The Effects of a Mobile Stress Management Protocol on Nurses Working with Cancer Patients: a Preliminary Controlled Study

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Abstract. Oncology nurses face extraordinary stresses that may lead to emotional exhaustion, a feeling of emotional distance from patients and burnout. The presentation describes the preliminary results of a study to test the effects of an innovative 4-week 8-session self-help stress management training for oncology nurses supported by mobile tools (Nokia N70 smartphone). The sample included 16 female oncology nurses with permanent status employed in different oncology hospitals in Milan, Italy. The study used a between-subjects design, comparing the experimental condition (mobile phone stress management protocol) with a control group (neutral videos through mobile phones). In addition to a significant reduction in anxiety state at the end of each session, the experimental group demonstrated a significant improvement in affective change in terms of anxiety trait reduction and coping skills acquisition at the end of the protocol.

Keywords: Mobile-phones, Stress-Management, Nurses, Oncology

1. Introduction

Nursing professionals, especially if working in a cancer setting, face extraordinary stresses: giving intense emotional support in the face of patients’ suffering, dealing daily with pain, loss, and traumatic illness events. As noted by Kash and colleagues [1], they experience greater emotional exhaustion, a feeling of emotional distance from patients, and a poorer sense of personal accomplishment making them vulnerable to several related effects, such as burnout and job dissatisfaction.

2. Stress Management Training using mobile phones

Within telehealth tools, the mobile phone may play an important role in the management of stress [2-4]. On one side, mobile phones guarantee the availability of the contents at anytime and in any place. More, the advanced multimedia features of smartphones allow the possibility of providing graded audio-visual exposure
experiences. Finally, the common use of these tools in everyday life may enhance users’ acceptance of their application in mental health education and treatment [5].

The current study tested the short-term effects of an innovative self-help stress management training for oncology nurses supported by mobile tools. The Stress Inoculation Training (SIT) methodology served as the basis of the training [6], with the innovative challenge being the use of mobile phones to support the stress management experience.

3. The Stress Management protocol

The experimental protocol included two phases: the needs analysis and the self-help intervention phase. The needs analysis was conducted to explore the communicative and relational competences of nurses, related to bad news communication management and adaptation to work, and to explore stress effects (physiological, psychological, and behavioral effects) perceived by nurses during their work. This first part of the experiment resulted in the creation of an intervention protocol corresponding to the real needs of oncology nurses.

The 4-week intervention protocol included eight 5-minute video clips with a narrative developed using the SIT approach. Every Tuesday and Friday, at the end of the working hours, the nurses were asked to set up a space where they felt comfortable and to sit in a relaxing chair to experience one video using their UMTS mobile phone (Nokia N70 used with headphones, see Figure 1).

![Nokia N70](image)

**Figure 1.** Nokia N70

1) *Video Clips 1/2/3 - Conceptualization phase (Figure 2):* To make nurses aware of their typical stressful reactions during work. The narrative voice guided participants in a vernal garden, a lake, and a small waterfall exploration.
2) Video Clips 4/5/6 - Skills acquisition and rehearsal phase: To teach coping strategies and relaxation techniques. The narrative voice guided participants to explore an autumn hill, a mountain, and a tree house.

3) Video Clips 7/8 - Application and follow-through phase (Figure 3): To assess participants’ ability to use the coping skills acquired during the intervention. Participants watched two video clips presenting oncology patients suffering from cancer in a hospital ward.

![Figure 2. Relaxation environment](image1)

![Figure 3. Stressful video](image2)

![Figure 4. Neutral video (for the control group)](image3)

The first six video clips, showing different relaxing virtual environments, were created using the Just Leap In platform (available for free at [www.justleapin.com](http://www.justleapin.com)).
The final two video clips, presenting oncology patients suffering from cancer, were developed by combining three different public social advertising campaigns (available from www.pubblicitaproposso.it).

4. The research study

To test the efficacy of the intervention protocol, a between-subjects design was used to compare the experimental condition with a control group. 16 female oncology nurses (Mean age = 42; SD = 7.60) enrolled in the study. All the nurses reported a level of stress corresponding to the higher quartile (Italian normative data).

Participants were randomly allocated into two groups (8 participants for each condition). In the experimental condition, participants experienced the intervention protocol. In the control condition, participants watched eight video clips previously validated as neutral stimuli (see Figure 4) by Gross and Levenson [7]. The background music was the same in both conditions.

In particular, the study tried to test the following hypotheses:

1) *Hypothesis 1*: The emotional state (state anxiety reduction) of oncology nurses included in the experimental group will improve by the end of each session of the protocol.
2) *Hypothesis 2*: The affective state (trait anxiety reduction and acquisition of styles of coping) of oncology nurses included in the experimental group will improve by the end of the entire protocol.

5. Results

The data from the current study highlighted the effectiveness of self-help stress management training supported by mobile tools. Specifically, results showed a significant decrease in anxiety among those who performed the SIT protocol compared to the control group.

In addition to the significant reduction in anxiety state at the end of each session, the results demonstrated a significant improvement in affective change in terms of anxiety trait reduction and coping skills acquisition.

In particular, nurses learned two important coping strategies represented by the decrease of denial and the increase of active coping, intended as a set of actions aimed to change the situation.

The positive correlation found between the anxiety trait and the denial style of coping underscores that—at the end of the protocol—the acquisition of the capacity to cope with the existence of the daily critical situation (i.e., reduction of denial) is also associated with a reduction of a negative dispositional dimension, as represented by the anxiety trait.
6. Future steps

As this is a preliminary study in the field, the sample size is still limited. We have started an extension of this study with a wider sample.

Furthermore, it is important to consider the fact that emotional and affective states were measured using only self-reporting questionnaires. Even if the assessment tools used were validated and effectively tested in different contexts, the use of physiological indices in the future may help obtain a more complete picture of the emotional response of the nurses.

7. Acknowledgements

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8. References