

Dickinson B. and Briscoe L. 2017.

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Key Phrases

- Barriers exist for women surrounding Pelvic Floor Muscle Exercises (PFME) and there is a need to find innovative ways to engage women.
- Women expressed different perceptions about the anatomy of the pelvic floor, therefore more education is required.
- Women want more information from midwives, but midwives lack of confidence in providing education about PFME.
- Frequency and gestation should be standardised for PFME.

Why are Pelvic Floor Muscle Exercises (PFME) a Neglected Public Health Issue?**Abstract**

Pelvic floor muscle exercises (PFME) positively impact on urinary stress incontinence and quality of life for women. A search was performed on Cochrane, Cinahl and Discover More. Delimiting the search provided 28 papers which informed this literature review. Differing methodology and small sample size of individual studies, variation in trainer and the design of PFME education limited the evidence base. Many barriers existed and women were disinterested with PFME or did not know the reasons for performing pelvic floor exercises. Those who were young, in their first pregnancy and from deprived areas were less likely to perform PFME, as they had no access to

information or believed they were not necessary. Midwives lacked confidence in their knowledge and suggested other professionals perform health promotion better. It is important to investigate how midwives influence education about PFME and women's perceptions. This paper concludes that new and creative methods of health promotion are needed to engage women with PFME more effectively.

Introduction

Pelvic floor muscle exercises (PFME), are suggested as a method to improve pelvic muscle control in the antenatal and postnatal period (Dinc et al, 2009; Bo and Haakstad, 2011; Langeland Wesnes and Lose, 2013). PFME exercises are defined as the repetitive contraction of the pelvic muscles performed with an intent to strengthen, increase endurance and co-ordinate muscle activity to prevent urinary incontinence (Hay-Smith et al, 2008). During pregnancy, PFME may help to counteract the increased pressure caused by the fetus and the increased laxity of ligaments in the pelvic area (Hay-Smith et al, 2008). The National Institute of Health and Care Excellence (2008) recommend pregnant women are advised about PFME at their first booking appointment, however, there is no data collected that would indicate if this advice takes place in a standardised way locally, nationally or internationally. It is recognised that at booking this information is provided by midwives as part of their role in public health.

There is consensus that approaches to public health combines science and art and definitions include phrases linked to protecting health and well-being, preventing ill-health and prolonging life via the efforts of a supportive community (Lueddeke, 2015; UK's Faculty of Public Health (UKFPH) 2010). Theories associated with how to

promote health originate from paternalistic or facilitative perspectives (Lueddeke, 2015). In recent documents the facilitator role of the midwife has been recognised by policy makers and midwives themselves (Hunter, 2015). For example in Hunter's work (2015: 44), Midwife number 10 comments that, '*delivering information is to deliver it in a non-biased way, giving them (women) informed choice*' reflecting the perspective of the facilitator's role. Within this approach there is no doubt that midwives have an important role in public health promotion. However, public health messages are interrupted by complex issues related to limited time, training and resources where midwives perceive they, 'bombard' women with a, 'wall of information' (Sanders et al 2016: 257). Further limitations influence public health messages when strategic prioritisation means midwives focus on the essential aim to reduce maternal and neonatal death. For example, prioritising information about sepsis, flu or streptococcus 'A' may overshadow information related to pelvic floor exercises (Hunter, 2015; Knight et al 2016) when time is limited and there are reduced staffing levels. In that context morbidity associated with reduced pelvic floor functioning becomes hidden, which may be the reason why in Hunter's work (2015) little emphasis is placed on pelvic floor exercises by midwives and the topic is mentioned only briefly. However, Gerrard and Hove (2013) in their joint statement for the RCM and Chartered Society of Physiotherapy, believe that pelvic floor exercises need to be raised as an important issue for midwives to address as a key issue.

To complicate issues related to the midwife's public health role, there is no consensus to suggest when antenatal PMFE should begin. The Bladder and Bowel Foundation (2017) advise PFME to be performed at least 3 times per day, varying in intensity of contraction to strengthen each of the pelvic muscles. A scoping search was performed to try and understand more about pelvic floor exercises and included

Cochrane, Cinahl and Discover More. Discover More is software that enables access to 55, 000 professional journals. Search terms included 'pelvic floor exercises AND urinary incontinence AND antenat* AND postnat* AND health promotion AND after birth AND education', which highlighted that 211 were relevant. Delimiting the search to include peer reviewed titles provided 28 papers which informed this literature review.

