

ORIGINAL ARTICLE

Effectiveness of Theory Based Intervention Using Social Media to Reduce Urinary Incontinence Among Postpartum Women in Hebron City Hospitals: Randomized Controlled Trial

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ABSTRACT

Introduction: Urinary incontinence (UI) is a condition which is common and is closely linked to vaginal delivery. Pelvic floor muscle exercise (PFME) are considered the first line management of UI and regular practice of PFME is a key factor in its effectiveness. This study was designed to investigate the effectiveness of theory-based intervention using social media to reduce UI among postpartum women. **Methods:** This is a randomized controlled trial with the final number of recruited participants of 104. The participants were assigned randomly either to control or intervention groups and were followed up at three and six months. The primary outcome of this study was severity of UI. Adherence to exercises was the secondary outcome. **Results:** After the intervention, at three months and six months follow-up, there were significant differences between the two groups regarding the practice of PFMEs ($p \leq 0.05$). Friedman's analysis of variance showed that there was a significant difference in respect of the exercise adherence rating scale among the intervention group at baseline, at three months and post six months ($p \leq 0.05$). In the intervention group at baseline the mean (standard deviation, sd) of the International Consultation on Incontinence Questionnaire Short Form was 3.00 (1.94) whereas at three months it decreased to 1.96 (1.69), which decreased further to 1.04 (0.51) at six months. **Conclusion:** theory-based education delivered through social media is a feasible and effective way of increasing the practice of PFMEs, and can lead to decrease of severity UI.

Keywords: Health belief model, Urinary incontinence, Pelvic floor muscle exercises, Social media

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INTRODUCTION

Women who are pregnant or at postnatal period are at higher risk of developing postpartum urinary incontinence than the rest of the female population and are therefore encouraged to undergo PFME program to maintain or improve pelvic floor muscle function and reduce the risk of UI (1). Urinary incontinence is defined as the manifestation of any involuntary loss of urine by a person (2). It can have a major influence on quality of life, UI affects 200 million people worldwide and one in four women over the age of 18 experience episodes of leaking urine involuntarily (3).

Women who experiencing UI are isolated and influence their socialization, leading to more psychosocial complications. Urinary incontinence makes women suffer from emotional and physical distress, which

include loss of self-esteem and depression (4). For that reason, women experiencing UI are encouraged to do exercise of pelvic floor muscles to reinforce functionality of their pelvic floor muscles to reduce the symptoms of UI (5). Pelvic floor muscle exercises are approved by the International Continence Society as the initial stage in UI treatment (6) and play essential role in prevention of urinary incontinence. Conversely, constant PFME practice has a major influence in its effectiveness (7). Approximately, 64% of patients strictly follow short term PFME routines and health instruction, while in the long term, 23% only do so (8).

It is evident from the previous research that theoretical interventions in educating people concerning muscles of the pelvic floor give better outcomes compared to which are based on the problem. For example, theory-based intervention was developed by Wilson (2015) concerning pregnant women exercises for the pelvic floor muscles and the outcome showed significant effect of this type of intervention (4). Furthermore, the theory-based interventions usage can improve our understanding on the effectiveness of the interventions

(9).

The health belief model conceptualize that a woman’s perceptions of susceptibility, seriousness, barriers and benefits are affected by the cues to action and self-efficacy, and this has got the capability to influence or alter a person’s behaviour (10). The four constructs (perceived barriers, perceived benefits, cues to action, self-efficacy and motivating factors) stated above were applied to develop programs of intervention to sustain a behaviour (practicing PFME regularly) in order to reduce UI. Table I explain the constructs of health belief model. Technological developments have brought about new possibility of service delivery to persons not necessarily having to visit a health center (11). For the last few years, population of smartphone users is constantly rising (11). Furthermore, Mobile health applications and telemedicine are becoming increasingly used by people with health problems to monitor their health, it is claimed that application of this technology might result in improving health outcomes (12).

