

THE USE OF MOBILE APPS IN PELVIC DYSFUNCTIONS

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ABSTRACT | Physical therapy has a fundamental role in conservative treatment options for pelvic floor dysfunctions. In this context, telerehabilitation associated with the concept of mHealth emerges as an important strategy because it involves the possibility of conducting therapy, evaluation or training at a distance through mobile devices. It is possible to observe two established segments of mobile applications: a re-reading of the traditional voiding diary and the one that guides exercises to the pelvic floor musculature. Searches (October 2016) in major mobile application stores showed various applications that allow the user to fill in daily information regarding fluid intake, urination, urine leakage and use of hygienic protection. There are also many mobile applications which seek to assist in performing exercises for the pelvic floor. However, these applications are just informative, showing series of exercises to be performed. Some products have been released in the market offering integrated systems to mobile applications that allow real-time interaction between the pelvic floor exercises performed by the users and the application. Despite several available applications, searches (October / 2016) in the main databases of the scientific literature on health showed the existence of only two studies referring to the mobile application called "Tät", whose objective is to favor the treatment of stress urinary incontinence. From a critical analysis of these studies, it is possible to conclude that there is little scientific evidence to support the use of mobile applications in the treatment of pelvic dysfunctions.

Key words: Pelvic Floor; Telerehabilitation; Mobile Applications.

The pelvic floor is an anatomical complex formed by several ligaments, muscles and fascia. In addition to closing the exit of the true pelvis separating the pelvic cavity from the perineum, it provides support to vital anatomical compartments, where the bladder, urethra, vagina and uterus (women) or prostate, seminal vesicles and bulbourethral glands (men), rectum, and anus are located^{1,2}. Its components are interconnected² and work together to prevent urinary and fecal incontinence and pelvic organ prolapse during increases in abdominal pressure and daily physical activities. However, they should allow urination and defecation, as well as delivery, in the case of women³.

The proper functioning of the pelvic floor depends on the integrity of its components, as well as adequate blood and nerve flow. Therefore, any change in one or more components of this anatomical-functional complex can generate some dysfunction if the intact structures are not able to supply the imbalance it causes^{4,5,6}.

Treatment of pelvic floor dysfunctions involves conservative and surgical interventions. Physical therapy plays a key role in conservative treatment options. However, physiotherapeutic success depends on the severity of the patient's disorder, the anatomical and nerve integrity of the pelvic floor, the type and duration of training, supervision, motivation and adherence of women to the proposed treatment⁷. As an alternative to improve the motivation and adherence of patients to the treatments, telerrehabilitation arises, whose principle involves the possibility of conducting therapy, evaluation or training at a distance through technology⁸⁻¹⁰.

In this context, the use of mobile devices, such as smartphones and tablets, in the health area allows the introduction of a new concept: "mobile health" or mHealth. The World Health Organization defines mHealth as the health practice mediated by mobile devices, that is, wireless devices¹¹. Many mobile apps are designed to favor telerrehabilitation through these devices. When the issue involves pelvic dysfunctions, it is possible to observe two established segments of mobile apps: one that re-read the voiding diary and one that direct their functions to pelvic floor muscle exercises.

Searches (October 2016) at major mobile app stores, Play Store, App Store and Windows Store showcase a range of apps with features equivalent to those of a voiding diary. Some of them are "Miccional Diary", "EduMicc", "Mictionary", "Daily-P", "Diario micc" and "Day2Day". All of these apps allow the user to fill in daily information regarding fluid intake, urination, urine leakage and use of hygienic protection. They also allow that after the period of completion of the diary, a report is sent to the responsible therapist via electronic mail.

In this scenario, the EduMicc mobile app stands out by also providing important educational information and a web platform so that health professionals can connect to their patients. Thus, besides the common functionalities to other apps, EduMicc enables interaction between therapist and patient, in which the therapist is synchronized with the updates of his patients and receives the recordings in real time. Through this web platform, the therapist can also send individualized alarms with guidelines so that patients can remember to ingest liquid or go to the bathroom, for example.

