

Effects of Pelvic Floor Muscle Training During Pregnancy and After Childbirth on Prevention & Treatment of Urinary Incontinence: A Scoping Review

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ABSTRACT

Background: Urinary incontinence is defined as the complaint of involuntary loss of urine. It is a common and embarrassing problem. Pelvic floor muscle training has been effective for the prevention and treatment of urinary incontinence during pregnancy and after childbirth. Thus, the aim of this study is to explore the effectiveness & outcome of physiotherapy in pelvic floor muscle training during pregnancy & childbirth in urinary incontinence.

Methodology: In this scoping review articles are searched from the search engines like PUBMED, GOOGLE SCHOLAR, etc. These articles are reviewed according to the inclusion criteria which include articles from last 10 years, randomized control trials, systematic review, experimental study, etc. 7 articles were selected according to it. Later the qualities of these articles were analyzed using PEDRO Scale.

Conclusion: In conclusion our study demonstrates that the pelvic floor muscle training might be effective in solving the problems of urinary incontinence during pregnancy and after childbirth. Pelvic floor muscle training can be advised by the physiotherapist or the pregnant women can be trained on how to perform the pelvic floor muscle exercises. Thus, pregnant women can take care of themselves and independently perform pelvic floor muscle exercises, thereby eliminating the problems of urinary incontinence.

Keywords: Pelvic Floor Muscle Training, Pregnancy, After Childbirth, Prevention, Treatment, Urinary Incontinence.

INTRODUCTION

Urinary incontinence is defined as the complaint of involuntary loss of urine¹. It is a common and embarrassing problem, loss in quality of life.

There are various factors which causes urinary incontinence in women which includes age, obesity, race/ethnicity, childbirth, oral hormonal therapy, earlier hysterectomy, mobility impairment, cognitive impairment, diabetes, history of pelvic and perineal surgery, pregnancy², pelvic floor trauma after vaginal delivery

and menopause³. It may also occur due to abnormalities of lower urinary tract or due to other illnesses⁴, use of diuretics, inactive lifestyle, caffeinated drinks, severe or chronic cough that results from chronic bronchitis/smoking, bladder stones and short urethra⁵. There are other causes which can also lead to urinary incontinence such as bladder dysfunction or urethral dysfunction. The gynecological causes of urinary incontinence are weakening of pelvic floor muscles, gynecological and obstetrical operations and pelvic organ prolapsed⁶. The

main factors which cause incontinence in pregnancy are maternal age more than 35 years, pregestational maternal body mass index and family history⁷. If the body weight of pregnant women at term is equal or more than 75kg then there is risk of stress urinary incontinence⁸. There is also a greatest risk of urinary incontinence if the women have given birth for the first time to a baby⁹. There are also factors which lead to urge urinary incontinence they are detrusor over activity, poor detrusor compliance and hypersensitive bladder.¹⁰

Urinary incontinence is further classified into three major subtypes they are: stress urinary incontinence, urge urinary incontinence and mixed urinary incontinence¹¹. Stress urinary incontinence is defined as the involuntary leakage of urine when there is a physical stress such as cough, lifting heavy objects or while doing other physical activities. Urge urinary incontinence occurs when there is involuntary loss of urine followed by an irresistible need to void¹¹. Mixed urinary incontinence is defined as involuntary urine leak that is associated with urgency, along with exertion, sneezing or coughing^{11,12,13}. There are also less common categories of urinary incontinence which are total incontinence, functional incontinence, overflow incontinence¹⁴, continuous urinary incontinence and urinary incontinence due to idiopathic or neurogenic detrusor.⁵

The prevalence of urinary incontinence in young elite athletes is between 4.5% and 80%¹⁵. The prevalence rate increases with increase in the maternal age and the rate increases by 3% every year¹⁶.

The incidence of urinary incontinence is 6.1 times more common in women after normal delivery than after a cesarean section¹⁷ but the risk increases after third cesarean section and it becomes similar to the normal delivery¹⁸. Incidence of urinary incontinence in pregnant women is 3.3 times more affected than the nulliparous women but one year after the first child the risk of urinary incontinence is

increased higher than in the nulliparous women.¹⁹

The mechanisms for urinary incontinence are: urethral hypermobility which results from loss of support to the bladder neck and urethra and due to the weakness of urinary sphincter by itself²⁰. Urinary incontinence occurs due to pregnancy and childbirth as there is weakening and injury to the perineum and to the pelvic floor muscles. Due to the stretch and rupture of the peripheral nerves, connective tissue and muscles it leads to urinary and faecal incontinence, pelvic organ prolapse, sensory abnormalities, defective dysfunction and sexual dysfunction.²¹

The medical interventions for urinary incontinence are: low dose vaginal oestrogen²², the anticholinergic drugs which acts directly on the detrusor muscle^{23,24}, beta 3-adrenergic agonists which also acts on the detrusor muscle, serotonin-nor adrenaline reuptake inhibitors.²⁵

