**	3.2(1.2 -8.6)	0.38	1.8.(0.4 – 6.8)
Family history of pelvic floor dysfunction(Yes Vs No)	0.02*	2.6(1.1 -6.7)	0.44	1.2.(0.2 – 5.3)

The above table 5.6.2(c) presented the multivariate logistic regression in comparison with univariate analysis for having more knowledge gains score. Women above 30 years of age, having primary education, belonged to joint family, having children more than 2, birth spacing more than a year, having normal BMI, had medical induction during last child birth, had weight of baby more than 3 kgs and having family history of pelvic floor dysfunction reported more knowledge gain score in univariate analysis while number of child birth, induction of labour, weight of the baby and family history was not significant with multivariate analysis. The unadjusted odds for having more knowledge gain score was given along with 95% confidence interval.



# *CHAPTER 6*

## *Discussion*

## **CHAPTER – 6**

### **DISCUSSION**

The present study was conducted to assess the effectiveness of interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction. The study findings are discussed based on the observation of the study findings. The present study involved screening of the women followed by assessment of the knowledge and pelvic floor muscle strength before and after the intervention.

The present study is discussed with relevant supportive literature as follows,

#### **Screening for Pelvic floor dysfunction**

Women were screened before they were included in the study. Among the 424 eligible women from 26 villages screened, 232(54.7%) women were identified to have any one of the pelvic floor muscle dysfunction. Women who had at least one pelvic floor muscle dysfunction were included in the study. The present finding was supported by the studies conducted in rural India with prevalence of pelvic floor dysfunction ranging from 38% to 50.8% as depicted in table 5.5.1 and 5.5.2. The findings also proved the burden of the problem among women who had multiple child birth. Systematic review conducted by Bozkurt M et al., highlighted that traumatic birth, usage of forceps, length of the second stage of delivery, and sphincter damage as modifiable risk factors for pelvic floor dysfunction. Women with multiple vaginal deliveries undergo constant damage to the pelvic floor and becomes at risk for pelvic floor dysfunction.<sup>93</sup>

Among the women who had reported pelvic floor muscle dysfunction, 193(82.4%) of them had urinary incontinence, 116(50%) of them had bowel incontinence, 3(1.4%) of them had pelvic organ prolapse, 218(93.2%) had pelvic pain and 128(54.6%) of them had sexual dysfunction. The present study findings were supported by a systematic review done by Guri Rortveit and Yngvild S. Hannestad, where in the study had reported urinary incontinence of 25 – 45 %, pelvic organ prolapse of 5 – 10%. Majority of the women reported urinary incontinence and pelvic pain which affects their quality of life to the maximum.<sup>94</sup>

### **Demographic, Obstetrical, Clinical and Study specific characteristics of study participants**

The data findings in table 5.2.1a and 5.2.1b revealed with regard to the demographic variables among the 220 women, Most of the women 82(74.5%) and 76(69%) were between 21 – 30 years of age in experimental and control group respectively. Most of them 42(38.2%) and 47(42.7%) had middle school education, 84(76.4%) and 79(71.9%) were Hindus, 54(49.1%) and 63(57.2%) were belonging to joint family, 84(76.4%) and 87(79.1%) had monthly income within Rs. 11361, 83(75.5%) and 85(77.2%) were unemployed and having sedentary lifestyle and 106(96.4%) and 107(97.3%) of the women were having non vegetarian food pattern among the experimental and control group respectively.

With regard to the Obstetrical factors shown in the table 5.2.2 among the study participants most of them 48(43.6%) and 42(38.2%) had one child birth, 29(26.4%) and 33(30%) had 2-3 years birth spacing between two children and 60(54.5%) and 55(50%) had normal vaginal delivery among the experimental and control group respectively.

With regard to clinical factors shown in the table 5.2.3a and 5.2.3b pertaining to last child birth among the study participants 65(59.1%) and 53(48.2%) had 6-10 kg weight gain during pregnancy, 77(70%) and 80(72.7%) of them had medical induction of labour and 49(57%) and 41(59.4%) of them had less than one hour of second stage of labour, 69(62.7%) and 72(65.5%) had children with birth weight between 2-3 kilograms, 43(39.1%) and 40(36.4%) were in between 7 – 9 months post natal period, 31(28.25) and 36(32.7%) had perineal trauma during last child birth and 15(13.6%) and 21(19.1%) were presently obese among the experimental and control group respectively.

With regard to study specific factors as shown in the table 5.2.4 among the study participants, 42(38.2%) and 34(30.9%) had family history of pelvic floor dysfunction and all of them had I degree relationship, among the family members with pelvic floor dysfunction 26(61.9%) and 22(64.7%) had urinary incontinence among the experimental and control group respectively. Among the 220 women 6(5.5%) and 8(7.3%) had previous information about pelvic floor dysfunction and all them had information from health care personnel and none of them did any type of exercises among the experimental and control group respectively.

Demographic and clinical variables of the women with pelvic floor dysfunction showed clear majority of women having family history, sedentary life style, medical induction of labor, vaginal delivery and birth spacing less than 2 years. These factors are largely supported by many epidemiological studies and systematic reviews. In a study conducted by Jennifer M. Wu et al., where prevalence and trends of these pelvic floor disorders in U.S. women from 2005–2010 was studied it was found that there are various factors associated with pelvic floor dysfunction. The study findings showed that Higher

BMI, greater parity, and hysterectomy being associated with higher odds of one or more pelvic floor disorder.<sup>94</sup>

The above observations were also supported by studies conducted by Arati Mahishale and Himani Dave among 100 postnatal women from tertiary care hospital, Belagavi. The study findings showed that type of delivery and working status of postnatal women as major contributing factors for urinary incontinence. Other contributing factors were identified as mode of delivery, parity, urinary tract infection, occupation and level of physical activity.<sup>8</sup>

A large scale study conducted by Uma Singh et al among 3000 women presented the contributing factors for urinary incontinence which was the most common among the pelvic floor muscle dysfunction as age more than 40 years, multiparity, postmenopausal Status, body mass index more than 25, history of diabetes and asthma, habit of taking tea, tobacco, pan, and betel are risk factors found to be associated with increased prevalence of urinary incontinence in univariate analysis. On multivariate analysis, age more than 40 years, multiparity, vaginal delivery, hysterectomy, menopause, tea and tobacco intake, and asthma were found to be significantly associated with overall incontinence.<sup>95</sup>

Another study conducted by Trupti et al among 552 women showed a prevalence of Urinary Incontinence to have significant association with increasing age and obstetrical factors such as high parity, young age at first childbirth, forceps delivery and prolonged labour.<sup>21</sup>

**The first objective was to assess and compare the pre and post test level of pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction between experimental and control group**

The data analysis section 5.3 depicted the pre test mean pelvic floor muscle strength score among the experimental group and control group which was 9.07 and 9.27 respectively with scores was representing weak pelvic floor muscle strength. In the post test the mean scores was 15.81 and 9.52 among the experimental and control group respectively. The mean difference was 6.29 and women in experimental group had good to strong muscle strength after the intervention.

Considering the components of pelvic muscle strength power and endurance had slightly better mean score in the pre test among the experimental and control group while in the post test there was significant improvement in all components with good to strong power, endurance, repetitions, fast contraction and timed contraction scores among women in the experimental group.

The mean strength gain score was found to be 6.74(95%CI: 6.30 -7.17) which was 26.9% (95%CI: 25.2 – 28.7%) gain from pretest score.

Similar observations were observed in a community based study conducted by Waterfield and Ann Elisabeth among 244 women with weak PFM. It was a randomized control trial where two hundred and forty subjects were randomized to one of three groups, 75 of them were into control group, 84 of them had training regarding pelvic floor muscle exercises from a general practice nurse and 85 of them had intervention from the Specialist nurse. Both treatment groups showed a significant increase in pelvic

floor strength after 3 months' training, compared with Controls. Intervention provided by specialist nurse had significant improvement in the pelvic floor muscle strength.<sup>96</sup>

The findings of the study was supported by studies conducted by Marian Wiegersma among 287 women aged 55 years and more where pelvic floor muscle training was tested with watchful waiting and the study results showed that pelvic floor muscle training improved the pelvic strength after 3 months of intervention. Another study conducted by Xin wang et al. among 106 nullipara women post delivery where the pelvic floor muscle training was given to the women in the experimental group for 3 months and the intervention proved to have had greater impact on improving the muscle strength after 3 months.<sup>84</sup>

Study findings are further supported by a study conducted by Hafrun et al among 150 women followed by childbirth process where the effect of pelvic floor muscle strength was assessed after giving pelvic floor muscle training using various approaches. The study findings showed that women who performed pelvic floor muscle exercise with biofeedback technique had shown significant improvement in the pelvic floor muscle Strength.<sup>97</sup>

One year follow up study was conducted by Siv Morkved and Kari Bo among women in immediate postpartum period. Women had eight-week pelvic floor muscle training program in prevention and treatment of urinary incontinence in the immediate postpartum period. 162 women participated in the study and they were randomized into experimental and control group. At end of one year follow up women who had practices

pelvic floor exercises had greater improvement in the pelvic floor muscle strength and had reduced pelvic floor muscle dysfunction.<sup>98</sup>

In another study conducted by Vjollca Ndreu et al among women with urinary incontinence where pelvic floor muscle exercises were taught to women in the experimental group and were asked to practice at home and control group women had no intervention. The study findings showed that women who practiced pelvic floor muscle exercises at home had significant improvement in the symptoms of urinary incontinence with increased pelvic floor muscle strength and hence pelvic floor muscle exercises practice was highly recommended intervention for prevention and treatment of pelvic floor muscle dysfunction.<sup>99</sup>

The above findings and supported study evidences prove that pelvic floor muscle training and practice was very much useful in improving the pelvic floor muscle strength.

**The second objective was to assess the effectiveness of interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction between experimental and control group**

The data analysis the section 5.4 depicted the pretest mean knowledge score among women between the experimental and control group was 4.60 and 4.77 respectively with scores representing very low awareness towards the pelvic floor dysfunction. In the post test after intervention the mean scores was 18.69 and 5.83 among women between experimental and control group respectively which showed there was mean difference of 12.86 between the two groups.



The intervention had significantly improved the knowledge scores among women in the experimental group. Considering domain wise scores in the pre test all the items had poor scores while in post test among women in the experimental group there was improvement in all the item scores. The mean knowledge gain score was found to be 14.09 (95% CI: 13.13 -15.06) which was 56.4% (95% CI: 56.4% – 60.2%) gain from pretest score.

The findings of the study was supported by studies conducted by Mandimika et al. among 431 women aged between 19 – 98 years where knowledge about pelvic floor dysfunction was tested and it was found that all women lacked the knowledge regarding pelvic floor dysfunction. [100] Another study conducted by AA Flores et al. among 92 Asian American women, the knowledge regarding urinary incontinence, pelvic organ prolapse were found to very low.<sup>101</sup>

A study conducted by Hedwig at al among the 212 nulliparous women also showed that 93% of them had insufficient knowledge about the pelvic floor dysfunction and many of them had concerns of having pelvic floor dysfunction. In another study conducted by Hedwig et al among the menopausal women and peripartum women also revealed lack of knowledge of pelvic floor dysfunction. The study had 402 peripartum women and 165 menopausal women and among them 75 % peripartum women and 65% post menopausal women had reported insufficient knowledge and expressed the concern of knowing more about the condition and its prevention.<sup>102</sup>

The study results were also supported by a study conducted by Yuan-MeiLiao et al where the effect of pelvic floor muscle training was studied on knowledge, attitude

and pelvic floor muscle strength among women with urinary incontinence. The study findings showed that women had significant improvement in the knowledge and pelvic floor muscle strength.<sup>85</sup>

In a similar study conducted by Moen Michael et al in understanding the knowledge and pelvic muscle exercises among 120 women with complaints of pelvic floor muscle dysfunction showed that majority of the women had knowledge about the pelvic floor exercises but they had not performed them.<sup>77</sup>

The conceptual framework was based on the integrated model of Betty Neuman System and Wiedenbach Prescriptive Theory. The researcher set the goal for women 3 months to 1 year post delivery. The researcher assessed the intra personal, interpersonal and extra personal stressors which constantly interact and counteract with the basic structure of the women between 3 months to 1 year post delivery. All these three level of stressors interact with the flexible line of defense and invades the normal line of defense and also tries to intrude into basic structure. But the researcher integrates the Wiedenbach helping art for the secondary prevention level. For the identification of need for the help the researcher screen the pelvic floor dysfunction and assess the pretest pelvic floor muscle strength and knowledge on pelvic floor dysfunction for the both the group.

The second step ministering the needed help that is intervention package administered by the researcher to the experimental group only. The third step validating the needed help was explored by the post test of pelvic floor muscle strength and knowledge on pelvic floor dysfunction and exercises for the both the group. If there is

improvement in the mean knowledge and pelvic floor muscle strength the researcher reinforces and enhances the intervention, if there is negative outcome the researcher restart by reassessment.

Thus the application of concepts of Betty Neuman System and Wiedenbach Prescriptive model guided the investigator during the all the phases of the research study and helped to accomplish the objectives of the study. The administration of interventional package empowered the women with pelvic floor dysfunction to improve the pelvic floor muscle strength and knowledge throughout their life.

Statistical analysis had showed that there was significant difference between the post test scores among experimental and control group and hence the hypothesis  $H_1$  stated earlier that **“There is no significant difference in the pre and posttest pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction between the experimental and control group”** was not accepted.

**The third objective was to correlate the mean differed knowledge score with pelvic floor muscle strength among women with pelvic floor dysfunction in experimental and control group**

The table 5.5 depicted where there was a significant positive correlation observed between the mean differed pelvic floor muscle strength score and knowledge score in the experimental group at  $r = 0.47$  and  $p < 0.001$  level. The findings showed that knowledge had positive influence in improving the pelvic floor muscle strength. While there was no significant correlation noted in the control group.

The findings of the study was supported by study conducted by Rosediani M et al. among 56 women where knowledge was found to be positively correlated with practice of pelvic floor exercises which promotes the strengthening of the pelvic floor muscles.<sup>103</sup>

In a study conducted by Berzuk, Kelli among the 161 women aged 16 – 69 years where the knowledge and pelvic floor strength is correlated and it was found that low pelvic floor health knowledge associated with high prevalence of PFD. Further, as knowledge/awareness significantly increased following education, quality of life and pelvic floor strength also increased.<sup>104</sup>

The above findings are supported by another study observation conducted by Kari Bo where the knowledge given from pelvic floor muscle training has significantly increased the pelvic floor muscle strength among the women. Similar observation was noted from study conducted by Jacomo et al where education of pelvic floor anatomy was provided to check its effect on the pelvic floor strength which showed that there was significant improvement in the pelvic floor muscle strength followed by the education.<sup>105</sup>

Another study conducted by Hsia-Tzu Kao et al among the 177 women who were screened for pelvic floor muscle strength showed a significant positive correlation between the knowledge and pelvic floor muscle strength. The study recommended the need for education of the women regarding pelvic floor muscle strength and teaching of pelvic floor muscle exercises to significantly improve on the pelvic floor muscle strength.<sup>106</sup>

Statistical analysis had showed that there was significant difference between the post test scores among experimental and control group and hence the hypothesis  $H_2$  stated earlier that **“There is no significant relationship between the mean differed knowledge with pelvic floor muscle strength among women with pelvic floor dysfunction in the experimental and control group”** was not accepted for experimental group and accepted for control group.

**The fourth objective was to associate the mean differed gain score of pelvic floor muscle strength and knowledge scores with selected variables in experimental and control group**

Table 5.6.1 and 5.6.2 depicted the association between the mean differed gain score of pelvic floor muscle strength with the selected variables among women in the experimental group more than 30 years of age had better gain score than women younger than 30 years. Women above 30 years have understood the seriousness of pelvic floor dysfunction and might have performed pelvic floor exercises regularly. Women who had undergraduate education and more had reported to have more gain score than women with low education which showed that knowledge influenced the pelvic floor muscle strength as observed with correlation score.

Women with monthly income of more than Rs. 11362 reported more gain score than women in low income level. Socio economic influence on performance of regular exercises noted with this observation. Women with one to two childbirths had more gain score than women with three or more childbirths. Women with more childbirth had weak pelvic floor muscle strength.

Women with birth spacing of 1-2 years had more gain score than women with less than one year spacing. Birth spacing was considered important in regaining the pelvic floor muscle strength between childbirths. Women with normal BMI had more gain score than overweight and obese women. Increased body weight weakens the pelvic floor muscle strength with more straining placed on the muscles.

Women who had medical induction during last labour process had more gain score than women who had no induction. Women who had no induction might have strained a lot which would have weakened the pelvic floor muscle strength. Women with family history of pelvic floor dysfunction had more gain score than women without family history. Women might have taken seriously the risk as they have observed their family member suffer from the problem and would have had an influence.

The above findings were supported by univariate and multivariate analysis using unadjusted odds ratio with 95 % Confidence interval scores.

#### **Association of mean differed gain score of pelvic floor muscle strength with selected variables among women in the control group**

Table 5.6.1(c) showed that the association of mean differed gain score pelvic floor muscle strength with the selected variables among women in the control group who had family history of pelvic floor dysfunction had better gain score than women without family history and as discussed earlier family history would have improved their awareness towards the prevention.

**Association of mean differed gain score of knowledge with selected variables among women in the experimental group**

Table 5.6.2(a) depicted the association of knowledge gains scores, women more than 30 years of age had better gain score than women younger than 30 years. Observation was similar to that of the strength score as elder women might have understood the risk more. Women with undergraduate education and more had more gain score similar to that of strength score. Influence of education was clearly observed.

Women in joint family had more gain score than women in nuclear and extended family. Support from elders would have had an influence. Women with two childbirths had more knowledge gain score than other women. Women with planned childbirth had more knowledge gain about pelvic floor dysfunction.

Women with less than one year and 2 to 3 years of spacing between childbirths had more knowledge gain. Women with greater risk would have observed better to the education. Women with Normal BMI had more knowledge gain score than underweight and overweight women. Women's attitude towards health might have had an influence on knowledge.

