



Bangladesh Knowledge Management Initiative: Effects of a Digital Health Training Package on Client Family Planning Behaviors

Research Brief

February 2017



USAID
FROM THE AMERICAN PEOPLE

K4Health
Knowledge for Health

ACKNOWLEDGEMENTS

This research brief is made possible by the support of the American People through the United States Agency for International Development (USAID). The Knowledge for Health (K4Health) Project is supported by USAID's Office of Population and Reproductive Health, Bureau for Global Health, under Cooperative Agreement #AID-OAA-A-13-00068 with the Johns Hopkins University. K4Health is led by the Johns Hopkins Center for Communication Programs (CCP) in collaboration with FHI 360, IntraHealth International, and Management Sciences for Health. The information provided in this research brief is not official U.S. Government information and does not necessarily represent the views or positions of USAID, the United States Government, or the Johns Hopkins University.

Authors: Rupali Limaye, Anne Ballard, Saori Ohkubo, and Naheed Ahmed, Johns Hopkins Center for Communication Programs.

Research Highlights

- To test the effects of a digital health training package on family planning behaviors in Bangladesh, the Knowledge for Health (K4Health) project conducted a cross-sectional study.
- The knowledge a fieldworker gains through a digital health training package can be diffused to clients, positively affecting client knowledge and behaviors.
- Digital health training packages can empower fieldworkers by providing them with relevant information at the point of care, which can enhance their credibility among the communities they serve.

BACKGROUND

Bangladesh has made remarkable progress in many of its health and development indicators (Zere et al., 2013). However, Bangladesh's growing population negatively affects its economic growth (Streatfield & Karar, 2008).

Fieldworkers play a crucial role in communicating information about modern contraceptive methods and motivating women and girls to use them (Gayen & Raeside, 2010). The global health care worker shortage, coupled with a lack of access to continuing professional development opportunities (Nartker et al., 2010), results in a health care workforce that is ill-equipped to prevent, treat, and manage diseases. Digital health is particularly relevant within a training context as conventional training programs often do not focus on practical aspects of health care delivery (Ajuwon & Rhine, 2008). Many resource-poor settings are starting to explore the use of digital health packages for training (Aluttis et al., 2014) to enhance the knowledge and skills of health professionals (Wutoh et al., 2004; Campbell et al., 2014).

The diffusion of innovations theory suggests that although external influences are generally responsible for making individuals aware of an innovation, such as a practice or idea, interpersonal influence—or the interaction with friends and neighbors—is what leads to adopting that idea or practice (Rogers, 1995; Valente, 1996). The K4Health Project hypothesized that fieldworkers would obtain knowledge through a digital health training package and then pass on the information to their clients. The project sought to answer the following two research questions:

1. How did a digital health training package geared toward improving knowledge related to reproductive health among fieldworkers affect client *knowledge* related to reproductive health?
2. How did a digital health training package geared toward improving knowledge related to reproductive health among fieldworkers affect client *behaviors* related to reproductive health?

Methods

This cross-sectional study collected data through a household survey. The study was conducted in two low-performing districts, Sylhet and Chittagong, and focused on the use of family planning services. Multistage sampling was used to select study participants. Six upazilas (subdistricts) were randomly selected from each of the two districts. Within each upazilla, two unions were randomly selected, yielding a total of 12 unions per district. A household mapping exercise was undertaken in 12 unions in each district to prepare a sampling frame of mothers with children under age 2. A random start was used in each union to begin the systematic random sampling process. This study received ethical approval from the Johns Hopkins Bloomberg School of Public Health Institutional Review Board and the Bangladesh Medical Research Council Survey. Data were analyzed through Stata version 14 (StataCorp, College Station, TX, USA).

Netbooks were issued to fieldworkers and contained two distinct offline digital health training resources: (1) eight video-based eLearning courses on topics related to maternal health, family planning, nutrition, interpersonal communication, and integrated messaging; and (2) an eToolkit containing more than 100 printed and audio-visual materials for fieldworkers to use as counseling tools on health, family planning, and nutrition topics during their regular counseling activities. The eToolkit was also designed to supplement and refresh fieldworker knowledge.

This study was interested in two outcomes:

1. Fieldworkers' behaviors through the eyes of the mothers. The survey included yes/no questions about
 - (1) whether the fieldworker provided information about possible side effects of contraceptive method choice,
 - (2) whether the fieldworker provided information about actions to take in case side effects were experienced, and
 - (3) whether the fieldworker provided information about the various methods of family planning options available. Respondents answered a yes/no question for each fieldworker behavior.
2. Mothers' current contraceptive use. Respondents answered a yes/no question about whether they were currently using any contraceptive method (both modern and traditional).

There were three exposure group categories: mothers who reported no home visit from a fieldworker (no exposure); mothers who reported receiving a home visit from a fieldworker who had a netbook with the digital health training package (low exposure), and mothers who reported receiving a home visit from a fieldworker who had a netbook with the digital health training package and were shown a digital resource during the visit (high exposure).

