Knowledge, Attitude, and Practice (KAP) Towards Pelvic Floor Muscle Exercise Among the Female Population Attending the Obstetrics and Gynaecology Clinic at Sultan Ahmad Shah Medical Centre (SASMEC@IIUM)

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Abstract:

Introduction: The weakening of the pelvic floor muscles among women is a common condition after childbirth. Pelvic floor muscle exercise (PFME) is prescribed to prepare the women during pregnancy and later stage of labour as a prevention of pelvic floor muscle disorder (PFMD). The study intended to assess the knowledge, attitude, and practice towards pelvic floor muscle exercise among female population attending the obstetrics and gynaecology clinic at SASMEC@IIUM. **Method:** The study was conducted by distributing online Google form questionnaire through a QR code scan among female population at the obstetrics and gynaecological clinic, SASMEC @IIUM. A total of 112 respondents participated in the study based on inclusion and exclusion criteria. **Result:** The findings showed the respondents had a high knowledge and attitude score of 52% and 58.9% respectively. Nevertheless, there was a low score of 70% for the practice level of practice in more than half of the respondents. Non-pregnant and pregnant groups showed no significant difference. The pregnant women demonstrated significant difference of practice compared with non-pregnant towards PFME. **Conclusion:** The adherent to PFME needs to be empowered for long-term benefits.

Introduction:

Pelvic floor muscle exercise (PFME) benefits the recovery of urinary incontinence (UI) due to weakening of the pelvic floor (Ahmed Ibrahim, 2015). According to Ptak, Ciećwiez, Brodowska et al. (2019), damage of the levator ani muscle and visceral pelvic fascia may happen during natural childbirth due to excessive stretching. Parous women are 6.1 times greater to have urinary incontinence (UI) (Marcin, Daria, Maria, Daria, Marcin and Irena, 2017). Vaginal delivery may contribute to urinary incontinence as it damages the pelvic floor and subsequently weakened the pelvis. The pelvic floor muscle dysfunction may also lead to prolapse of female reproductive organs (Jundt, Peschers and Kentenich, 2015). In 2018, almost 420 million people had incontinence involving 300 million women while 120 million affected the male population compared to 346 million in 2008 (Abrams, Anderson, Birder et al., 2010). Milsom, Altman, Lapitan, Nelson, Sillen and Thom (2013) claimed that the prevalence of 50% in women around the world has been affected globally with pelvic floor muscle disorders. In Malaysia, the condition affects nearly 40.4% of women in an outpatient clinic setting, 22.1% experienced it after 5 months of postpartum period, and 76.6% had uterine prolapse (Rosediani et al., 2019). Therefore, physiotherapy intervention is designed to strengthen the weakened perineal and pelvic floor muscles as their effectiveness depends solemnly on the patient's motivation and compliance level to the exercise regime (Kamel, Thabet, Tantawy and Radwan, 2013). The present study intended to evaluate the pelvic floor muscle disorder among female population attending the obstetrics and gynaecology clinic at SASMEC@IIUM.

Materials and Methods:

Study Design

The study design was a cross-sectional study. The participants were selected based on the inclusion and exclusion criteria that were outlined by the researcher.

Subjects

The study was conducted at the Sultan Ahmad Shah Medical Centre @IIUM (SASMEC @IIUM) in Kuantan, Pahang Darul Makmur. The study consisted of the female population at the obstetrics and gynaecological clinic at SASMEC@IIUM. The inclusion criteria of the study are patients or staff aged between 19-45 years old at the obstetrics and gynaecological clinic, SASMEC @IIUM. To define non-pregnant women, the respondents had no history of pregnancy while the pregnant women had history of pregnancy. The visitors and those having known metal implant on the pelvic area were excluded from the study.

Ethical Consideration

The study received its ethical approval (Ethics No.: KAHS 149/20) from the Kulliyyah Postgraduate and Research Committee (KPGRC) and from the IIUM Research Ethics Committee (IREC) (Ethics No.: IIUM/504/14/11/2 IREC 2020-PRS (KAHS). All regulations and guidelines of the research were strictly adhered to wherever deemed applicable and all the result from this study is kept confidential.