Theories assist in pointing out hypotheses concerning the goals and aims of anticipated programs of intervention (13). The HBM (health belief model) being one of the theory-based model is the most used model in health education and promotion. The HBM explained why a person would or would not use services in the health sector. This is a cognitive-behavioural theory-based model which is applied to predict engagement in health behaviors in health prevention (14). The HBM has been effectively used in research on covering issues of health so as to plan, provide and examine health researches, for example, the examination of change in behavior in HIV risk and assessment of Alzheimer’s disease (14, 15). This study aimed to investigate the effects of a theory-based intervention using social media on the practice of PFME and on the severity of UI.

MATERIALS AND METHODS

Study Design

The study design was randomized controlled trial, registered in The International Standardized Randomized Controlled Trial Number Registry which is a major registry of clinical trials and has registered this research procedure under registration number ISRCTN13224744. It was designed to investigate the effects of a theory-based intervention using social media on the practice of PFME and on the severity of UI, with a pre and three months and six months post intervention assessment of both the intervention and control groups. It was single-blinded randomized control trial, with parallel intervention and control groups with 1:1 allocation ratio. Only the researcher knows which group the participants are allocated to, either the intervention or control group until the trial is over. Figure 1 provides CONSORT flow

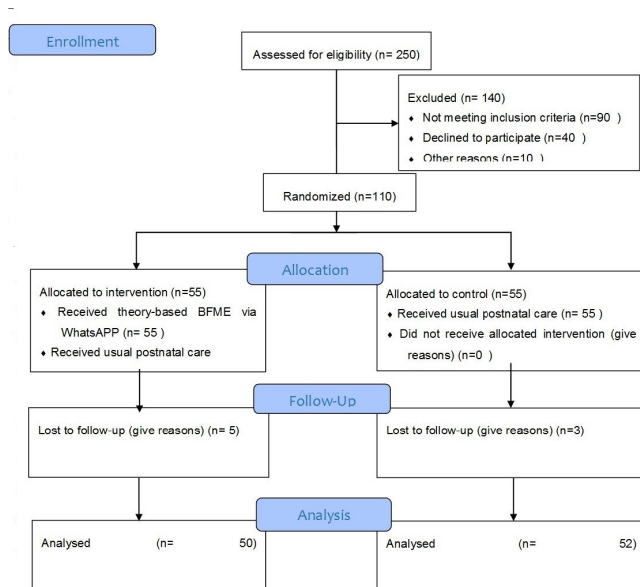


Figure 1: CONSORT Flow Diagram of the study

Table I: Summary of the content of intervention

Content of intervention	Description	Aim
5 minute video	The video contained dialogue between a physiotherapist and a postpartum woman who had UI. In the video, the physiotherapist explained to the woman the basic anatomy of the PFM, how the PFM functions, how to recognize her PFM, how to contract the PFM correctly without contracting other muscles, the frequency and duration of each of the exercises, and the position to adopt while doing the exercises	<ul style="list-style-type: none"> • Develop awareness about PFM and PFMEs and why it is important to do PFMEs regularly post-delivery. • Understand the basic PFM anatomy, and where the PFM is located. • Know how the PFM operates, what the PFM does. • Know how to correctly contract a PFM.
Written information	risk factors for the UI, what affects the PFM and what reduces the impact of PFME, what personal barriers prevent daily PFME, doing PFME takes a few minutes per day, that it takes 2 months before results can be seen, and that UI can become worse if not managed	Precipitating forces that make a person feel the need to take action.
Reminder	A reminder to do PFME was sent to the participants every 1 week via whatsapp, in which they were also advised to relax during stressful periods and to restart exercises after a relapse.	Individual’s factors, self-efficacy and confidence that will begin the process of changing behaviour.
Posters	posters showing the attachments of the PFM and the anatomy of the pelvic floor	Motivating the participants to do PFME
		The aim of using posters was to increase the participants’ knowledge about the PFM and to enable them to recognize their PFM and thus help them to contract the PFM correctly

diagram of the study.