Women who had medical induction during last labour process had more gain score than women who had no induction. Association was found spurious. Women with babies of 3-4 kgs birth weight had more gain score compared with women with more than 4 kgs and less than 2 kgs birth weight baby. Association was found spurious.

Women with family history of pelvic floor dysfunction had more gain score. Previous exposure towards the problem would have had an impact.

The above findings were supported by univariate and multivariate analysis using unadjusted odds ratio with 95% Confidence interval scores.

#### **Association of mean differed gain score of knowledge with selected variables among women in the control group**

Table 5.6.2(b) depicted there was no significant association found with any of the variables with the knowledge gain score among women in the control group.

Hence the hypothesis NH<sub>3</sub> stated earlier that **“There is no significant association between the mean differed pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction with selected variables in control group”** was not accepted for above mentioned variables of experimental group and control group and accepted for other variables in the experimental and control group.

The findings of the present study were supported by studies conducted by Krishna Rao B et al where a cross sectional study was conducted among 1256 married women there was a statistically significant association found between age ( $p \leq 0.001$ ), occupation of the women ( $p \leq 0.001$ ), presence of urinary incontinence during pregnancy which disappeared after delivery ( $p=0.009$ ) and occurrence of at least one type of pelvic floor dysfunction. Age, occupation and presence of symptom of urinary incontinence during pregnancy which disappeared after the delivery were reported as the independent predictor of symptoms of pelvic floor dysfunction when analyzed with multivariate logistic regression model.<sup>10</sup>



In another study conducted by Zizzi Pt et al among 128 women where the prevalence and risk factor association for pelvic floor muscle strength was studied it was found that type of birth and cohabitation with a partner, newborn's weight, previous pregnancy, Urinary incontinence during pregnancy, and sexual activity showed an association with pelvic floor dysfunction.<sup>64</sup>

A study conducted by Katarina P et al among the 90 women with pelvic floor dysfunction showed significant associations with age, demanding job, body height, number of deliveries, sports activities, prolapse-caused gynecological surgeries, other gynecological surgeries and other gynecological diseases.<sup>78</sup>

The overall above findings of the study have clearly highlighted on the problem of the study the pelvic floor dysfunction among women and also proved that women require a structured training and awareness program where they should be trained on preventing and managing pelvic floor muscle dysfunction. Women should be aware of the various risk factors and should be guided for prevention of the problem. The study findings are well supported by many literature and the study findings have also significantly added evidence to the literature and especially to the Indian context.

# *CHAPTER 7*

*Summary, Conclusion,*

*Implications, Recommendations*

*and Limitations*

## **CHAPTER – 7**

### **SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS AND LIMITATIONS**

The present study was aimed at evaluating the effectiveness of an interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction.

#### **7.1. SUMMARY**

Pelvic floor dysfunction causes a lot of burden among the women and studies have showed a trend of increasing prevalence. Pelvic floor dysfunction can be easily prevented by women with improved awareness and by performing regular pelvic floor strengthening exercises. The major problem in India and other developing countries was the lack of awareness about the preventing measures and contributing factors of pelvic floor dysfunction.

Simple, yet effective, community based nursing interventions are very much needed to prevent women from encountering pelvic floor dysfunction which will significantly affect their quality of life. Keeping in view of this, the present study was designed and executed.

#### **The Statement of the Problem was:**

An experimental study to evaluate the effectiveness of an interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction at selected settings, Thiruvallur Dist.

**The Objectives of the study were**

1. To assess and compare the pre and post test pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction in the experimental and control group.
2. To assess the effectiveness of interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction between experimental and control group.
3. To correlate the mean differed knowledge score with pelvic floor muscle strength scores among women with pelvic floor dysfunction in experimental and control group.
4. To associate the mean differed pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction with selected variables in experimental group and control group.

**The Null Hypotheses formulated were**

**NH<sub>1</sub>:** There is no significant difference in the pre and posttest pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction between the experimental and control group at  $p < 0.05$

**NH<sub>2</sub>:** There is no significant relationship between the mean differed knowledge with pelvic floor muscle strength among women with pelvic floor dysfunction in the experimental and control group at  $p < 0.05$

**NH<sub>3</sub>:** There is no significant association between the mean differed pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction with selected variables in experimental and control group at  $p < 0.05$

Women who were in 3 months to 1 year post delivery status were screened in 26 villages adopted by Omayal Achi Community Health Centre for the presence of pelvic floor dysfunction and all women who had pelvic floor dysfunction were chosen for the study which used true experimental study design , the experimental group received the intervention which consisted of video assisted teaching, demonstration and return demonstration regarding pelvic floor strengthening and control group had intervention after the study period of 8 weeks. The dependent variables studied were knowledge and pelvic floor muscle strength.

A total of 424 women were screened and 232 women were identified with pelvic floor dysfunction out of which 220 women became the final sample for the study with 110 in each group. After establishing the validity, reliability and feasibility through pilot study for the tools the data collection for the study was conducted and the results were analyzed using both descriptive and inferential statistics.

**The major findings of the study were:**

- Among the 424 women screened in 26 villages 232(54.7%) of the women had pelvic floor muscle dysfunction. Urinary Incontinence was highly prevalent among 193(82.4%) out of 232 women who had pelvic floor muscle dysfunction.
- Women in the experimental and control group reported weak pelvic floor muscle strength with mean scores of 9.07 and 9.27 respectively.
- Women in the experimental group reported good pelvic floor muscle strength in the post test with mean score of 15.81 while women in control group had mean score of 9.52.

- There was significant improvement noted in all the components of pelvic floor muscle strength such as power, endurance, repetitions, fast contractions and timed contraction scores among women in the experimental group.
- Women in both experimental and control group had low awareness regarding pelvic floor muscle dysfunction with mean scores of 4.60 and 4.77 respectively. After the intervention there was significant improvement in the awareness of women in the experimental group with mean score of 18.69.
- There was a significant positive correlation observed after the intervention among the experimental group between knowledge and pelvic floor muscle strength showing that knowledge had high influence in improving the pelvic floor muscle strength.
- Association of variables with mean pelvic floor muscle strength gain score among the experimental group showed that women
  - more than 30 years of age had better gain score than women younger than 30 years
  - who had undergraduate education and more had reported to have more gain score
  - with monthly income of more than Rs. 11362 reported more gain score than women in low income level
  - with one to two childbirths had more gain score than women with three or more childbirths
  - with birth spacing of 1-2 years had more gain score than women with less than one year spacing
  - with normal BMI had more gain score than overweight and obese women
  - who had medical induction during last labor process had more gain score than women who had no induction

- with family history of pelvic floor dysfunction had more gain score than women without family history.
- Association of variables with mean knowledge gain score among the experimental group women showed that women
  - more than 30 years of age
  - with undergraduate education and more
  - living in joint family
  - with two childbirths
  - with less than one year
  - with normal BMI
  - who had medical induction during last labor process
  - with babies of 3-4 kgs birth weight
  - with family history of pelvic floor dysfunction had more gain score.

## **7.2 CONCLUSION**

Women are vulnerable for pelvic floor muscle dysfunction and the need for prevention was very well presented in the study. The simplest way of prevention is by using community based intervention which is simple and feasible for the women. The present study finally concluded that the interventional package was an effective strategy in improving the pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction and hence will be a simple and effective intervention for utilization. Nurses can incorporate the education on pelvic floor muscle strength to women as they encounter them during their day to day practice. Hence the study recommends the utilization of interventional package by practicing nurses across various settings and

more specifically recommends to the primary health practitioners to create awareness using this above package.

### **7.3 NURSING IMPLICATIONS**

The investigator has devised the following implications that may be vital for the community health nurse practitioners, community health nurse administrators, Nurse educators and nurse researchers.

#### **7.3.1 Community Health Nursing Practice**

Community health nurse practitioner can

- provide the interventional package to improve the pelvic floor muscle strength among women.
- integrate the interventional package into practice at all the community care settings.
- provide the interventional package to improve the pelvic floor muscle strength.
- educate the women about the pelvic floor muscle strengthening exercises to lead a quality life.
- develop the best practice model for caring for women with pelvic floor muscle dysfunction with this interventional package.
- administer to women as a vital component of pelvic floor dysfunction at all levels of prevention.
- communicate, counsel and advise women with pelvic floor muscle dysfunction to adhere to the interventional package to improve the strength of the Pelvic Floor Muscle.



- motivate the NGO's to take part in promotion of pelvic floor muscle strength among women in rural and urban settings.
- mobilize the appropriate resources to disseminate the information among the nurses in the clinical settings.
- organize a multi disciplinary practice committee to appraise the current practice of pelvic floor muscle strength among women and refine the necessary changes in nursing care interventions.
- disseminate the information regarding the impact of interventional package on pelvic floor muscle strengthening to the entire population.

### **7.3.2 Community Health Nurse Administration**

#### **Community health nurse administrator can**

- integrate the pelvic floor muscle strength into the health educational protocol while teaching the post natal mother in various health care services settings.
- integrate together as comprehensive interventional package to reserve the resources while caring for the women with pelvic floor muscle dysfunction.
- devise the algorithm to improve the pelvic floor muscle strength practice in the rural and urban health care settings.
- promote the inter sectoral co-ordination between the health department and social welfare department to improve the pelvic floor muscle strength among women through self help group and balwadi.
- enhance the community participation for improving pelvic floor muscle strength among women through women's organizations.
- Corroborate the intervention with other nursing care measures like yoga, exercise can rendered in the rural and urban settings.

- organize a continuing nursing education program on pelvic floor muscle strength package among the primary care provider to impart knowledge about pelvic floor muscle strength.
- empower primary care providers to focus on the pelvic floor muscle strength among women in the reproductive age group.
- allocate the budget exclusively to converge the pelvic floor muscle strength programme among women welfare programme during camps and other special activities.
- provide cost effective health care services to the women by creating the standard interventional package as a module.
- Organize a campaign programme in which all self-help group members and key personnel can perform the exercise to impact the women.

### **7.3.3 Nursing Education**

The nurse educators can

- incorporate of pelvic floor dysfunction in the undergraduate and postgraduate curriculum in which the importance of pelvic floor muscle strength among women may be emphasized.
- organize seminars, workshop and symposium on pelvic floor muscle strength package among staff nurses.
- select and organize the learning experience for students and novice nurses where in the knowledge will be enhanced about the pelvic floor muscle strength.
- motivate the nursing staff to have more discussions on interventional package and its impact on pelvic floor muscle strength.

- incorporate the pelvic floor muscle strength components into their procedure log book and learning protocol.
- organize the various teaching learning strategies to impose the importance of pelvic floor muscle strength like tableau, simulation and computer assisted learning.
- bridge the gap between theory and practice relevant to the pelvic floor muscle strength among women in the educational and clinical context.
- appraise the students in the context of pelvic floor muscle strength and its importance in improving and enhancing women welfare.
- teach and demonstrate the assessment of pelvic floor muscle strength & dysfunction to utilize the interventional package in their day to day practice.
- emphasize the need of nurse educator to execute the crash courses on pelvic floor muscle strengthening.

### **7.3.3 Nursing Research**

The nurse researcher can

- lay the strong foundation to appraise the pelvic floor muscle strength of various obstetric condition among women.
- create a website where the impact of pelvic floor muscle strength on pelvic floor dysfunction can be disseminated.
- utilize the secondary analysis and meta-analysis to study about the pelvic floor muscle strength among women.
- utilize the findings for validating the need for pelvic floor muscle strength interventional package for women.

## 7.4 RECOMMENDATIONS

The study findings showed the effectiveness of interventional package on PFMS and knowledge among women and recommended the following:

1. Interventional package may be utilized in the women welfare clinic of OACHC to improve the PFMS of women.
2. Interventional package can be administered regularly to the women at our parent hospital Sir Ivan Stedford Hospital and it will be recommended to the other affiliated Health Care Institutions.
3. Interventional package can be converged along with other patient care focused interventions and tested for its effectiveness among women.
4. Comparative study to assess the effectiveness of interventional package among rural & urban women may be undertaken.
5. Comparative study to assess the effectiveness of interventional package on PFMS among clients receiving health care services from government and private settings can be done.
6. Qualitative study to assess the lived in experience of women with pelvic floor dysfunction can be carried out.
7. Comparative study to assess the lifestyle determining the PFMS can be conducted among rural and urban women.
8. A grand theory could be constructed to devise the women experience along with its relevant components about PFMS.
9. Community engagement was an advantage thereby investigator recommends the education of community level workers on PFMS, so they can educate their women in the community.

## **7.5 LIMITATIONS**

1. The investigators had to spend a considerable amount of time to create trust and confidence for doing the PFMS using a per vaginal examination.
2. Travelling to the rural villages was one of the challenges faced during the data collection period.
3. Transporting equipment's for per vaginal examination was tedious work.

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# *ANNEXURES*



# THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY

No.69, ANNA SALAI, GUINDY, CHENNAI - 600 032.

Website : [www.tnmgrmu.ac.in](http://www.tnmgrmu.ac.in)

E-mail : [mail@tnmgrmu.ac.in](mailto:mail@tnmgrmu.ac.in)

☎ : 22353574, 22353576 - 79, 22301760 - 63, 22353094

Fax : 91-44-22353698

**Dr. S.T. RADIGHA, M.D.,**  
**ACADEMIC OFFICER i/c.**

**Dated:04.07.2013**

## PROVISIONAL REGISTRATION CERTIFICATE FOR Ph.D.

1)	Name of the Candidate	:	Mrs. R. VIJAYALAKSHMI
2)	Qualification	:	M. Sc. (N)
3)	Duration of the Research	:	PART - TIME - 4 YEARS
4)	Name and Designation of Guide	:	Dr. S. Kanchana, M.Sc.(N), Ph.D., Principal, Omayal Achi College of Nursing, Chennai.
5)	Name and Designation of Co-Guide	:	-----
6)	Department in which candidate is conducting Research	:	Community Health Nursing
7)	Name of the Institution	:	Omayal Achi College of Nursing, Chennai.
8)	Broad Topic of Research	:	Community Health Nursing
9)	Provisional Title of Research	:	"AN EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF AN INTERVENTIONAL PACKAGE ON PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION AT SELECTED SETTINGS, THIRUVALLUR DIST."
10)	Faculty & Branch	:	NURSING & COMMUNITY HEALTH NURSING
11)	Date of Registration i.e. session	:	01.01.2013
12)	Date of conduct of Methodology Examination	:	01.01.2014
13)	Last Date for completion of Methodology examination	:	31.01.2014
14)	Last date for submission of Synopsis	:	01.10.2016
15)	Prescribed date for submission of Thesis	:	01.01.2017
16)	Last date for submission of Thesis	:	01.01.2018

  
ACADEMIC OFFICER i/c.

/2011

5/7/13



# THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY

No.69, ANNA SALAI, GUINDY, CHENNAI - 600 032.

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☎ : 22353574, 22353576 - 79, 22301760 - 63, 22353094

Fax : 91-44-22353698

**Dr. S.T. RADIGHA, M.D.,**  
**ACADEMIC OFFICER. i/c.**

**Ref. No.ACI(2)/30469/2012**

**Dated: 04.07.2013**

To

Dr. S. Kanchana, M.Sc.(N)., Ph.D.,  
Principal  
Omayal Achi College of Nursing,  
45, Ambathur Road,  
Puzhal, Chennai 600 066.

Madam,

Sub:	Academic - The Tamil Nadu Dr. M.G.R. Medical University, Chennai - Mrs. R. VIJAYALAKSHMI - Application for PART - TIME Ph.D. Registration - Provisional Registration-Reg.
Ref:	1. Ph.D. Application dated 27.07.2012. 2. Minutes of the Meeting in the Screening Committee in the Speciality of 'NURSING' held on 31.01.2013.

\*\*\*\*\*

I enclose herewith, the PART - TIME Research Provisional Registration Certificate in respect of Mrs. R. VIJAYALAKSHMI for the research leading to the award of Ph.D. Degree.

**I am to request you, to obtain and forward the Joining Report of the candidate to this University within 30 days from the date of receipt of this order. Failing which, her Registration for Ph.D. Programme will be automatically cancelled.**

Yours faithfully,

*S. Radigha*  
ACADEMIC OFFICER i/c.

Copy to :

✓ Mrs. R. VIJAYALAKSHMI, Ph.D. candidate.

/ 2011





**ETHICAL CLEARANCE CERTIFICATE**

Valid from: January 2013

To: December 2017

Time duration: 4 years

Name of the Principle Investigator: Mrs. Vijayalakshmi R,

The ICCR Ethical Committee meeting had reviewed the project titled “An Experimental study to evaluate the effectiveness of an Interventional Package on Pelvic Floor muscle strength and Knowledge among women with pelvic floor dysfunction at selected settings, Thiruvallur Dist”. The proposal was found to be acceptable on ethical grounds. The Principle Investigator has the responsibility and accountability for any other administrative / regulatory approvals that may pertain to this research project, and for ensuring that the authorized research is carried out according to the conditions outlined in the original protocol submitted for ethics review.


This certificate of approval is valid for the time period provided, there is no change in the methodology protocol or consent process and documents.

Any significant change should be reported to Director for Research Committee considerations in advance for its implementation.

Signature of Research Director

: 

Signature of Researcher

: 

# OMAYAL ACHI COMMUNITY HEALTH CENTRE

ARAKKAMBAKKAM, CHENNAI - 600 055.

## IEC CERTIFICATE

Valid From : January 2013

To : December 2017

Time duration: 4 years

Name of the Principle Investigator: Mrs. Vijayalakshmi R,

The IEC committee meeting had reviewed the IEC materials – Video assisted teaching with Laptop and booklet titled on “Pelvic floor muscle strength exercise”.

The proposal was found to be acceptable on principles of AV AID preparation. It is certified that the intervention tool based on IEC materials are appropriate to administer for the research project titled “An Experimental study to evaluate the effectiveness of an Interventional Package on Pelvic Floor muscle strength and Knowledge among women with pelvic floor dysfunction at selected settings. Thiruvallur Dist”.

This certificate of approval is valid for the time period provided.

Any significant change should be reported to coordinator / Director for research committee considerations in advance for its implementation.

