



Remote Education based on Self-Efficacy Theory (RESET): A randomized Trial Protocol to Reduce Health Worker Burnout with Occupational Back Pain

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Authors

Seyedeh-Somayeh Kazemi ^{1,2}, PhD
Mansour Ranjbar ³, PhD
Seyed-Abolhassan Naghibi*¹, PhD
Golnush Khazaei-poul ⁴, MSc
Masoud Shayesteh Azar², PhD

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¹ Department of Health Education and Promotion, Faculty of Health, Mazandaran University of Medical Sciences, Sari, Iran.

² Department of Orthopedic Surgery, Orthopedic Research Center, Imam Khomeini Hospital, Mazandaran University of Medical Sciences, Sari, Iran.

³ Department of Education Development Center (EDC), Mazandaran University of Medical Sciences, Sari, Iran.

⁴ Unit of Health Education, Health Network, Mazandaran University of Medical Sciences, Chalus, Iran.



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* Correspondence

Department of Health Education and Promotion, Faculty of Health, Mazandaran University of Medical Sciences, Sari, Iran.
P.O.Box:48471-91640
Tel: 0098 1133543317
Fax: 009833542473
E-mail anaghibi1345@yahoo.com

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ABSTRACT

Aims: Back pain significantly impacts healthcare providers, causing absenteeism, disability, and burnout. Enhancing self-efficacy is essential for effective job performance and skill development, underscoring the importance of targeted interventions to mitigate burnout in healthcare settings. This study investigates the effectiveness of a remote educational intervention grounded in self-efficacy theory in reducing job burnout among healthcare workers with back pain within the Chalus health network.

Method and Materials: This randomized clinical trial will proceed in three phases. The first phase involves a cross-sectional study to assess back pain, occupational burnout, and self-efficacy among participants. The second phase focuses on designing an electronic educational program. In the third phase, this program will be implemented for the target group. The academic program's impact will be evaluated at two time points: before the intervention and three months after the intervention. Data collection will utilize demographic checklists, Visual Analog Scale, Maslach Burnout Inventory, and Schwarzer's General Self-Efficacy Scale. Participants will be healthcare workers from the Chalus Health Network, located in Mazandaran Province, Iran. These workers will be randomized into an intervention group, which will receive Remote Education based on Self-Efficacy Theory (RESET), and a control group that will not receive this education. Data will be analyzed using SPSS-23 with descriptive and analytical statistical tests.

Findings: The RESET program has significant public health implications, particularly in reducing burnout among healthcare workers suffering from back pain. By applying this educational technique, it is intended to alleviate both physical and psychological stress, and more broadly, it could enhance workforce well-being, job satisfaction, and the quality of patient care. The findings may also inform future public health initiatives aimed at improving occupational health among healthcare professionals.

Conclusion: The study concluded that the myofascial trigger release technique was more effective than the muscle energy technique.

Keywords: Remote Education, Burnout, Low Back Pain, Self-efficacy Theory, Health Workers

Introduction

Pain is characterized as a discomfort sensation and an emotional experience associated with actual or potential tissue damage, impacting overall functioning and Quality of Life [1, 2]. Among prevalent work-related problems due to Low Back Pain (LBP) and occupational fatigue, occupational LBP manifests with indicators of pain, discomfort, and restricted function localized below the T12 vertebra and above the buttock creases, excluding pathological changes such as intervertebral disc herniation and vertebral fractures [3, 4]. Presently, LBP stands as a significant health dilemma within the spectrum of non-communicable diseases

Globally, approximately 60.1 million individuals are incapacitated annually from engaging in heavy physical tasks due to back pain [5]. The worldwide prevalence of occupational back pain among adults is estimated at 40%, with an annual disease burden of approximately 38% [6]. Notably, the 2013 Global Burden of Disease Study underscores LBP and mental disorders among the top ten causes of disability-adjusted life years across 188 countries [7].

Specific occupational cohorts, particularly among healthcare workers, face a heightened vulnerability to low back pain (LBP) due to the intrinsic nature of their occupational

responsibilities^[8]. Studies have reported a pronounced prevalence of low back pain (LBP) within healthcare professions ^[9, 10]. Particularly concerning, a study documented that over 80% of healthcare workers endure chronic back pain ^[11], further exacerbating challenges within the healthcare sector. The societal costs, encompassing expenses linked with absenteeism and work disability arising from LBP and burnout, are substantial ^[12-14]. Failing to effectively address physical and psychological challenges not only jeopardizes the safety of healthcare providers but also has adverse repercussions for the quality, safety, and overall well-being of the healthcare system, ultimately leading to burnout. Recognizing burnout as an "occupational phenomenon," the World Health Organization (WHO) classified it in the revised International Classification of Diseases 11 (ICD-11), positing it as a syndrome stemming from "chronic workplace stress not successfully managed" ^[15]. Job burnout is a prevalent issue among healthcare workers, resulting from their ongoing exposure to patient distress and the demanding nature of care provision ^[16].