Study Setting and Participants

Participants were recruited from obstetrics and gynecology outpatient clinic at AL-Ahli hospital in Hebron city. The clinic provides outpatient care, maternal healthcare, about 30-50 patients attend the clinic daily.

Criteria for inclusion were postpartum women having UI after delivery, participants who delivered vaginally, own a smartphone and those who accepted to participate in the study and filled the consent form. Exclusion criteria were the presence of chronic obstructive pulmonary disease, neurological disease, diabetes mellitus, arterial hypertension, urinary tract infection, and history of pelvic surgery, kidney stones, and these women were excluded because these problems may increase the possibility of urine loss. Eligible women received a letter that included the respondent information sheet and informed consent form. Upon returning the informed consent, participants were asked to complete two validated questionnaires which were sent via the Whatsapp application. The questionnaires are the International Consultation on Incontinence Modular Questionnaire (ICIQ) Urinary Incontinence Short Form (ICIQ-UI SF) to evaluate symptom severity (16), and Exercise Adherence Rating Scale to evaluate the practice of pelvic floor muscle exercises (17). For ethical consideration the participants in both groups were informed about the importance of PFME and learned how to do these exercises at the time of recruiting and before the study started. Participants in both group received standard care for their UI symptoms when necessary throughout the study period. In addition, participants in the intervention group were contacted via WhatsApp after randomization to ensure that they had understood the study procedure and receive reminders and follow-up as part of the intervention strategy. There was no face-to-face communication with the participants at any time during, or after the research.

Sample size Determination

A sample size was estimated for this study taking into consideration the desired statistical significance level ($p = 0.05$), and the power of the study at 80%. The primary outcome in this research was the severity of UI and the PFME practice is the secondary outcome. The size of the sample was determined basing on outcomes of a previous internet research (7). The calculation of the size of the sample for every outcome to enable detection of an effect difference between group's, manual calculations is used to calculate sample size for continues outcome (18). Considering 33% rate of dropout, therefore, we aimed for a sample size of 110 participants (55 participants in control group and 55 in the experiment group).

Process of Randomization and Recruitment

The recruitment process was conducted in two phases.

The first phase involved assessing for eligible hospitals in Hebron city. The eligible hospitals were hospitals with total bed equal or more than 100 beds and there were obstetrics and gynecology outpatient clinic, after assessing of eligibility there were three eligible hospitals, simple random sampling using fish bowl was used to select one hospital out of the three eligible hospitals.

The second phase, was process of screening in order to find suitable participants. Screening was done by midwives in the outpatient clinic. The criteria for eligibility were postpartum women who experienced any degree of UI after birth (mild, moderate, severe). Additional inclusion criteria include having experienced a vaginal delivery and having a smartphone. In the hospital's outpatient clinic, those who met the conditions were recruited by random sampling method. After an extensive explanation about the research aims and process, those accepted to take part in this research were requested to sign the consent form.

The screening process involved a health assessment performed using a structured case report form. The examination acquired information concerning the socio-demographic data, past medical records, severity of postpartum UI and practice if there was and practice of exercise of pelvic floor muscles. Eligible participants were randomly allocated into two groups, they were randomized to either intervention or control group using simple randomization. The researcher had introduced 110 codes to the computerized simple random sample generator, which produced 55 random codes that were assigned for the experimental group and another 55 codes were assigned for the control. Then the researcher applied the relevant program for each assigned code (experimental or control) based on the patients code that was distributed based on the order of recruitment. Many RCTs have used this type of randomization to reduce bias and achieve balance between two trial arms. This type of randomization in allocation increases the probability that the two groups contained an equal number of participants, randomization minimizes imbalances so that treatment groups are as similar as possible (19).

After the participants were enrolled in either of the two research groups, baseline assessment was conducted, participants were asked to fill the pre-intervention questionnaires to assess the primary and secondary outcomes of the study.