Signature of the IEC Director

: *Lakshmi*

Signature of the IEC Coordinator

: *Aulina*

Signature of the H.O.D

:

Signature of the Researcher

: *Rvj-11*

Date

:

# OMAYAL ACHI COLLEGE OF NURSING

Run by MR. Omayal Achi MR.Arunachalam Trust

45, AMBATTUR ROAD, PUZHAI, CHENNAI - 600 066.  
(Affiliated to the Tamilnadu Dr.M.G.R. Medical University)

Recognized by the Indian Nursing Council & TN Nurses and Midwives Council)

Tel	: 26591617, 26591618
Fax	: 26591616
E-mail	: oacn1992@gmail.com
Website	: omayaln.com

11.01.2016

The Centre Incharge,  
Omayal Achi Community Health Centre,  
Arakkambakkam

-----  
Dear Mrs. Mythili,

Sub: Permission requested for research work – Reg  
-----

Mrs.R.Vijayalakshmi is a bonafide student doing her research leading to the award of Ph.D., degree in the field of Nursing and she is conducting “AN EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF AN INTERVENTIONAL PACKAGE ON PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION AT SELECTED SETTINGS, THIRUVALLUR DISTRICT” in the adopted villages of Omayal Achi Community Health Centre.

This is for the research project to be submitted to The Tamil Nadu Dr. M.G.R.Medical University in partial fulfillment of the University requirement for the award of Ph.D Degree in Nursing.

Further details of the proposed project will be furnished by the student personally. She will not hinder your routine in any way and she will abide by the rules and regulations of the Institution. The information collected from your Institution will be kept confidential. I kindly request you to grant her permission to conduct the study at your Esteemed Institution.

Thanking you,

Yours sincerely,  
OMAYAL ACHI COLLEGE OF NURSING

CC to:

The Village Leaders

  
Principal

## Urkund Analysis Result

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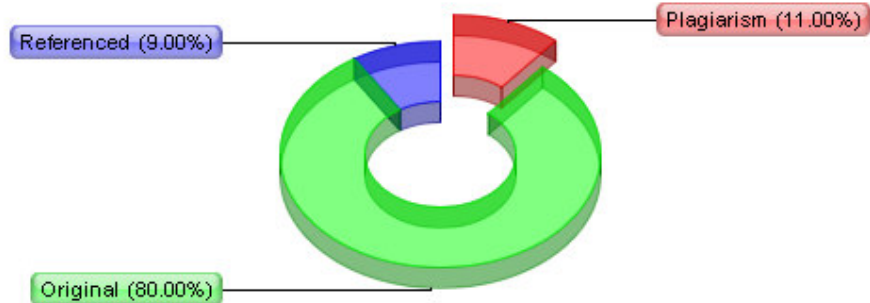
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# The Tamil Nadu Dr. M.G.R. Medical University

69, Anna Salai, Guindy, Chennai - 600 032.

**CME 30 CREDIT POINTS**

This Certificate is awarded to Dr. / Mr. / Mrs. ....**VIJAYALAKSHMI . R.**.....

for participating in the Workshop on

**“XXIX Research Methodology & Biostatistics”**

organized by the Department of Epidemiology,

The Tamil Nadu Dr. M.G.R. Medical University

from 24<sup>th</sup> to 28<sup>th</sup> June, 2013.

  
Dr. JHANSI CHARLES, M.D.,  
REGISTRAR

  
Prof. Dr. D. SHANTHARAM, M.D., D.Diab.,  
VICE-CHANCELLOR

This is to certify that Dr./Prof./Mr./Ms. Vijayalakshmi.R was the resource person on the topic Development of Theoretical / Conceptual Framework for the “**TRAINING PROGRAMME ON RESEARCH METHODOLOGY**” Organized by the **INTERNATIONAL CENTRE FOR COLLABORATIVE RESEARCH (ICCR)**, Omayal Achi college of Nursing. We thank him / her for his / her valuable contribution in making the training programme a success. The CNE credit points awarded by Tamilnadu Nursing Council is 15 credit point & 30 credit hours +2

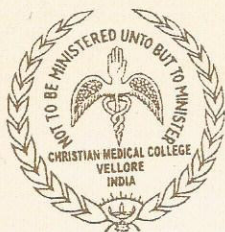
Date : 23<sup>rd</sup> to 27<sup>th</sup> Sep 2013

  
**Dr. K.R. RAJANARAYANAN,**  
M.B.B.S., FRCH London.  
Research Co-ordinator, ICCR  
Omayal Achi College of Nursing  
Chennai, India

  
**Dr. S. KANCHANA**  
M.Sc(N)., Ph.D (N)  
Research Director, ICCR  
Omayal Achi College of Nursing  
Chennai, India



**RUHSA DEPARTMENT  
CHRISTIAN MEDICAL COLLEGE**



## Certificate of Participation

*This is to certify that* Ms. R. Vijaya lakshmi

*of* Omayal Achi College of Nursing, Chennai

*has participated in a Clinical Training Workshop on "Low-tech*

*Screen and Treat Methods for Cervical Cancer "*

*held at RUHSA Department, Christian Medical College,*

*Vellore from 28.11.2013 to 30.11.2013*

**Dr. Alfred Job Daniel**, MBBS, D.Ortho, MS(Ortho), DNB(Ortho)  
Principal, CMC, Vellore

**Dr. Rita Isaac**, MD, MPH  
Professor & Head, RUHSA Department



# MMM COLLEGE OF NURSING

(A UNIT OF THE MADRAS MEDICAL MISSION)

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(Affiliated to the Tamilnadu Dr. MGR Medical University, Chennai)  
No. 131, Sakthi Nagar, Nolambur, Mogappair West, Chennai - 600 095, Tamilnadu



## Continuing Nursing Education

Department: RESEARCH

Theme: WORKSHOP ON "RESEARCH METHODOLOGY"

This is to certify that Ms. VIJAYALAKSHMI has contributed as a resource person (Topic: TOOLS & DATA COLLECTION IN QUALITATIVE RESEARCH) in the Continuing Nursing Education programme conducted on 03.07.14

Credit points by The Tamilnadu Dr. M.G.R. Medical University 6+4 hrs (App No : 1655, date 18/6/14)

  
CNE Co-ordinator

MMM COLLEGE OF NURSING  
No. 131, SAKTHI NAGAR,  
NOLAMBUR,  
CHENNAI - 600 095.

  
Principal

MMM College of Nursing  
Chennai - 95.



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#323 & 434, N.S.K.Salai, Vadapalani, Chennai - 600026.

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## CERTIFICATE

*This is to certify that*

Mr. / Ms. .... *R. VIJAYALAKSHMI* .....

*has participated in the state conference on*

*“ NUTRITIONAL MANAGEMENT ; PIVOTAL ROLE OF NURSES ”*

*as ~~delegate~~ / resource ~~person~~ / ~~organizer~~ held on 10/01/2015*

*at B.N.R Hall, Vijaya Health Centre, Chennai-26.*

CNE Credit hours awarded by, Tamil Nadu Nurses & Midwives Council, Chennai - 7+2.9 Hours.

*B. Bharathi Reddy*  
Mrs. B. Bharathi Reddy  
Organizing Executive

*J. Hemamalini*  
Ms. J. Hemamalini  
Organizing chairperson

*R. Lakshmi*  
Ms. R. Lakshmi  
Organizing Secretary

*P. Krishna Murthy*  
Mr. P. Krishna Murthy  
Program Co-Ordinator



This is to certify that Dr. / Prof. / Mr. / <sup>✓</sup>Ms. VIJAYALAKSHMI


was the resource person on the topic *Development of research questions, formulation of research objectives & hypothesis,*


*Operational definitions, assumptions* for the **4<sup>th</sup> TRAINING PROGRAMME ON "RESEARCH METHODOLOGY"**

organized by the **INTERNATIONAL CENTRE FOR COLLABORATIVE RESEARCH (ICCR),**

Omayal Achi College of Nursing from 06/07/2015 to 10/07/2015. We thank him / her for his / her valuable contribution in making the Training Programme a success.

The CNE credit hours awarded by the Tamil Nadu Nurses & Midwives Council is 2 Hrs.

  
Dr. S. KANCHANA  
M.Sc (N), Ph.D (N) Post Doc. (Res.)  
Research Director & Principal  
ICCR, Omayal Achi College of Nursing  
Chennai, India

  
Dr. K. R. RAJANARAYANAN  
M.B.B.S., FRSH (London)  
Research Co-Ordinator, ICCR  
Omayal Achi College of Nursing  
Chennai, India



This is to certify that Dr. / Prof. / Mr. / Ms. Vijaya Lakshmi . R  
was the resource person on the topic Mixed Methods research - Design &  
Sampling. for the 5<sup>th</sup> TRAINING PROGRAMME ON "RESEARCH METHODOLOGY"  
ORGANIZED BY THE INTERNATIONAL CENTRE FOR COLLABORATIVE RESEARCH (ICCR),  
Omayal Achi College of Nursing from 28/03/2016 to 01/04/2016. We thank him / her for  
his / her valuable contribution in making the training programme a success.

The CNE credit hours awarded by the Tamil Nadu Nurses & Midwives Council  
is 2 Hrs.

**Dr. S. KANCHANA**  
M.Sc (N), Ph.D (N), Post Doc. (Res.)  
Research Director & Principal  
ICCR, Omayal Achi College of Nursing  
Chennai, India

**Dr. K.R. RAJANARAYANAN**  
M.B.B.S., FRSH (London)  
Research Coordinator, ICCR  
Omayal Achi College of Nursing  
Chennai, India



# THANTHAI ROEVER COLLEGE OF NURSING

ROEVER MAIN CAMPUS, PERAMBALUR - 621212.

## CERTIFICATE

This is to certify that Mr./Ms ...Prof. R. VIJAYALAKSHMI, M.Sc (N), Ph.D...... has participated as a Delegate / Resource Person / Organizer at the state level conference on **“Investing in Intranatal Nursing”** Organized by Thanthai Roever College of Nursing, Perambalur, held on **27<sup>th</sup> Jan 2017** and obtained .....7+2 Credit hours awarded by Tamil Nadu Nurses and Midwives Council, Chennai.

Date :

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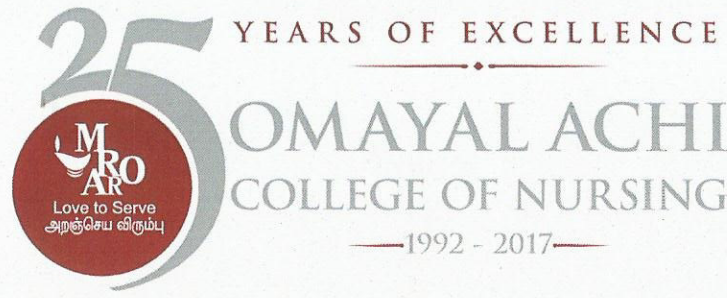


  
Organizing Secretary

THANTHAI ROEVER COLLEGE OF NURSING

  
Principal

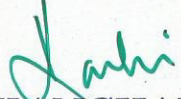
THANTHAI ROEVER COLLEGE OF NURSING



## CERTIFICATE OF TRAINING

This is to certify that Dr. / Prof. / Mr. / Ms. Vijayalakshmi  
was the Resource Person and presented on the topic Evidenced Informed Nursing  
Practice . in the

**6<sup>th</sup> TRAINING PROGRAMME ON "RESEARCH METHODOLOGY" ORGANIZED BY  
THE INTERNATIONAL CENTRE FOR COLLABORATIVE RESEARCH (ICCR),**  
Omayal Achi College of Nursing from 01/05/2017 to 05/05/2017. We thank him / her for his / her  
valuable contribution in making the Training Programme a success.

  
Dr.S.KANCHANA  
M.Sc (N), Ph.D (N), Post Doc. (Res.)  
Research Director & Principal  
ICCR, Omayal Achi College of Nursing  
Chennai, India

  
Dr.K.R.RAJANARAYANAN  
M.B.B.S., FRSH (London)  
Research Coordinator, ICCR  
Omayal Achi College of Nursing  
Chennai, India



सत्यमेव जयते



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1926 - 2013



# CONTINUING NURSING EDUCATION TRAINING PROGRAMME ON ACCOUCHEMENT

This is to certify that **DR. R. VIJAYALAKSHMI**..... has participated as a Delegate / Resource person in the CNE Training Programme on Accouchement ( Labour & Delivery Care ) sponsored by Government of India in collaboration with Tamilnadu Nurses and Midwives Council Chennai, conducted at Vignesh Nursing College, Tiruvannamalai from 21.07.2017 to 27.07.2017.

No.of credit hours awarded by the TNNMC is 4 Hrs.

**Dr. S. Ani Grace Kalaimathi, R.N., R.M., Ph.D.**

Registrar, Tamil Nadu Nurses and Midwives Council

**Dr. S. Vijayalakshmi, M.A., M.Sc(N.), Ph.D.**

Course Coordinator, Vignesh Nursing College



## CERTIFICATE FOR RESEARCH PUBLICATION/PRESENTATION

This is to certify that Prof. Ms. VIJAYALAKSHMI R. M.Sc. (N), pursuing her Ph.D programme in Nursing from Omayal Achi College of Nursing, affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Guindy, has published/presented the following papers in journals/international conference during her period of study, under my supervision and guidance. The copies of the publication and certificate of presentation has been attached.

### INDEX OF RESEARCH PUBLICATION/PRESENTATION

JOURNAL PUBLICATIONS			
S.No.	Author (s)	Title	Journal Details
1	Vijayalakshmi.R, Kanchana S	Pilot Study on the Effectiveness of Interventional Package on Pelvic Floor Muscle Strength and Knowledge among Women with Pelvic Floor Dysfunction at Selected Settings, Thiruvallur Dist	ICCRJNR, Jul - Dec 2016,1(2) 86-94 <a href="http://www.iccrjnr.com">http://www.iccrjnr.com</a> ISSN 2456-0200
2	Baby Shobana.N Vijayalakshmi.R, Kanchana S	Comparison of maternal and fetal outcome among obese and normal mothers in view of developing maternal obesity management strategy	TJPRC: IJOGNN JUN. 2017 1(1): 9 – 12 www.tjprc.org

### RESEARCH GUIDE

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## Pilot Study on the Effectiveness of Interventional Package on Pelvic Floor Muscle Strength and Knowledge among Women with Pelvic Floor Dysfunction at Selected Settings, Thiruvallur Dist

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### ARTICLE INFORMATION

#### Article History:

Received :  
Nov 06<sup>th</sup> 2016

Revised:  
Nov 18<sup>th</sup>, 26<sup>th</sup>  
2016

Accepted:  
Nov 18<sup>th</sup> 2016

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### Abstract

**Background:** Women's health is considered very important in many countries. One of the important aspects of women health is pelvic floor strength. Pelvic floor forms the core foundation of the lower body supporting the abdominal parts and also acts to maintain the continence of bowel and bladder both in male and female. When pelvic floor gets damaged due to any cause, the muscle strength gets weak which will lead to pelvic floor dysfunction. Prevalence of pelvic floor dysfunction was reported to be high among women in rural areas. Rural areas reported a prevalence of 44.2% (38.0 – 50.8 %). Community based nursing interventions are the need of the hour in managing the problem of pelvic floor dysfunction among women.

**Objective:** The objective of the study was to evaluate the effectiveness of an interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction.

**Methods:** Quantitative research approach with experimental design was used. A total of 40 women between 3 months post delivery to one year, with urinary incontinence, bowel incontinence, pelvic organ prolapse, pelvic pain or dyspareunia formed the samples, with 20 women each in the experimental and control groups. Random sampling technique was used - for selection of villages, lottery method; and for selection of samples, total enumeration technique was followed. Data was collected using structured interview schedule and modified oxford grading scale.

**Results:** Both the data collection tools were found to be highly reliable. Statistical analysis of the background and clinical variables revealed homogeneity between the experimental and control group in the pre-test. The statistical comparison of the level of knowledge and pelvic floor muscle strength revealed that the experimental group 'Z' value was 3.42 and 3.93 which showed a very high statistical significance at  $p=0.001$ . Positive correlation was identified between the level of knowledge and pelvic floor muscle strength, thus indicating that the interventional package was effective.

**Keywords** – pelvic floor muscle, pelvic floor muscle strength, interventional package, knowledge, pelvic floor dysfunction.

## Introduction

Women's health is considered the most important in many countries. Women are exposed to a lot of health risks due to various physiological changes happening within them. One of the important aspects of women's health is pelvic floor strength<sup>[1]</sup>. Pelvic floor muscle strength is required for proper functioning of the lower abdominal organs in women. Pelvic floor muscles help to keep the urine and feces inside the bladder and rectum and prevent incontinence. Pelvic muscles strength helps women in experiencing orgasm during sexual intercourse. Any factor which weakens the pelvic floor muscle causes dysfunction in these major functions in women<sup>[2]</sup>.

When pelvic floor gets damaged due to any cause, the muscle strength gets weak which will lead to pelvic floor dysfunction. Pelvic floor dysfunction among women include a group of clinical conditions such as 'urinary incontinence', 'fecal incontinence', 'pelvic organ prolapse', 'sexual dysfunction' and 'chronic pelvic pain'. These problems affect women's health very badly and disrupt the quality of life in women as they get older<sup>[3]</sup>.

The major contributing factors to pelvic floor dysfunction among women include increasing weight, pregnancy and childbirth, frequent lifting of heavy objects, having surgery or injury to pelvic floor and straining bowel patterns. Pregnancy and child birth have long been considered as risk factors in the genesis of pelvic floor dysfunction. The mechanical strain during delivery may give rise to partial denervation of the pelvic floor and injury to the muscle and connective tissue. The etiology is thought to be multifactorial. Traumatic damage to fascial and muscular support structures during childbirth may be an important contributor to the development of urinary incontinence and prolapse of pelvic organ<sup>[4-8]</sup>.

An alarming nature of pelvic floor dysfunction was observed in the recent years and the projections are even worse. The prevalence rate of women experiencing any one of the pelvic floor dysfunctions amongst the women in United States was estimated to be 25.0% (95% CI 23.6, 26.3). The prevalence included 17.1% (95% CI 15.8, 18.4) of women with moderate-to-severe urinary incontinence, 9.4% (95% CI 8.6, 10.2) with fecal incontinence, and 2.9% (95% CI 2.5, 3.4) with prolapses<sup>[9-10]</sup>.

