

The Effect of an Exercise Programme Delivered through tele-rehabilitation Systems on Fitness and Quality of Life in Perimenopausal women - A Randomised Control Trial: A Hypothesis

Eden Mehdiabadi¹, Apurv Shimpi¹, Suroshree Mitra¹

¹Community Physiotherapy department, Sancheti Institute College of Physiotherapy, Thube Park, Shivaji Nagar, Pune, Maharashtra, India.
Institute at which research was conducted: Sancheti institute College of Physiotherapy, Thube park, Shivajinagar Pune 411005, Maharashtra.
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Address of Correspondence

Dr. Apurv Shimpi,
Sancheti Institute College of Physiotherapy, 12, Thube Park, Shivaji Nagar, Pune - 411005,
Maharashtra.
E-mail: scopcommunitydept@gmail.com



Dr. Eden Mehdiabadi



Dr. Apurv Shimpi



Dr. Suroshree Mitra

Abstract

Background: The menopausal transition culminates in reproductive senescence and is associated with several adverse symptoms and health effects which makes it a difficult stage of life for most women. 80 - 96% of women experience mild to severe physical and physiological menopause related complaints during the perimenopausal period. The changes they undergo during this period puts them at an increased risk of weight gain, cardiovascular diseases, osteoporosis, development of postmenopausal breast cancer and depression. Menopausal women usually report a low physical activity level and a sedentary lifestyle which may further contribute to deteriorating their health and quality of life, and hence this is an identified problem which necessitates the formulation and promotion of a structured exercise programme for this population. Along with being effective, the formulated programme needs to be such that it is accessible and promotes adherence by being easy to inculcate in their weekly schedule. The mode of delivery of any intervention to improve fitness plays a key role in ensuring its effectiveness. Tele-rehabilitation is an emerging mode of delivery that is being increasingly welcomed and has shown promising prospects. Thus, the objective is to study the effect of a home based exercise programme delivered through tele-rehabilitation systems on the fitness and quality of life in perimenopausal women aged between 45 to 60 years by a prospective randomised active control trial on 54 participants (27 per group) over a period of six weeks.

Hypothesis: A home based exercise programme for fitness in perimenopausal women will show enhanced benefits when delivered through tele-rehabilitation systems as compared to a conventionally delivered home exercise programme.

Clinical importance: A deeper understanding of the optimal mode of delivery when promoting fitness in perimenopausal women will help in better structuring and implementation of strategies for this population.

Future research: To follow up with women and see the beneficial effects of the programme in conjunction with how empowered these women feel over time to take ownership of and give importance to their level of fitness.

Keywords: tele-rehabilitation, perimenopause, home programme, fitness

THESIS SUMMARY

Introduction

The menopausal transition is a significant period of a women's life which is associated with several adverse symptoms and health effects which makes it a difficult stage of life for most women. According to the stages of reproductive ageing (STRAW) criteria, 'perimenopause' includes the time around the menopause. It begins at stage minus 2 which is the early menopausal transition phase during which women experience variability in menstrual cycle length and increased levels of FSH levels, and ends 12 months after stage 0 which is the final menstrual period [1, 2]. The world health organisation (WHO)

defined it as the period immediately before menopause (when the endocrinological, biological and clinical features of approaching menopause commence) and the first year after menopause [3].

Physical and physiological menopause related complaints are attributed mainly to the decline of oestrogen levels and to a reported lower level of physical activity which further led to deterioration of their health and quality of life. Women who have a stable level of physical activity were reported to have smaller gains in weight, better musculoskeletal health and lower risks of developing breast cancer post menopause amongst other benefits to their mental health, quality of life, etc. Currently the

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physiotherapy strategies being used to alleviate the symptoms include exercise programmes including walking, aerobic exercises, yoga, weight bearing and strengthening exercises, etc [4, 5], but there is a scarcity of literature that focuses on the importance that the mode of delivery used to administer the intervention to this population plays.

