



# An eHealth education intervention to promote healthy lifestyles among nurses

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## ABSTRACT

**Background:** Nurses often do not adhere to health-promoting lifestyles, compromising their health status and quality of care. This study aimed to evaluate health-promoting effects of an eHealth intervention among nurses compared with conventional handbook learning.

**Methods:** This controlled before/after study enrolled 105 nurses, 55 in an experimental group and 60 in a control group, for 3 months of intervention. Both groups completed pre- and postintervention questionnaires of the Health-Promoting Lifestyle Profile and Short-Form Health Survey. Subjects' height, weight, and body mass index were recorded.

**Discussion:** The eHealth education intervention had the effect of significantly increasing nurses' postintervention Health-Promoting Lifestyle Profile total scores. No significant changes were observed in the postintervention scores of the control group subjects. The experimental group also had significant post-intervention decreases in BMI, but no similar changes were observed in the control group.

**Conclusions:** Tailored eHealth education is an effective and accessible intervention for enhancing health-promoting behavior among nurses.

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## Introduction

Health care practitioners commonly fail to adhere to health-promoting lifestyles. Nurses' scores on the "health responsibility" and "physical activity" categories of the Health-Promoting Lifestyle Profile (HPLP) were markedly lower than other categories, indicating greater disability in these areas (Tsai & Liu, 2012). These poor health-promoting lifestyles among nursing staff are associated with anxiety, gastrointestinal upset, headache, and insomnia (Tsai & Liu, 2012). Nurses' heavy workloads and lack of work-life balance

are also associated. A survey of over 2,000 nurses in 11 countries showed that 92% reported facing time constraints, and they acknowledged that heavy workloads had an impact on the time spent with patients and overall quality of care (DeCola & Riggins, 2010). How, then, are nurses to focus on improving their own health? Various hospitals have organized health promotion policies and activities for professional staff, including programs for mental health, weight control, health promotion through exercise, and tobacco hazard control (A Health Promotion Project for Workers at National Taiwan University Hospital, 2013). In providing these programs, organizers

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encounter difficulties such as a lack of man power, lack of funding, staff members too busy to attend, and lack of relevant sports or catering facilities. However, that study also indicated that although hospital staff generally understand the intention of organized health-promoting activities, the participation rate still remains low (Lin, 2007).

Nursing careers are characterized by huge workloads, long working hours, high work-related stress, and physical and mental exhaustion characterized as “burnout” (Aiken et al., 2011). Our previous study revealed that the extent of job-related stress among nurses is especially severe in Taiwan, and stress-related symptoms are associated with poor quality of health-promoting lifestyle behaviors (Tsai & Liu, 2012). The demands of nursing work affect nurses’ physical and mental health and may result in depression, insomnia, and gastrointestinal upset. Shift work may result in unhealthy eating habits and irregular physical activities, and, as a result, nurses may become a high-risk population for metabolic syndrome and cardiovascular diseases (Tsai & Liu, 2012). In addition, when nurses are overworked, the quality of care they provide will be affected, which poses a threat to patient safety (DeCola & Riggins, 2010). The converse is also true; reducing nurse burnout is suggested to be an effective strategy for improving nurse-perceived quality of hospital patient care (Poghosyan, Clarke, Finlayson, & Aiken, 2010). Therefore, enhancing the health of health care providers through education has clinical importance, not only for health care providers themselves but also for patients receiving care.

Today’s advanced information technology offers opportunities to apply new types of targeted health-promoting education. A foremost example is eHealth. The term eHealth is defined as “the use of emerging information and communication skills, especially the use of the internet, to improve or promote health and healthcare” (Eng, 2001). Education delivered via eHealth emphasizes audience autonomy, which allows ready use of the services and tools provided by the Internet (Bashshur, Reardon, & Shannon, 2000). Using the Internet, the audience can actively search for information and generate self-care abilities in a safe, supported, and favorable learning environment. The concept of transferring the autonomy of self-care to the audience coincides with the concept of health promotion. Nguyen, Carrieri-Kohlman, Rankin, Slaughter, and Stulbarg (2004) applied eHealth promotion to patients with cardiovascular diseases, basing it on three major categories of applications: peer support communities, tailored education, and professionally facilitated education and support programs (Nguyen et al., 2004).

To encourage nurses to develop and maintain healthy lifestyles, this study aimed to develop a health-promotion website for nurses in Taiwan and to evaluate the effects of nurses’ health promotion received via eHealth intervention compared with conventional health promotion via handbook learning.

## Subjects and Methods

### Subject Enrollment

A total of 115 study subjects were recruited from nurses in Hsin-Chu and Chia-Yi metropolitan teaching hospitals by purposive sampling from November 1, 2011 to January 31, 2012. Inclusion criteria were that subjects had to be registered female nurses working since at least September 2011 who agreed to participate in the study. Pregnant women and subjects with hyperlipidemia, hypertension, or cardiovascular disease controlled by medication were excluded. Subjects in the experimental group also had to have a personal computer and network device in their homes or living places and had to be familiar with using the Internet. One hundred five subjects were enrolled, including 55 subjects in the experimental group and 60 in the control group. The 3-month intervention period was from February 15, 2012 to May 14, 2012.

### Sample Size

A type I error ( $\alpha = 0.05$  [one-tailed]), power of 0.8, and expected efficacy of 0.5 were used to calculate the minimum sample size. To detect differences between the two groups at the large effect size of 0.4 at the power of 0.95, at least 84 subjects were required. The sample size calculation was accessed using the free software G\*Power 3 (Department of Psychology, [http://downloads.fyxm.net/G\\*Power-10787.html](http://downloads.fyxm.net/G*Power-10787.html), freeware) as previously described (Faul, Erdfelder, Lang, & Buchner, 2007).

### Ethical Considerations

All enrolled subjects provided signed informed consent to participate. The institutional review board of Hsin-Chu and Chia-Yi hospitals reviewed and approved the study protocol.

### Methods

The study was conducted as a controlled before/after analysis using baseline and postintervention questionnaires. The experimental group was introduced to the website and became registered users able to participate in the eHealth education intervention. The control group was not registered to use the website and received only conventional handbook learning intervention. The handbook *Healthy Life and Exercise* published by the Health Promotion Administration, Taiwan Ministry of Health and Welfare, was mailed to control subjects who were asked to read the handbook independently. The experimental group completed baseline preintervention and postintervention questionnaires after 3 months of eHealth intervention on the website, whereas the control group completed baseline preintervention and postintervention

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