As for the apps that have functions to support the training of the pelvic floor musculature, the surveys (October / 2016) in the main stores revealed several options such as "Kegel Exercises", "Kegel Trainer", "MaxKegel", "Pelvic Floor Kegel Exercises", "EjerciciosKegel" and "Kegel Bootcamp". However, these applications are informative because they show only series of exercises to be performed, without reliable feedback of what the patient performs and without quality control in the form of execution.

Faced with this gap, some products have been released in the market offering systems integrated to mobile apps that allow real-time interaction between the pelvic floor exercises performed by the users and the application. Named Kgoal, Elvie, Skea - Smart Kegel Exercise Aid and Magic Kegel, these are some of the systems available in the market that result from an integration between hardware and software and are composed of a silicone device for introduction into the vaginal canal and a mobile app. These silicone devices' design is similar and they all have a pressure sensor with integrated Bluetooth® that sends the information from the pelvic floor musculature to the respective mobile app. Each app provides exercise programs

to be performed through games or interactive graphics, which have varied characteristics of scenarios and goals. However, the content available for these devices is still quite limited, as most of the accessible information is commercial in nature. There is, therefore, no evidence that the protocols established in these apps respect the physiological and biomechanical particularities of the pelvic floor muscles or the individual characteristics of the users. Despite several applications available, searches (October / 2016) in the main databases of the scientific literature on health (MEDLINE / PubMed, CINAHL, CENTRAL, LILACS) showed the existence of only two registers^{12,13} referring to the same mobile app called "Tät", developed in Sweden by the Umeå University team. This application was developed with the purpose of favoring the treatment of stress urinary incontinence and provides information and guidelines on urinary incontinence and lifestyle, as well as instructions for performing a pelvic floor exercise program involving visual and hearing commands and the possibility of scheduling reminders to carry out the proposed training.

A study was then conducted to evaluate the effectiveness of Tät for the treatment of stress urinary incontinence. The study was attended by 123 women between 18 and 72 years of age, allocated to two groups: one group that used the app for three months and another group that did not have any intervention, but had access to the app after three months. The severity of the symptoms of urinary incontinence, the quality of life of the volunteers, the frequency of episodes of incontinence per week and the perception of improvement of the participants were evaluated. The results of the analysis between the groups showed statistically significant and clinically relevant improvements in relation to these outcomes, favoring the group that used Tät. In addition, 66.7% of the women were satisfied with the app, 96.7% of the participants rated it as "good" or "very good" and 100% of the experimental group sample recommended its use. In this sense, it was proposed by the authors of the study that the treatment for women with stress urinary incontinence does not need to be attended in person and can be conducted through mobile apps, including through the Tät app, which proved to be an effective and easily accessible alternative^{12,13}.

The results with the Swedish app were quite

interesting, however, to incorporate them into the clinic, one must consider questions that imply the practical applicability of these results. They are as follows:

- a) Is there a similarity between the type of participant in the study, the proposed intervention and the comparison with the clinical scenario in which we are inserted?
- b) Is the studied intervention available and is it feasible in our work environment?
- c) What is the relationship between the potential benefits and harms of the therapy in question?
- d) What are the expectations and perspectives of our patients?
- e) What are the barriers and facilitators for implementing the intervention in the context of our patient's life?

These questions help in interpreting the findings of the studies within the context of clinical practice and are easily accessed through the mobile app CrivoApp, developed with the objective of assisting the critical reading of scientific articles in the health area.

In view of the above, it can be concluded that, despite many mobile apps available, there is little scientific evidence to support the effectiveness of its use in the treatment of pelvic dysfunctions. In addition, these evidences become very limited when considering clinical practice in Brazil, since there is an important sociocultural difference between Brazil and Sweden. However, telerrehabilitation through mobile apps is a potential alternative for the treatment of pelvic floor disorders and efforts in scientific research are essential so that more concrete findings are able to substantiate an evidence-based clinical practice.

COMPETING INTERESTS

No financial, legal or political competing interests with third parties (government, commercial, private foundation, etc.) were disclosed for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.). However, participation in the creation of EduMicc and CrivoApp was presented.

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