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Original Research

The attitudes of primary healthcare providers towards web-based training on public health services in rural China: a cross-sectional study

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ABSTRACT

Objectives: To explore the attitudes of primary healthcare workers, including township public health workers (TPHWs) and village doctors (ViDs), towards web-based training on basic public health services (BPHS) and to examine the factors influencing their attitudes.
Study design: Cross-sectional study.
Methods: Questionnaires addressing training status, needs, and attitudes towards web-based public health training were administered to 2768 primary healthcare workers from May to September 2013. Multivariate logistic regression models were used to identify the factors that were significantly associated with a positive attitude towards web-based public health training.
Results: Among the 2768 participants, 90.6% of the TPHWs and 86.9% of the ViDs expressed a positive attitude towards web-based BPHS training. TPHWs who had a positive attitude towards previous public health training (odds ratio [OR] = 2.75, 95% confidence interval [CI] = 1.28–5.93) and better computer skills (OR = 2.59, 95% CI = 1.03–6.48) were more likely to adopt web-based training on BPHS, as were ViDs who had better computer skills (OR = 2.54, 95% CI = 1.58–4.11) and better Internet speeds (neutral: OR = 2.81, 95% CI = 1.58–5.01; satisfied: OR = 2.53, 95% CI = 1.28–5.01). TPHWs who tended to read papers (OR = 0.24, 95% CI = 0.11–0.50) and were aged 50 years or older (OR = 0.34, 95% CI = 0.14–0.87), as were ViDs who tended to read papers (OR = 0.48, 95% CI = 0.29–0.77), expressed a more negative attitude towards web-based BPHS training.
Conclusions: The findings indicated that most primary healthcare workers have a positive attitude towards web-based BPHS training. More priority measures, such as conducting computer training, improving Internet quality and integrating mobile technology, are recommended and will further improve the implementation of web-based public health training programs.

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Introduction

In April 2009, the Chinese government launched a new health system reform, with the goal of providing affordable and equitable basic health care for all residents by 2020.[1] One of the main measures was the provision of a package of equitable basic public health services (BPHSs) for all residents.[1,2] The package included 11 service categories: the establishment of resident records; the provision of health education, vaccinations, and health management for children up to six years old, pregnant women, the elderly, and patients with hypertension and diabetes or major psychiatric disorders; the reporting and handling of infectious disease outbreaks and public health incidents; and the provision of health administrative oversight in 2011.[3] Two additional services, the health management of Chinese traditional medicine[4] and health management with TB patients,[5] were added in 2013 and 2015, respectively. In rural China, primary healthcare workers, including township public health workers (TPHWs) in township health centres and village doctors (ViDs) in village clinics, are the major workforce to provide BPHS for residents.

The implementation of BPHS depends on an adequate and competent health workforce. Primary healthcare workers in China, particularly ViDs, are not sufficiently qualified and face challenges, such as a lower level of education, ageing and insufficient professional training,[6–9] which can affect the quality of BPHS delivery.[10] Training has always been an important strategy for improving the health workforce and strengthening capacity building.[1] At present, face-to-face training seminars, particularly conference sessions, are the main training mode for primary healthcare workers.[11] However, face-to-face training is often hindered by time conflicts between work and training for primary healthcare workers.[12] Meanwhile, previous studies have revealed that BPHS training remains inadequate and that it is urgently required because of the limited training opportunities and the lack of effective BPHS training systems in rural China.[13,14] Therefore, a more effective training mode is necessary for primary healthcare workers.

Advances in information technology (IT) have facilitated web-based education and have accelerated knowledge delivery through the Internet. Web-based learning can diminish time and space barriers to learning and provides the opportunity to tailor learning to individual needs.[15] In low- and middle-income countries, such as in Brazil, India, Egypt and South Africa, a variety of health workers are currently using the Internet for health worker training.[16] Cook et al.[15] suggested that web-based instructions can have favourable outcomes across varied learners and learning contexts. Attitude towards web-based learning is an important factor influencing the adoption and dropout rates of e-learning courses.[17,18] Our previous qualitative exploration of stakeholders' perceptions of web-based training on BPHS suggested that it is a promising option in rural China.[19] However, the qualitative study was conducted in only one city, and the factors influencing primary healthcare workers' attitudes towards web-based learning on BPHS were not explored. Based on the results in the qualitative study, we conducted a questionnaire survey with a larger sample size to explore primary healthcare workers' attitudes towards web-based training on BPHS and the factors influencing such attitudes.

Methods

Study design and participants

A cross-sectional study was conducted in four cities (Jingzhou, Yichang, Xianning and Ezhou) in Hubei Province in central China using a multistage cluster sampling method to select participants. At the first stage, according to their per capita gross domestic product rank in 2013 in Hubei Province, the prefecture-level/sub-prefecture-level cities were divided into three income levels (low, medium, high). The cities of Jingzhou, Yichang, Xianning and Ezhou were purposely selected (low: Jingzhou; medium: Xianning; high: Yichang and Ezhou). At the second stage, the counties in each city were divided into three income levels based on the gross domestic product per capita rank in 2013, and one county was randomly selected at each respective income level. Three rural counties were randomly selected in each city; therefore, 12 counties were included in this study. At the third stage, all of the township health centres and village clinics in each sample county were included in this cross-sectional study, and all of the healthcare providers who were currently providing BPHS in the selected township health centres and village clinics were enrolled. In total, 3200 participants, consisting of 813 TPHWs and 2387 ViDs, were included in the survey from May to September 2013.

Questionnaire

A self-administered, structured questionnaire was designed based on the literature review, personal interviews and expert consultations. The 21-item questionnaire included the following: (1) characteristics of the individuals, including gender, age, educational level, major and the number of years delivering BPHS (5 items); (2) current public health training status and needs (7 items); (3) the characteristics of the technology, including Internet and computer accessibility and Internet quality (3 items); (4) self-assessed computer skills and reading preference (2 items); and (5) prior web-based training experiences and attitudes towards web-based training on BPHS (4 items).

The questionnaire was piloted with 38 TPHWs and 58 ViDs and was revised accordingly to ensure that the questions could be understood and answered by all of the respondents. The subjects who participated in the pilot test were excluded from the final analysis.

Data collection

The questionnaires were distributed to the sampled TPHWs and ViDs at the township health centre with assistance from the counties' Centers for Disease Control and Prevention and local township health centres. The questionnaire took 10 – 15 min to complete. After the questionnaires were returned, the research team examined the questionnaires; if the answers were incomplete or missing, a follow-up telephone interview