Why are pelvic floor exercises important?

Pregnancy and childbirth factors have been considered to be key for the development of urinary stress incontinence (Whitford et al, 2007a; 2007b; Dinc et al, 2009; Ko et al, 2010). Stress incontinence relates to the leakage of urine when the bladder is under pressure from activities such as coughing or sneezing (Hay-Smith et al, 2008). From a comprehensive literature review it was suggested that PFME are used commonly as a prevention method for urinary incontinence (Dinc et al, 2009). A systematic review by Boyle et al (2012) included 22 randomised controlled trials (RCTs) related to PFME, where the intent was to prevent or treat urinary incontinence in antenatal and postnatal women (n= 8,485 women). Systematic reviews use a pre-defined selection of best available evidence to ensure the highest quality of research is used for practice (Rees, 2011). This review included a large sample of women from a variety of backgrounds and ethnicities which supports generalisation of the findings. The systematic review (Boyle et al, 2012) found that those women who performed PFME during pregnancy were less likely to report urinary incontinence in late pregnancy, and results were statistically significant ($p= 0.09$).

Another review by Dumoulin et al (2014) compared PFME to; no treatment, a placebo, sham treatments and inactive control treatments. The review included 21 RCTs and involved 1,281 women. Although the sample was comparably smaller to the previous systematic review (Boyle et al, 2012), the study can still be considered large (Rees, 2011). In this meta-analysis, women who performed pelvic floor exercises were eight times more likely to report improvement or cure (Dumoulin et al, 2014). However, the review suggested findings were undermined due to the small sample sizes in the individual trials. A further limitation of the review was that Dumoulin et al (2014) did not identify whether any participants were pregnant or post-delivered. Therefore, it was not possible to generalise these findings to a particular population (Aveyard et al, 2015).

A randomised controlled trial (RCT) by Ko et al (2010) found from a population of 300 women, those who performed PFME (n= 150) had a significantly lower incidence of urinary incontinence during late pregnancy ($p= 0.62$) and postnatally ($p= 0.06$).

Another small study carried out a cross-sectional survey involving 50 women from an Indian population and found a significant association between frequency of stress incontinence in the antenatal and postnatal period and frequency of PFME (Panhale and Mundra, 2012). Generalisability of the findings is limited as quantitative research requires large samples to ensure research is able to identify a level of statistical significance (Aveyard et al., 2015). Therefore, the size of Panhale and Mundra's (2012) study suggests the findings could have occurred by chance as the study was underpowered.

From women's perspectives, Dinc et al (2009) used an experimental design to collect data using interviews together with urinary diaries and digital palpation to measure pelvic floor strength. Experimental designs allow researchers to observe and compare two groups of participants; enabling them to see whether a particular variable has had an effect on the study group (Rees, 2011). Burns et al (2013) identify that three elements confirm an experimental design. These include; (1) randomisation, (2) researcher manipulation of a variable and (3), a control group. All of these elements were present in the research by Dinc et al (2009). In this research, the sample of 80 participants reduced to 54 participants due to withdrawal and low adherence rates (Dinc et al, 2009). The intervention group measured a significant decrease in urinary incontinence during pregnancy ($p = 0.008$) and postnatally and there was increased pelvic floor strength ($p = 0.014$).

However, the results should be treated with caution due to attrition and the small sample size, which suggests the finding could be due to error (Rees, 2011). In addition, it was not clear where and how women were recruited which reduces awareness about the ethical process (Rees, 2011; Parahoo, 2014). However, the combination of results from multiple study designs, various sample sizes and various populations suggests a strong association between PFME, stronger pelvic floor muscles and reduced urinary incontinence.