Central to individuals' professional efficacy is their belief in their abilities and aptitudes, encapsulated in the concept of self-efficacy. Self-efficacy emerges as a pivotal element for optimal task performance and acquisition of fundamental skills requisite for job competence ^[17]. Defined as an individual's conviction in their capacity to undertake behaviors necessary to achieve specific performance goals, self-efficacy embodies confidence in controlling one's motivation, conduct, and social milieu ^[18]. Bandura classifies four determinants that influence self-efficacy: mastery experiences, observing success in social models, nurturing beliefs in personal competence, and physiological and psychological states. Self-efficacy plays a crucial role in enhancing pain management and mitigating occupational burnout, as individuals with higher self-efficacy are more likely to engage in proactive coping strategies and seek practical solutions to their challenges.

Noteworthy is the instrumental role of web-

based platforms in catering to individuals' needs and fostering support avenues beyond conventional working hours ^[19, 20]. Recent findings underscore the beneficial impact of web-based interactive interventions on patients with diverse chronic conditions, empowering individuals to achieve improved health outcomes ^[21]. Substantial scientific evidence supports the efficacy of online platforms in enhancing health-related knowledge ^[22] and precipitating behavioral modifications ^[23].

Given the prevalence of LBP and burnout among healthcare workers based on demanding work environments, increased workloads, and psychological stress experienced by health network personnel, the necessity for holistic interventions—addressing both physical and psychological dimensions is acutely apparent. Moreover, organizational frameworks play a pivotal role in providing effective interventions to mitigate employee burnout. Comprehensive interventions include pain management techniques, ergonomic practices, exercise, and stress reduction strategies. Hence, this study aims to evaluate the efficacy of a remote educational intervention grounded in self-efficacy theory in alleviating burnout among healthcare professionals experiencing back pain.

Future research is essential to investigate the long-term effects of the RESET program and its impact on burnout among healthcare workers. This study aims to fill existing gaps in the literature by providing empirical evidence on the effectiveness of such interventions in alleviating occupational back pain and enhancing overall well-being. Additionally, further investigations could examine the scalability of these interventions across different healthcare settings and their impact on providing health services.

Method and Materials

The study protocol is designed as a single-blind, randomized controlled trial to develop and assess a theory-based remote intervention for managing burnout among healthcare workers experiencing occupational low back pain (LBP). The protocol was

adopted from the Declaration of Helsinki and has received ethical approval from the Human Ethics Committee at Mazandaran University of Medical Sciences, Sari, Iran (IIR.MAZUMS.IMAMHOSPITAL.REC.1402.102) To achieve the study objective, a series of

phases outlined in Table 1 will be executed. Initially, a cross-sectional study will be undertaken in the first phase to examine the prevalence of back pain, burnout levels, and self-efficacy among the participants.

Table 1) The study overview

Phases and participants	Aim	Methods
Phase 1 Cross-sectional study	Examining back pain, job burnout, and self-efficacy	Questionnaires (Demographic checklist, VAS, Maslach Burnout Inventory, General Self-Efficacy Scale-GSE)
Phase 2 Design and development of interventions	Intervention group training Evaluation of the program	Based on social media Checklist
Phase 3 Step 1: Implementation	Present educational content to the intervention group	Based on social media
Step 2: Follow up in 2 points of time (Baseline, 3 months)	Identification of the impact of the program on the intervention group	Questionnaires

In the subsequent phase, an electronic training program will be developed and reviewed by two health education specialists, two orthopedic specialists, and ten healthcare workers for content and execution feedback before its implementation. Incorporating input from both individuals and experts, the final program will be refined and readied for presentation. Following this, the educational intervention will be rolled out for the target

group in the third phase. The efficacy of the training program will be assessed at two time points: pre-intervention and three months post-intervention. Before their involvement in the study, participants will be required to provide written informed consent. The study will be conducted among health workers working in the Chalus Health and Treatment Network, located in Chalus, Mazandaran, Iran (Figure 1).

