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Pelvic Floor Function and Fitness: View Point of Nulliparous Physiotherapy Students

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ABSTRACT

Pelvic floor function and fitness: View point of nulliparous physiotherapy students
Background and objectives:
Pelvic floor dysfunction is detrimental to Quality of life. Physiotherapists often come across individuals with pelvic floor dysfunction. Objective of the study was to find out the point of view of nulliparous physiotherapy students on pelvic floor function and fitness.
Methods
Through structured questionnaire knowledge of pelvic floor function and fitness was evaluated in 102 physiotherapy students.
Results:
The knowledge of pelvic floor is rated between 4 to 5 by 57%; about 50% of them lacked knowledge about status and role of pelvic floor muscles immediately, 1 month and 6 months after delivery and role of pelvic floor in sexual function.
Interpretation and conclusion:
The results showed that in spite being students of physiotherapy, the knowledge about function and fitness of pelvic floor is quite deficient.

KEYWORDS Pelvic floor muscles, pelvic floor function, pelvic floor fitness, physiotherapy

Introduction:
Pelvic floor is hammock or sling situated at the termination of the pelvic outlet. Structures forming pelvic floor from above downward are peritoneum, pelvic viscera and endopelvic fascia, levator ani muscles, perineal membrane, and superficial genital muscles. The viscera are often thought of as being supported by the pelvic floor, but are actually part of it. The viscera play an important role in forming the pelvic floor through their connections with structures, such as the cardinal and uterosacral ligaments[1].

Any dysfunction in the pelvic floor will give rise to symptoms like urinary incontinence, fecal incontinence, and pelvic organ prolapse. These symptoms have devastating effect on quality of life woman experiencing it.

Pelvic floor physiotherapy is an important adjunct to the management of female pelvic and sexual pain disorders which are often associated with bothersome bladder symptoms.[2] Evidence suggests that performing correct voluntary contraction of pelvic floor may not be possible for women having pelvic floor dysfunction.[3]

Hedwig Neels[4] et al concluded that knowledge of pelvic floor muscles found to be quite deficient when checked for nulliparous women. Study was conducted in a developed country and if women in developed country are found to be deficient in their knowledge, more likely that women in developing countries may also be less informed.

Physiotherapy students learn about the anatomy and physiology of pelvic floor muscles, and reproductive organs. Yet, the extensive knowledge of pelvic fitness and function may not be emphasised. Also the subjects like, pelvic floor dysfunction and its effects on sexual dysfunction may not be covered as a part of curriculum. It also depends on individual student's interest to dig deeper into the particular topic.

Knowledge of pelvic floor function and fitness is evaluated in this study because the students may not only deal with persons with pelvic floor dysfunctions, but also, as female, may experience it by themselves. If physiotherapists are well informed about the functions and fitness, more likely they can work to prevent pelvic floor dysfunction.

Methodology:
This is a cross sectional study. 102 Students of physiotherapy, between the ages of 18 to 24 years, who were never been pregnant before, were included in the study. Purposive sampling was performed. Data were recorded anonymously and written informed consent was obtained.

A structured questionnaire[4] was used for the study, which is developed in Dutch country and English translation of the same is available. The questionnaire is validated and reliable. Authorization for the use of the questionnaire was obtained from the author and questions were modified as per the requirements of the present study. It took around 15-20 minutes to complete the questionnaire.

The questionnaire consists of 40 questions, beginning with the individual's age, current academic year, marital status, and whether been pregnant before or not etc. Questions 9 to 14 consist of pelvic floor anatomy – what is included in pelvic floor, location of pelvic floor, functions of pelvic floor muscles and what movement does it produce etc.

Questions 15 to 19 consist of pelvic floor dysfunctions, and symptoms of it, and consequences of child birth. Questions 20 to 23 are about consequences of pelvic floor dysfunction immediately after delivery, 1 month after delivery and 6 months after delivery. Questions 24 to 27 ask about the organ prolapse and its consequences. Questions 28 to 30 are for role of pelvic floor in sexual intercourse. Questions 31 to 33 ask about their opinion on prenatal and post natal physiotherapy. 31 to 37 questions ask about their perception on knowledge

of pelvic floor and how they received information on pelvic floor other than their curriculum.

38 to 40 questions is about asking the students what their biggest anxiety is, if they find they are sufficiently informed about the topic and if they wish to receive more information about the topic.

All the relevant questions have an option of "I do not know".

Results:

The data was analysed using SPSS version 20.0.

Demographic information: The mean age of the participants was 20.23 years with standard deviation of 1.7. All the participants were single (not married), and never been pregnant before.