Sample Size Calculation

The sample size was calculated by using a formula as stated by Charan and Biswas (2013), the sample size for this study was 99.

$$n= \frac{1.96^2 \times p(1-p)}{d^2}$$

$$n= \frac{1.96^2 \times (0.372)(1-0.372)}{0.10^2}$$

n= 89.75
Add 10% non-response rate: n= 89.75 + (0.1× 89.75) = 98.73≈99
n= sample size
p= proportion in population d= absolute error or precision

Value for p was taken from the previous study by Rosediani et al. (2019). Hence, with the margin error is 0.10%, the confidence interval is 95% and adds a 10%

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non- response rate to achieve more data accuracy, the sample size for this study was 99.

Sampling Method

The sampling method that used in this study was convenience sampling. The data was collected using an online Google form questionnaire that consists of four sections which include the participant information sheet, informed consent form, sociodemographic data and knowledge, attitude, and practice (KAP). The questionnaire adapted from Rosediani et al., (2019) was distributed among the female population at the obstetrics and gynaecology clinic, SASMEC @IIUM through a QR code scan placed at the clinic. The questionnaire from Rosediani et al. (2019) was validated with Cronbach Alpha for Knowledge, Attitude, and Practice was 0.949 (excellent), 0.837 (good), and 0.742 (acceptable) respectively. The Malay language was used and divided into 4 parts:

a) Demographic data include age, ethnicity, occupation, education, income, gravida, sexual satisfaction, incontinence, and baseline pelvic floor muscle exercise information.
b) Knowledge towards pelvic floor muscle exercise

c) Attitude towards pelvic floor muscle exercise
d) Practice towards pelvic floor muscle exercise

The knowledge section comprised of 17 questions where the section was divided into two categories. There were pelvic floor muscle knowledge and benefits of performing pelvic floor exercise, and the method used in performing PFME. The answers given were "yes", "no", or "unsure" for each item. A score of 1 point was given upon correct answers and 0 point was given for any incorrect answers or "unsure". The level of the knowledge was categorized into three-level of scoring which are poor (0-60%), moderate (60-79%), and high for score of 80% and above (Ramli, Rahman and Haque, 2018). For the section of attitude, a 5-point Likert scale was used ranging from strongly agree (5) to strongly disagree (1). It consists of 8 questions. Finally, the section of practice which comprised of 4 questions. Each of the items was categorized by using a 5-point Likert scale which ranges from "never" to "always". They were scored from 0 to 5 respectively. The scoring for these two sections were also adapted and modified from Ramli, Rahman and Haque (2018). Table 1.0 below shows the level classification for total scores of knowledge, attitude, and practice towards pelvic floor muscle exercise.

Table 1.0 Level classification for total scores of knowledge, attitude, and practice towards pelvic floor muscle exercise

Percentage of total scores (%)	Total scores of knowledge	Total scores of attitudes	Total scores of practices	Level
80-100	14-17	7-8	4	Good
60-79	11-13	5-6	3	Moderate
<60	< 11	< 5	< 3	Poor

Statistical Analysis

The data collected from the study were recorded and analyzed by using the Statistical Package for Social Science Software (SPSS) version 25.0 for MacBook. The assessment of KAP towards pelvic floor muscle exercise among the female population at the obstetrics and gynaecology clinic, SASMEC @IIUM were described with the method of descriptive analysis. The parametric test of independent t test was used to compare the knowledge, attitude, and practice

towards pelvic floor muscle exercise among pregnant and non-pregnant women (p-value < 0.05).