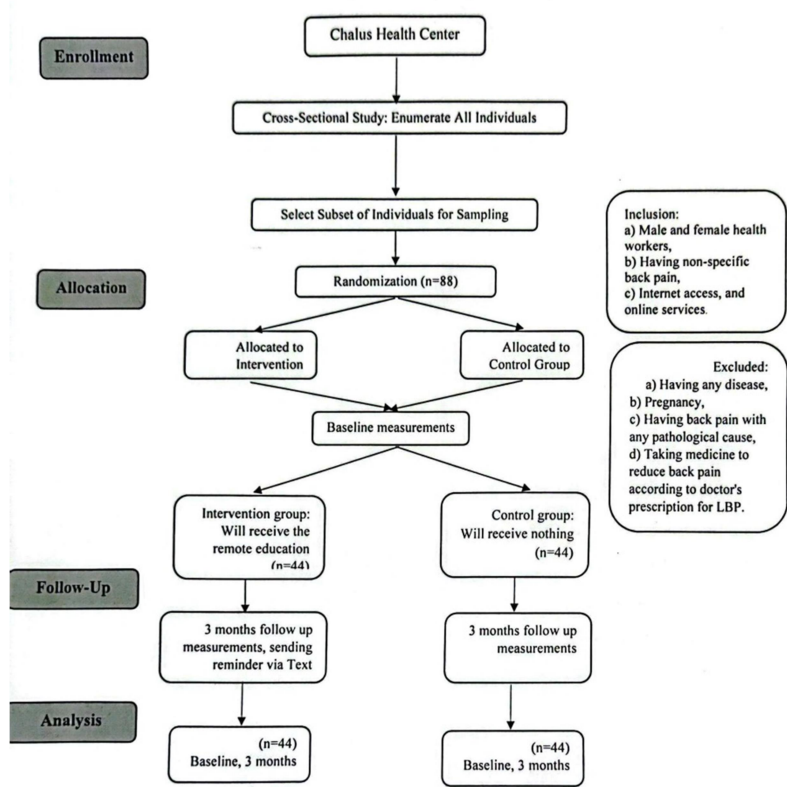


Figure 1) CONSORT flow diagram

The research will be conducted among healthcare workers at the health center in Chalus, a city located in Mazandaran, Iran. Initially, a cross-sectional study will be conducted to provide an overview of the population, involving a complete enumeration of all individuals. Subsequently, a subset of these individuals will be sampled and randomly allocated into either the intervention or control group. Following this, an electronic educational program will be developed and implemented for the intervention group. The study will be conducted in a double-blind manner, where the researchers and assessors will be unaware of the group assignment. A designated coordinator will administer the grouping.

The study begins with a cross-sectional examination aimed at characterizing the population, where a complete examination of all individuals is conducted. Subsequently, the focus shifts to evaluating the impact of an educational intervention on reducing job burnout. For this phase, individuals are randomly chosen from the population and then allocated randomly into either the intervention or control group. The necessary sample size is determined by referencing a comparable study [24] using the formula below. Consequently, to address potential individual variance (by selecting the maximum sample size based on this aspect), an analysis is conducted, considering the findings from the study above. The mean values for the intervention group and control group are 21.61 and 24.69, respectively, with corresponding standard deviations of 4.44 and 5.32. With a confidence level set at 95% ($z=1.96$) and a test power of 80% ($z=0.84$), the calculated sample size is 40 individuals per group. Accounting for a 10% attrition rate, the final sample size is determined to be 44 individuals for each group.

$$n_1=n_2=\frac{Z_{1-\alpha/2}+Z_{1-\beta})^2(6_1^2+6_2^2)}{(\mu_1-\mu_2)^2}$$

The data collection instruments for this study include a demographic checklist, a Visual Analog Scale (VAS) for assessing back pain, the Maslach Burnout Inventory, and Schwarzer's General Self-Efficacy Scale

(Schwarzer & Jerusalem).

Checklist of Demographics: The demographic checklist covers variables such as age, gender and marital status, number of children, work experience, and education level.

Visual Analog Scale for Back Pain: The Visual Analog Scale (VAS) is a widely used method for assessing pain intensity based on behavioral cues [25]. Participants rate their pain level on a 10 cm horizontal line, where 0 represents "no pain" and 10 indicate "worst pain imaginable" [26]. The reliability and validity of the VAS for pain assessment have been established in previous research [27-29]. Given its simplicity and effectiveness, the Persian version of the VAS will be employed in this study.

Maslach Burnout Inventory (MBI): This scale is a commonly utilized tool for measuring burnout across various professions. It comprises 22 items, with questions covering emotional fatigue, depersonalization, and personal ineffectiveness. Participants rate the frequency of these feelings on a scale from 0 (never) to 6 (every day). Higher scores on this inventory indicate greater levels of job burnout. The reliability of the MBI has been demonstrated using Cronbach's alpha, with a reported value of 0.89 for the overall scale [30, 31].