Structure of the pelvic floor:

In the question, what is included in pelvic floor, 77% of them all answered that muscles are part of pelvic floor. 44% answered that ligaments and tendons, and 45% answered that abdominal organs are also part of pelvic floor. Only 36% mentioned arteries and nerves as part of pelvic floor. 44% said skin and fat to be part of pelvic floor and 10% had an opinion that bones and joints are also part of pelvic floor.

Localisation of pelvic floor:

65% localised pelvic floor correctly on the female human figure.

Function of the pelvic floor and why do we need them?

75% answered the function of pelvic floor correctly, 8% of them gave an answer which was not right and 17% of them said they did not know. The answer of question, why do we need pelvic floor muscles, 51% answered it right, 10% gave an incorrect answer and 39% said they did not know it.

If a healthy woman able to control (contract and relax) the pelvic floor muscles whenever she wants?

77% knew that the healthy woman is able to control the pelvic floor muscles. 12% said the woman cannot control pelvic floor muscles on her own. 10% said they did not know if a woman is able to control the muscles or not.

Movements of the pelvic floor:

As much as 60% believed that pelvic floor muscles can make inward lifting movements, 56% outward pushing movements, 12% believed it can make pinching movement, 7% thought that there is no conscious control possible and 9% opted "I do not know".

Openings in pelvic floor and which are they?

66% answered correctly that there are three opening in pelvic floor. And 60% named all three correctly.

Table 1 describes most common causes of bad functioning of the pelvic floor. And Table 2 describes the role of pelvic floor in urinary incontinence, various consequences of pelvic floor functioning immediately after delivery, 1 month after delivery and 6 months after delivery, role of pelvic floor in sexual orgasm and role of prenatal and postnatal physiotherapy. Table 3 describes various consequences after delivery.

Table 1

Most common causes of bad functioning of the pelvic floor	
Causes	Percentage
Pregnancy	54%
Surgery of the urinary tract, uterus and abdomen	47%
Caesarean delivery	28%
Heredity	12%
Constipation	6%
Vaginal Deliveries	68%
Straining during peeing	19%
Over weight	24%
Drinking alcohol	0%
Smoking	5%

Which delivery may have the most negative consequences for the pelvic floor?

61% believed vaginal delivery has more negative consequences than the Caesarean section. 69% believed that vaginal delivery that takes longer impacts more negatively than fast vaginal delivery. 76% believed that vaginal delivery with rupture has more negative consequences than vaginal delivery with episiotomy. 57% answered that vaginal delivery with forceps has more negative impact than vaginal delivery with vacuum.

55% did not know what gets cut or torn during vaginal delivery. Majority of them answered correctly for the question related to prolapse and what can prolapse from vagina.

96% of them never received any pelvic floor therapy. Those who received did not mention a reason for which they received pelvic floor therapy.

Table 2

Question	Yes	No	I don't know
Knowledge about pelvic floor			
Does a healthy person occasionally loose urine? (100% attempted the question)	30%	58%	12%
Does a healthy person lose urine during intensive sport? (100% attempted the question)	26%	63%	11%
If use of precautionary pad is normal. (100% attempted the question)	13%	83%	4%
Strength of pelvic floor is not as good as before, after child birth? (100% attempted the question)	77%	10%	13%
Pain in the pelvic floor			
Immediately after delivery (92% attempted the question)	46%	5%	41%
1 month after delivery (87% attempted the question)	22%	15%	50%
6 months after delivery (80% attempted the question)	6%	22%	52%
Occasional loss of urine			
Immediately after delivery (93% attempted the question)	30%	15%	48%
1 month after delivery (86% attempted the question)	11%	25%	50%
6 months after delivery (82% attempted the question)	2%	28%	52%
Occasional loss of stool			
Immediately after delivery (97% attempted the question)	21%	30%	46%
1 month after delivery (88% attempted the question)	2%	34%	52%
6 months after delivery (90% attempted the question)	1%	37%	52%
Pain during intercourse			
1 month after delivery (99% attempted the question)	26%	13%	60%

6 months after delivery (88% attempted the question)	5%	21%	62%
Role of pelvic floor in sexual orgasm (99% attempted the question)	49%	5%	45%
Pain experienced by healthy women during intercourse (99% attempted the question)	26%	17%	56%
Leakage of urine during intercourse (100% attempted the question)	13%	20%	67%
Importance of prenatal physiotherapy (100% attempted the question)	96%	0%	4%
Importance of postnatal physiotherapy (100% attempted the question)	94%	1%	5%

Table 3

Consequences of delivery	Percentage
Gapping vagina	50%
Urinary incontinence	37%
Pain in the pelvic floor	37%
Pain during intercourse	14%
Stool problems	7%
Diminished orgasm	9%

On rating their knowledge about pelvic floor on VAS, only 57% attempted the question. Out of them, average rated their knowledge between 4 and 5.

34% never received any information about pelvic floor muscles other than part of their curriculum. The additional information received by them 24% are from Gynaecologists, 4% is from general practitioner, around 18% received it from Family or friends, about 16% is from school.

61% never took an initiative to find information about pelvic floor muscles on their own. Those who found information about the pelvic floor, 25% are from internet and 18% from books.

63% believed that they are not informed enough about the pelvic floor. And 93% desired for more information about the pelvic floor. 48% did not know their biggest anxiety about the pelvic floor and 18% expressed that they had no anxiety about the pelvic floor.

Discussion:

Pelvic floor dysfunction has devastating effect on quality of life. During the life span, around 20-30% women suffer from pelvic floor dysfunction and it is linked with parity and age. [5-7] Physiotherapists are more likely to come across the individuals with pelvic floor dysfunction and also female physiotherapists may experience some of the problem by themselves. Cultural background of the country like India may not encourage the open discussion of pelvic floor function and fitness. The purpose of the study was to find out view point of nulliparous physiotherapy students on pelvic floor function and fitness.

The study had 100% response rate, all 102 participants responded and returned the questionnaire.

The questions based on pelvic floor structure, localisation of pelvic floor, movements of pelvic floor muscles and openings in pelvic floor were answered correctly by around 60-70%. This might be explained as basic anatomy and physiology of pelvic floor is part of the curriculum in Bachelor of Physiotherapy.

In listing out the commonest causes of bad pelvic floor functioning, 68% believed vaginal delivery is the commonest cause of bad pelvic floor functioning, pregnancy is 54% and surgery of the urinary tract is 47%. These findings are realistic and are supported by Kepenekci[5] et al, who found that there is significant relation between pelvic floor dysfunction and delivery. But at the same time Kepenekci also mentioned that both types of delivery, vaginal and caesarean have negative consequences on pelvic floor dysfunction. The population of the present study fails to recognise that.

Questions which asked about pelvic floor pain, urinary and bowel incontinence immediately after delivery, 1 month after delivery and 6 months after delivery, on an average 50% have answered "I don't know". Which means two out of one does not know the outcome of pelvic floor function immediately after delivery or one and six months after it. These findings particularly are matter of concern as per the findings of Kelli Berzuk[8] et al. They concluded that low level of pelvic floor knowledge resulted in increased risk of pelvic floor dysfunction and increase in knowledge and awareness led to increase in pelvic fitness and better quality of life.

Type of delivery that has most negative consequences on pelvic floor, 76% believed that vaginal delivery with rupture has more negative consequences than vaginal delivery with episiotomy. Which is in contrast to the recent findings, which suggests that episiotomy has more negative consequences and pain than rupture.[4,9-11]

If pelvic floor plays a role in sexual orgasm, 49% answered yes and 45% said they did not know, 5% answered no. If pain is experienced during intercourse, 26% answered it as yes, and 56% did not know. 67% did not know if healthy woman leaks a little bit urine during sexual intercourse. Great percentages of women were not clear about the role of pelvic floor muscle during sexual intercourse. Stéphanie Thibault-Gagnon[12] concluded that levator ani has an important role to play during sexual function and partum related trauma has a negative impact on the woman's sexual function as well as quality of life.

Pelvic floor function knowledge is rated in the range of 40% to 50% by majority of the participants. And they wished for more information about the pelvic floor but 61% of them never took an initiative to explore available resources for more information. The ratings given by women in developed country were between 20-30%, in a study done by Hedwig Neels et al[4]. Better score in present study indicates that health education should be emphasised along with the general education.

Suggested solution for this can be interactive continence workshops. Tannenbaum C et al[13] carried out a study to find the impact of an interactive continence workshop on changing participants' attitudes, knowledge and skills in relation to self-managing or seeking care for incontinence. He found that improvements in incontinence-related knowledge and attitudes occurred in up to 94% participants. 43% of the study participants initiated and were satisfied with self-treatment, and an additional 42% consulted a health care professional. Interactive continence workshops promote self-management and consultation seeking among older women with incontinence.

48% said that they did not know what their biggest anxiety about the pelvic floor muscle is. It signifies the lack of sufficient knowledge to state clearly what their anxiety is, or there is no anxiety at all.