The prevalence rates were found to be high across women in developed and developing countries. In India, studies have reported a prevalence rate of 21% with 19.02% of the women experiencing urinary incontinence and 1.99% experiencing pelvic organ prolapse. The prevalence of incontinence was found to be 18.6% in another study where the prevalence was reported in 12.5% of primi mothers as compared to 26.4% in multiple child births<sup>[11]</sup>.

Prevalence of pelvic floor dysfunction was reported to be high among women in the rural areas. Rural areas reported a prevalence of 44.2% (38.0 – 50.8 %), the reason being that most of the women do a lot of heavy lifting activities and give birth to more number of children<sup>[12]</sup>.

Community based nursing interventions are the need of the hour in managing the problem of pelvic floor dysfunction among women. Many interventions such as weight management, pelvic strengthening exercises, pelvic floor muscle training and behavioral therapy approaches are found to be useful in managing women with pelvic floor dysfunction.

The present study used the preventive model of community based interventions of women who underwent child birth process and included components of awareness generation and

intensive pelvic muscle strengthening activities which would help to prevent the occurrence of pelvic floor dysfunction.

The present study was conducted as a pilot study to know the feasibility of the study plan, intervention protocol and outcomes of the measurement tools.

### **Objectives of the study**

- To study the feasibility of the interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction.

### **Materials and Methods**

**Research Approach:** Quantitative Research Approach and Experimental design was adopted.

### **Sample selection criteria**

#### **Inclusive criteria:** Women

- who were willing to participate in the study
- who could understand Tamil
- Between 3 months post-delivery to one year with pelvic floor dysfunction.

#### **Exclusion criteria:** Women

- who had undergone pelvic floor exercise training programme
- undergone any surgery in the pelvis
- with Severe Medical and Surgical condition (Stroke, Colostomy)
- with postpartum complication ( wound gaping, infection, cervical tear)

**Sampling technique:** 55 villages adopted by the OACHC were divided into four zones (north, east, west south). Using a lottery method, 2 zones for experimental group and control group respectively were chosen. Total enumeration technique was used to select the samples.

### **Variables**

**Independent variable:** Intervention Package comprising of video assisted teaching of anatomy and physiology of pelvic floor, meaning, causes and risk factors of pelvic floor dysfunction, types, signs and symptoms, diagnosis, treatment modalities on pelvic floor dysfunction, demonstration of pelvic floor muscle strengthen exercises and importance of maintaining a healthy pelvic floor, demonstration and return demonstration of the Pelvic floor muscle strengthening exercises which include Kegel exercises, Abdominal clams core stabilizer exercise, Bladder control spinal rotation exercise, Sideleg circles exercise, rolling knee step, push up exercise, bridging exercise, alternate arm pulses exercises.

**Dependent variable:** Comprised Knowledge regarding pelvic floor dysfunction and assessment of pelvic floor muscle strength.

**Extraneous variables** are age, education, type of family, monthly income, religion, type of occupation, type of work, food habit, number of child birth, birth spacing between kids, mode of child birth, number of vaginal delivery, number of LSCS, height, weight, weight gain during pregnancy, BMI, induction of labour, duration of second stage of labour, weight of the

baby, post natal period, history of perineal trauma, previous information about pelvic floor exercise

### **Ethical considerations**

The study proposal and plan was granted formal ethical approval by the International Centre for Collaborative Research which is the official ethics review board of Omayal Achi College of Nursing. Consent was obtained from the Head of the institution, and the person in-charge of the Omayal Achi Community Health Centre (OACHC), and the village leaders. Written informed consent was obtained from the samples after clear explanation of the study purpose, type of data required, nature of commitments, participation, procedure and potential benefits, and the right to withdraw from the study at any point of time was also explained. Confidentiality of all personal details disclosed by the samples and full privacy was assured. Equality and justice was ensured by administering the intervention to the control group at the end of the post-test.

### **Study setting**

The study was conducted in eight selected villages, Pandeswaram, Ekambarachatram, Kalaignar Nagar, Kallikuppam (experimental) and Karani, Karalappakkam, Kandigai, Keelkondaiyar, (control) from among the 55 villages adopted by the Omayal Achi Community Health Centre (OACHC). These villages are located at about 5 kms distance in geographically opposite directions from the Omayal Achi Community Health Centre. The total population of mothers - 3 months post-delivery to 1 year in each village was around 10 to 20.

### **Instruments**

The tool consisted of the following:

#### **Data collection tool**

Part A: Tool to assess pelvic floor dysfunction

Part B: Demographic and clinical variables

Part C: Assessment of knowledge using structured interview schedule.

Part D: Tool to assess pelvic floor muscle strength

#### **Intervention tool**

**Interventional package** consisted of video assisted teaching, demonstration and return demonstration techniques used by the investigator to strengthen the pelvic floor muscle and improve the knowledge in women with pelvic floor dysfunction. It consisted of knowledge components and exercises.

- Video assisted teaching included anatomy and physiology of pelvic floor, causes of pelvic floor muscle weakness, effect of pelvic floor muscle weakness, medical and surgical management, and prevention of complications and importance of maintaining a healthy pelvic floor
- Exercise programme through video assisted teaching, demonstration and return demonstration on Kegel exercise, Abdominal Clams Core Stabilizer Exercise, Bladder Control Spinal Rotation Exercise, Side Leg Circles Exercise, Rolling Knee Step, Push Up Exercise and Bridging Exercises
- The interventional package was administered individually at their home and its total duration was about 30 minutes. Every woman was asked to maintain a daily chart to tick the column, if she performed the exercises and was sent messages through the mobile phone as reminders to perform exercises. Reinforcement was given through the form of a

booklet and community level volunteers, identified by the investigator to reinforce the need to do regular exercises.

### Data analysis

Descriptive statistics such as mean and standard deviation and inferential statistics such as Mann Whitney U-test, Wilcoxon signed rank test, Karl Pearson correlation co-efficient, Kruskal Walls H-test and chi square were used for analyzing the data.

### Results

The reliability of the data collection tools was assessed using Test-retest and split half technique and the correlation coefficient r-value obtained was 0.88 for the knowledge questionnaire and 0.82 for the modified Oxford grading scale. These correlation coefficient values are very high and hence, these tools are reliable enough for assessing the effectiveness of pelvic floor muscle strength and knowledge among women at selected villages, Chennai.

Table 1 showed that the posttest level of total score mean was increased after intervention in the experimental group and the rank test also shows a high statistical significant difference at  $p < 0.001$  level, which indicates that the intervention was effective in improving the knowledge about pelvic floor dysfunction.

Table 2 showed that in the control group, the post test level of knowledge score about pelvic floor dysfunction was not increased and also the Z value shows no significant difference which indicates that without giving intervention, there was no difference in knowledge score.

Table 3 revealed that there was a high statistically significant difference between the pre and post test score at  $p < 0.001$ , which indicates that the interventional package on pelvic floor muscle strength was found to be effective.

Table 4 revealed that there was no statistically significant difference between the pre and post test score in the control group

**Table1: Comparison of the Pre and Post test level of knowledge among women with pelvic floor dysfunction in the experimental group**

N=20

S.No	Domains	Experimental group				Wilcoxon Signed rank test
		Pretest		Posttest		
		Mean	SD	Mean	SD	
1	General Information	0.85	0.93	3.25	0.97	Z=3.75 P=0.001***
2	Possible causes / Risk factors	0.70	0.73	3.65	1.04	Z=3.10 P=0.01**
3	Signs and Symptoms	0.70	0.66	3.80	1.51	Z=3.30 P=0.001***
4	Treatment of Pelvic Floor Dysfunction	1.00	0.92	1.60	0.50	Z=2.23 P=0.03*
5	Pelvic floor muscle strength exercises	1.40	0.80	5.35	1.44	Z=3.92 P=0.001***
	<b>Total</b>	4.65	2.67	17.65	2.70	Z=3.42 P=0.001***

\*\*\* Very High Significance at  $P \leq 0.001$

Table 5 showed a positive correlation between the muscle strength and knowledge in experimental group. It indicates that if knowledge increases, the muscle strength increases. It concludes that if the woman has knowledge about pelvic floor dysfunction, she will practice the exercises regularly. Hence the muscle strength increases, whereas in control group there was no correlation between knowledge and muscle strength.

**Table 2: Comparison of the Pre and Posttest level of knowledge among women with pelvic floor dysfunction in the control group**

N=20

Domains	Control group				Wilcoxon Signed rank test
	Pretest		Posttest		
	Mean	SD	Mean	SD	
General Information	0.90	0.72	1.10	0.73	Z=1.01 P=0.37, N.S
Possible causes / Risk factors	0.65	0.75	0.95	0.67	Z=1.81 P=0.07, N.S
Signs and Symptoms	0.85	0.75	1.15	0.51	Z=0.80 P=0.44, N.S
Treatment of Pelvic Floor Dysfunction	0.95	0.69	1.00	0.69	Z=0.00 P=1.00, N.S
Pelvic floor muscle strength exercises	1.45	0.83	2.10	0.57	Z=1.29 P=0.19, N.S
<b>Total</b>	4.70	2.49	6.30	1.82	Z=1.70 P=0.08, N.S

N.S= Not significant

**Table 3: Comparison of the pre and posttest level of pelvic floor muscle strength among women with Pelvic floor dysfunction in the experimental group**

N=20

S.No.	Domains	Experimental Group				Wilcoxon Signed rank test
		Pre test		Post test		
		Mean	SD	Mean	SD	
1	Power	02.30	0.57	03.25	0.64	Z=3.34 P=0.001***
2	Endurance	02.10	0.31	03.10	0.55	Z=3.71 P=0.001***
3	Repetitions	01.70	0.47	03.15	0.67	Z=3.84 P=0.001***
4	Fast Contraction	01.70	0.47	03.20	0.62	Z=3.91 P=0.001***
5	Every Contraction Timed	01.75	1.16	02.90	0.55	Z=2.89 P=0.001***
	<b>Total</b>	09.55	1.19	15.60	1.88	Z=3.93 P=0.001***

\*\*\* Very high significant at  $P \leq 0.001$

**Table 4: Comparison of pre and post test level of pelvic floor muscle strength among women with Pelvic floor dysfunction in the control group**

N=20

S.No.	Criteria	Control Group				Wilcoxon Signed rank test
		Pre test		Post test		
		Mean	SD	Mean	SD	
1	Power	02.05	0.51	2.15	0.49	Z=1.00 P=0.37, N.S
2	Endurance	02.15	0.59	2.20	0.62	Z=0.57 P=0.56, N.S
3	Repetitions	01.95	0.60	2.15	0.60	Z=1.29 P=0.19, N.S
4	Fast Contraction	01.80	0.62	1.95	0.60	Z=1.08 P=0.27, N.S
5	Every Contraction Timed	01.85	0.67	1.95	0.67	Z=0.00 P=1.00, N.S
	<b>Total</b>	09.80	2.02	10.40	1.74	Z=1.22 P=0.22, N.S

N.S = Not significant

**Table 5: Correlation of the mean differed level of knowledge with pelvic floor muscle strength among women with pelvic floor dysfunction between experimental and control groups.**

N=40

Group	Variables	Mean difference	SD	Karl pearson correlation coefficient
Experimental	Knowledge	13.00	±5.20	r=0.51 p=0.01**
	Strength	6.05	±2.37	
Control	Knowledge	1.60	±4.40	r=0.19 p=0.22, N.S
	Strength	0.60	±1.72	

\*\* High Significant at  $P \leq 0.01$ 

N.S- Not Significant

### Discussion

The main focus of this study was to test the reliability and feasibility of the data collection tools and intervention tool and its acceptability and effectiveness in enhancing the understanding of the women, and to practice regularly to improve the pelvic floor muscle strength and encouraging them to incorporate the specified, simple strategy to reduce the risk of pelvic floor weakness. Prolapse was not prevalent in our population. The results indicated that tools used -structured interview schedule and modified Oxford grading scale are highly reliable and appropriate for assessing the knowledge and pelvic floor muscle strength respectively.

The pilot study also showed that the total enumeration technique that was used to select, the sampling technique based on the set inclusion and exclusion criteria were appropriate for sample selection. The method of administering the interventional package, the teaching methods selected and the proposed analytical measures were suitable for the study. The comparison within and between the groups showed that there was a statistical significance. The overall plan was effective, feasible and practicable to be applied in the main study.



**Conclusion**

The pilot study on the effectiveness of interventional package on pelvic floor muscle strength and knowledge among women in the selected villages revealed a high prevalence of pelvic floor dysfunction with urinary incontinence as a predominant problem among the women in the rural areas. The Data collection tools used were reliable, feasible and appropriate to be applied to the samples in the main study and the intervention package was effective in significantly improving the muscle strength among women with pelvic floor dysfunction. The study findings also showed that among the rural people, knowledge was poor and pelvic floor muscle strength was low. The findings also proved that community based nursing interventions are effective in improving the pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction.

**Source of support: NIL**

**Conflict of interest: NIL**

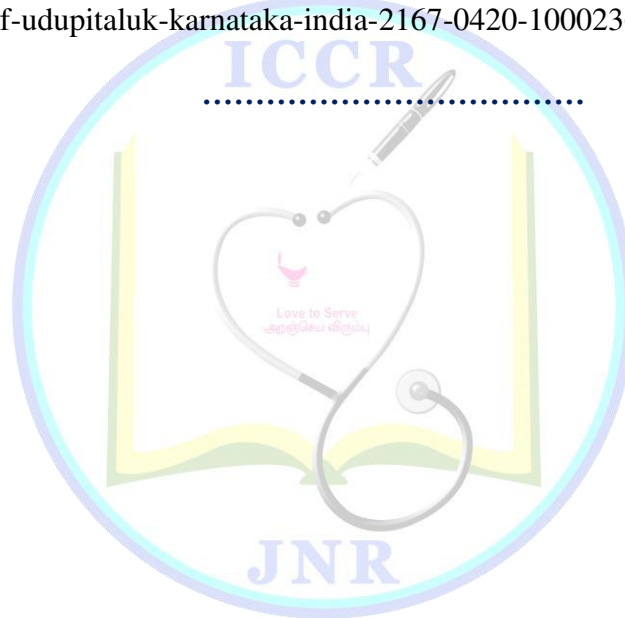
**Acknowledgement**

I extend my sincere thanks to Balwadi workers and key persons in the villages who helped me to identify the women for the study. Also thank all content validity experts from various institutions, my research assistant Ms. Girija B.Sc.(N) and Ms. Uthralakshmi B.Sc.(N) who helped me for data collection and all the women who participated in this pilot study.

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**COMPARISON OF MATERNAL AND FETAL OUTCOME AMONG OBESE  
AND NORMAL MOTHERS IN VIEW OF DEVELOPING MATERNAL OBESITY  
MANAGEMENT STRATEGY**

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**ABSTRACT**

*A comparative study was done to assess the maternal and fetal outcome among obese and normal mothers in view of developing maternal obesity management strategy, 200 mothers who were in labour were grouped according to their BMI by purposive sampling technique, 100 normal mothers (BMI 18.5-24.9kg/m<sup>2</sup>) and 100 obese mothers (BMI ≥25kg/m<sup>2</sup>) at selected hospitals, Chennai. The findings revealed that Obese women were about 6 times likely to develop PIH (OR – 6.37) and malposition (6.31), 2 times more likely to deliver by forceps application (OR – 2.69), 3 times of risk to deliver by vacuum extraction (OR – 3.59), meconium aspiration (OR – 3.06) and prolonged wound healing (OR – 3.12). Maternal obesity in early pregnancy is strongly associated with a number of maternal and fetal outcomes. Hence the maternal obesity management strategy will create awareness among future mothers with obesity*

**KEYWORDS:** *Obese Mothers, Maternal and Fetal Outcome, Maternal Obesity Management Strategy*

**Received:** Feb 18, 2017; **Accepted:** Mar 10, 2017; **Published:** Mar 14, 2017; **Paper Id.:** TJPRC:IJOGNNJUN20173

## **CONTENT VALIDITY CERTIFICATE**

This is to certify that the data collection tool developed by **Prof. Ms. Vijayalakshmi. R** Ph.D scholar under the guidance of **Dr. S. Kanchana**, Principal and Research Director, ICCR, Omayal Achi College of Nursing, affiliated to The Tamil Nadu Dr. M.G.R Medical University, Guindy, on the topic **“An Experimental Study to Evaluate the Effectiveness of an Interventional Package on Pelvic Floor Muscle Strength and Knowledge Among Women with Pelvic Floor Dysfunction at Selected Settings, Thiruvallur Dist.** during the study period from January 2013 to January 2017, has been validated for appropriateness, depth of content, simplicity and clarity.

### **Tools validated:**

1. Risk assessment
2. Demographic data
3. Structured Interview Schedule for knowledge
4. Assessment of Pelvic Floor Muscle Strength
5. Intervention Tool

### **Comments:**

### **Suggestions/Recommendations:**

### **Signature of the expert:**

### **Designation and institutional address:**

### **Seal:**

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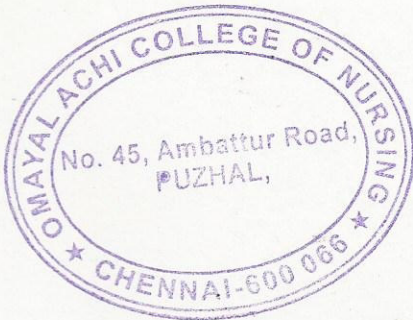
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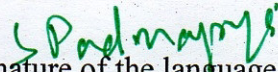
This is to certify that Mrs. R. Vijayalakshmi, Associate Professor & Head of the Department of Obstetrics & Gynaecological Nursing Department is doing her Ph.D(N) at Omayal Achi College of Nursing on the title “ AN EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF AN INTERVENTIONAL PACKAGE ON PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION AT SELECTED SETTINGS, THIRUVALLUR DISTRICT” has undertaken training from me to do the per vaginal examination to assess the pelvic floor muscle strength among women who are participating the her study.



