The Effect of Antenatal and Postnatal Pelvic Floor Muscle Training on the Risk of Developing Pelvic Floor Dysfunction - A Cohort Study

Neema Acharya¹, Manjusha Agrawal², Priyanka Singh³, Tejaswini Fating⁴

¹Professor and Head, Department of Obstetrics and Gynaecology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Deemed to be University), Maharashtra, India; ²Professor, Department of OBGY, Department of Obstetrics and Gynaecology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Deemed to be University), Maharashtra, India; ³Junior Resident, Department of OBGY, Department of Obstetrics and Gynaecology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Deemed to be University), Maharashtra, India; ⁴Post Graduate Student, Dept of Neurophysiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences (Deemed University), Sawangi (Deemed To Be University), Maharashtra, India.

ABSTRACT

Introduction: Pelvic floor dysfunction is a common gynaecological problem affecting women's health apart from their quality of life. It manifests as Urinary and faecal incontinence and pelvic organ prolapse. The present evidence is not conclusive about the need and long term benefits of pelvic floor muscle rehabilitation.

Objectives: The present study is aimed to study the effect of antenatal and postnatal rehabilitation of the pelvic floor by pelvic floor muscle training.

Methods: The occurrence of pelvic floor muscle. The dysfunction will be assessed periodically in a cohort of women who receive pelvic floor muscle training antenatally and postnatally and compared with that in a comparable cohort of women who didn't receive.

Results: The anticipated results are that the pelvic floor muscle dysfunction will be significantly more in women who did not receive muscle training.

Conclusion: The occurrence of pelvic floor muscle dysfunction will be significantly more in a cohort of women who receive pelvic floor muscle training antenatally and postnatally and compared with that in a comparable cohort of women who didn't receive.

Key Words: Stress, Urinary incontinence, Pelvic floor muscle, Pelvic organ prolapse

INTRODUCTION

The long term quality of life of women is affected by many issues related to childbirth and menstrual problems.¹ Urinary and faecal incontinence and pelvic organ prolapse, classified as pelvic floor disorders/dysfunction are commonly found in women.² Pelvic floor muscles (PFM) muscles comprise of the pelvic diaphragm muscles and the urogenital diaphragm muscles. The weakness of the PFM is the main cause of pelvic floor muscle dysfunction.

The incidence of pelvic floor dysfunction is more in the low-income population may be because women in this strata have more parity and less access to the health care system and also

resume the heavy work pattern early after childbirth.³ One of the important contributing factors is instrumental delivery which commonly follows difficult or prolonged labour resulting in damage to pelvic floor muscle integrity. Stress urinary incontinence (SUI), as a manifestation of pelvic floor dysfunction, is quite common and has a significant effect on the quality of life of these women.^{4,5}

As per a Cochrane Systematic review, women who received a structured pelvic floor muscle training (PFMT) programme right from the first trimester may reduce the risk of developing urinary incontinence in late pregnancy and postpartum. In a developing country like India women who are poor and malnourished, resume work early and with a low body mass

Corresponding Author:

Dr. Neema Acharya, Department of OBGY, DMIMS (Deemed To Be University), Maharashtra, India.
Contact: 9326692511; Email: neemasacharya@gmail.com

ISSN: 2231-2196 (Print)

ISSN: 0975-5241 (Online)

Received: 25.08.2020

Revised: 22.09.2020

Accepted: 30.10.2020

Published: 30.11.2020

index are at increased risk factor for urinary incontinence. Most of the National and International programmes for maternal well-being are target towards the prevention and treatment of complications of pregnancy and labour. Rehabilitation of women's health after physiological changes during the antenatal and postnatal period is rarely given importance and is need of the hour to enhance the quality of life of women which is affected by disorders like pelvic floor dysfunction.

The present evidence is inconclusive about whether a population-based approach of practising PFMT is effective in reducing urinary incontinence or it should be targeted towards high-risk women.⁵ Though short term studies are done in this area long term effects of PFMT programmes are not studied so far. This cohort study will be conducted to determine the short term and long term effect of postnatal pelvic floor muscle rehabilitation programme on the risk of developing pelvic floor dysfunction to be assessed periodically over 20 years.

In the present study objectives are to study the effect of pelvic floor muscle exercises on PFMs strength and thickness in postnatal women in the exposed and unexposed group and to study the effect of pelvic floor muscle exercises on the occurrence of pelvic floor dysfunction in the exposed and unexposed group.

MATERIALS AND METHODS

Study Design: Cohort Study

Setting: The study will be conducted in the antenatal and postnatal rehabilitation centre. Datta Meghe Institute of Medical Sciences Wardha.

Duration: 20 Years

Participants

Antenatal and postnatal women delivered at AVBRH

Inclusion criteria:

Women who underwent normal delivery, all low-risk antenatal women in the first trimester throughout the postnatal period of 6 weeks giving consent and women who did not receive the muscle training and attend the gynecologic OPD for other symptoms post-natally will be considered to include in the study.

Exclusion criteria:

Women who undergo Caesarian section and instrumental delivery

Elderly antenatal women who will be perimenopausal after 20 years

Sample size:1000

Procedure

Women who did not receive the muscle training and attend the gynecologic opd for other symptoms post-natally will be included in the control group. Pelvic floor muscle exercises will be initiated for study group from the first trimester. The training will be done by an expert physiotherapist. The exercises will be continued till 6 weeks postpartum. The frequency of the exercises will be done daily three times a day.

The control group of women will be those who did not undergo this programme.