The Intervention

WhatsApp was used in this study to deliver the intervention to each participant individually, this research intervention included the HBM constructs so as to enhance behavior change, which comprises an increase in the PFME practices. Four constructs of the HBM were considered during the study: the perceive benefit of regular practice of PFME, the perceived

barriers during the PFME performance behaviors which are linked to social, physical and emotional barriers, cues to action/ motivation, as well as self-efficacy. The perceived barriers of expected behavior were applied to reduce the problem. Health motivation is determined as one's level of concern about general health issues, resulting in positive health behaviors to reduce disease (10).

This program was developed based on several other studies in relation to behavioral intervention (4) and in terms of PFME where it was based on the evidence-based practices (20).

The intervention contained PFME which had different combinations and replications of frequently and commonly used contractions: a basic contraction to determine the correct muscles, contractions to enhance strength and durability and contractions prior to coughing. Every description of the program contained graphical representation demonstrating the duration and intensity of every contraction with associated relaxation. A message was sent through WhatsApp once in a week, to the intervention group which aimed at encouraging and reminding the participants to continue with the program.

Intervention group also received a message concerning muscles of the pelvic floor and the simplest way of finding them; pictures were sent to demonstrate the position of these muscles and the correct way of contracting. UI information (long-term impacts, seriousness) were sent through WhatsApp to the participants in the course of the intervention stage, In terms of frequency, it was prescribed as three times a day with 15 contractions each time (21) and a frequency of Whatsapp reminder as once per every week.

The intervention combined with strategies to reduce exercise barriers. For example, probable solutions to "be unable to remember to exercise" include posting a reminder message on a mirror in bathroom or on the screen of the computer, setting aside a consistent time for exercise each day, and combined exercise with an already developed behavior like brushing of teeth (7). Table II contains description of intervention provided to the participants in the intervention group.

After an intervention of three months, termination of the Whatsapp information reminding the participants to practice PFME occurred and the participants in the two groups were requested to respond to the following questionnaires: (EARS) and (ICIQ-UI SF) so as to examine the severity of postpartum UI and how the participants adhered to PFME, Whatsapp was used to send the questionnaires. Final follow up was done at six months and in connection to this, the two groups were asked to fill in the two questionnaire forms to assess the primary and secondary outcomes.

Table II: Health belief model constructs

Health belief model constructs	Definition
Perceived Susceptibility	Subjective belief that a person has with regard acquiring a disease or reaching a harmful state as a result of indulging in a behaviour
Perceived benefits	Belief in the advantages of the methods suggested for reducing the risk or seriousness of the disease or harmful state resulting from a particular behaviour.
Perceived barriers	Refer to beliefs concerning the actual and imagined costs of following the new behaviour
Perceived Seriousness	Refers to person subjective belief in the extent of harm that can result from the acquired disease.
Cues to action – Motivating factors	Precipitating forces that make a person feel the need to take action. Individual's factors, self-efficacy and confidence that will begin the process of changing behaviour.
Self-efficacy	The confidence that a person has in or her ability to pursue a behaviour

The postponed treatment group was the control group and there is no material incorporated in the application that was given during the research period. After accomplishing six months of follow-up, the participants were given the intervention.

Measures of Study Outcome

Measure of Primary Outcome

The primary outcome for this study was the severity of postpartum urinary incontinence and it was measured by the International Consultation on Incontinence Questionnaire-Urinary Incontinence-Short Form (ICIQ-UI SF). The ICIQ-UI SF is validated in English and Arabic language and it is a reliable scale include three questions concerning the amount and frequency of leaking of urine and its overall impact on everyday life. The overall score is ranging from 0 to 21, whereby 21 represent the most severe case. The fourth question was asked when leakage is reported, this question was not included in the score. The total scores were categorized into severity groups (1-5=slight, 6-12=moderate, 13-18=severe, 19-21=very severe) (17).

The ICIQ-UI Short Form is a brief and psychometrically robust patient-completed questionnaire concerned with the assessment of the rate of occurrence, seriousness and influence on the kind of lifestyle of UI patients in research and clinical practice across the world. It gives a brief and strong way to examine the influence of symptoms of outcome incontinence (21).

Measure of Secondary Outcome

The level of practice of PFME was the secondary outcome of this study, the practice of PFME was measured subjectively using Exercise Adherence Rating Scale (EARS). The EARS is a standardized approved adherence

measure to recommended exercises at home, it is a self-reported and short measure made up of three parts; the first section is A which needs participants to record the recommended exercise which caregivers have directed them, section B is a 6-item measure of adherence while section C is a 10-item measure concerning of factors which affect (hinder or help) adherence to exercise (18). Moreover, a validated questionnaire was the primary tool for measuring the HBM constructs. The Self-Efficacy for Exercise (SEE) is the approved questionnaire and was applied. The scale is nine items which aims at the expectations of self-efficacy which relates to the ability to continue exercise in the face of perceived barriers (22). The scale of SEE is a self-report of self-efficacy practice. The overall score is calculated by adding the answers for every question. The perceived statement barriers are based on the confidence of participant while exercising 15 contractions thrice in a day. The final score is ranging from 1 to 10, where the lower the score the lesser is the strength of SEE.

Analysis of Data

Descriptive statistics were used to describe the participants' age, weight, and other socio-demographic variables and this analysis was performed by using SPSS version 20. After that, the following analytical steps were undertaken. Frequencies and percentages were presented for all categorical variables according to the demographic variables of the research. Mean and standard deviation were used as the measures of central tendency for the Likert scale variables. The extraction reliability coefficient (Cronbach's alpha) was calculated for each section and for the whole questionnaire to check the questionnaire's reliability. The Pearson correlation between indicators was measured for each section in the questionnaire to check the questionnaire's validity. The Kolmogorov-Smirnov test was conducted to test the normality of distribution of the data. The Mann-Whitney test was conducted to check whether there were any differences between the experiment and control groups at pre intervention and post intervention at the three levels of the study (at baseline, three months after intervention and six months after intervention). Friedman's analysis of variance (ANOVA) – non-parametric equivalent test of repeated measures ANOVA – was conducted to examine whether there were significant differences between the mothers in the experiment group at the three levels of the study (baseline, three months after intervention and six months after intervention).

Ethics and Dissemination

Ethical principles were taken into consideration during the study. Prior to its implementation, the study was approved by the University Ethics Committee for Research Involving Human Subject, of University Putra Malaysia in Malaysia with ethical clearance reference number UPM/TNCPI/1.4.18.2 (JKEUPM). Permission was also obtained from the local Ministry of Health and the medical superintendents of the selected hospital.

Participants who met the inclusion criteria were invited to participate in the study, and the aim of the study was explained to them. Then, if they agreed to participate, they were asked to sign a consent form. The participants were assured that all the information obtained would be handled confidentially, as no names would be used in the analysis or in the presentation of the results. Participants were also told that they were allowed to withdraw from the experiment at any time and that their information would only be used for research purposes.

RESULTS

Socio-demographic characteristics of the participants

The main characteristics of the 110 women in the sample (55 in the experiment group and 55 in control group) are illustrated in table III.

Health belief model constructs

From the analysis, there were no significant differences

Table III: Characteristics of the participants (N=110)

Variable	Experiment Group n =55 N (%)	Control Group n =55 N (%)	
Age	Less than 20 years	5 (9.1%)	
	20- 30 year	20(36.4%)	
	More than 30 years	30(54.5%)	
Number of previous deliveries	One delivery	11(20.0%)	
	2-5 deliveries	34 (61.8%)	
	More than five deliveries	10 (18.2%)	
Weight	Less than 55 Kg	4(7.3%)	
	56-70Kg	21 (38.2%)	
	More than70	30 (54.5%)	
Height	Less than cm	4 (7.3%)	
	150-160cm	23 (41.8%)	
	More than 160 cm	28 (50.9%)	
Educational Level	Primary	4(7.3%)	
	secondary	5 (9.1%)	
	Diploma	14(25.5%)	
	First university degree	25 (45.5%)	
	Master	5 (9.1%)	
Type of delivery	PhD	2 (3.6%)	
	Vaginal delivery	55 (100.0%)	
	Caesarean section	-	
	Forceps delivery	-	
	Vacuum	-	
	Medical conditions	Muscle weakness e.g. Stroke, Multiple Sclerosis	-
		Asthma or regular cough	-
Irritable bowel		-	
Constipation		-	
No medical conditions		55(100.0%)	
Other (specify)	-		