RESULTS

Fieldworkers' Behaviors

Using logistic regression modeling, both low and high levels of exposure to the digital health training package were associated with higher odds of mothers reporting that the fieldworker discussed various contraceptive method options, side effects of methods, and what action to take with regard to side effects (Table 1):

- Mothers in the low-exposure group were 3.18, 3.22, and 3.21 times more likely to report that the fieldworker discussed contraceptive choice, discussed side effects, and provided information regarding actions the mother could take if she experienced side effects related to contraceptive use, respectively, compared with mothers in the no-exposure group.
- Mothers in the high-exposure group were 2.73, 3.29, and 3.23 times more likely to report that the fieldworker discussed contraceptive choice, discussed side effects, and provided information regarding actions the mother could take if she experienced side effects related to contraceptive use, respectively, compared with mothers in the no-exposure group.

Table 1: Odds ratios from logistic regression analysis measuring effects of mothers' exposure to a digital health training package on fieldworkers' behavior (n = 651)

	Fieldworker offered a choice of contraceptives during home visit	Fieldworker discussed side effects of contraceptives during home visit	Fieldworker discussed what to do for side effects during home visit
Independent variables	Adjusted odds ratio [95% CI]	Adjusted odds ratio [95% CI]	Adjusted odds ratio [95% CI]
Exposure to digital health training package			
No exposure (reference group)	1.00	1.00	1.00
Low exposure	3.18*** [2.06–4.91]	3.22*** [2.09–4.96]	3.21*** [2.09–4.95]
High exposure	2.73***[1.90–3.93]	3.29*** [2.27–4.75]	3.23***[2.23–4.66]
Age of mother (with a child under age 2)			
< 30 years	1.00	1.00	1.00
30–43 years	1.12 [0.75–1.66]	1.08 [0.72–1.60]	1.09 [0.73–1.62]
Education			
Non-literate	1.00	1.00	1.00
Primary (grade 1–4)	1.57 [0.92–2.68]	1.46 [0.85–2.50]	1.52 [0.87–2.62]
Some secondary or more	1.49 [0.87–2.57]	1.57 [0.91–2.72]	1.61 [0.93–2.79]
Household assets^a			
Low (0–3)	1.00	1.00	1.00
High (4–6)	0.91 [0.60–1.37]	1.01 [0.68–1.53]	0.98 [0.65–1.48]
District			
Sylhet	1.00	1.00	1.00
Chittagong	1.56** [1.12–2.16]	1.46* [1.05–2.03]	1.37 [0.99–1.91]

Note. CI = confidence interval.

^a Household assets: electricity, radio, television, mobile phone, landline phone, refrigerator * $p < .05$, ** $p < .01$, *** $p < .001$.

Mothers' Current Contraceptive Use

Using logistic regression modeling, a high level of exposure was associated with higher odds of mothers reporting current contraceptive use (Table 2):

- Mothers in the high-exposure group were 1.85 times more likely to currently use contraceptives compared with mothers in the no-exposure group.
- Mothers in the low-exposure group did not have higher odds of current contraceptive use compared with mothers in the no-exposure group.

Table 2: Odds ratios from logistic regression analysis measuring effects of mothers' exposure to a digital health training package on current contraceptive use (n = 651)

Independent Variables	Adjusted Odds Ratio [95% CI]
Exposure to digital health training package	
No exposure (reference group)	1.00
Low exposure	1.30 [0.83–2.03]
High exposure	1.85* [1.25–2.74]
Age of mother (with a child under age 2)	
< 30 years	1.00
30–43 years	0.97 [0.64–1.48]
Education	
Non-literate	1.00
Primary (grade 1–4)	1.73 [1.00–3.01]
Some secondary or more	1.52 [0.87–2.64]
Household assets^a	
Low (0–3)	1.00
High (4–6)	0.44*** [0.29–0.67]
District	
Sylhet	1.00
Chittagong	0.83 [0.59–1.17]

Note. CI = confidence interval.

^a Household assets: electricity, radio, television, mobile phone, landline phone, refrigerator * $p < .05$, ** $p < .01$, *** $p < .001$.

DISCUSSION

Knowledge management methods such as eLearning courses and Toolkits provide curated and synthesized collections of selected health information that fieldworkers can easily access and apply in their daily work, and then diffuse this knowledge and learning to their clients. This study indicates that fieldworker use of these knowledge management methods proved to be a crucial factor that strengthened their actionable knowledge and skills to the extent that they were not only able to transfer the knowledge to their clients, but they were also able to persuade clients who expressed a need for family planning to initiate contraceptive use.

This study provides evidence for the differential effects of a digital health training package. Even low exposure to the package was associated with an increased likelihood of fieldworkers offering a choice of contraceptives, discussing side effects, and discussing possible actions to take after experiencing side effects. However, higher odds of contraceptive use was associated only with high exposure—those mothers who reported receiving a home visit from a fieldworker who had a netbook with the digital health training package and were shown a digital family planning resource on the

netbook. This finding indicates that digital resources, an effective and appropriate tool for facilitating counseling, must be supplemented with interpersonal communication for successful client behavior change.

REFERENCES

- I Ajuwon, G.A., & Rhine, L. (2008). The level of Internet access and ICT training for health information professionals in sub-Saharan Africa. *Health Information & Libraries Journal*, 25(3), 175–185. doi: 10.1111/j.1471-1842.2007.00758.x
- