

Applying the technology acceptance model to explore public health nurses' intentions towards web-based learning: A cross-sectional questionnaire survey

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Abstract

Background: In the era of the knowledge economy, public health nurses (PHNs) need to update their knowledge to ensure quality of care. In pre-implementation stage, policy makers and educators should understand PHNs' behavioural intentions (BI) toward web-based learning because it is the most important determinant of actual behaviour.

Objectives: To understand PHNs' BI toward web-based learning and further to identify the factors influencing PHNs' BI based on the technology acceptance model (TAM) in pre-implementation stage.

Design: A nationwide-based cross-sectional research design was used in this study.

Setting: Three hundred and sixty-nine health centres in Taiwan.

Participants: A randomly selected sample, 202 PHNs participated in this study.

Methods: Data were collected by mailing in a questionnaire.

Results: The majority of PHNs (91.6%, $n = 185$) showed an affirmative BI toward web-based learning. PHNs rated moderate values of perceived usefulness (U), perceived ease of use (EOU) and attitude toward web-based learning (A). Multiple regression analyses indicated that only U revealed a significantly direct influence on BI. U and EOU had significantly direct relationships with A; however, no significant relationship existed between A and BI. Additionally, EOU and an individual's computer competence revealed significant relationships with U; Internet access at the workplace revealed a significant relationship with EOU.

Conclusion: In the pre-implementation stage, PHNs perceived a high likelihood of adopting web-based learning as their way of continuing education. In pre-implementation stage, perceived usefulness is the most important factor for BI instead of the attitude. Perceived EOU, an individual's computer competency, and Internet access at workplaces revealed indirect effects on BI. Therefore, increasing U, EOU, computer competence, and Internet access at workplace will be helpful in increasing PHNs' BI. Moreover, we suggest that future studies should focus on clarifying problems in different stages of implementation to build a more complete understanding of implementing web-based learning.

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Keywords: Behavioural intentions; Continuous education; Public health nurses; The technology acceptance model (TAM); Web-based learning

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What is already known about the topic?

- In the era of the knowledge economy, web-based learning is expected to play an important part in providing continuing education for health professionals, e.g. nurses. Behavioural intention (BI), which could be used to predict behaviour, is the most important determinant of behaviour. There have been few studies to explore nurses' BI toward web-based learning, which is still at its preliminary stage.
- The technology acceptance model (TAM) is designed to explain computer usage BI and actual behaviour. However, regarding nurses' web-based learning, previous studies have lacked the theory base to explore determinants of BI.

What this paper adds

- Web-based learning is a feasible way of PHNs' continuing education. Based on our empirical findings, in pre-implementation stage, perceived usefulness is the most important predictor for BI instead of the attitude. Perceived EOU, an individual's computer competency, and Internet access at workplaces revealed indirect effects on BI.

1. Introduction

Continuing education is an important part of lifelong learning and professional development. In order to maintain competency in rapidly changing health care systems and meet the challenge of overcoming traditional barriers to continuing education, nurses need access to innovative educational delivery methods to keep pace with updated information (Atack and Rankin, 2002). As the Internet becomes increasingly accessible to more people, it is important to understand its relevance to nursing. In particular, web-based learning has been widely recognized in several countries and has become a valuable and legitimate learning tool for health care professionals in the 21st century. In UK and USA, it has been used for nursing students and continuing education (Fullerton and Ingle, 2003, Di-Maria-Ghalili et al., 2005). The American Public Health Association (APHA) indicated that web-based learning can provide health professionals with more continuing education (Horton, 2000).

Based on the advances of computer technology and given the many benefits of web-based learning (or e-learning), educators and administrators are starting to consider how to make it more accessible. Nurses can now select web-based learning methods as a suitable way of continuing their education, thus creating more opportunities for continuing education (Wills and Stommel, 2002; Frith and Kee, 2003).

In Taiwan, public health centres (basic government units which are responsible for promoting community health; preventing disease, disability and premature death; and for protecting the health of vulnerable populations) play a major role in primary health care. Among diverse health professionals in health centres, public health nurses (PHNs) are the key health professionals (Yu and Chin, 1996). Because of the important roles of PHNs and rapid changes in health information, PHNs need to update their knowledge and skills continually to deliver health services effectively and to ensure the quality of health care (Gebbie, 1999). Web-based learning should be one feasible way to continue PHN's education.

Previous studies indicated most PHNs revealed a positive attitude towards web-based learning (Yu and Yang, 2006). Prior to implementing web-based learning programs (i.e. in pre-implementation stage), for reasons ranging from saving costs and avoiding unnecessary failure to the fact that web-based learning is not suitable for every learner (Atack and Rankin, 2002), policy makers and educators should investigate learners' BI toward web-based learning because BI are the most important determinant and a predictor of actual behaviour (Montano and Kasprzyk, 2002; Szajna, 1996).

Is there any theory that can be used to explore factors relating to PHNs' BI toward web-based learning? The Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen, is a widely used model from social psychology concerned with the determinants of consciously intended behaviour and has been used in exploring individual's health behaviours. According to TRA, a person's performance of a specified behaviour is determined by the person's attitude and subjective norm; BI is a prerequisite of the likelihood of performing a specific behaviour (Ajzen and Fishbein, 1980). Davis et al. (1989) adapted the TRA and introduced the TAM to attempt to explain computer usage BI and actual behaviour. TAM postulates that computer usage is determined by BI; a person's acceptance of an information system is hypothesized to be determined by his or her intention to accept it. The TAM explained the causal links among "perceived usefulness" (U) and "perceived ease of use" (EOU), attitude (A), and BI (BI). According to TAM, A is a major determinant of BI (A–BI link), which is influenced by U and EOU (A = U + EOU). U has also been linked to BI (U–BI link). Besides, the TAM proposed that U and EOU are affected by various external variables (such as user characteristics and organizational factors, etc.). External variables are expected to influence BI by affecting beliefs (U and EOU) and attitudes (A) and then influencing actual behaviour (Davis et al., 1989; Davis, 1993) (Fig. 1).

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