



Global Health eLearning: Examining the Effects of Blended Learning Models on Knowledge Application and Retention

Research Brief

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Research Highlights

- To understand how various learning modes can affect knowledge retention and application, the Knowledge for Health (K4Health) project conducted a cross-sectional study.
- Blended learning is an important strategy to strengthen learning outcomes and application of knowledge among health professionals in lower- and middle-income countries.
- Findings from the study support the potential of blended learning models to reinforce learning and application of knowledge, which is crucial to ensuring health professionals around the world have access to accurate and timely health information.

BACKGROUND

Family planning programs have achieved remarkable progress in recent decades, but at the same time there have been significant issues around lack of consent in these programs, including coerced and forced sterilization and other limits to reproductive freedom (Lombardo, 1996). In response to these human rights abuses, the U.S. government passed legislation requiring recipients of U.S. government funding for overseas family planning programs to follow specific guidelines related to voluntarism and informed consent.

In order to reach and educate health professionals around the globe, the K4Health project established the Global Health eLearning Center (GHeL), which provides free, self-paced eLearning courses on a variety of health topics. GHeL offers a number of compliance courses, including “U.S. Abortion and Family Planning Requirements,” which provides an overview of abortion and family planning legislative and policy requirements that shape government assistance.

Online learning, or eLearning, can increase access to education around the world and strengthen the capacity of health care professionals in low- and middle-income countries (Frehywot et al., 2013). Blended learning combines traditional learning settings (i.e., face-to-face learning) with online learning approaches. The objective of blended learning is to strengthen learning outcomes and application of knowledge by providing a variety of approaches to ensure that learners receive information in the format that works best for them (Singh, 2003). Some studies evaluating blended learning approaches suggest higher knowledge retention among students compared with traditional or online-only learning models, whereas other studies indicate no difference in knowledge retention between the approaches (Frehywot et al., 2013; Kiviniemi, 2014).

No systematic study has been conducted to understand the relationship between various learning approaches and the impact on learning outcomes related to family planning legislative and policy requirements among U.S. federal foreign aid recipients in lower- and middle-income countries. To address this research gap, the K4Health project conducted a study to examine the effect of a blended learning model that included three components (online course, in-person training, and a conference call) on knowledge retention and application. K4Health sought to answer the following two research questions:

1. Which learning approach or combination of approaches resulted in greater *knowledge retention* among participants who completed the “U.S. Abortion and Family Planning Requirements” compliance course?
2. Which learning approach or combination of approaches resulted in greater *knowledge application* among participants who completed the “U.S. Abortion and Family Planning Requirements” compliance course?

METHODS

This cross-sectional study collected data through online surveys. Using purposive sampling, respondents who had completed the “U.S. Abortion and Family Planning Requirements” eLearning course between July 2013 and April 2015 received an email invitation to complete an online survey. A total of 660 respondents completed the survey. Primary outcomes of interest included knowledge retention and knowledge application related to compliance with family planning and abortion requirements. This study received ethical approval from the Johns Hopkins Bloomberg School of Public Health Institutional Review Board. Survey data were analyzed through SPSS version 23 (SPSS Inc., Chicago, IL, USA) and Stata version 14 (StataCorp, College Station, TX, USA).

Respondents had several opportunities for exposure to trainings related to compliance with family planning and abortion requirements: taking the online course, participating in an in-person training, and participating in a conference call.

The study was interested in two outcomes:

1. Knowledge retention. Respondents answered 10 knowledge questions that covered topics included in the trainings. For each correct question, the respondent was awarded one point. Scores could therefore range from 0 to 10. Mean scores were then calculated to assess how knowledge differed across the learning types.
2. Knowledge application. Respondents answered a yes/no question about whether they used the knowledge they learned from the trainings in their work.

There were five exposure groups: respondents who took the eLearning course once (Group A), respondents who took the eLearning course multiple times (Group B), respondents who took the eLearning course and participated in the in-person training (Group C), respondents who took the eLearning course and participated in the conference call (Group D), and respondents who took the eLearning course, participated in the in-person training, and participated in the conference call (Group E).

RESULTS

Knowledge Retention

Mean scores differed significantly within the exposure groups (Table 1). Those respondents who took the online course, participated in the in-person training, and participated in the conference call (Group E) scored highest, followed by the respondents who took the online course multiple times (Group B), and then by the group of respondents who took the online course once (Group A).

Table 1: Mean knowledge scores by exposure group

Mean score (standard deviation) by group						
Exposure group	A: Online once (n = 217)	B: Online multiple times (n = 204)	C: Online + in-person (n = 201)	D: Online + conference call (n = 16)	E: Online + in-person + conference call (n = 22)	p-value
Value	7.63 (1.95)	8.05 (1.80)	7.55 (2.11)	6.88 (2.45)	8.68 (1.64)	<0.05

Knowledge Application

Knowledge application differed significantly within the exposure groups (Table 2), with three of the groups having 80% or more of the respondents indicating that they had applied the knowledge they gained. Those respondents who took the online course, participated in the in-person training, and participated in the conference call (Group E) had the highest proportion of respondents indicating that they had applied the knowledge they gained, followed by the group that took the online course and participated in the in-person training (Group C).

Table 2: Knowledge application by exposure group

Exposure group	Percentage by group					p-value
	A: Online once (n = 217)	B: Online multiple times (n = 204)	C: Online + in-person (n = 201)	D: Online + conference call (n = 16)	E: Online + in-person + conference call (n = 22)	
Value	66%	80%	89%	67%	95%	<0.05

DISCUSSION

The findings from this study support blended learning as an important strategy for reaching health professionals in lower- and middle-income countries with information about family planning and abortion regulations and promoting application of that knowledge. Findings on knowledge retention and application suggest that respondents who took the online course multiple times had high knowledge retention, but application of the knowledge learned in courses was lower compared with respondents who also participated in additional learning modes, including the in-person and conference call training sessions. Respondents who participated in all three learning approaches had greater knowledge retention and application compared with respondents who completed only one or two of the learning modes.

These results have broader implications for long-distance learning for health professionals in general. While eLearning courses are effective teaching platforms for reaching health professionals in lower- and middle-income countries, blended learning models have the potential to reinforce learning and application of knowledge, which is crucial to ensuring health professionals around the world have access to accurate and timely health information.

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