Result:

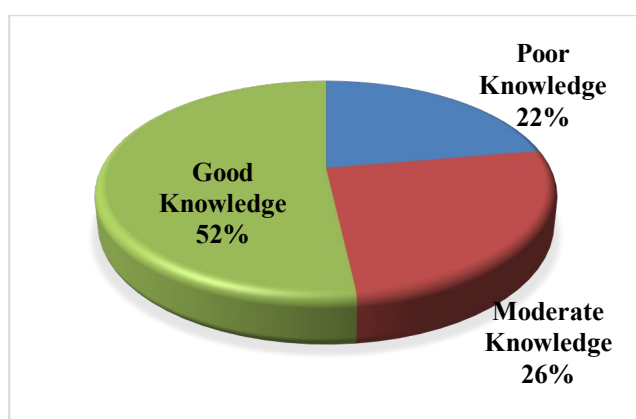### Sociodemographic characteristics

The total participants for this study were 112. Most of them were Malay and had a professional career. The education background and income appeared to be parallel because many of them graduated from a higher education institution. The Gravida section was the highest achieved by women with nulligravida

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counted for 43.8%. Meanwhile, most of the respondents had moderate sexual satisfaction computed with 33.9% slightly higher than low and high sexual satisfaction which shared the same score 31.3%. The incontinence section illustrated 73.2% had no complaint of the sign and symptom while the baseline knowledge of the pelvic floor muscle exercise received the most from the doctor. Table 4.1 summarizes the sociodemographic characteristics of the respondents.

Knowledge Towards Pelvic Floor Muscle Exercise

In terms of knowledge towards pelvic floor muscle exercise, as in each of the question, majority of the respondents got the correct answers. The least of the correct answer recorded was the question number 17 "PFME should be done at least 3 times a day, in the morning, afternoon, and night" which counted only 52.7% while the highest of the correct answers recorded were questions number four "PFME is important controlling urinary bladder function" and 13 "PFME can be done at anytime" counted for 94.6% (Table 4.2).

The result revealed that most respondents have a good knowledge towards the pelvic floor muscle exercise while the least respondent falls into poor knowledge (Figure 4.1)

(<60%= Poor, ≥60%= Moderate, ≥80%=Good)
Figure 4.1 Level of Knowledge Towards Pelvic Floor Muscle Exercise

Table 4.1 Sociodemographic Characteristic of the respondents

Variable	Value (N=112) Mean±SD	P-Value
Age (years)	31.88±5.94	0.00*
	n (%)	
Ethnicity		0.00*
Malay	107 (95.5)[a]	
Chinese	3 (2.7)	
India	1 (0.9)	
Others	1 (0.9)	
Occupational		0.00*
Professional	70 (62.5)[a]	
Non-professional	22 (19.6)	
Housewife	9 (8.0)	
Others	11 (9.8)	
Education		0.00*
Primary school	0	
Secondary school	12 (10.7)	
Higher education	100 (89.3)[a]	
Income (Ringgit Malaysia)		0.00*
<720	12 (10.7)	
720-1,999	15 (13.4)	
2,000-3,999	53 (47.3)[a]	
4,000-6,999	23 (20.5)	
>7,000	9 (8.0)	
Gravida		0.00*
Nulligravida	49 (43.8)[a]	
Primigravida	19 (17)	
Multigravida (2-5)	42 (37.5)	
Grand multigravida (>5)	2 (1.8)	
Sexual satisfaction		0.00*
None	35 (31.3)	
Low	4 (3.6)	
Moderate	38 (33.9)[a]	
High	35 (31.3)	
Incontinence		0.00*
Yes	30 (26.8)	
No	82 (73.2)[a]	
Baseline information of pelvic floor muscle exercise		0.00*
Doctor	24 (21.4)[a]	
Staff nurse	19 (17.0)	
Physiotherapist	22 (19.6)	
Relative/friends	9 (8.0)	
Antenatal mothers in clinic	5 (4.5)	
Books	5 (4.5)	
Magazines	2 (1.8)	
Television	4 (3.6)	
Others	22 (19.6)	

Values are presented as frequency, n (%) or mean ± standard deviation (SD).
*: Significant different *p*-value < 0.05
a: The highest score in each item

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Table 4.2 Summary of Knowledge Towards Pelvic Floor Muscle Exercise

No.	Questions	Mean$^{\mu}$± SD$^{\sigma}$	No. of respondents with the correct answer, n (%)
	Pelvic floor muscle knowledge and benefits of performing pelvic floor exercise		
Q1	Muscles involved in PFME are situated in the pubic region	0.59±0.49	68 (60.7)
Q2	PFME involves muscles in the anal region	0.54±0.50	61 (54.4)
Q3	*Vaginal muscles are not involved in PFME**	0.88±0.33	98 (87.5)
Q4	PFME is important controlling urinary bladder function	0.95±0.23$^{\alpha}$	106 (94.6)$^{\alpha}$
Q5	*PFME is not involved in controlling anal function**	0.57±0.50	64 (57.1)
Q6	*PFME does not tighten the vagina**		
Q7	PFME is important in sexual activity	0.82±0.38	92 (82.1)
Q8	Buttock muscles can be tightened by performing pelvic floor exercise	0.88±0.33	98 (87.5)
		0.71±0.45	81 (72.3)
Q9	PFME can prevent urinary incontinence during laughing, sneezing, or weight-bearing	0.91±0.29	102 (91.1)
Q10	*PFME cannot increase your sexual satisfaction**		
Q11	PFME can increase your husband's sexual satisfaction	0.66±0.48	74 (66.1)
		0.69±0.46	78 (69.6)
Q12	PFME can prevent or treat uterine prolapse	0.79±0.41	88 (78.6)
	Methods used in performing PFME		
Q13	PFME can be done at anytime	0.95±0.23$^{\alpha}$	106 (94.6)$^{\alpha}$
Q14	PFME can be done during routine daily activities such as cooking and laundering	0.80±0.40	90 (80.4)
Q15	Muscles involved in the pelvic floor exercise should be contracted for 8 seconds before being released	0.72±0.45	82 (73.2)
Q16	PFMs should be contracted 8 to 10 times per exercise	0.58±0.50	65 (58.0)
Q17	PFME should be done at least 3 times a day, in the morning, afternoon, and night	0.47±0.50$^{\beta}$	59 (52.7)$^{\beta}$

(1=yes, 0= no or unsure)
Values are presented as frequency, n (%) or mean ± standard deviation (SD).
*: the italic font in the questions reflected the negative statement.
α: The highest score of the items.
β: The lowest score of the items.
μ: The average of the percentage of the respondents that answered the questions correctly.
σ: The data of the respondents that measure the dispersal about the mean score.

Table 4.3 Summary of Attitude Towards Pelvic Floor Muscle Exercise

No.	Questions	No. of respondents, n (%)					Mean$^{\mu}$±SD$^{\sigma}$
		1	2	3	4	5	
Q1	PFME should be done by all women, especially pregnant and postnatal women, whether or not they have PFMD	0 (0)	0 (0)	10 (8.9)	41 (36.6)	61 (54.5)	4.44 ±0.66
Q2	I should practice PFME to prevent or treat urinary incontinence	0 (0)	0 (0)	10 (8.9)	44 (39.3)	58 (51.8)	4.43±0.65
Q3	I should practice PFME to prevent uterine prolapse	0 (0)	0 (0)	26 (23.2)	30 (26.8)	56 (50)	4.21±0.82
Q4	*I feel that PFME is boring**	3 (2.7)	20 (17.9)	46 (41.1)	35 (31.3)	8 (7.1)	3.22±0.92$^{\beta}$
Q5	I feel that PFME should be taught to all antenatal mothers at the antenatal clinic	0 (0)	0 (0)	8 (7.1)	46 (41.1)	58 (51.8)	4.45±0.63
Q6	I support those who want to perform PFME	0 (0)	0 (0)	6 (5.4)	33 (29.5)	73 (65.2)	4.57±0.60$^{\alpha}$
Q7	I feel that PFME can increase sexual satisfaction	0 (0)	0 (0)	28 (25.0)	34 (30.4)	50 (44.6)	4.20±0.81
Q8	I will try to find information on PFME	0 (0)	0 (0)	30 (26.8)	40 (35.7)	42 (37.5)	4.09 ±0.79

(5= strongly agree, 4= agree, 3= unsure, 2= disagree, 1=strongly disagree)
Values are presented as frequency, n (%) or mean ± standard deviation (SD).
*: the italic font in the questions reflected the negative statement.
α: The highest score of the items.
β: The lowest score of the items.
μ: The average of the percentage of the respondents that answered the questions correctly.
σ: The data of the respondents that measure the dispersal about the mean score.

Attitude Towards Pelvic Floor Muscle Exercise

In terms of attitude towards pelvic floor muscle exercise, most of the respondents achieved good score in each of the question indicating good attitude towards pelvic floor muscle exercise. The highest mean score for question number six, the mean score of 4.57 (0.60) with 65.2% respondents strongly agreed to support those who want to do PFME. Nonetheless,

question number four displayed poor attitude with the lowest mean score 3.22 (0.92) and 41.1% of the respondents had neutral with the feeling of bored doing PFME (Table 4.3).

Figure 4.2 revealed that the majority of respondents have a good attitude towards the pelvic floor muscle exercise while the least respondent falls into poor attitude.

Practice Towards Pelvic Floor Muscle Exercise

For practice towards pelvic floor muscle exercise, most of the respondents had low score in each of the question. The findings revealed that the respondents had a poor practice towards pelvic floor muscle exercise which the highest mean score for question number one, 2.62 score with 46.4%

respondents usually performed PFME when they were not pregnant. Nonetheless, question number three displayed poor practice with the lowest mean score 2.06 and 34.8% of the respondents had never discussed PFME with their friends. In Figure 4.3, the result revealed that the PFME practice among the respondents was poor while the least respondent falls into good practice.

Table 4.4 Summary of Practice Towards Pelvic Floor Muscle Exercise

No.	Questions	No. of respondents (%)					Mean$^{\mu}$±SD$^{\sigma}$
		1	2	3	4	5	
Q1	I performed PFME when I was not pregnant	20 (17.9)	24 (21.4)	52 (46.4)	12 (10.7)	4 (3.6)	2.62 ±1.03$^{\alpha}$
Q2	I spent time performing PFME	21 (18.8)	25 (22.3)	55 (49.1)	8 (7.1)	3 (2.7)	2.51 ±0.96
Q3	I have discussed PFME with friends	39 (34.8)	33 (29.5)	32 (28.6)	7 (6.3)	1 (0.9)	2.06 ±0.97$^{\beta}$
Q4	I have tried to find information on PFME	23 (20.5)	33 (29.5)	46 (41.1)	9 (8.0)	1 (0.9)	2.41 ±0.94

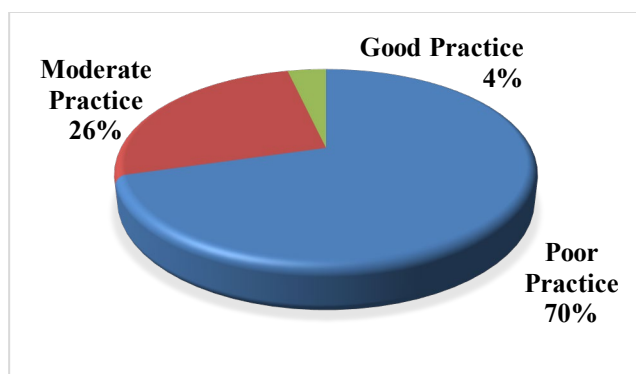*(5= always, 4= frequently, 3= usually, 2= seldom, 1= never).*

Values are presented as frequency, n (%) or mean ± standard deviation (SD).
α: The highest score of the items.
β: The lowest score of the items.
μ: The average of the percentage of the respondents that answered the questions correctly.
σ: The data of the respondents that measure the dispersal about the mean score.

(<60%= Poor, ≥60%= Moderate, ≥80%=Good)

Figure 4.2 Level of Practice Towards Pelvic Floor Muscle Exercise

Comparison of Knowledge, Attitude, And Practice Towards Pelvic Floor Muscle Exercise Between Non-Pregnant and Pregnant Women

There is no significant difference in the knowledge mean score towards pelvic floor muscle exercise between non-pregnant and pregnant women in terms of knowledge, and attitude towards pelvic floor muscles exercise. In contrast, there is a significant difference of mean score towards pelvic floor muscle exercise between non-pregnant and pregnant women in terms of practice (p <0.05) (Table 4.6).