For the management of urinary incontinence, the physiotherapy treatment which should be included are: pelvic floor muscle training²⁶, pelvic floor muscle exercise along with biofeedback. In these the biofeedback is obtained by using small electrodes which are placed around the anus or by using an internal, vaginal electrode²⁷, pelvic floor muscle exercises and by use of electrical stimulation¹⁵ and by using cone therapy¹¹. The pelvic floor muscle exercise includes repetitive voluntary contraction and relaxation of specific pelvic floor muscles¹³ increases the strength of pelvic floor muscles^{28,29}. To improve more strength of pelvic floor muscles use of progression model method should be included which involves doing repetition 8 to 12 times with maximum contractions of the pelvic floor muscles at moderate velocity with 1 or 2 minutes break in between each set. The number of trainings should be increased from 2 to 3 times to 4 to 5 times per week³⁰. These exercises should be performed in sitting, kneeling and standing postures.³¹

METHODOLOGY

Study Setting: Dr. A.P.J. Abdul Kalam College Of Physiotherapy, Loni

Study Design: Scoping Review.

Scoping Review is a technique to ‘map’ relevant evident based literature in the field of interest.

Database & Search Strategy: The search is done on Search Engines such as: PUBMED, Google Scholar, PEDro. The key words are used for the research are: Pelvic Floor Muscle Training, Pregnancy, After Childbirth, Prevention, Treatment, Urinary Incontinence.

Study Duration: 6 months

Equipments used: Laptop

Selection Criteria: Information sources are independently used to search articles. The relevance of the article to the research question is been observed before reviewing it. The articles for review are selected according to their inclusion or exclusion in the criteria set.

Eligibility Criteria:

Phenomenon of Interest: Effect of pelvic floor muscle training on prevention &

treatment of urinary incontinence during pregnancy & after childbirth.

Inclusion criteria:

1. Articles from last 10 years
2. Articles published in English
3. Articles with abstract & Full Text available
4. Randomized control trials
5. Systematic review
6. Experimental study
7. Research articles

Exclusion criteria:

1. No geographic restriction
2. Abstract & poster
3. Medical & other than physiotherapy management

PROCEDURE:

Evidence based articles elaborating the objectives of the study will be selected for scoping review data will be collected on the basis of eligibility criteria from the selected sites & index. The qualities of the articles are assessed and the articles are discussed and then the conclusions are drawn for the study.

Database	Search words	Number of articles	Selected articles(author/year)
PUBMED	Pelvic floor muscle training	1882	0
	Pelvic floor muscle training, urinary incontinence	1261	Siv. Morkved, et al.(2010) Marcin Dornowski,et al.(2018)
Google Scholar	Pelvic floor muscle training, pregnancy, childbirth, prevention, treatment, urinary incontinence	11400	Telma F.Pires,et al(2020) Maria Habib,et al.(2018) Zarawski Marcin,et al.(2017) Stephanie J Woodley,et al(2017) Natalia Price,et al. (2010)

Outcome Measures:

Physiotherapy Evidence Database (PEDro) scale is a 10 component scale to assess the methodological quality of clinical trial. It is also used to rate systematic reviews. The PEDro scale was developed from Delphi List. As per author’s suggestion the scores are: <4 is reflected ‘poor’, 4-5 is ‘fair’, 6-8 is ‘good’ & 9-10 is ‘excellent’. The Inter-rater reliability of this PEDro scale is ICC=0.53 to 0.91 for clinical trial of physiotherapy related intervention.

Author	Siv Morkved, et al.(2014)	Natalia Price, et al. (2010)	Stephanie J et al(2017)	Zarawski Marcin, et al.(2017)	Marcin Dornowski, et al.(2018)	Maria Habib, et al. (2018)	Telma F. Pires, et al(2020)
Random allocation	Yes	Yes	Yes	No	No	Yes	Yes
Concealed allocation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics comparable	Yes	No	Yes	Yes	Yes	Yes	Yes
Subject blinded	No	No	No	No	No	No	No

<i>Table continued...</i>							
Therapist blinded	No	No	No	No	No	No	No
Assessor blinded	No	No	No	No	No	No	No
Outcome for 85% of initial participants	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intention to treat analysis	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Comparison between group statistical	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Point variability	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Total score	7/10	6/10	7/10	6/10	6/10	7/10	7/10

