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## Effectiveness of digital support intervention for self-management of low back pain among obese women

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### Abstract

Obesity is a growing public health concern. Obesity is one of several lifestyle factors that has been suspected of causing low back pain. Low back pain is an important clinical and public health problem. Digital interventions providing self-management information have been proposed as a promising mode of delivery for self-management interventions. A quantitative approach with pre-experimental research design was adopted for the present study conducted among 60 patients with low back pain among obese women by using purposive sampling technique. Demographic variables were collected pre-test was done by self-structured questionnaire. The investigator assessed the pre level of pain by using Quebec back pain disability scale. Then the group was trained to use mobile health application for 7 days. The mobile application consists of exercise, yoga poses, and diet-pattern. After one week the investigator assessed the post-test level of pain by using same Quebec back pain disability scale. The data were analyzed by using descriptive and inferential statistics. After intervention the experimental group value of posttest 't' test value of  $t=21.547$  was found to be statistically highly significant at  $p<0.001$  level. Hence the findings of present study concluded that was significantly improvement in the post test level of reduced pain in the experimental group which clearly infers that digital support intervention on self-management of low back pain was found to be effective in reducing the level of low back among obese women.

**Keywords:** Digital support intervention, self-management, low back pain, obese women

### Introduction

Obesity is a growing public health concern. Globally, the number of overweight or obese people is dramatically increasing. Obesity contributes substantially to the burden chronic medical conditions and this medical condition place a high economic burden on the health care systems. The association between obesity and low back pain remains controversial. Low back pain is more common in women than in men<sup>[1, 2]</sup>. Obesity is recognized as a major public health problem in industrialized countries and it is associated with various musculoskeletal disorders, including impairment of spine and osteoarthritis.<sup>[3]</sup> The reported prevalence of low back pain was 22% on 5724 obese adults are 60 years or older, with a linear correlation between LBP and BMI<sup>[4]</sup>.

Low back pain is a symptom not a disease this may be due to degenerative processes of the spinal axis, various trauma, occupational positions and congenital malformation. Back pain in the lumbar area is a widespread problem in the world's population, approximately 70-80% of the peoples suffer from it at least once in their life-time. Low back is a pain that manifests itself in the lumbar region and may also include the sciatic nerve<sup>[5]</sup>. Low back pain is an important clinical and public health problem. It is the most common cause of disability among younger adults that affects an estimated 70% to 80% of adults at some point during their lifetime. Obesity is one of several lifestyle factors that has been suspected of causing low back pain<sup>[6]</sup>.

Self-management refers to the individual's ability to manage symptoms, treatment physical and psychosocial consequences, and lifestyle changes inherent in living with a chronic condition and to affect the cognitive, behavioral, and emotional response necessary to maintain a satisfactory quality of life. The core of self-management program for chronic LBP should be exercise, with the support of health education and the professional advice.<sup>[7]</sup> Self-managing disease, such as chronic illness like low back pain, is positively affected by receiving social support. Using mHealth applications (apps) to support and reinforce desired self-management behavior has been put forward as a promising way to increase the effectiveness of self-management interventions<sup>[8]</sup>. Optimizing treatment strategies that are cost-effective, safe, and easy to administer for individuals with LBP is essential.

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Self-management is consistently recommended in international guidelines on the management of LBP. Self-management focuses on the patient’s ability to manage their own condition rather than treatment being based within the health care system or centered on a health care professional. The aim is to restore autonomy to the patient and include educational, or learning, components to position the patient at the center of their own management process and to help them acquire and maintain competencies to efficiently manage their condition. Digital interventions (i.e., interventions accessed via computer, mobile phone, or other handheld devices, including Web-based, desktop computer programs, or apps), providing self-management information have been proposed as a promising mode of delivery for self-management interventions [9].

Mobile health (m Health) connects patients, their families, and health care professionals by creating a network with mobile and specialized devices with wearable sensors, recording health parameters, and gathering health data. Health information can be subsequently converted and transferred to physicians and other health care professionals involved in the care of patients via medical application interfaces. By enabling patients to access and share their health information, m Health empowers patients to become more engaged and to take initiative in self-management and shared management of their health. [10] On the wider m Health market, various apps have been developed for different purposes. The latter include apps for disease prevention among healthy users and apps for people with existing chronic health conditions. A recent study, for example, demonstrated that apps can contribute to improve disease control in people with diabetes, hypertension, or asthma and can help for the monitoring and self-management of obesity, mental health diseases, and multimorbidities [11].