Table 4.5 Comparing Knowledge Mean Score Between Non-pregnant and Pregnant Women (Independent Sample T-Test)

Variable	Non-pregnant women (n= 49)		Pregnant women (n= 63)		Mean differences (95% CI)	t-statistics (df)	p-value
	Mean	SD	Mean	SD			
Knowledge	12.45	3.629	13.29	2.921	-.837 (-2.063, .390)	-1.352 (110)	0.179
Attitude	32.24	3.956	33.17	3.443	-.930 (-2.317, .458)	-1.328 (110)	0.187
Practice	8.92	3.081	10.31	3.119	-1.209 (-2.380, -.038)	-2.045 (110)	0.043*

*: Significant difference p-value < 0.05

Discussion:

The results in this study were similar with the study of Ahmed Ibrahim (2015) in which 76.5% had a good knowledge about PFME. Temtanakitpaisan, Bunyavejchevin, Buppasiri and Chongsomchai (2020) also reported only 55.5% recognized PFME in which doctors documented the highest score 21.4%, physiotherapist 19.6% and staff nurse 17.0%. Temtanakitpaisan et al. (2020) repudiated the statement, their participants never received information from the physicians despite the fact that 58.8% healthcare providers disseminate the knowledge. Majority of the participants demonstrated good attitude towards learning. They decided that health care providers would teach PFME to all antenatal mother's despite of absence in PFMD. About 58.9% of the respondents depicted good attitude similar to what Rosediani et al. (2019) had

found. Nonetheless, more than half of them did not have the motivation to do the exercise even though they are aware about the importance of PFME.

The degree of adherent to PFME reported the poorest proportion when compared with previous levels of knowledge and attitude. The findings of this research for practice were in tandem with Bo, Haakstad and Voldner (2007) that fewer than 17% of antenatal mothers had PFME at least once a week during pregnancy and Whitford, Alder and Jones (2007) found only 54% practiced PFME during pregnancy given the large number of PFME knowledge acquired. This shows that high level of knowledge and attitude did not confer to have a great practice. The report of practice towards PFME in this research is similar to Temtanakitpaisan et al. (2020), only 10.7% practiced PFME but irregularly. Rosediani et al. (2012) also showed that only 10.7% of their

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respondents had a good practice of PFME, 39.3% reported that PFME was regularly done before pregnancy and 30.4% reported that they often spent time practicing PFME. Bo et al. (2007) mention that those who were more educated tend to practice PFME more.

The level of knowledge and attitude towards PFME depicted no significant difference between non-pregnant and pregnant women. This may be due to the advanced online search and social medias grant the accessible to information at the fingertips. In terms of practice, a significant difference existed between non-pregnant and pregnant women. Experience and struggle to give birth might be the elements to be considered. In the theory of planned behaviour (TPB) by Ajzen (2011), the author describes the intention to act to resolve a perceived danger in a certain way. Whitford and Jones (2007) used a revised TPB which integrated past behavioural measures to explore motivation for PFMT among pregnant women. They found that, pregnancy would not cause women to pursue PFME even the chances of PFMD complication existed. In this study, only 49 of the subjects were nulliparous, despite the fact that proportions of the respondents were pregnant women with 56.25% of the whole study, there was no concession for them to practice PFME. This is in line with Rosediani et al. (2019) as being parous has no association with practice. Even there were distinctive different between 2 groups, the practice mean score had the most negative point as it surpassed more than half of the respondents, 70.5.

Conclusion:

Majority of the respondents that attended the obstetrics and gynaecological clinic, SASMEC @IIUM has positive knowledge and attitude towards PFME. Nonetheless, the level of practice is low. Non-pregnant and pregnant women groups showed no significant difference. It is recommended the study could be disseminated into all sectors of health all over Malaysia.