between the participants in the intervention and control groups at baseline with regards to perceived benefits, perceived barriers, self-efficacy and cues to action in respect of practicing PFME. However, there was a significant difference between the two groups at three months and six months post intervention. The participants in the intervention group had significantly improved in terms of perceived benefits, self-efficacy, and cues to action for PFME, and they also had decreased perceived barriers to PFME as compared to the participants in the control group. Participants in the intervention group stated that they would be able to practice PFMEs when they were busy, when the weather was bothering them, when they were bored by the programme or activity and when they felt pain when exercising, and finally when they felt stressed and depressed after receiving the intervention as compared to the participants in the control group.

Adherence to PFME

The responses obtained from the follow-up questionnaires showed there were significant differences in adherence between the two groups at three months and at six months follow-up (Mann-Whitney P-value of 0.001 and 0.001), with respondents in the experimental group more adhere to PFME than respondents in the control group. As shown in fig. 2 the respondents in intervention group did the PFME as often as recommended, after the intervention the mean rank of practicing PFME was increased as compared to the baseline.

Severity of UI

After the intervention, the experimental group had

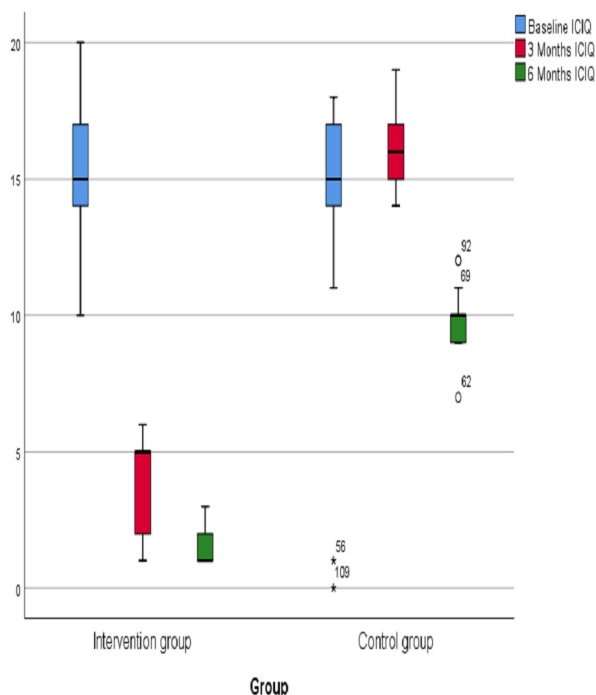


Figure 2: Mean differences of ICIQ between the intervention and control groups at three time points

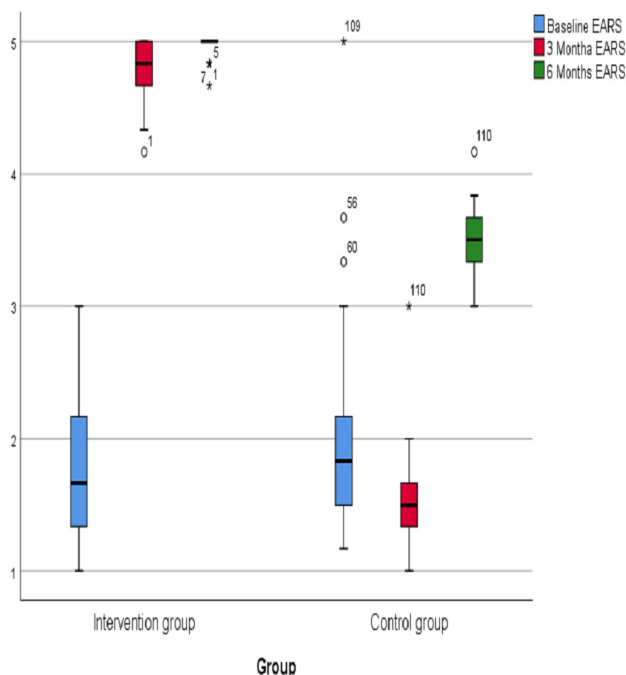


Figure 3: Mean differences of ERAS between the intervention and control groups at three time points