RESULT

Author/Year	Study type	Aim	Result
Siv Morkved,et al.(2014)	Systematic review	To address the effects of pelvic floor muscle training during pregnancy & after delivery in the prevention & treatment of urinary incontinence.	Pelvic floor muscle training should be included as a daily routine part of women's exercise programme.
Natalia Price,et al. (2010)	Systematic literature review	To summarise recently published data on the use of pelvic floor muscle training for treatment for urinary incontinence.	The pelvic floor muscle training is useful for the treatment of urinary incontinence and there are no side effects of these exercises.
Stephanie J Woodley,etal(2017)	Systematic review	To assess the effects of pelvic floor muscle training for preventing or treating urinary and faecal incontinence in pregnant or postnatal women.	Pelvic floor muscle training in early pregnancy for continent women may prevent the onset of urinary incontinence in late pregnancy and postpartum.
Zarawski Marcin,etal.(2017)	Research article	To identify the impact of urinary incontinence on quality of life during pregnancy and the postpartum period and to present an evaluation of pelvic floor muscle training regarding disease prevention and quality of life improvement	Pelvic floor training is an effective method of treatment of urine leakage during pregnancy and the postpartum period.
Marcin Dornowski,etal.(2018)	Clinical research	To show the differences in the level of pelvic floor muscle determined in 3 measurement protocol tasks among 3 test groups- with, without urinary incontinence, and a control group	The strength of the pelvic floor muscles improved significantly after intensive pelvic floor muscle training.
Maria Habib,etal.(2018)	Randomized controlled trial	To determine the effectiveness of 8 weeks home based pelvic floor muscle exercises in the prevention of stress urinary incontinence during pregnancy and to see how many women were consistent with them	Home based pelvic floor muscle exercises are very important for the prevention of stress urinary incontinence.
Telma F.Pires,etal(2020)	Experimental study	To verify the effectiveness of pelvic floor muscle training program in pregnant women,by analyzing the amount of urine leakage.	Pelvic floor muscle training reduced urinary incontinence in pregnant women and also there was significant improvement in the quality of urine leakage and an increase in the strength of the pelvic floor muscles.

DISCUSSION

This present study titled “effects of pelvic floor muscle training during pregnancy and after childbirth on prevention and treatment of urinary incontinence: a scoping review” was conducted in Pravara Institute of Medical Sciences, Loni. This scoping review is aimed to provide an overview on how effective is pelvic floor muscle training for treatment of urinary incontinence during pregnancy and after childbirth. The articles were searched on different search engines like PUBMED, Google Scholar. Later the articles were selected according to the inclusion and exclusion criteria set. Then the qualities of

the articles were assessed using PEDro scale.

Urinary incontinence is defined as the involuntary leakage of urine. It's a common and embarrassing problem which affects of the quality of life of women.

Siv Morkved, et al. used pelvic floor muscle training for treating urinary incontinence where there was reduction in the urinary incontinence seen in the women during their late pregnancy and 6 months postpartum who did intensive pelvic floor muscle training during their antenatal period.

Natalia Price, et al. stated that pelvic floor muscle training is effective for the

treatment of urinary incontinence. Women who did supervise pelvic floor muscle exercises during their pregnancy reduced the chances of urine leakage in the postpartum in the first year after the childbirth. The greatest effect was seen when there was strengthening of pelvic floor muscles along with weekly electrical stimulation.

Stephanie J Woodley, et al treated urinary incontinence with the help of pelvic floor muscle training. This review considers whether pelvic floor muscle training is effective for treatment of urinary and faecal incontinence in the pregnant women than other treatment in antenatal and postnatal care.

Zarawski Marcin, et al. conducted a study for the evaluation of impact of pelvic floor muscle exercises on the development of urinary incontinence in women of three different periods: during pregnancy, until 6 weeks postpartum and up to 12 months childbirth. Their studies have confirmed that urinary incontinence is common in all the above groups. Their studies have shown the importance of educating the public about the urinary incontinence and they have confirmed that pelvic floor muscle training is an effective method for the treatment of urinary incontinence.

Marcin Dornowski, et al stated that pelvic floor muscle training is an effective method for primigravid pregnant and primiparous postpartum women for the decrease in urinary symptoms. They concluded from their study that pelvic floor muscle strength improved after intensive pelvic floor muscle training and pelvic floor muscle training during pregnancy resulted in improved muscle coordination and flexibility.

Maria Habib, et al. their study highlighted that 8 weeks home based pelvic floor muscle exercises are effective in the prevention of stress urinary incontinence during pregnancy in highly motivated patients. Pelvic floor muscle exercises also improved the strength of the pelvic floor muscles.

Telma F. Pires, et al concluded that pelvic floor muscle training is better than no treatment, placebo or inactive treatment controls for women with stress urinary incontinence. They also stated that pelvic floor muscle training can cure or improve the symptoms and may reduce the number of urine leakage episodes in women with stress urinary incontinence.

CONCLUSION

In conclusion our study demonstrates that the pelvic floor muscle training might be effective in solving the problems of urinary incontinence during pregnancy and after childbirth. Pelvic floor muscle training can be advised by the physiotherapist or the pregnant women can be trained on how to perform the pelvic floor muscle exercises. Thus, pregnant women can take care of themselves and independently perform pelvic floor muscle exercises, thereby eliminating the problems of urinary incontinence.

Ethical Approval:

An ethical permission was obtained from Institutional Ethical Committee held on 16 December 2020 at Dr. A.P.J. Abdul Kalam College of Physiotherapy, Pravara Institute of Medical Sciences, Loni, Maharashtra, India-413736

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