Acknowledgement:

References:

Abrams, P., Andersson, K. E., Birder, L., Brubaker, L., Cardozo, L., Chapple, C., Cottenden, A., Davila, W., De Ridder, D., Dmochowski, R., Drake, M., DuBeau, C., Fry, C., Hanno, P., Hay Smith, J., Herschorn, S., Hosker, G., Kelleher, C., Koelbl, H., … Wyndaele, J. J. (2010). Fourth international consultation on incontinence recommendations of the international scientific committee: Evaluation and treatment of urinary incontinence, pelvic organ prolapse, and fecal incontinence. In *Neurourology and Urodynamics*. https://doi.org/10.1002/nau.20870

Ahmed Ibrahim, W. (2015). Assess Levels of Knowledge, Attitude and Practice of the Married Women about Pelvic Floor Muscles Exercise. *International Journal of Science and Research*. https://doi.org/10.21275/ART20177426

Bo, K., Berghmans, B., Morkved, S., & Van Kampen, M. (2007). Evidence-Based Physical Therapy for the Pelvic Floor. In *Evidence-Based Physical Therapy for the Pelvic Floor*. https://doi.org/10.1016/B978-0-443-10146-5.X5001-1

Bø, K., Haakstad, L. A. H., & Volder, N. (2007). Do pregnant women exercise their pelvic floor muscles? *International Urogynecology Journal*. https://doi.org/10.1007/s00192-006-0235-2

Charan, J., & Biswas, T. (2013). How to calculate sample size for different study designs in medical research? In *Indian Journal of Psychological Medicine*. https://doi.org/10.4103/0253-7176.116232

Jundt, K., Peschers, U., & Kentenich, H. (2015). The Investigation and Treatment of Female Pelvic Floor Dysfunction. *Deutsches Aerzteblatt Online*. https://doi.org/10.3238/arztebl.2015.0564

Kamel, D. M., Thabet, A. A., Tantawy, S. A., & Radwan, M. M. (2013). Effect of abdominal versus pelvic floor muscle exercises in obese Egyptian women with mild stress urinary incontinence: A randomised controlled trial. *Hong Kong Physiotherapy Journal*. https://doi.org/10.1016/j.hkpj.2012.11.002

Marcin, Z., Daria, K., Maria, M., Daria, P., Marcin, O., & Irena, M.-B. A. (2017). The Impact of Pelvic Floor Exercises on the Quality of Life of Women with Urinary Incontinence – Analysis of Pregnancy and the Postpartum Period. *Journal of Novel Physiotherapy and Physical Rehabilitation*. https://doi.org/10.17352/2455-5487.000044

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Jarni et al. (2021)   *IJAHS, 5(6): 2521-2529*

Milsom, I., Altman, D., Lapitan, M. C., Nelson, R., Sillén, U., & Thom, D. (2009). Epidemiology of Urinary (UI) and Faecal (FI) Incontinence and Pelvic Organ Prolapse (POP). *Ics*.

Ptak, M., Ciećwiez, S., Brodowska, A., Starczewski, A., Nawrocka-Rutkowska, J., Diaz-Mohedo, E., Rotter, I., & Franic, D. (2019). The Effect of Pelvic Floor Muscles Exercise on Quality of Life in Women with Stress Urinary Incontinence and Its Relationship with Vaginal Deliveries: A Randomized Trial. *BioMed Research International*. https://doi.org/10.1155/2019/5321864

Rosediani, M., Nik Rosmawati, N. H., Juliawati, M., & Norwati, D. (2019). Knowledge, attitude and practice towards pelvic floor muscle exercise among pregnant women attending antenatal clinic in Universiti Sains Malaysia Hospital, Malaysia. *International Medical Journal*.

Temtanakitpaisan, T., Bunyavejchevin, S., Buppasiri, P., & Chongsomchai, C. (2020). Knowledge, attitude, and practices (KAP) survey towards pelvic floor muscle training (PFMT) among pregnant women. *International Journal of Women's Health*. https://doi.org/10.2147/IJWH.S242432

Tettamanti, G., Altman, D., Iliadou, A. N., Bellocco, R., & Pedersen, N. L. (2013). Depression, neuroticism, and urinary incontinence in premenopausal women: a nationwide twin study. *Twin Research and Human Genetics : The Official Journal of the International Society for Twin Studies*. https://doi.org/10.1017/thg.2013.60

Whitford, H. M., Alder, B., & Jones, M. (2007). A cross-sectional study of knowledge and practice of pelvic floor exercises during pregnancy and associated symptoms of stress urinary incontinence in North-East Scotland. *Midwifery*. https://doi.org/10.1016/j.midw.2006.06.006

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