improvements in the severity of postpartum UI symptom, this clearly appear in fig.3 the mean ICIQ-UI SF score reduced from 15.2 at baseline to 4.3 at three months follow-up and to 1.3 at six months follow-up, thus indicating that the intervention was a feasible and effective tool for reducing the symptoms of UI. On the other hand, the control group reported a statistically non-significant reduce in UI severity of symptom, where the mean ICIQ-UI SF score at baseline was 14.8, at three months it was 16 and at six months it was 10.

DISCUSSION

Adherence to a PFME programme

In this study, there were significant increase in adherence to the PFMEs program among the participants in the intervention group, compared to participants in the control group. This adherence is crucial because it has been found that the key to the success of a PFME programme depends on adherence to the exercises (4). Based in this finding, awareness about this topic is lacking in our hospitals, and it is recommended that it is included in the pre-discharge policy of hospitals, so that the patients get more oriented in terms of the problem and its consequences and seek help when needed.

Similar to other studies that found that there is a high level of engagement in a PFME programme (24-25), a significant number of women undertook the PFME programme developed for this study. The current study showed that advanced technology can promote adherence to a PFME programme, as it showed that the mean score of the EARS had increased from 1.00 at baseline to 2.15 at three months and 2.85 at six months,

which supports the findings of the systematic review study (24) of all the available mobile applications for PFME and the relevant literature regarding adherence, in which they found that mobile applications for PFME are an essential part of a first-line, efficient intervention for postpartum UI, and that they have the potential to improve adherence. This may be attributed to the fact of the prevalence of mobile and social media use by high percentage of women from different socioeconomic background, which makes it a unique method of both communication and motivation that keeps a sustained rhythm of reminding and follow up with patients, which may contribute to the effect of this method. Those results may be encouraging to use social media as a mean of health promotion among women in general. The proper social-media application that may give better results was not within scope of this research, further research in this field requested to investigate the best application to use.

Severity of UI

In this study the respondents in the two groups, reported moderate to severe UI before the intervention. After the intervention, the participants in the intervention group reported that they had mild UI symptoms and a significant increase in the practice of PFME, whereas the control group did not show any significant difference in UI symptom severity at baseline, three months or six months follow-up.

Although the number of participants in this study was small, the reduction in the severity of postpartum UI symptoms was linked to adherence to a PFME programme, the same results were documented in previous studies (4-26-25). The trial design for this study was powered to detect the effect of a PFME programme on UI, where the participants in the intervention group reported a reduction in the ICIQ-UI SF score which can be interpreted to indicate a reduction and improvement in the severity of UI. This is consistent with several previous studies (8-11-27-28-26) which demonstrated that PFME could reduce UI. In addition to the intervention effect, performing exercises as a health improving practice that may contribute to more healthy life style adoption and indicate the ability to change behaviour for the sake of achieving better health, which is a missing elements in the control group, on top of that is the effect of the intervention itself element that is directly affecting the UI. This result could also show the importance of the social media in changing behaviour that could be used in other areas of health promotion related to women.

Use of social media to deliver a PFME

WhatsApp-based PFMEs showed to be a successful ways to promote adherence to PFME. Participants who were involved in the intervention programme had significantly increased self-perceived benefits of PFME in regard to postpartum UI and they had significantly increased self-efficacy. Moreover, the respondents in

the intervention group had significantly reduced in self-perceived barriers to PFMEs as compared to the control group.