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Signature of the language expert  
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Date: **POOCHIATHIPATTU**

Place: **19.12.2017**

CERTIFICATE OF TAMIL EDITING  
TO WHOMSOEVER IT MAY CONCERN

This is to certify that the thesis work executed by **prof. Ms. Vijayalakshmi. R PhD** Scholar, under the guidance of **Dr. S. Kanchana**, Principal and Research Director, Omayal Achi College of Nursing, affiliated to The Tamil Nadu Dr. M.G.R Medical University, Guindy, on the topic of “**Effectiveness of an Interventional Package on Pelvic Floor Muscle Strength and Knowledge Among Women with Pelvic Floor Dysfunction at Selected Settings, Thiruvallur Dist**”. during January 2013 to January 2017 is edited by me for Tamil language appropriateness and found to be correct.

*M. Valarmathy.*

Signature of the language expert

**GOVT. HIGH SCHOOL  
BOOCHIATHIPATTU - 600 052.**

Designation and address

*M. VALARMATHY  
GRADUATE TEACHER  
TAMIL*

Date: *BOOCHIATHIPATTU*

Place: *19.12.17*



## **INFORMED CONSENT FORM**

I have been informed that Prof. Mrs.Vijayalakshmi.R Ph.D Scholar at Omayal Achi College of Nursing, is doing her research on the topic “An experimental study to evaluate the effectiveness of interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction at selected settings, Thiruvallur dist”. I have been explained that the data collection for the study involves disclosure of my personal information regarding demography, clinical, obstetrical data and vaginal examination.

I understand that my identity and all information disclosed by me will be kept confidential. I also realize that there are no risks associated and my participation in this study is entirely voluntary. I have also been informed that I may choose to discontinue my participation at any point if wish and will continue to be treated in the usual and customary manner. I realize that my anonymity will be maintained throughout the study. However, the data collected and the study proceedings may be audio or video recorded and used in nursing publication or presentations for the benefit of women.

Any queries regarding my involvement in the study will be clarified by the investigator at any time. The study has been explained to me and I have understood the contents of the consent form. All my questions have been answered and hence I give my full cooperation and consent to participate in the study.

If needed, I may contact the investigator,

**Prof. Mrs.Vijayalakshmi R (Mobile No. 9840132303)**

Ph.D Scholar,

Omayal Achi College of Nursing,

Puzhal, Chennai-66.

**Name of the participant:**

**Signature with date**

**Name of the investigator:**

**Signature with date**

**Name of the witness:**

**Signature with date**

**ஒப்புதல் படிவம்.  
(அல்லது)  
முன் அறிவிப்பு ஒப்பந்த படிவம்.**

உமையாள் ஆச்சி செவிலியர் கல்லூரியின் சார்பில் முனைவர் பட்டப்படிப்பு பயிலும் பேராசிரியர் திருமதி.விஜயலக்ஷ்மி. ரா அவர்களால் நடத்தப்படும் இந்த ஆய்வில் என்னை பங்கேற்க கேட்டுக்கொண்டதை நான் ஏற்றுக்கொள்கிறேன். இந்த ஆராய்ச்சியானது பெண்களின் ஆரோக்கியத்தை மேம்படுத்துவதற்கான வழிமுறைகளை பற்றிய ஆராய்ச்சி படிப்பாகும். மற்றும் என்னுடைய சுய தகவல்கள் குறிப்பாக, தனி நபர் தகவல் படிவம், kfg;ngW gpz;zdp மருத்துவ gpz;zdp ஆய்வு குறித்த பிண்ணனி ,Lg;g[ js typikia fz;lwptjw;F தகவல்கள் சேகரிக்கப்படும் என்பதை நான் அறிவேன்.

என்னைப்பற்றி சேகரித்த சுய தகவல்கள் அனைத்தும் வெளியிடப்படாமல் ஆய்வு மேற்கொள்ளப்படும் என்பதை நான் அறிவேன். இந்த ஆய்வின் மூலம் எனக்கு எந்த வித பாதிப்பும் ஏற்படாது என்பதால் நான் இந்த ஆய்விற்கு மனபூர்வமாக சம்மதிக்கிறேன். நான் இந்த ஆய்விற்கு மனபூர்வமாக சம்மதிக்கிறேன். நான் யாருடைய கட்டாயத்தின் பெயரிலோ, வற்புறுத்தலின் பெயரிலோ ஆய்வில் பங்குக்கொள்ளவில்லை என்பதையும், தேவைப்பட்டால் நான் ஆய்விலிருந்து விலகிக்கொள்ளவும் எனக்கு முழு உரிமை உண்டு என்பதை அறிவேன். அவ்வாறு ஆய்விலிருந்து விலகிக்கொள்ளும்பட்சத்திலும் எப்பொழுதும் பிறரைப் போலவே நடத்தப்படுவேன் என்பதையும் அறிவேன். என்னைப்பற்றிய அனைத்து தகவல்களும் இரகசியமாக பாதுகாக்கப்படும் என்பதை அறிவேன். தேவைப்படும் போது ஆய்வின் முடிவுகள் செவிலியர் சார்ந்த பத்திரிகைகளிலும் கருத்தரங்குகளிலும் வெளியிட முழு சம்மதம் அளிக்கிறேன் மற்றும் ஆய்வின் முடிவுகள் செவிவழி தொடுமுறையின் மூலமாகவோ அல்லது படக்காட்சியாகவோ வெளியிட்டு என் போன்ற பெண்கள் பயனடைய சம்மதிக்கிறேன்.

ஆய்வினைப் பற்றிய சந்தேகங்கள் அனைத்தும் ஆய்வாளரால் தீர்த்து வைக்கப்படும் என்பதை நன்கு அறிவேன். இந்த ஆய்வினைப்பற்றிய முழு விளக்கமும் எனக்கு அளிக்கப்பட்டிருக்கிறது. இந்த ஆய்விற்கு தேவையான கேள்விகளுக்கு தகுந்த பதில்களை அளித்து ஆய்வில் முழு மனதுடன் பங்குக்கொள்ள சம்மதம் அளிக்கிறேன்.

தேவைப்படும்போது, நான் ஆய்வாளரை தொடர்புக் கொள்ள,

**திருமதி. விஜயலக்ஷ்மி. ரா**  
தொ. பே. எண்: 9840132303)  
முதுநிலை பட்டதாரி,  
உமையாள் ஆச்சி செவிலியர் கல்லூரி,  
புழல், சென்னை 600 066.

பங்கேற்பவரின் பெயர்	:	கையொப்பம் மற்றும் தேதி
ஆராய்ச்சியாளரின் பெயர்	:	கையொப்பம் மற்றும் தேதி
சாட்சியின் பெயர்	:	கையொப்பம் மற்றும் தேதி

## SYMPTOMS CHECK LIST TO ASSESS THE PELVIC FLOOR DYSFUNCTION

This survey has been designed to see if you are at risk of pelvic floor problems, and if so, to make sure your exercise program is *pelvic floor safe*. The survey will take 5 minutes to complete and your answers will be confidential

**Code No.:**

S.No	Types of pelvic floor dysfunction	Yes	No
1	<b>Lower urinary tract symptoms</b> 1. Urinary incontinence 2. Urgency and frequency 3. Slow or intermittent stream and staining 4. Feeling of incomplete emptying		
2	<b>Bowel symptoms</b> 1. Obstructed defecation 2. Functional constipation 3. Fecal incontinence 4. Rectal/ anal prolapse		
3	<b>Vaginal symptoms</b> 1. Pelvic organ prolapse 2. Sexual Function ❖ Painful intercourse ❖ orgasmic dysfunction 3. Pain ❖ chronic pelvic pain		

## **DATA COLLECTION TOOL**

Dear Participant,

I Mrs. Vijayalakshmi R, Ph.D Scholar, would like to collect certain baseline details about you and assess your knowledge. I request you to feel free to express your symptoms which will be kept confidential and used only for this study purpose. If you have any doubts you can clarify and you are given the freedom of choice to participate in the study, even in the middle of study you are given full freedom to withdraw. I assure you that this study will not harm you.

Express your willingness to participate in the study titled “An experimental study to evaluate the effectiveness of an interventional package on pelvic floor muscle strength and knowledge among women with pelvic floor dysfunction at selected settings, Thiruvallur dist. and to provide necessary information and kindly accept the interventions. The information provided will be kept confidential and used only for this study purpose.

## **STRUCTURED INTERVIEW SCHEDULE**

### **PART -1: DEMOGRAPHIC VARIABLES**

#### **1. Age (in Years) :**

#### **2. Education**

- a. No formal education
- b. Primary school
- c. Middle school
- d. High school
- e. Undergraduate
- f. Postgraduate and more

#### **3. Religion**

- a) Christian
- b) Hindu
- c) Muslim
- d) Others (specify)

#### **4. Type of Family**

- a) Joint Family
- b) Nuclear Family
- c) Extended Family

#### **5. Family monthly Income (in Rs per month )**

- a. >30375
- b. 1518-30374
- c. 11362-15187
- d. 7594-11361
- e. 4556-7593
- f. 1521-4555
- g. <1520

**6. Occupational status**

- a) Employed – full time
- b) Employed – part time
- c) Unemployed
- d) Daily labour
- e) Retired

**7. If employed, current employment status-----**

**8. Type of Work**

- a. Sedentary
- b. Heavy worker
- c. Moderately heavy worker

**9. Food Habit**

- a) Vegetarian
- b) Ova Vegetarian
- c) Non – Vegetarian

**II Obstetrical Variable:**

**1. Number of child birth (G P L A S D)**

- a. One
- b. Two
- c. Three
- d. More than three

**2. Birth spacing between two children ( Incase of Multi)**

### 3. Mode of previous child birth

	1	2	3	4	5
a. Normal Vaginal Delivery					
b. Vaginal delivery with forceps instrument					
c. Vaginal delivery with vacuum instrument					
d. Normal vaginal delivery with episiotomy					
e. LSCS					
g. VBAC					

### 4. No. of vaginal birth/LSCS

- a. One
- b. Two
- c. Three
- d. More than three

### III. Clinical variable:

5. Height = - - - - - (in cm)

6. Weight during term/delivery - - - - - (in Kg)

7. Weight gain during pregnancy - - - - - ( in Kg)

### 8. Body Mass Index(WHO) during pregnancy

- a) Underweight (< 18.5)
- b) Normal Range ( 18.5 – 24.9)
- c) Over weight ( 25 -29.9)
- d) Obese (  $\geq$  30 )

### 9. Induction of Labour

- a) Medical Induction
- b) Surgical Induction
- c) Both
- d) Nil

**10. Duration of First stage of Labour -----**

**11. Duration of second stage of labour**

- a) Less than One Hour
- b) More than One Hour

**12. Weight of the baby at birth**

- a) < 2 Kg
- b) 2 – 3 Kg
- c) 3 – 4 Kg
- d) > 4 Kg

**13. Postnatal Period**

- a) 3 – 6 months
- b) 7 – 9 months
- c) 10 – 12 months

**14. A. Any history of perineal trauma during vaginal delivery**

- a. Yes
- b. No

**B. If yes, specify the degree of perineal trauma**

- a. I degree
- b. II degree
- c. III degree

**III. Study specific Variable:**

**1. A. Family history of pelvic floor dysfunction**

- a) Yes
- b) No

**B. If yes, specify the family relationship**

- a) I Degree (maternal or paternal)
- b) II Degree
- c) III Degree



**C) Specify the type of pelvic floor dysfunction**

- a) Urinary incontinence
- b) Bowel incontinence
- c) Pelvic organ prolapse
- d) Pelvic pain
- e) Painful intercourse

**2. A) Previous source of the information regarding pelvic floor dysfunction and pelvic floor muscle strength exercises**

- a) Yes
- b) No

**B) If yes, Specify**

- a) Health care personnel
- b) Relatives
- c) Mass Media
- d) Others

**3. A. Are you doing any type of exercises**

- a. Yes
- b. No

**B. If yes, Specify**

**Section B: Structured Interview Schedule to assess the knowledge regarding Pelvic floor dysfunction and Pelvic floor muscle strength exercises.**

**I. General Information:**

1. What is pelvic floor?
  - a. Complex layer of tissues
  - b. Complex layers of fibres
  - c. Complex layers of muscles
  - d. Complex layers of nerves
  
2. What is pelvic floor dysfunction?
  - a. Unable to control the abdominal pain and vomiting
  - b. Unable to control the urine and faeces
  - c. Unable to control the discharge and bleeding form vagina
  - d. Unable to control cough or sneeze
  
3. What is the function of pelvic floor?
  - a. Support the lower and upper abdominal organ
  - b. Support the lower abdominal organ
  - c. Support the upper abdominal organ
  - d. Support the pelvic and abdominal organs.
  
4. How will be the pelvic floor muscle during the postnatal period?
  - a. Wrinkled
  - b. Rigid
  - c. Soft, flabby and weak
  - d. Consistent

**II. Possible causes / Risk factors:**

5. What is the common risk factor for pelvic floor dysfunction?
  - a. Vaginal Birth
  - b. Vaginal Examination
  - c. Vaginal infection
  - d. Vaginal Polyps

6. How does the vaginal childbirth contributes to pelvic floor dysfunction?
  - a. Prolonged first stage of labour
  - b. Prolonged second stage of labour
  - c. Prolonged third stage of labour
  - d. Prolonged forth stage of labour
  
7. When do you feel the risk of developing Pelvic flood dysfunction?
  - a. Excess menstrual bleeding
  - b. Scanty menstrual flow
  - c. Previous trauma to the pelvic region
  - d. Previous trauma to the abdominal region

### **III. Signs and Symptoms:**

8. What are the signs and symptoms of pelvic floor dysfunction?
  - a. Leaking of serous fluid and sweat
  - b. Leaking of blood and discharge
  - c. Leaking of pus and mucus
  - d. Leaking of urine and faeces
  
9. How do you identify the pelvic floor dysfunction?
  - a. Losing control of muscle coordination
  - b. Losing control of urine and wind
  - c. Losing control of nerve coordination
  - d. Losing control of bone strength
  
10. How do you feel the symptoms of prolapse of pelvic organ in to the vagina?
  - a. Feeling of heaviness, pulling and dragging
  - b. Feeling of irritation and leaking
  - c. Feeling of dryness and burning sensation
  - d. Feeling of burning and leaking

11. What is the common sign of women with pelvic floor dysfunction during cough or sneeze?

- a. Accidentally leaking urine
- b. Accidentally leaking white discharge
- c. Accidentally leaking blood
- d. Accidentally leaking serum

12. How can we evaluate the function of pelvic floor muscle?

- a. History collection
- b. Ultrasonography
- c. CTG
- d. Manual technique

13. Which device is used for assessing the pelvic floor contractions?

- a. Ultra sound
- b. Coloposcopy
- c. Perineometer
- d. Speculum examination

**D. Treatment of Pelvic Floor Dysfunction:**

14. How the pelvic floor muscle can be strengthened?

- a. By rest
- b. By heavy work
- c. By exercises
- d. By medication

15. What are the modalities used for treating pelvic floor dysfunction?

- a. Self care, vaginal cones and electrical stimulation
- b. Home care, walking and dieting
- c. Medications and ointment
- d. Counselling and medications

## **PELVIC FLOOR MUSCLE STRENGTH EXERCISES**

16. Why should women with pelvic floor dysfunction do exercises?
- To improve general strength
  - To enhance their functioning capacity
  - To be relieved from distress
  - To improve pelvic floor muscle strength
17. What types of exercises are advisable for pelvic floor dysfunction?
- Sit up exercises
  - Deep breathing exercises
  - Muscle strength exercises
  - Circulatory Exercises
18. What is one of the benefits of pelvic floor muscle strengthening exercises?
- To prevent abortion in future
  - To prevent uterine prolapse
  - To prevent abdominal hernias
  - To prevent pelvic trauma
19. How many times a day should the exercises to be performed?
- 5 -10 times
  - 10 -15 times
  - 15-20 times
  - 20-25 times
20. Which is the best time to perform pelvic floor muscle strength exercises?
- Afternoon after food only
  - Before bedtime only
  - Anytime of the day
  - Only morning

21. What advice the women should follow before and after exercises?

- a. Not to drink water
- b. Not to eat
- c. Do Warm up and cool down exercises
- d. Empty the bladder

22. What are the purposes of abdominal core stabilizers exercises?

- a. Protect the spine and prevent back pain
- b. Prevent hernia
- c. Strengthen the pelvic floor muscles
- d. Protect abdominal internal organs

23. What are the benefits of spinal rotation exercises?

- a. Maintaining bladder control and preventing bladder weakness
- b. Prevent back pain
- c. Prevent muscle strain
- d. Protect the spine

24. What are the advantages of Kegel's exercises?

- a. Prevent hernias
- b. Prevent leucorrhoea
- c. Prevents bladder incontinence & bowel incontinence
- d. Regularises normal menstruation

25. Kegel exercises are practiced by?

- a. Contracting the abdomen
- b. Contracting and releasing the urethra, vagina and rectal muscles
- c. Contracting thigh muscles
- d. Lifting the leg up and down

## PERFECT ASSESSMENT FOR PELVIC FLOOR MUSCLE

NAME OF THE MOTHER :	AGE :	YEAR :	MONTH :
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DATE	Preassessment:	Postassessment:	SAMPLE NO :
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S.No	Criteria	Preassessment						Postassessment					
		Grade						Grade					
		0	1	2	3	4	5	0	1	2	3	4	5
		Nil	Ficker	Weak	Moderate	Good	Strong	Nil	Ficker	Weak	Moderate	Good	Strong
1	Power (Measurement of Maximal Voluntary Contraction)												
2	Endurance (Length of Time)												
3	Repetitions (No. of Repetitions)												
4	Fast Contraction												
5	Every Contraction Timed (Time & Record)												