Study included only nulliparous physiotherapy students, and did not consider their school background (language medium, state board or central board, etc.), economic status and religion. These factors might influence their knowledge and attitude towards topic discussed here.

Since majority of the students expressed that there is requirement for more knowledge, we insist that the women should be educated about the pelvic floor function and fitness in the school around the age of puberty. And they should be educated irrespective of the stream they choose to study. Here all

the students who participated are from science stream, there could be future studies where knowledge of common stream students can be evaluated. Also knowledge and awareness about the symptoms of incontinence can be evaluated in gravida, primigravida and multigravida.

The present study is one of its kinds, which explored the knowledge and attitude of physiotherapy students about the pelvic floor function and fitness which might prompt the readers to think about health education in women in India.

Conclusion:

The present study concludes that in spite being students of physiotherapy, the knowledge about function and fitness about pelvic floor is quite deficient. Participants lack knowledge in certain areas of pelvic floor function and fitness to name a few, role and status of pelvic floor muscles immediately, 1 month and 6 months after delivery, role of pelvic floor muscles in sexual intercourse, most negative consequences for the pelvic floor based on the type of delivery, etc.

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References:

1. John T Wei, John O. L. De Lancey, Functional anatomy of the pelvic floor and lower urinary tract, Clinical Obstetrics and Gynecology,2004, volume 47, Number 1, 3-17
2. T. Y. Rosenbaum, Pelvic floor physiotherapy for women with urogenital dysfunction: Indications and methods, Minerva Urol Nefrol 2011; 63: 101-7.
3. Tibaek, S. & Dehlendorff, C. Pelvic floor muscle function in women with pelvic floor dysfunction: a retrospective chart review, Int Urogynecol J (2014) 25: 663. doi:10.1007/s00192-013-2277-6
4. Hedwig Neels, Jean-Jacques Wyndaele, Wiebren A. A. Tjalma, Stefan De Wacht er, Michel Wyndaele, Alexandra Vermandel, Knowledge of the pelvic floor in nulliparous women J. Phys. Ther. Sci. 28: 1524–1533, 2016
5. Kepenekci, Ilknur; Keskinkilic, Betul ; Akinsu, Filiz ; Cakir, Petek; Elhan, Atilla Halil; Erkek, Ayhan Bulent; Kuzu, Mehmet Ayhan, Prevalence of Pelvic Floor Disorders in the Female Population and the Impact of Age, Mode of Delivery, and Parity; Diseases of the Colon & Rectum Issue: Volume 54(1), January 2011, pp 85-94
6. Krishna R B, Nayak S, Kumar P, Kamath V, Kamath A and Suraj S. Prevalence of Pelvic Floor Dysfunction among Married Women of Udupi Taluk, Karnataka, India. J Women's Health Care 2014, 4:3
7. Nygaard I, Barber M, Burgio K, Kenton K, Meikle S, Schaffer J, MD, Spino C, Wu J, and Brody D. Prevalence of Symptomatic Pelvic Floor Disorders in US Women. JAMA. 2008 Sep 17; 300(11): 1311–1316.
8. Kelli Berzuk, Barbara Shay, Effect of increasing awareness of pelvic floor muscle function on pelvic floor dysfunction: a randomized controlled trial, International Urogynecology Journal June 2015, 26(6), pp 837–844
9. Andrews V, Thakar R, Sultan AH, et al.: Evaluation of postpartum perineal pain and dyspareunia—a prospective study. Eur J Obstet Gynecol Reprod Biol,2008, 137: 152–156.
10. Leeman L, Fullilove AM, Borders N, et al.: Postpartum perineal pain in a low episiotomy setting: association with severity of genital trauma, labor care, and birth variables. Birth, 2009, 36: 283–288.
11. Räisänen S, Vehviläinen-Julkunen K, Heinonen S: Need for and consequences of episiotomy in vaginal birth: a critical approach. Midwifery, 2010, 26:348–356.
12. Stéphanie Thibault-Gagnon, Sara Yusuf, Suzanne Langer, Vivien Wong, Ka Lai Shek, Andrew Martin, Hans Peter Dietz, Do women notice the impact of childbirth-related levator trauma on pelvic floor and sexual function? Results of an observational ultrasound study Int Urogynecol J DOI 10.1007/s00192-014-2331-z
13. Tannenbaum C, Drali R, Holroyd-Leduc J, Richard L. Lessons learned: impact of a continence promotion activity for older community-dwelling women. Neurourol Urodyn. 2010 Apr;29(4):540-4. doi: 10.1002/nau.20800.