The endpoint of the follow up will be the development of pelvic floor dysfunction.

Survey for pelvic floor dysfunction and assessment of the pelvic floor muscle function will be done periodically at 6 weeks, at the year,5 years and 10 and 20 year periods through questionnaire and clinical pelvic examination.

A predesigned and pretested proforma will be used for interviewing the study and control groups' participants. The interview questionnaire will be composed of mainly five sections (socio-demographic factors, obstetric and gynaecological history, questions on urinary incontinence, questions on faecal incontinence and presence or absence of prolapse symptoms). Maternal obstetric and gynaecological history such as parity, mode and place of delivery will be noted. Pelvic floor dysfunction will be assessed by a validated questionnaire.

OUTCOME VARIABLES

Primary outcome

Occurrence of urinary incontinence, faecal incontinence, pelvic organ prolapse

(Assessed by questionnaire and clinical examination). PFM Strength measured before and after the treatment period by clinical pelvic examination (vaginal examination and perineal body thickness) tone of pelvic floor muscle on clinical examination

Secondary outcome

Quality of life of women in long term

Exposures: Antenatal and postnatal regular pelvic floor muscle exercises done or not

Potential confounders – Compliance, BMI, Nutritional status, Type of work

Effect modifiers

1. Presence of other causes of chronic increased intra-abdominal pressure

2. Development of other medical disorders (trauma/as-cites/neurological)
3. Development of other gynecologic disorder (endometriosis)

Dropouts

Those who develop antenatal maternal or fetal high-risk factors.

Those who had difficult labour/instrumental delivery/caesarian section

Those who deliver at home

Those who did not continue exercises in a given set of period

Statistical Analysis

Data will be entered in a predesigned proforma. Statistical analysis will be done by using descriptive and inferential statistics using the chi-square test. The software's used in the analysis will be SPSS 17.0 and Graph pad Prism. A value less than 0.05 for P will be considered as Level of significance. Continuous variables will be reported as means with standard deviations or medians with interquartile range and categorical variables as proportions.

The ability of the risk-stratification scores will be calculated to differentiate between the presence or absence of the different endpoints separately using the area under the curve.

Possible predictors of adverse outcome (endpoint outcome ie pelvic floor dysfunction) using univariable logistic regression analyses will be noted. Odds ratios (OR) will be calculated using 95% confidence intervals (95% CI. Continuous variables will be checked for nonlinearity and collinearity.

EXPECTED OUTCOMES

The PFMs strength and thickness in postnatal women who underwent pelvic floor muscle training will be significantly more than those in the control group. There will be a significantly low incidence of pelvic floor dysfunction in women in the study group than those in the control group.

DISCUSSION

Most of the National and International programmes for maternal well-being are target towards the prevention and treatment of complications of pregnancy and labour. Rehabilitation of women's health after physiological changes during the antenatal and postnatal period is rarely given importance. Such rehabilitation programmes are need of the hour to improve the quality of life of women which is affected by disorders like pelvic floor dysfunction. Some related studies were reported.⁶⁻⁸ Though short term studies are done in this area

long term effects of these PFMT programmes are not studied so far. This cohort study will be helpful to provide evidence to not only short term effect but also to determine the long term effect of postnatal pelvic floor muscle rehabilitation programmes on the risk of developing pelvic floor dysfunction which will be assessed periodically over 20 years.

CONCLUSION

The occurrence of pelvic floor muscle dysfunction will be significantly more in a cohort of women who receive pelvic floor muscle training antenatally and postnatally and compared with that in a comparable cohort of women who didn't receive.

ACKNOWLEDGMENT

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references to this manuscript. The authors are also grateful to authors / editors / publishers of all those articles, journals, and books from which the literature for this article has been reviewed and discussed.

Conflict of Interest: Nil

Source of Funding: Nil

REFERENCES

1. Selvanathan S, Acharya N, Singhal S. Quality of life after hysterectomy and uterus-sparing hysteroscopic management of abnormal uterine bleeding or heavy menstrual bleeding. *J Mid-life Health* 2019;10(2):63.
2. Hallock JL, Handa VL. The epidemiology of pelvic floor disorders and childbirth: an update. *Obstet Gynecol Clin North Am* 2016; 43(1): 1-13.
3. Cavkaytar S, Kokanali MK, Topcu HO, Aksakal OS, Doğanay M. Effect of home-based Kegel exercises on quality of life in women with stress and mixed urinary incontinence. *J Obstet Gynaecol* 2015;35(4):407-10.
4. Haylen BT, De Ridder D, Freeman RM, Swift SE, Berghmans B, Lee J, et al. An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. *Neurourol Urodyn* 2010;29(1):4-20.
5. Shaw JM, Nygaard IE. Role of chronic exercise on pelvic floor support and function. *Curr Opin Urol* 2017;27(3):257.
6. Agrawal M, Kolli SN. Role of laparoscopy in the diagnosis of chronic pelvic pain. *J Datta Meghe Inst Med Sci Uni* 2019;14(4):310.
7. Agrawal M, Acharya N, Joshi K, Shrivastava D. Effectiveness of Isosorbide Mononitrate in Cervical Ripening before Induction of Labor in Full-Term Antenatal Patients. *J SAFOG* 2019; 11: 96-9.
8. Acharya N, Gadge A, Agrawal M, Singh M. Mechanical Cervical Ripening with Foley Catheter Balloon: Rekindling a Forgotten Art. *J SAFOG* 2018; 10: 1-4.