Schwarzer's General Self-Efficacy Scale (GSE): Schwarzer and Jerusalem developed the General Self-Efficacy Scale to assess general and social self-efficacy. The scale was revised in 1981, reducing the number of statements to 10. Scoring on this scale ranges from 1 (completely wrong) to 4 (entirely right), with total scores ranging from 10 to 40. Self-efficacy levels are categorized as low (10-20), medium (21-30), and high (above 30) [32]. The reliability of this scale, as indicated by internal consistency using Cronbach's alpha, has been reported as 0.73 by Akbari Balutbangan [33].

The inclusion criteria in this study are as follows: a) Male and female health workers, b) having non-specific back pain, c) Internet access, and online services. Exclusion criteria include: a) having any disease that prevents the person from participating in the study, b) pregnancy, c) having LBP with any pathological cause, d) taking medicine to

reduce LBP according to a doctor's prescription.

Before implementing the intervention, an educational program will be developed based on the self-efficacy theory and undergo pre-testing. During the pre-testing phase, the academic program will be shared with two health education specialists, two orthopedic specialists, and ten healthcare workers for evaluation of content and execution. Feedback from both individuals and experts will be solicited and integrated into the program as needed, culminating in the finalization of the program for presentation. The educational content will encompass a wide range of topics, including general information, ergonomic principles, back stretching and strengthening exercises, self-efficacy enhancement strategies, job fatigue, and its determinants, as well as coping mechanisms for job-related fatigue and stress reduction strategies.

Subsequently, the educational intervention will be delivered via social media over 5 days, spanning two consecutive weeks, with one-hour sessions scheduled daily for the target audience. Following the conclusion of the intervention, participants will receive weekly reminder messages via social media platforms or text messages. The effectiveness of the educational program will be assessed three months after the intervention has been implemented. In contrast, the control group will not receive any form of training during this period. At the end of the three-month follow-up and the project, the educational content will be extended to the control group for their benefit.

The primary purpose of this study is to assess whether MBI can reduce burnout. Secondary outcomes will include improving self-efficacy, which will be evaluated using the General Self-Efficacy Scale (GSE). Moreover, the reduction in LBP will be assessed through VAS questionnaires.

Descriptive and analytical analyses using SPSS 26 will be conducted to assess the impact of the educational intervention on the dependent variables.

Discussion and Conclusions

One key characteristic of this research is its

emphasis on enhancing workplace health. The study aims to evaluate the effectiveness of remote educational interventions in reducing job burnout among healthcare personnel who experience occupational low back pain (LBP). The primary framework of this investigation will involve implementing a theory-driven and evidence-based strategy to develop and deliver an interactive intervention using social media platforms, specifically targeting healthcare workers. This approach aims to address the unique challenges faced by healthcare professionals experiencing job-related stress and burnout, with the ultimate goal of promoting well-being and resilience within the healthcare workforce. The utilization of a theory-driven and evidence-based approach reflects the commitment to rigor and efficacy in designing interventions tailored to the specific needs and contexts of healthcare settings.

Some of the strengths may exist in the study are as following.

1. Innovative Approach: Utilizing a distance learning intervention for healthcare workers with occupational low back pain (LBP) can offer a novel and potentially effective method for addressing job burnout issues.

2. Targeted Intervention: Focusing on healthcare workers with occupational low back pain (LBP) ensures that the intervention is tailored to a specific population facing unique challenges, which may enhance its effectiveness.

3. Theoretical Foundation: Grounding the intervention in self-efficacy theory provides a solid theoretical framework for understanding and potentially improving job burnout in healthcare workers.

Regarding limitations the following issues could be discussed.

1. Methodological Challenges: Implementing a distance learning intervention may pose methodological challenges related to participant engagement, adherence, and data collection, which can impact the validity of the results.

2. Confounding Variables: Other factors influencing job burnout, such as the workplace environment or organizational culture, may not be fully controlled for, which

could potentially confound the study's results. Addressing these weaknesses through a robust study design, careful consideration of confounding variables, and transparent reporting of methods and results can strengthen the research on the effectiveness of a distance learning intervention based on self-efficacy theory in reducing job burnout among healthcare workers with occupational low back pain (LBP). This study aims to conduct a 6-month follow-up, if possible, to determine whether a remote intervention will have a lasting impact or if its effects will diminish over time.

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MR: Read and approved the final version. SAN: Writing the manuscript, read and approved the final version. GKH: Data collection, Implementation of the intervention, read and approved the final version. MSH: Intervention design read and approved the final version.

Ethical Permission: The Mazandaran University of Medical Sciences Ethics Committee for Health Research Ethics (IR.MAZUMS.IMAMHOSPITAL.REC.1402.102) approved the study. Furthermore Iran Clinical Trial (IRCT) approved the study on date 2024-02-20 with IRCT registration number: IRCT20230930059559N1

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