Tele-rehabilitation is a branch of telemedicine which is defined as 'the remote delivery of rehabilitation and home health care services', it can optimise the time, intensity, and sequencing of intervention and therefore be able to provide an opportunity for the individual to continue to receive rehabilitation in their own social and vocational environment [6]. This productive use of advancements in information and communication technology in the field of health care can help the benefits of therapy to move beyond the confines of traditional healthcare facilities by allowing patients to participate in it while they are within the comfort of their own home, alongside numerous other benefits related to accessibility and cost saving [7, 8].

Hypothesis

In India, the mean age of menopause is 47.36 ± 3.58 years. In general, perimenopausal women tend to hesitate in openly talking about the problems they face related to menopause, and hence may not actively search for and adopt an exercise regime specifically structured for the changing needs of their body. Health care workers need to be sensitised to identify menopausal symptoms and utilise every contact to encourage preventive health behaviour. Encouraging preventive health behaviour in this population is very necessary, and a good fitness regime forms an important part of it [9].

Home exercise programmes are typically long term and hence their success requires patients to adhere to them for a long time. Although Home exercise programmes facilitate effective treatment, it is not uncommon for the more than 65% of patients to have difficulty in adhering to such programmes and maintaining their continuity. The way the programme is delivered is very important as it influences the degree which the patient follows it. Traditionally, verbal communication, written instructions, or both have been the predominant methods, but emerging research has shown the use of technology potentially improves the outcomes. In today's technologically advanced society, increasing number of people are turning to technological devices to make their way of availing healthcare services easier. The research on using technology to increase patient engagement with physiotherapy programmes is very limited [10], and hence this study aims to study this aspect of a mode of delivery in depth. Numerous factors may interfere with a woman's access to services that empower her to undertake a regular exercise programme, including distance, high travel related expenses, transportation barriers, family support, and ethnic and cultural differences [11].

While formulating any programme, it is important to take into account the preferences of the individual, especially with respect to time and their daily/weekly schedule, so that the programme is sustainable. Hence, in this study the programme will be given to one group through inexpensive video conferencing, while it will be conventionally

delivered to the other group through home visits and follow ups. The outcome measures of fitness along with the exercise diary that the participants will be asked to maintain will give us an understanding of the effectiveness of the mode of delivery and help gain an understanding of how it can be further implemented in this population.

Approval for the project was obtained from the Institutional Ethics Committee. Written informed consent shall be obtained from the participants, and they will be randomly allocated to either the experimental or the control group. After this an initial assessment will be performed by a blinded assessor. The parameters that will be assessed include the measures of body composition (height, weight, BMI, body fat %, muscle mass, bone mass, total body water %, visceral fat level; muscular fitness (modified push up test, one minute curl up test); musculoskeletal Flexibility (sit and reach test); and Menopause specific Quality of Life Questionnaire (MENQOL). The experimental group will receive the fitness programme five times a week for a period of six weeks through tele-rehabilitation systems, while the control group will receive it for the same duration of time, but with a session conducted every two weeks in person. Each participant will also be asked to maintain an exercise diary. At the end of six weeks, the final assessment will be conducted and statistics performed on the obtained data.

Discussion

Use of the emerging technologies and applications gives the opportunity for formulation of tele-rehabilitation strategies that can be tailored to meet individuals needs in the context of their own environment [12]. This delivery model can potentially empower patients, promote confidence and deepen understanding of their condition, thereby leading to improved health outcomes. Even though some technological issues are generally anticipated, challenges can generally be overcome with clear instructions and support [13].

The proposed innovative tele-rehabilitation programme directly addresses the issue of continuity, which is one of the major issues of care for this population. Since the hours of supervised therapy are limited, tele-rehabilitation will enable patients to expand significantly the hours that they practice therapeutic exercises, while promoting more effective methods of long-term rehabilitation and maintenance of a healthy lifestyle. This mode of delivery seems to be compatible with the evolving models of self-management, in which clients are encouraged to take responsibility for managing their own health [14].

Clinical Implication

A deeper understanding of the optimal mode of delivery when promoting fitness in perimenopausal women will help in better structuring and implementation of strategies for this population.

Future direction

To follow up with women and see the beneficial effects of the programme in conjunction with how empowered these women feel

over time to take ownership of and give importance to their level of fitness.

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Declaration of patient consent : The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient's parents have given their consent for patient images and other clinical information to be reported in the journal. The patient's parents understand that his names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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