Signature of the Investigator

**MODIFIED OXFORD PERFECT GRADING SCHEME**

S.No	Criteria	Assessment					
		Grade					
		0	1	2	3	4	5
		Nil	Ficker	Weak	Moderate	Good	Strong
1	Power (Measurement of Maximal Voluntary Contraction)	No discernible muscle contraction	A flicker or pulsation is felt under the examiner's finger	An increase in tension is detected, without any discernible lift.	Muscle tension is further enhanced and characterised by lifting of the muscle belly and also elevation of the posterior vaginal wall and an in-drawing of the perineum and anus.	Increased tension and a good contraction are present which are capable of elevating the posterior vaginal wall against resistance.	Strong resistance can be applied to the elevation of the posterior vaginal wall.
2	Endurance (Length of Time)	No Longer	One second	2 - 3 Seconds	4 - 5 seconds	6 - 7 seconds	8 - 10 Seconds
3	Repetitions (No. of Repetitions)	No Longer	One Time	2 - 3 Times	4 - 5 Times	6 - 7 Times	8 - 10 Times
4	Fast Contraction	No Longer	One Time Contraction	2 - 3 Contractions	4 - 5 Contractions	6 - 7 Contractions	8 - 10 Contractions
5	Every Contraction Timed (Time & Record)						



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ஈ இதரவகை (குறிப்பிடுக)

4 குடும்ப வகை  
அ Tl;L FLk;gk;  
ஆ தனி குடும்பம்  
இ ePl;of;fg;gl;l FLk;gk;

5 குடும்ப மாத வருமானம்(ரூபாய் மாதத்தில்)  
அ.  $\geq 36997$   
ஆ 18498-36996  
இ 13874-18497  
ஈ 9249-13873  
உ 5547-9248  
ஊ 1866-5546  
எ  $\leq 1865$

6 bjhHpy;rhu; epiy  
m/ KGneu ntiy  
M/ gFjpneu ntiy  
./ ntiyapy;yhik  
</ jpdf;Typ  
c/ Xa;t{jpak

7. ntiyapy; ,Ug;gtu;fshapd;. jw;nghija ntiyapd; epiy

8 czt[ gHf;ftHf;fk;  
m/ irtk;  
M/ irtk; kw;Wk; Kl;il  
./ mirtk;

## kfg;ngW gpz;zdp

- 1 FHe;ijfspன் எண்ணிக்கை  
அ. ஒன்று  
ஆ. இரண்டு  
இ.முன்று  
ஈ. K:d;Wf;F nky;
- 2 ,uz;L FHe;ijfSf;F ,ilapyhd ,ilbtsp
- 3 FHe;ij gpwe;j Kiw  
அ. சுக பிரசவம்  
ஆ. சுகபிரசவம் மற்றும் இடுக்கி கருவி  
இ சுகபிரசவம் மற்றும் காற்று கருவி  
ஈ அறுவை சிகிச்சை
- 4 சுக பிரசவம் - அறுவை சிகிச்சை எண்ணிக்கை  
அ ஒன்று  
ஆ இரண்டு  
இ K:d;W  
ஈ K:d;Wf;F nky

## மருத்துவ gpz;zdp

- 5 உயரம் (br/kP)
- 6 பிரவசத்தின் nghJ எடை (fp/fp)
- 7 பிரவசத்தின் nghJ Toa vil (fp/fp)
8. பிரவசத;jpd; nghjhd cly; ey FwpaPI;blz;  
அ குறைவான எடை (< 18.5)  
ஆ அளவான விகிதம் (18.5-24.9)  
இ அதிக எடை (25-29.9)  
ஈ குண்டான ( ≥ 30)
- 9 gps;isg;ngw;W typapd; bjhlf;fk;  
அ kUj;JtuPjpahd bjhlf;fk;  
M/ mWit rpfpr;rpapyhd bjhlf;fk;  
,/ ,uz;Lk;  
</ vJt[k; ,y;iy

10 gps;isg;ngw;Wf;fhd இuz;lhtJ epiyapd; fhy mst[

அ ஒரு மணி neu;jpw;Fk குறைவான

ஆ ஒரு மணி neu;jpw;Fk; nky;

11 gpwe;j FHe;ijapd; vil

1. < 2 fp/fp

2. 2 – 3 fp/fp

3. 3 – 4 fp/fp

4. > 4 fp/fp

12 FHe;ij ngw;Wf;F gpd;fhyk;

1. 3-6 மாதம்

2. 7-9 மாதம்

3. 10-12 மாதம்

13 gpurtj;jpd; nghJ VnjDk; gpwg;g[Wg;g[ ghjpg;g[

1.ஆம்

2.இல்லை

ஆம் எனில். gpwg;g[Wg;g[ ghjpg;gpன; அளவு

அ முதல் அளவு

ஆ இரண்டாம் அளவு

இ முன்றாம் அளவு

**ஆய்வு குறித்த பிண்ணனி**

1 அ குடும்ப பிண்ணனியில் யாஈரனும் இLg;g[js பிரச்சனையில் பாதிக்கப்பட்டுள்ளனரா?

1.ஆம்

2.இல்லை

ஆ ஆம் எனில் குடும்ப உறவு bதாடர்பாக குறிப்பிடுக

1.முதல் அளவு

2.இரண்டாம் அளவு

3.முன்றாம் அளவு

இ இடுப;g[ தள பிரச்சனையின் வகையை குறிப்பிடுக

1.சிறுநீர் கட்டுப்படுத்த இயலாமை

2.மலம் கட்டுப்படுத்த இயலாமை

3. இடுப;g[ உறுப்ப[ இடம் bபயர்தல்

4.இடுப்ப[ தள வலி

5. உடல் உறவின் போது வலி

2 ,Lg;g[ js bray; ,Hg;g[ kw;Wk; ,Lg;g[ js jir typik gapw;r;rp gw;wpa Ke;ija K:yjfty;fs;  
VnjDk; mwpe;jpUf;fpwPu;fsh >

1. ஆம்
  2. இல்லை
- ஆம் எனில். குறிப்பிடுக
1. சுகாதார துறை நபர் மூலமாக
  2. உறவினர்கள்
3. Clf';fs;
  4. இதர

3 VnjDk; clw;gapw;rp bra;fpwPu;fsh >

1. ஆம்
2. இல்லை

#### பகுதி ஆ

**,Lg;g[ js bray; ,Hg;g[ kw;Wk; ,Lg;g[ js jir typik gapw;rp Fwpj;j mwpt[j;jpwid fzf;fpl  
fl;likf;fg;gl;l ml;ltiz-nfs;tpfs;  
bghJ jfty;fs;**

1. ,Lg;g[ jsk; vd;why; vd;d >

1. rpf;fyhd mLf;Ffis bfhz;l jpRf;fs;
2. rpf;fyhd mLf;Ffis bfhz;l ehu;fs;
3. rpf;fyhd mLf;Ffis bfhz;l jirfs;
4. rpf;fyhd mLf;Ffis bfhz;l euk;g[fs;

2 இடு;g[js bray; ,Hg;g[ vd;why; vd;d >

- 1/ fl;Lg;gLj;j Koahj tapw;W typ kw;Wk; the;jp
- 2/ fl;Lg;gLj;j Koahj rpWePu; kw;Wk; kyk;
- 3/ fl;Lg;gLj;j Koahj ,uj;jnghf;F fytpfhy;thapypUe;J btspnaw;wk;
- 4/ fl;Lg;gLj;j Koahj ,Uky; my;yJ Jk;ky;

- 3 ,Lg;g[ js gFjapad; bray;ghL vd;d >  
 1/ fPH; kw;Wk; nky; tapw;Wg;gFjapad; cWg;g[fis jh';Fjy;;  
 2/ fPH; tapw;Wg;gFjapad; cWg;g[fis jh';Fjy;;  
 3/ nky; tapw;Wg;gFjapad; cWg;g[fis jh';Fjy;  
 4/ ,Lg;g[ js kw;Wk; tapw;Wg;gFjapad; cWg;g[fis jh';Fjy

- 4 ,Lg;g[js jirahdJ gpurtj;jpw;F gpwF vt;thW ,Uf;Fk;;>  
 1/ RU';fp ,Uf;Fk;  
 2/ jplkhdjhf ,Uf;Fk;  
 3/ bkd;ikahf bjh';fpa kw;Wk; gytPdkhdjhf ,Uf;Fk;  
 4/ rPuhdjhf ,Uf;Fk;

### rhj;jpa TWfs;

- 5 ,Lg;g[ js bray; ,Hg;gpw;F bghJthd rhj;jpa TWfs; vd;d >  
 m/ gpwg;g[Wg;gpd; tHpahf FHe;ij gpwg;g[  
 M/ gpwg;g[Wg;ig nrhjid bra;tJ  
 ,/ gpwg;g[Wg;gpy; neha; bjhw;W  
 </ gpwg;g[Wg;gpy; கட்டி ஏW;படுதல்
- 6 gpwg;g[Wg;gpd; tHpahf FHe;ij gpwg;g[ vt;thwhf ,Lg;g[ js bray; ,Hg;ig  
 Vw;gLj;JfpwJ>  
 m/ ePoj;j Kjy; fl;l gps;isngw;W typ  
 M/ ePoj;j ,uz;lhk;; fl;l gps;isngw;W typ  
 ,/ ePoj;j K:d;whk; fl;l gps;isngw;W typ  
 </ ePoj;j ehd;fhk;; fl;l gps;isngw;W typ
7. ,Lg;g[ js bray; ,Hg;g[f;fhd rhj;jpa TWfs; Vw;gLtij vg;nghJ czu;tPu;fs;>  
 m/ mjpf mstpshd khjtplha; nghf;F  
 M/ Fiwe;j mstpshd khjtplha; nghf;F  
 ,/ ,Lg;g[ gFjapay; Kd;Tl;oa mjpu;t[ -fhak;  
 </ tapw;Wg; gFjapay; Kd;Tl;oa mjpu;t[ -fhak;

### அறி குறிகள்

8. ,Lg;g[ js bray; ,Hg;g;pd; அறி Fwpfs; ahit>  
 அ.: திரவ kw;Wk; tpau;it frpt[  
 M/ ,uj;jf; frpt[ kw;Wk; திரவ btspnaw;wk;  
 ,/ rPH; kw;Wk; திரவ frpt[

</ rpWePu; kw;Wk; kyk; frpt[

9. இடுப்[ தள bray; ,Hg;ig எவ்வாறு கண்டறிவது?  
அ தசை ஒருங்கிணைப்[f;fhd கட்டுப்பாடு இழத்தல்  
ஆ சிறுநீர் மற்றும் kyk btspnaw;wj;Jf;fhd கட்டுப்பாடு இழத்தல்  
இ நரம்[ ஒருங்கிணைப்[f;fhd கட்டுப்பாடு இழத்தல்  
ஈ எலும்[ வலிமைக்கான கட்டுப்பாடு இழத்தல்
10. இடுப்[ தள உறுப்[கள் கலவிக்கால்வாய்க்கு இடம்பெயர்வதை எவ்வாறு அறிவீர்கள்?  
அ அடிப்பகுதியில் கனமானகவும் இழுப்பKhd உணர்வு  
ஆ அடிப்பகுதியில் vupr;ryhl;lf;Toa மற்றும் கசிவு ஏற்படுதல் போன்ற உணர்வு  
இ அடிப்பகுதியில் cyu;e;j kw;Wk; vupr;ryhl;lf;Toa czu;வு  
ஈ அடிப்பகுதியில் vupr;ry; kw;Wk; frpt[nghd;w czu;t[
11. இடுப்[ தள செயல் இழுப்[ உடைய பெண் இரும;[ம் போதோ அல்லது தும;[ம்போதோ உண்டாகும் அறிகுறிகள் என்ன?  
அ jw;brayhf rpWePu; frpவு  
ஆ jw;brayhf bts;is கசிவு  
இ jw;brayhf ,uj;jf; frpt[  
ஈ jw;brayhf திரவ frpt[
12. ,Lg;[ js jirapd; bray;ghl;oid vt;thW fz;lwpayhk; >  
அ tuyhw;W nrfupg;g[  
M/ my;l;uhnrrhndhfpuh`gp  
,/ CLfUtp  
</ ifitj;J Muha;e;Jfz;lwpjy;
13. ,Lg;[ js typikia fz;lwpjtjw;F ve;j fUtp gad;gLj;jg;gLfpwJ>  
1. CLfUtp  
2. fUg;ig tha; Ez;nzhf;fp  
3. பெரினியோமீட்டர்  
4. ஸ்பெக்குலம் ஆய்வு

#### குணப்படுத்தும் முறைகள்

14. ,Lg;[ js jir gFjpia vt;thW tYg;gLj;JtJ>  
அ Xa;t[ vLg;gjd; K:yk;  
ஆ/ fodkhf ntiy bra;tjd; K:yk;  
இ clw;gapw;r;rpapd; K:yk;

ஈ மருந்து உட்கொள்வதிd; K:yk;

- 15 ,Lg;g[ js bray; இழ்பிg rupbra;tjw;fhd Kiwfs; ahit>  
அ Raguhkupg;g[. bgz;QqUg;g[ Tk;g[ kw;Wk; kpd; mBKiw  
ஆ tPl;oy; guhkupg;g[ . eilgapu;r;rp kw;Wk; czt[fl;Lg;ghL  
இ kUe;J kw;Wk; fspk;g[[  
ஈ Mnyhrid kw;Wk; kUe;Jfs;

**,Lg;g[ js jirfis வலு ஊட்டும் பயிற்சிகள்**

- 16 ,Lg;g[ js bray; இழப்பு bfhz;l bgz; Vd; ,Lg;g[ js jir tYt{l;Lk; clw;gapw;r;rp bra;antz;Lk;>  
அ bghJ typikia mjpfupf;க  
ஆ bray;jpwid mjpfupf;f  
இ துன்பத்திலிருந்து விடுபட  
ஈ ,Lg;g[ js jirapid tYt{l;l
- 17 இLg;g[ js bray; இHபபில; ve;j tifahd clw;gapw;r;rp mwpt[W];jg; gLf;pwJ>  
அ/ mku;e;J ? vGjy; nghd;w clw;gapw;r;rp  
ஆ MH;e;j K;r;Rgapw;r;rp  
./ jir tYt{l;Lk; gapw;r;rp  
</ RHw;rp tifapyhd clw;gapw;r;rp
- 18 ,Lg;g[ js tYt{l;Lk; clw;gapw;r;rpapdhy; cz;lhfK; xU ed;ik vd;d>  
m/ tU';fhyj;jpy; fUfiyg;ig jLf;f  
M/ fUg;ig ig ,lk;bgau;jiy jLf;f  
./ tapw;W Flypwf;fj;jpid jLf;f  
</ ,Lg;g[ gFjpapy; cz;lhfK; fhak; nghd;wtw;iw jLf;f
- 19 ehs; Xd;Wf;F vj;jid Kiw clw;gapw;r;rp bra;a ntz;Lk; >  
m/ 5- 10 Kiw  
M/ 10-15 Kiw  
./ 15-20 Kiw  
</ 20-25 Kiw
- 20 ,Lg;g[ js jiria tYt{l;Lk; clw;gapw;rp bra;a cfe;j neuk; >  
m/ kjpa cztpw;F gpwF  
M/ ,ut[ Jh';f bry;Yk; Kd;g[  
./ ve;j neuj;jpYk;



</ fhiyapy; kl;Lk;

21 clw;gapw;r;rpF;F Kd;du; kw;Wk; gpd;du; bgz;fs; filgpof;f ntz;oaif vd;d>  
m/ jz;zPu; mUe;j TlhJ  
M/ czt[ cz;z TlhJ  
./ thkg; kw;Wk; rhe;jkhd clw;gapw;;rp  
</ rpWePu;igia fhypahf itj;J bfhs;tJ

22 tapw;wpd; ikag;ghfj;jpid epiygl;Jtjw;fhd clw;gapw;r;rpapd; nehf;fk; vd;d>  
m/ KJbfYk;g[ ghJfhg;g[ kw;Wk; KJFtypia jLf;f  
M/ Flypwfj;jpid jLf;f  
./ ,Lg;g[ js jirapid tYt{l;l  
</ tapw;Wg;gFjpapd; cl;g[w cWg;g[fi ghJfhf;f

23 KJF-jz;Ltl RHw;r;rp clw;gapw;r;rp ed;ikfs; vd;d>  
m/ rpWeP;u;ig fl;Lg;ghl;il guhkupf;f kw;Wk; rpWePu;ig gytPdkiljiy jLf;f  
M/ KJF typia jLf;f  
./ jir mGj;jj;jpid jLf;f  
</ KJbfYk;ig ghJfhf;f

24 കേകിS;സ; clw;gapw;r;rpapd; ed;ikfs; vd;d>  
m/ Flypwf;fj;jpid jLf;f  
M/ bgz; cWg;gpy; bts;is gLjiy jLf;f  
./ rpWePu; ml';fhik kw;Wk; kyk; ml';fhikia jLf;f  
</ khjtpolha; RHw;r;rpia tud;Kiwg;gLj;j

25 കേകിS;സ; clw;gapw;r;rpia vtthW bra;antz;Lk;;>  
m/ motapw;W gFjpia ,Wf;fp gpqj;jy;  
M/ rpWePu; ghij kyk; fHpf;Fk; ghij nahdpgFjpia ,Wf;fp gplpj;jy;  
./ bjhil jiria ,Wf;fp gpqj;jy;  
</ fhy;gFjppapid nkYk; fPGkhf Jhf;Fjy;

**LESSON PLAN**

**ON**

**PELVIC FLOOR DYSFUNCTION**

**&**

**PELVIC FLOOR MUSCLE STRENGTH**

**EXERCISES**

## LESSON PLAN

<b>Topic</b>	:	Pelvic Floor Dysfunction and Pelvic Floor Muscle Strengthen Exercises
<b>Group</b>	:	Mothers between 3 months to 1 year post delivery with Pelvic Floor Dysfunction.
<b>Time</b>	:	25 - 30 minutes
<b>Place</b>	:	Rural villages
<b>Student Teacher</b>	:	Investigator
<b>Method</b>	:	Lecture cum discussion
<b>Teaching Aid</b>	:	Video assisted instruction and demonstration.

### **Overall Objective:**

On completion of the teaching, the women will have adequate knowledge regarding pelvic floor dysfunction and will be able to demonstrate pelvic floor muscle strengthen exercises.