The program addressed a number of misconception, such as believing that the disorder is “normal” and showed that the PFME programme is effective in causing a positive change in terms of UI and at the same time managed to change the habits of patients towards more health positive behaviour (daily exercise). Furthermore, increasing the participants’ beliefs seemed to lead to the action of practising PFME regularly. This findings also show the link between changing behaviour, and improvement in PFM strength and reduce the severity of UI. This result was also supported by the literature, despite the differences in setting, as previous studies have used advanced technology such as social media or mobile applications to promote PFME (28-27-8). However, those studies were carried out in various countries and none of the studies were in the Arabic region, whereas this study was conducted in an Arabic country.

In light of the above, Internet technologies like this intervention offer a viable alternative or an addition to attending physiotherapy clinics and should be considered in clinical practice. Moreover, the provision of WhatsApp-based education may be an essential adjunct especially when there is no PT available that specializes in women’s health.

Theory-based pelvic floor muscle exercises

This study showed that using constructs of HBM to promote PFME and encourage women to practice these exercises on a daily basis are effective method and have further effect in reducing the symptoms of UI. Such results support previous research that showed participants are more likely to adhere to the PFMEs program when they believe that, firstly, that behavior is likely to have a beneficial outcome and, secondly, that they have self-efficacy (29) in performing behaviour. Previous research indicated that women can maintain the strength of PFM by following a PFMEs program so that there is a reduced severity of UI (24). Those positive effect result may be a direct effect of empowering women by education and training from one side, and building self-confidence (self-efficacy) that they can change their situation through active involvement in the management plan, which has an added value of having the patient as partner in the management rather than a passive recipients of an intervention program, the thing that from the researcher’s point of view, could contribute to both commitment and practice of the women.

As this study showed, reminding and follow up with patients give better results in term of adherence to PFME and this supported by a randomized control trial which approved that reminders aid in the adherence of home-based pelvic floor muscle training and effective in the

management of stress urinary incontinence (30).

In conclusion the difference in outcome between the two group shows that the availability of the knowledge alone is not enough, but also the compliance and use of this information to improve outcome, the results and variation in outcome, highlights and underlines the importance of enhanced compliance using social media in this research, as a method of increasing motivation, follow-up and augmentation of compliance promotion in achieving better results than providing the information only (31).

Limitations

This study had a few limitations which are outlined below together with some strategies used overcome them in future research:

One of the limitations of this study may be the lack of ability of the researcher to guarantee the quality of exercises performed since it is based on a remote follow up, only around 30% of participants performed PFME correctly. Therefore, future research studies could evaluate the WhatsApp-based PFME programme with a face-to-face group in terms of the development of the skill of performing PFME in both groups. And future research could compare the WhatsApp-based PFME with other social media.

Short-term behavioural changes are of limited value if they do not lead to long-term adherence. It is well known that the uptake (short-term adherence) of PFME is much higher than long-term adherence (Alewijjnse, Mesters, et al., 2003). Thus the measurement of only short-term adherence is a limitation of this study. The thing that makes this issue less relevant for this study is that the intervention itself is short, and designed to manage a temporary dysfunction, which makes the long term effects less relevant here. It is thus recommended that future studies in this area incorporated an on-going intervention to ensure a long term and sustainable impact, which could be measured at least six months post intervention.

This RCT study used a validated self-reported questionnaire to measure the severity of UI among the participants. However, to enhance the robustness of the findings in further trials, it could be that using more accurate outcome measures such as the pad test to investigate the severity of UI, may lead to more robust results than using self-reported subjective questionnaire.

CONCLUSION

The results of this study demonstrate that a theory-based PFME programme delivered via WhatsApp in addition to usual postnatal care is an effective method of increasing confidence in and belief about engaging in PFME; it increased adherence to PFME and reduced the severity of postpartum UI as compared to usual postnatal care

alone. This method of delivering the intervention is effective when women may have no time to attend a physiotherapy clinic to learn about PFME, so providing women with information and education about PFME through advanced technology gives them the option of receiving new consistent evidence-based information, through an affordable, motivating, and accessible method of service delivery.

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