Variation in education for PFME

Education plays an important role in reducing urinary incontinence (Dinc et al, 2009; Ko et al, 2010; Mason et al, 2010; Bo and Haakstad, 2011; Panhale and Mundra, 2012). Guerrero et al (2007) used a survey to examine how women wished to be taught PFME in the antenatal period. The survey method used questionnaires which

are suggested to be a quick and cheap form of research permitting widespread distribution geographically (Rees, 2011). A total of 54 women and 75 health professionals (21 obstetricians; 29 midwives; 25 GPs) were included. Guerrero et al (2007) found that 36% of General Practitioner's (GP) failed to discuss pelvic floor exercises with antenatal women. However, this was from a small sample of 25 GPs. GP's reported feeling they did not see women often, which was suggested to inhibit the provision of PFME information, and they felt that PFME education was the midwife's role. The majority (57%, n= 30) of women wanted a discussion in the antenatal period and 76% (n= 41) of women wanted midwives to teach PFME. However, 48% (n=14) of midwives felt continence advisors or physiotherapists could perform the task better due to their increased knowledge and training. Lack of confidence about providing education about PFME creates barriers for women. This finding was reflected in an Australian study (Butterfield et al, 2007) which included a potential sample of 432 midwives where there was a response rate of 52% (n=225). Although, set in Australia, the wider grading of the sample of clinical midwives (42.4% n=88) was reflective of similar midwifery grades in the UK. Butterfield et al (2007) found there were anomalies within midwifery knowledge related to frequency of assessment for incontinence. In addition, midwives omitted to link how antenatal incontinence was a factor for postnatal incontinence. Lack of knowledge created missed opportunities for health promotion around PFME.

In Ko et al (2010), Mason et al (2010) and Bo and Haakstad's (2011) research, physiotherapists educated women about PFME. However, Dinc et al (2009) failed to identify what type of professional provided education related to PFME and simply identified the educator as the researcher. Therefore, variation was related to PFME education which was provided by different health professionals who used a variety of

training methods. Variation in technique reduces the ability to make comparisons between studies effectively. Additional variation exists about when to begin PFME and many times there was no specific gestation identified (Dinc et al, 2009; Ko et al, 2010; Mason et al, 2010; Bo and Haakstad, 2011; Boyle et al, 2012; Panhale and Mundra, 2012). However, Bo and Haakstad (2011) suggested that PFME should be performed two to three times per week for 12 weeks, which Ko et al (2010) agree with. Level of significance differed between the two studies (Bo and Haakstad (2011; Ko et al 2010) and one explanation for the discrepancy may be attributed by differing sample sizes.

Variation identified that some women may be provided with more information than others which was represented in the participant groups in research by Mason et al (2010). Mason et al (2010) included 286 pregnant women, recruited from two hospitals in North West England. Participants received varying information such as: one to one exercising with an instructor, leaflets, brief reminders or nothing at all. Those participants assigned to the intervention group (n= 141) performed PFME more times than the control group (n= 145), although results were not significant. The suggestion was that women who have more information about PFME are more likely to perform exercises. This finding can be related to Whitford et al (2007a) where, younger, first time mothers from deprived backgrounds were less likely to report having information and practicing PFME. However, consideration needs to be given to the gap in timing of data collection (2005-2006) compared to publication date for Mason et al (2010). Therefore, findings may be questioned. In addition, the varied information provided to the intervention group (n=141) would lead to ethical questions about equity and withholding information. Despite limitations, the intervention group was found to have fewer episodes of urinary incontinence, although findings were not significant.

Barriers

Women expressed different perceptions about the importance of PFME and identified barriers that influenced their exercise performance (Melville et al, 2008). Melville et al (2008) used a cross sectional survey to consider the etiology of urinary incontinence (n=1458). All participants in the research were asked a series of questions regarding their knowledge of PFME, if participants recalled being informed about PFME, and PFME teaching. Responses were open to socially desirable answers and it was possible that the participants may not have remembered exactly everything about how PFME teaching due to recall bias (Bowling, 2014). Therefore, the validity of the findings may have been undermined (Rees, 2011). However, the use of open ended questions may have encouraged the participants to complete the questionnaire using the terms they believed described their own experiences (Rees, 2011). A key theme identified that almost one third (n= 370) of the 1,458 participants attributed their urinary incontinence to the weakening or loss of control of their pelvic floor muscles (Melville et al, 2008). Participants reported this as a suspected physiological change which occurred from childbirth, reporting, "*I just assumed that delivering a baby a few years ago made me undergo some anatomical changes*" (Melville et al, 2008; pp 1095). Different perceptions about the anatomy of the pelvic floor and women's lack of knowledge about PFME suggested that more education was required for women.