Digital health technology can provide care for large population and improve outcomes for non-invasive treatments by following providers to monitor adherence and activate patients to engage in their recovery. A digital therapy approach can integrate multiple conservative care channels while also tracking outcomes and providing biofeedback [12]. Digital health is a contemporary advancement in home-based self-management of NCDs. Widespread internet connectivity to at least 55% of the global population, over 5 billion mobile phone users and the availability of thousands of mobile health applications has provided unprecedented access to the digital delivery of home-based support. Content, structures, and modes of delivery for these digital interventions are wide ranging, and their potential effects are well documented. [13] Digital solutions such as mobile apps can be used as platforms for supporting self-management [14].

**Methods and Materials**

A quantitative approach with pre-experimental research design was used in this study. The population of the study includes all obese women who were visited orthopedic OPD and admitted in orthopedic ward in Saveetha Medical College and Hospital. The inclusion criteria included obese women who were having smart phone, know to operate smart phone. The exclusion criteria were severe pain, neuritis, fractures, and other orthopedic problems. The sample size is comprised of 60 in this study. The investigator selected samples by using purposive sampling technique. After selecting the samples, the investigator

explain the purposes of the study and informed consent were obtained. Demographic variable were collected by using self-structured questionnaire. The investigator assessed the pre-test level of pain by using Quebec back pain disability scale. Then the trained to use digital support intervention (mobile health application) for one week or 7 days. The mobile health application consists of exercises, yoga poses, and dietary management. After the experimental group trained with mobile health application for one week, then the investigator assessed the post-test level of pain by using the same Quebec back pain disability scale. The data were analyzed by using descriptive and inferential statistics.

**Results and Discussion**

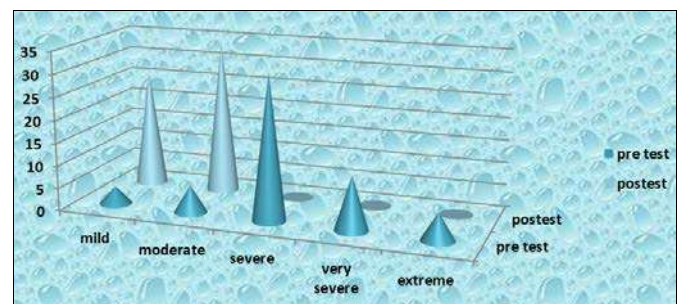
Assessment of pretest and posttest level of low back pain among obese women.

**Table 1:** Frequency and percentage distribution of level of low back pain among obese women M = 60

Knowledge	Mild		Moderate		Severe		Very severe		Extreme	
	No.	%	No.	%	No.	%	No.	%	No.	%
Pretest	4	6.7	6	10.0	32	53.3	12	20	6	10.0
Post Test	26	43.3	34	56.7	-	-	-	-	-	-

The table shows that, in pretest 6.7% were under mild back pain, 10% were of moderate pain, 53.3% was severe, 20% of them were very severe and 10% were under extreme back pain.

In posttest, 43.3% were under mild pain and 56.7% were of moderate pain and none of them were severe. This clearly states that the digital support intervention on self-management of low back pain in effective in reduction of pain in post test



**Fig 1:** Shows pre-test and post-test of mild, moderate, severe, very severe, extreme

**Table 2:** Comparison of pretest and posttest level of low back pain among obese women N = 60

Variables	Test	Mean	S.D	Paired 't' test Value
Level of pain	Pretest	7.72	2.43	t = 21.547 p = 0.0001 S***
	Post Test	17.85	2.29	

\*\*\*p<0.001, S – Significant

The pretest mean score of Level of pain was 7.72±2.43 and the posttest mean score was 17.85±2.29. The calculated paired 't' test value of t=21.547 was found to be statistically highly significant at p<0.001 level. This clearly infers that administration of with one of digital support intervention for self-management of low back pain was found to be effective in reducing the pain in the post test.

**Major finding**

There was significant improvement in the low back pain level and reduction in the low back pain in the experimental group after digital support intervention for self-management among obese women with low back pain ( $p < 0.001$ ).

It was found that there was significant improvement in the post test level of reduced pain which clearly infers that digital support intervention on self-management of low back pain was found to be effective in reducing the level of low back pain among obese.

### Conclusion

The results of the present study revealed that there was significant improvement in the post test level of reduced pain which clearly infers that digital support intervention for self-management of low back was found to be effective in reducing the level of low back pain among obese women.

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### Conflict of interest

Author declare no conflict of interest

### Finding support

None.

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