**Specific Objectives:**

At the end of teaching the women will be able to

Identify the anatomy and physiology of pelvic floor muscle

State the meaning of pelvic floor muscle dysfunction

list down the causes and risk factors of pelvic floor dysfunction

discuss the types of pelvic floor dysfunction

indicate the signs and symptoms of a pelvic floor dysfunction

enumerate the diagnosis of a pelvic floor dysfunction

brief about treatment modalities

demonstrate and redemonstrate the Pelvic floor muscle strength exercises

S.NO.	CONTRIBUTORY OBJECTIVE	CONTENT	INVESTIGATOR ACTIVITY	CLIENT'S ACTIVITY
1	Introduction	<b>INTRODUCTION:</b> Good Morning ! I am Vijalakshmi,Ph.D Scholar from Omayal Achi college of Nursing, Chennai.I am going to discuss about pelvic floor dysfunction and pelvic floor muscle strengthen exercises.	Lecture	Listening
2	Identify the anatomy and physiology of pelvic floor muscle	<p><b>ANATOMY AND PHYSIOLOGY OF PELVIC FLOOR MUSCLE</b></p> <p>The pelvic floor is the complex layer of the muscles and ligaments. These muscles are located in the pelvis, and stretch from the pubic bone (at the front) to the coccyx or tail-bone (at the back) and from side to side. There are three openings in the pelvic floor, one for the urethra which carries urine from the bladder, one for the vagina (<i>birth canal</i>) and one through which the bowel empties (anus).</p> <p>Because of its anatomical position, it plays a role in proper bladder, bowel and sexual function, childbirth, support the pelvic organs, postural support and core stabilization of the trunk.</p> <p>It supports pelvic and abdominal organs. (while standing or straining)  It helps the opening of the bladder to stay closed (while coughing sneezing or straining)  It is used to control leakage of wind or motions from lower bowel.  It helps to increase sexual awareness by tightening during intercourse.</p>	Lecture cu discussion	Listening
3	State the meaning of pelvic floor muscle dysfunction	<p><b>MEANING OF PELVIC FLOOR MUSCLE DYSFUNCTION</b></p> <p>It refers to the woman who are unable to control and relax the pelvic floor muscle with the complaints of urinary incontinence, bowel incontinence, pelvic organ prolapsed, pelvic pain or Dyspareunia, it is called pelvic floor dysfunction.</p>	Lecture cum discussion	Listening
4	list down the causes and risk factors of pelvic floor dysfunction	<p><b>CAUSES FOR PELVIC FLOOR DYSFUNCTION</b></p> <p>Most of the causes of pelvic floor dysfunction are unknown.</p> <ul style="list-style-type: none"> <li>❖ Traumatic injuries to the pelvic area, such as in an accident</li> </ul>	Lecture cum discussion	Listening

S.NO.	CONTRIBUTORY OBJECTIVE	CONTENT	INVESTIGATOR ACTIVITY	CLIENT'S ACTIVITY
		<ul style="list-style-type: none"> <li>❖ Complications from vaginal childbirth can contribute to this condition. These include women who have had:               <ul style="list-style-type: none"> <li>✓ multiple births</li> <li>✓ Increase weight of the uterus during pregnancy</li> <li>✓ instrumental births (using forceps or ventouse)</li> <li>✓ long second stage of labour (over 1 hour)</li> <li>✓ severe perineal tear and</li> <li>✓ large babies (over 4Kg)</li> </ul> </li> <li>❖ A history of back pain</li> <li>❖ Previous trauma to the pelvic region such as a fall</li> <li>❖ Ongoing constipation (i.e., regularly straining to empty your bowels)</li> <li>❖ A chronic cough or sneeze (e.g. due to asthma, smoking or hayfever)</li> <li>❖ Being overweight, or having a body mass index above 25</li> <li>❖ Heavy lifting on a regular basis - either at work or at the gym.</li> </ul>		
5	Discuss the types of pelvic floor dysfunction	<p><b>TYPES OF PELVIC FLOOR DYSFUNCTION</b></p> <ul style="list-style-type: none"> <li>• Urinary incontinence (involuntary discharge of urine)</li> <li>• Fecal incontinence (involuntary discharge of feces)</li> <li>• Pelvic organ prolapse, (shift of organs such as bladder, uterus, and small intestine into or out of vagina)</li> </ul>	Lecture cum discussion	Listening
6	indicate signs and symptoms of pelvic floor dysfunction	<p><b>SIGNS AND SYMPTOMS OF PELVIC FLOOR DYSFUNCTION</b></p> <ul style="list-style-type: none"> <li>❖ accidentally leaking urine when do exercise, laugh, cough or sneeze</li> <li>❖ needing to get in to the toilet in a hurry or not making it there</li> </ul>	Lecture cum discussion	Listening

S.NO.	CONTRIBUTORY OBJECTIVE	CONTENT	INVESTIGATOR ACTIVITY	CLIENT'S ACTIVITY
		<p>in time</p> <ul style="list-style-type: none"> <li>❖ constantly needing to go to the toilet</li> <li>❖ finding it difficult to empty bladder or bowel</li> <li>❖ accidentally losing control of bladder or bowel</li> <li>❖ accidentally passing wind</li> <li>❖ heavy feeling in the pelvic or bulge in the vagina or a feeling of heaviness, discomfort, pulling, dragging or dropping <ul style="list-style-type: none"> <li>✓ may be felt as a bulge in the rectum or a feeling of needing to use their bowels but not actually needing to go</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>• pain in pelvic area and Muscle spasms in the pelvis</li> <li>• Pain or pressure in the vagina or rectum</li> <li>• Painful intercourse for women</li> </ul>		
7	describe the diagnosis of a pelvic floor dysfunction	<p><b>DIAGNOSIS OF A PELVIC FLOOR DYSFUNCTION</b></p> <p><b>History collection</b> The most important part of evaluating a patient with suspected pelvic floor dysfunction is a thorough medical history and physical examination, including an examination of the pelvic floor.</p> <p>An important aspect of the history includes a thorough obstetrical (child-bearing) history in women. This should seek to identify a history of difficult deliveries, forceps deliveries, prolonged labor, and traumatic tears or episiotomies (controlled surgical incision between the rectum and vagina to prevent traumatic tearing during childbirth). A thorough history of the patient's bowel patterns, including diarrhea, constipation, or both, is also essential. Other key parts of the history include prior anorectal surgeries and the presence of absence of pain prior to, during, or following a bowel movement.</p>	Lecture cum discussion	Listening

S.NO.	CONTRIBUTORY OBJECTIVE	CONTENT	INVESTIGATOR ACTIVITY	CLIENT'S ACTIVITY
		<p>After a complete history and physical examination,</p> <ul style="list-style-type: none"> <li>❖ (With Pelvic floor Risk assessment Scale)</li> <li>❖ <b>Physical examination</b> - Using <b>external and internal “hands-on” or manual techniques (PERFECT Score)</b> to evaluate the function of the pelvic floor muscles, they can assess the ability to contract and relax these muscles.</li> <li>❖ <b>Externally placed electrodes</b>, placed on the perineum (area between the vagina and rectum in women) and/or sacrum (a triangular bone at the base of spine) to measure whether they are able to effectively contract and relax the pelvic floor muscles.</li> <li>❖ Another way to measure pelvic floor contractions is with a <b>perineometer</b>, a small, tampon-like sensing device placed into the vagina or rectum.</li> </ul>		
8	brief about treatment modalities	<p><b>TREATMENT MODALITIES</b></p> <p>Treatments for pelvic floor dysfunction include:</p> <ul style="list-style-type: none"> <li>❖ Self care</li> <li>❖ Relaxation technique</li> <li>❖ Biofeedback</li> <li>❖ Vaginal cones</li> <li>❖ Electrical stimulation</li> <li>❖ Medication</li> <li>❖ Surgery</li> </ul> <p><b>1. Self-Care</b></p> <ul style="list-style-type: none"> <li>❖ Behavior changes, such as avoiding pushing or straining when urinating and having a bowel movement.</li> </ul>	Lecture cum discussion	Listening



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		<ul style="list-style-type: none"> <li>❖ Relaxing the muscles in the pelvic floor area overall is important.</li> <li>❖ Using methods such as warm baths at least twice a day is helpful</li> </ul> <p><b>2. Relaxation techniques</b> such as warm baths, yoga, and exercises.</p> <p><b>3. Biofeedback.</b> This non-painful, non-surgical technique provides improvement in pelvic floor muscle. These include using special sensors and video to monitor the pelvic floor muscles as the patient attempts to relax or contract them. The therapist then provides feedback and works with the patient on improving their muscle coordination.</p> <p><b>4. Vaginal cones.</b> These are small plastic cones that you put inside the vagina for about 15 minutes, twice a day. The cones come in a set of different weights. At first, the lightest cone is used. Women need to use her pelvic floor muscles to hold the cone in place. So, it helps to exercise the pelvic floor muscles. Once she can hold on to the lightest one comfortably and then move up to the next weight, and so on.</p> <p><b>5. Electrical stimulation</b> uses a small probe inserted into the vagina or rectum to stimulate pelvic floor muscles, helping desensitize nerves and causing muscles to contract and relax. Stimulation through electrodes placed on the body may calm pain and spasms. Different kinds of electrical stimulation devices are available , both for internal stimulation with a probe or for external stimulation, such as a transcutaneous electrical nerve stimulation (TENS) , to ease pain.</p>		

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		<p>Internal stimulation                      External stimulation</p> <p><b>6. Medication.</b> In some cases, physician may prescribe a low-dose muscle relaxant to deal with pelvic floor dysfunction.</p> <p><b>7. SURGERY</b></p> <ul style="list-style-type: none"> <li>❖ Physician determines the pelvic floor dysfunction is the result of a rectal prolapse or rectocele, surgery may be necessary.</li> </ul> <p><b>HOME EXERCISE (PELVIC FLOOR MUSCLE STRENGTHENING EXERCISES)</b></p> <ul style="list-style-type: none"> <li>❖ The goal of PFD therapy is to learn to control and, especially, relax the pelvic floor.</li> <li>❖ Therapists will teach you techniques for use at home to build on the therapies they do in their clinics.</li> <li>❖ This usually begins with general relaxation, stretching the leg and back muscles, maintaining good posture, and visualization—part of learning to sense your pelvic floor muscles and to relax them.</li> </ul>		
9	explain in detail about Pelvic floor muscle strength exercises	<p><b>PELVIC FLOOR MUSCLE STRENGTH EXERCISES</b></p> <p><b>Pelvic floor muscle exercises</b></p> <p>Pelvic floor muscle strengthening exercise is particularly beneficial in helping improve bladder and bowel control and pelvic floor muscle . Strengthening pelvic floor muscles will help actively support bladder and bowel. This improves bladder and bowel control and can reduce or stop leakage of urine and bowel motions. Like other muscles, the pelvic floor muscles become stronger with a regular exercise</p>	Video show	watching

S.NO.	CONTRIBUTORY OBJECTIVE	CONTENT	INVESTIGATOR ACTIVITY	CLIENT'S ACTIVITY						
		program. Pelvic floor muscle exercises are important for women.								
		<p><b>The benefits of pelvic floor muscle exercises</b> Pelvic floor muscle exercises can help with:</p> <ul style="list-style-type: none"> <li>❖ Improving control over bladder and bowel function</li> <li>❖ Reducing the risk of prolapsed ('sagging' of internal organs)</li> <li>❖ Better recovery from childbirth and surgery</li> <li>❖ Increased sexual sensation and orgasmic potential, and</li> <li>❖ Increased social confidence and quality of life.</li> </ul>	Video show	watching						
		<p><b>DO'S AND DON'TS OF EXERCISES</b></p> <table border="1"> <thead> <tr> <th>DO'S</th> <th>DON'Ts</th> </tr> </thead> <tbody> <tr> <td> <p><b>Do fit in fitness:</b> Schedule “workout” in the planner. Make exercise a commitment</p> </td> <td> <p><b>Don't get bored:</b> Fitness routines should always be enjoyable. Exercise is a great stress-buster. Vary your workouts so that you enjoy exercising.</p> </td> </tr> <tr> <td> <p><b>Do warm-up and cool-down:</b> A warm-up prepares the body for the activity to follow. Muscles perform better and are less prone to injury when they are warm. A warm-up can mean simply walking or marching for 5 to 10 minutes to raise the body's core temperature.</p> </td> <td> <p><b>Don't over-exercise:</b> Too much, too fast, too soon are the main causes of injury. Over-exercising and under-exercising are both detrimental to health.</p> </td> </tr> </tbody> </table>	DO'S	DON'Ts	<p><b>Do fit in fitness:</b> Schedule “workout” in the planner. Make exercise a commitment</p>	<p><b>Don't get bored:</b> Fitness routines should always be enjoyable. Exercise is a great stress-buster. Vary your workouts so that you enjoy exercising.</p>	<p><b>Do warm-up and cool-down:</b> A warm-up prepares the body for the activity to follow. Muscles perform better and are less prone to injury when they are warm. A warm-up can mean simply walking or marching for 5 to 10 minutes to raise the body's core temperature.</p>	<p><b>Don't over-exercise:</b> Too much, too fast, too soon are the main causes of injury. Over-exercising and under-exercising are both detrimental to health.</p>	Video show	watching
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		<p>A cool-down lowers the body's temperature, gradually. The last 5 to 10 minutes of the workout should be cool-down time. This allows the blood to return from the working muscles to the heart and for the body to return to its resting state</p>			
		<p><b>Do start off at a moderate intensity:</b> Gradually prepare the body to exercise without over-straining. Make sure the exercise program is structured, systematic and progressive.</p>	<p><b>Don't forget to breathe:</b> Breathing is an important aspect of exercises while performing exercises, you should exhale when you exert and inhale when you release muscular tension.</p>		
		<p><b>Do stretch:</b> A good time to stretch is immediately after an exercise session, while the body is still warm. Stretching prevents muscle soreness and increases flexibility. It also relaxes the muscles, mobilizes the joints and improves posture</p>	<p><b>Don't dehydrate yourself:</b> Water loss due to perspiration and sweating needs to be replaced. Drink plenty of water before, after and during an exercise routine to prevent dehydration.</p>		
		<p><b>Do consult a qualified trainer:</b> Consult a trainer to help you with right form. Right technique will protect the joints and safeguard the body from exercise trauma; whereas wrong technique or jerky movements can cause injury. Focus on posture and keep</p>	<p><b>DON'T Push an Injury:</b> Listen to your body. If you feel pain, stop. Muscle and joint pain can mean many things -- pushing a small hurt can lead to big problems later on. If pain persists more than a few days, see a doctor.</p>		

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		your body properly aligned while exercising.							
		<p><b>How do activate pelvic floor muscles?</b></p> <ol style="list-style-type: none"> <li>1. Pelvic floor activation position: lie on the back side with the knees bent up.</li> <li>2. Squeeze the pelvic floor as though trying to stop peeing. Should feel belly button draw in towards spine in an upwards lift. If this is being done correctly likely to feel a tightening sensation around bladder and vaginal opening.</li> <li>3. Tighten lower back muscles to form a flat spine and continue drawing everything in and up. Hold for 10 seconds.</li> <li>4. Repeat 10 times holding for ten seconds.</li> </ol> <p>Empty half your bladder and try to stop the urine flow.</p>		Video show	watching				
		<p><b>WARM UP EXERCISES</b></p> <table border="1"> <thead> <tr> <th>Name Of The Exercises</th> <th>Steps</th> </tr> </thead> <tbody> <tr> <td><b>1. March on the spot – keep going for 3 minutes</b></td> <td> <ul style="list-style-type: none"> <li>❖ Start off marching on the spot and then march forwards and backwards.</li> <li>❖ Pump arms up and down in rhythm with the steps, keeping the elbows bent and the fists soft.</li> </ul> </td> </tr> </tbody> </table>		Name Of The Exercises	Steps	<b>1. March on the spot – keep going for 3 minutes</b>	<ul style="list-style-type: none"> <li>❖ Start off marching on the spot and then march forwards and backwards.</li> <li>❖ Pump arms up and down in rhythm with the steps, keeping the elbows bent and the fists soft.</li> </ul>	Lecture cum demonstration	Observing
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		<b>2. Heel digs – aim for 60 heel digs in 60 seconds</b>	<ul style="list-style-type: none"> <li>❖ For heel digs, place alternate heels to the front, keeping the front foot pointing up, and punch out with each heel dig.</li> <li>❖ Keep a slight bend in the supporting leg.</li> </ul>		
		<b>3. Knee lifts – aim for 30 knee lifts in 30 seconds</b>	<ul style="list-style-type: none"> <li>❖ To do knee lifts, stand tall, bring up alternate knees to touch the opposite hand.</li> <li>❖ Keep the back tight and back straight.</li> <li>❖ Keep a slight bend in the supporting leg.</li> </ul>		
		<b>4. Knee bends – 10 repetitions</b>	<ul style="list-style-type: none"> <li>❖ To do knee bends, stand with the feet shoulder-width apart and hands stretched out.</li> <li>❖ Lower yourself no more than 10cm by bending your knees.</li> <li>❖ Come up and repeat.</li> </ul>		

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		<b>TYPES OF PELVIC FLOOR MUSCLE STRENGTHEN EXERCISE</b>			Video show	watching
<b>NAME OF THE EXERCISES</b>	<b>PURPOSES</b>	<b>ST</b>				
<b>Abdominal Clams Core Stabilizers Exercise</b>	❖ To strengthen their pelvic floor muscles	<ul style="list-style-type: none"> <li>❖ Tighten the pelvic floor muscles</li> <li>❖ Lie in a neutral spine position – i.e. with a flat back</li> <li>❖ Now tighten to feel the belly button pull in towards the spine</li> <li>❖ Breathe out gently, but keep those core muscles engaged</li> <li>❖ Lift both feet off the floor and then hold</li> <li>❖ Stable in this position, open and close the top knee</li> <li>❖ Relax and Repeat , stop if any pressure or pain in lower back or hip area</li> </ul>				
<b>Bladder Control Spinal Rotation Exercise</b>	❖ To help establish a strong foundation of core pelvic floor muscles to assist in maintaining bladder	<ul style="list-style-type: none"> <li>❖ Lie down on side and straighten the bottom of the leg</li> <li>❖ Drop the right knee onto the floor and hold left hand on right knee and the right hand on forehead</li> <li>❖ Breathe in, setting up pelvic floor muscles</li> </ul>				