Fine et al (2007) went on to identify reasons why pelvic floor exercises were not performed (n= 759). Reasons included forgetting to perform PFME, finding them unnecessary, being too tired, being too busy, and perceiving exercises as not important. Secondary analysis from a prospective multicentre cohort study was utilised (Fine et al, 2007). When using secondary analysis there may be issues with availability

and quality of data (Kumar, 2011). Data is therefore less likely to be rigorous and objective (Kumar, 2011). However, Borello-France et al (2013) corroborated that forgetting to perform PFME was the most frequently reported barrier for women. Other barriers included sickness, travelling/vacations, being tired, work hours, personal conflict and boredom with the exercises (Borello-France et al, 2013). These factors influenced the frequency of PFME and contributed to participants not performing PFME at all. Borello-France et al (2013) included 296 participants which would enhance an ability to identify level of significance and they used a self-administered questionnaire for data collection. Self-administered questionnaires have limitations as participants must be able to read and write and those who return them may have a particular attitude and opinion upon the subject (Kumar, 2011). A low response rate may then reduce representativeness of the findings, however, the response rate In Borrello- France et al (2013) was 88% (n= 132) in the combined group and 85% (n= 134) in the behavioural intervention group. Parahoo (2014) identifies a response rate of above 70% must be achieved to enhance reliability of findings.

Another study by Whitford and Jones (2011) found that those women who performed PFME before and after a pregnancy were more likely to perform PFME in subsequent pregnancies. Whitford and Jones (2011) performed a longitudinal cohort study, in which 289 women were recruited. Longitudinal cohort studies allow the researcher to follow the same participants over a time period which helps to establish possible influences to specific conditions (Rees, 2011). However, attrition is a problem with longitudinal design. In Whitford and Jones (2011) study the sample originally consisted of 438 participants, which decreased by 44% to 247 due to factors such as delivering their baby. The follow up questionnaire was received from 163 women (37% of the original sample size). Despite attrition, Whitford and Jones (2011) identified that

midwives need to stress the importance of pelvic floor exercises to primiparous women as this may influence whether or not they perform PFME in the future.

Conclusion

Urinary incontinence is a frequent complaint for women before and after childbirth. Antenatal and postnatal women who practice PFME reduce the incidence of morbidity attached to continence. Education about PFME supports a reduction in urinary incontinence. Findings indicated that antenatal education about PFME benefits women. However, the provision of education is varied. Variation exists about which professional delivers PFME to women and midwives appear to lack confidence and knowledge around hlth promotion. In addition there is variation around when and how often women should perform PFME. It is difficult to identify how PFME education is provided and techniques in training differ.

Variation around PFME effects the level of significance and reliability of findings and suggests that women receive information in a non-standardised format. This may mean some women benefit from PFME education and others do not. Therefore, the type and style of PFME information is essential and influences whether or not women perform PFME.

Women did not know the reason for performing PFME. Those who were young, in their first pregnancy and from deprived areas were less likely to perform PFME, as they had no access to information or believed PFME was not necessary. There were differences in how women perceived the origin of their urinary incontinence. Women came to believe that urinary incontinence was a normal aspect experienced after childbirth and showed minimal understanding of the anatomy of the pelvic floor. Therefore, there is a need to include anatomy of the pelvic floor within PFME

education. More definitive research is required to standardise approaches to PFME. Research design should identify an appropriately qualified health professional to deliver PFME information. Timing of PFME should be standardised and specific gestation should be clearly identified, with an appropriate rationale for this decision provided. Larger samples are required in research to increase reliability, representativeness and generalisability.

Women appear to be bored with PFME and there is a need to identify more innovative ways to engage women. For example, PFME could be incorporated into dance classes such as Zumba or Yoga exercise, which are a frequently accessed form of exercise (Domene et al, 2016) and the innovation may interest a wider group of pregnant or postnatal women. Alternatively innovative teaching may be developed via telephone applications to enable women of different ages to have easy access to PFME education in their home environment. One solution to assist women to remember to perform PFME may be facilitated via an alarm related to the phone app. However, new innovations demand to be explored, tested or investigated via research before advocating alternative techniques.

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