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			control and preventing bladder weakness.	<ul style="list-style-type: none"> <li>❖ Breathe out and begin to roll elbow (from the arm touching the forehead) backwards, aiming to place elbow on the ground behind</li> <li>❖ Hold this position for 2 in-and-out breaths.</li> <li>❖ Return to the start position</li> <li>❖ Relax and Repeat , then roll over and do the opposite side</li> </ul>		
		<b>Side Leg Circles Exercise</b>	❖ To strengthen their pelvic	<ul style="list-style-type: none"> <li>❖ Lie on the side in the neutral spine position. Turn those pelvic floor muscles on.</li> <li>❖ Breathing out first, lift top leg and draw 5 wide circles high up, breathe in, breathe out and repeat the circles in the opposite direction. The breathing here is really important and you need to concentrate on taking in and letting out those deep breaths.</li> <li>❖ Try to keep the leg as straight as possible and draw widest possible circles with leg</li> <li>❖ Repeat all of the above with tiny circles in both directions. The smaller circles are going to make things harder, be gentle with</li> </ul>		



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				<p>body and avoid any straining.</p> <ul style="list-style-type: none"> <li>❖ Turn over to repeat on the opposite side, now raising the other leg.</li> <li>❖ Ensure a constant neutral spine, to avoid any pressure on the lower back. Also check the pelvic floor and core remain engaged to ensure while doing the exercise correctly and getting the maximum benefit.</li> </ul>		
		<p><b>Kegel Exercise Rolling Knee Step</b></p>	<ul style="list-style-type: none"> <li>❖ To build up the pelvic floor muscles, this in turn helps maintain the strength of the muscles holding the bladder and bowel.</li> <li>❖ To ensure your pelvic floor muscles are strong and in good working order.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Lie on back with feet off the floor and knees bent up to right angles.</li> <li>❖ Engage the pelvic floor muscles and ensure spine is in the neutral position.</li> <li>❖ Breathing out, begin to roll the pelvis and knees to the left, while keeping right shoulder on the floor.</li> <li>❖ Breathe in and return the pelvis to the starting position, pause, and breath out. This time roll pelvis and knees to right, holding the left shoulder on the floor.</li> <li>❖ Aim to keep both shoulders flat on the floor as the pelvis rolls from</li> </ul>		

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				<p>side to side.</p> <ul style="list-style-type: none"> <li>❖ Keep the feet, knees and hips all rolling as one unit. Knees should stay at right angles to keep the pressure off the lower back, and don't drop the feet while performing the exercise.</li> <li>❖ Maintain a constant neutral spine and that as always, the pelvic floor is activated. This exercise can also be done with some variations including using an exercise ball, resting the feet on a stool or as described above without additional support.</li> </ul>		
		<i>Push Up Exercise</i>	<ul style="list-style-type: none"> <li>❖ To build pelvic floor muscles</li> </ul>	<ul style="list-style-type: none"> <li>❖ Position the hands and knees with hands turned in 45 degrees.</li> <li>❖ Lower the back into the neutral position – not curved or sunken in, and switch those pelvic floor muscles on.</li> <li>❖ Brace pelvic floor and abdominal muscles, holding that neutral spine.</li> <li>❖ Breathe out, then tip forwards on the knees, bending elbows outwards, dropping the chin on the</li> </ul>		

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				<p>floor in front of the fingers, breathe in and return to start position.</p> <ul style="list-style-type: none"> <li>❖ Relax and repeat</li> </ul>		
		<i>Bridging Exercise</i>	<ul style="list-style-type: none"> <li>❖ To strengthen their pelvic floor muscle</li> <li>❖ To prevent pelvic muscle elasticity</li> <li>❖ To regain bladder control</li> </ul>	<ul style="list-style-type: none"> <li>❖ Start by lying on the back, feet hip width apart, knees bent up.</li> <li>❖ Engage the pelvic floor muscles, breathing out, begin to roll your pelvis up off the floor, vertebra by vertebra, peeling spine away from the floor in a smooth, co-ordinated fashion.</li> <li>❖ Hold at the top, breath in and return in reverse dropping chest, middle back then lower back to return to the starting position.</li> </ul>		
		<i>Alternate Arm Pulses Exercise</i>	<ul style="list-style-type: none"> <li>❖ To regain bladder control. To strengthen the pelvic floor (the muscles around the vagina, uterus and bowel)</li> <li>❖ To</li> </ul>	<ul style="list-style-type: none"> <li>❖ Lie on your back with feet off the floor and hips and knees bent at right angles. Arms should be raised to about the height of knees and elbows should be slightly bent.</li> <li>❖ Set core muscles and engage the pelvic floor and assume a neutral spine position. Breathe freely</li> </ul>		

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			<p>compliment healthy lifestyle and reduce the associated incontinence.</p>	<p>(no breath holding) and begin to pulse the arms up\down repeatedly in a small range. Move them as quickly as possible and try to keep pulsing up for 60 seconds. This is going to make tired pretty quickly so for the first few times just pulse arms for as long as you feel comfortable.</p> <ul style="list-style-type: none"> <li>❖ Be sure to keep the elbows slightly out to the side. Check for that flat back and engage those pelvic floor muscles before starting each new set.</li> </ul>		
		<p><b>Spinal Twist Exercise</b></p>	<ul style="list-style-type: none"> <li>❖ To increase muscle tone and control over their pelvic floor with easy, moderate exercise and a healthy lifestyle.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Standing with hands on knees, with spine extended.</li> <li>❖ Breathing in, set pelvic muscles and while holding these tight, breathe out and begin to rotate whole spine to left looking up over left shoulder, sagging the lumbar and thoracic spine.</li> <li>❖ Return to start, take a breath and Straighten the spine.</li> <li>❖ Repeat on the opposite side.</li> </ul>		

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		<p><b>Legends: Repeat 5 times, If you are experience any pain, pressure or discomfort in your lower back or hip area, stop your exercises immediately</b></p>								
		<p><b>COOL DOWN EXERCISES</b>  <b>Goal: Cool down exercises after a workout to gradually relax, improve flexibility and slow your heart rate.</b> This cool-down routine should take about 5 minutes</p> <table border="1"> <thead> <tr> <th>Name Of The Exercises</th> <th>Steps</th> </tr> </thead> <tbody> <tr> <td> <p><b>Buttock stretch – hold for 10 to 15 seconds</b></p> </td> <td> <ul style="list-style-type: none"> <li>❖ To do a buttock stretch, bring knees up to chest.</li> <li>❖ Cross right leg over left thigh. Grasp back of left thigh with both hands.</li> <li>❖ Pull left leg toward chest. Repeat with opposite leg</li> </ul> </td> </tr> <tr> <td> <p><b>Hamstring stretch – hold for 10 to 15 seconds</b></p> </td> <td> <ul style="list-style-type: none"> <li>❖ To do a hamstring stretch, lie on your back and raise your right leg.</li> <li>❖ Keeping your left leg bent with your foot on the floor, pull your right leg towards you keeping it straight.</li> <li>❖ Don't hold at the knee level. Repeat with opposite leg.</li> </ul> </td> </tr> </tbody> </table>	Name Of The Exercises	Steps	<p><b>Buttock stretch – hold for 10 to 15 seconds</b></p>	<ul style="list-style-type: none"> <li>❖ To do a buttock stretch, bring knees up to chest.</li> <li>❖ Cross right leg over left thigh. Grasp back of left thigh with both hands.</li> <li>❖ Pull left leg toward chest. Repeat with opposite leg</li> </ul>	<p><b>Hamstring stretch – hold for 10 to 15 seconds</b></p>	<ul style="list-style-type: none"> <li>❖ To do a hamstring stretch, lie on your back and raise your right leg.</li> <li>❖ Keeping your left leg bent with your foot on the floor, pull your right leg towards you keeping it straight.</li> <li>❖ Don't hold at the knee level. Repeat with opposite leg.</li> </ul>	<p>Lecture cum demonstration</p>	<p>Observing</p>
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		<b>Inner thigh stretch – hold for 10 to 15 seconds</b>	<ul style="list-style-type: none"> <li>❖ For the inner thigh stretch, sit down with your back straight and bend your legs, putting the soles of your feet together.</li> <li>❖ Holding on to your feet, try to lower your knees towards the floor.</li> </ul>		
		<b>Calf stretch – hold for 10 to 15 seconds</b>	<ul style="list-style-type: none"> <li>❖ For the calf stretch, step your right leg forward, keeping it bent and lean forwards slightly.</li> <li>❖ Keep your left leg straight and try to lower the left heel to the ground.</li> <li>❖ Repeat with opposite leg.</li> </ul>		
		<b>Thigh stretch – hold for 10 to 15 seconds</b>	<ul style="list-style-type: none"> <li>❖ To do a thigh stretch, lie on right side. Grab top of left foot and gently pull heel towards left buttock to stretch the front of the thigh, keeping knees touching.</li> <li>❖ Repeat on the other side.</li> </ul>		
		<b>WARNING SIGNS</b> <ul style="list-style-type: none"> <li>• Increased fatigue</li> <li>• Muscle aches and pains</li> </ul>		Lecture cum discussion	Listening
		<b>POINTS TO BE REMEMBER</b> <ul style="list-style-type: none"> <li>❖ Get into the habit of doing exercises during normal day to day activities.</li> <li>❖ Daily intensive exercise can strengthen pelvic muscles.</li> </ul>		Lecture cum discussion	Listening

S.NO.	CONTRIBUTORY OBJECTIVE	CONTENT	INVESTIGATOR ACTIVITY	CLIENT'S ACTIVITY
		<ul style="list-style-type: none"> <li>❖ Always tighten and contract pelvic muscles before coughing, sneezing, jumping or lifting. This can help prevent involuntary loss of urine, gas or stool or bulging down of pelvic organs.</li> <li>❖ Try to maintain weight within healthy limits.</li> </ul> <p>Pelvic floor exercises are designed to strengthen the muscles. Each sphincter (vaginal, urethral, anal) should be exercised, need to familiarize with these muscles in order to contract them at will. If the pelvic floor is especially weak, it may be difficult to detect any muscular contractions at first.</p> <p><b>Suggestions on identifying sphincters include</b></p> <ul style="list-style-type: none"> <li>• <b>Vaginal</b> – insert one or two fingers into the vagina and try to squeeze them.</li> <li>• <b>Urethral</b> – when urinating, try stopping the flow in midstream. This should only be done to identify the sphincters. Do not do it on a regular basis.</li> <li>• <b>Anal</b> – Trying to stop yourself from breaking wind and squeeze tightly.</li> </ul>		
10		<p><b>CONCLUSION</b></p> <p>Pelvic floor muscle strength exercises play an important role in preventing and improving pelvic floor dysfunction. Therefore the women should be provided with knowledge regarding pelvic floor muscle dysfunction and pelvic floor muscle strength exercises to enhance women well being.</p>		

**The Tamil Nadu Dr. M.G.R. Medical University, Chennai.**

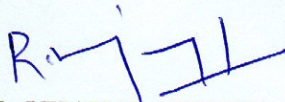

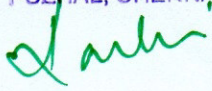
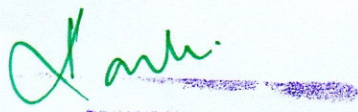
**FORM – IV**

**Ph.D., Synopsis Submission Application Form**

Note : Candidates should submit the duly filled Synopsis Application Form and Six copies of the Synopsis on or before the last working day of the Registration Sessions as given in No.31 of the Ph.D., Regulations.

- 1) Details of Remittance
  - a) Name of the Bank / Branch : Indian Bank, Puzhal Branch
  - b) Amount Remitted : RS. 15,500 (Rupees Fifteen thousand five hundred only)
  - c) Demand Draft / Chelan No : NEFT: IDIBH16270452287 for Rs.500/- & IDIBH16270452569 for Rs.15000/
  - d) Date of issue / remittance : 26.9.2016
- 2) Name of the Candidate : Mrs. R. VIJAYALAKSHMI
- 3) Date of Birth & Age : 18.05.1975
- 4) Place of Birth : NELLIKKUPPAM
- 5) Name and Occupation of guardian : P. RAVI SOFT WARE ENGINEER
- 6) Nationality : INDIAN
- 7) Religion : HINDU
- 8) Designation of the Candidate : PRINCIPAL  
ARCOT SRI MAHALAKSHMI WOMEN'S  
COLLEGE OF NURSING
- 9) Office Address with Tel. No. / Fax No. / E-mail I.D. : ARCOT SRI MAHALAKSHMI WOMEN'S  
COLLEGE OF NURSING  
ARNI MAIN ROAD  
VILLAPAKKAM 632521  
VELLORE DIST.  
04172 / 258800, 8973674171, 8973674173  
asmnursingcollege@gmail.com
- 10) Address for Communication with Telephone No. / Fax No. / E-mail I.D. : SAME AS ABOVE  
9840132303  
044-26185467.  
[vijiadi2006@yahoo.com](mailto:vijiadi2006@yahoo.com)
- 11) Name of the University, Register Number, Month and Year of Passing of the qualifying examination as mentioned in No.3 of Ph.D., Regulations. : THE TN DR MGR MEDICAL  
UNIVERSITY  
30046624, MARCH 2006
- 12) Date, Month & Year of the Convocation at which the qualifying Degree was taken : MARCH 2007
- 13) The Examination passed is from any other University, state the number and date of the communication recognizing the Degree : NA
- 14) The month and year in which the candidate was provisionally registered (Enclose certified Xerox Copies of confirmation of Provisional Registration). : 01.01.2013



- 15) Name of the Guide : DR.S.KANCHANA M.Sc (N),Ph.D
- 16) Name of the Department / Institution where the Research Work was done mention may be made about the additional places of the Research Work if any. : COMMUNITY HEALTH NURSING DEPARTMENT  
OMAYAL ACHI COLLEGE OF NURSING
- 17) Title of the Thesis in Block Letters : AN EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF AN INTERVENTIONAL PACKAGE ON PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION AT SELECTED SETTINGS, THIRUVALLUR DIST.
- 18) Signature of the Candidate :   
R. VIJAYALAKSHMI
- 19) Signature of the Guide with Designation :   
Ph.D., RESEARCH GUIDE  
Omayal Achi College of Nursing  
No.45, Ambattur Road,  
PUZHAI, CHENNAI - 600 066.
- 20) Signature of the Head of the Department where the candidate conducted the Research Work :   
Prof. & Head of the Department,  
COMMUNITY HEALTH NURSING
- 21) Signature of the Head of the Institution where the candidate is working :   
PRINCIPAL  
OMAYAL ACHI COLLEGE OF NURSING  
No.45, Ambattur Road,  
PUZHAI, CHENNAI - 600 066.
- 22) Station with Date : CHENNAI  
27.9.2016

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI.**

**FORM - V**

**Ph.D., Thesis Submission Application Form :-**

- 1) Details of Remittance :
- |                                |                                  |
|--------------------------------|----------------------------------|
| a) Name of the Bank / Branch-  | Indian bank Puzhal branch        |
| b) Amount Remitted.            | Rs. 30,500                       |
| c) Demand Draft / Challan No.  | 16363349085 – NEFT – Rs.30,000/- |
| d) Date of issue / remittance. | 16363348196 – NEFT – Rs.500/-    |
- 2) Name of the Candidate : Mrs. R.VIJAYALAKSHMI
- 3) Date of Birth & Age : 18-05-1975 42 years
- 4) Place of Birth : NELLIKUPPAM
- 5) Name and Occupation of father / guardian : Mr. A.V. RAMANUJAM (LATE)
- 6) Nationality : Indian
- 7) Religion : HINDU
- 8) Designation of the Candidate : Professor
- 9) Office Address with Tel. No./Fax No./E-mail I.D. :
- Omayal Achi College of Nursing,  
No. 45, Ambattur Road, Puzhal, Chennai-600 066  
Ph: 044-26591616/17/18 (or)  
Mobile no. 9840132303  
E mail: oacn1992@gmail.com (or)  
vijjadi2006@yahoo.com
- 10) Address for Communication with :  
Telephone No. / Fax No. / E-mail I.D.
- Omayal Achi College of Nursing,  
No. 45, Ambattur Road, Puzhal, Chennai-600 066  
Ph: 044-26591616/17/18 (or)  
Mobile no. 9840132303  
E mail: oacn1992@gmail.com (or)  
vijjadi2006@yahoo.com
- 11) Name of the University, Register Number, : The Tamil Nadu Dr.MGR Medical University,  
Month and Year of Passing the qualifying examination as mentioned in No.3 of Ph.D., Regulations. 30046624  
March 2006
- 12) Date, Month & Year of the Convocation at which the qualifying Degree was taken : MARCH 2006

- 13) The Examination passed is from any other University, state the number and date of the communication recognising the Degree : (Enclose certified Xerox Copies). NA
- 14) The month and year in which the candidate was : provisionally registered (Enclose certified Xerox Copies of confirmation of Provisional Registration). 01.01.2013
- 15) Name of the Guide: Dr. (Mrs.) Sambavadas Kanchana
- 16) Name of the Department / Institution where : the Research Work was done Mention may be made about the additional places of the Research Work if any. Community Health Nursing Department, Omayal Achi College of Nursing, Puzhal
- 17) Title of the Thesis in Block Letters: "AN EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF AN INTERVENTIONAL PACAKAGE ON PELVIC FLOOR MUSCLE STRENGTH AND KNOWLEDGE AMONG WOMEN WITH PELVIC FLOOR DYSFUNCTION AT SELECTED SETTINGS, THIRUVALLUR DIST."
- 18) Whether the applicant submitted the Thesis : previously for the Degree; if so, the month/s and year/s in which the Thesis was submitted NA
- 19) If the Thesis is re-submitted, please mention : the reasons for re-submission – NA  
a) Corrections carried out and re-submitted.  
b) Rejected in the first instance and re-submitted with additional work.
- 20) Signature of the Candidate :
- 21) Signature of the Guide with Designation:
- 22) Signature of the Head of the Department where the candidate conducted the Research Work:
- 23) Signature of the Head of the Institution where the candidate is working :
- 24) Station with Date :

# PHOTOGRAPHS



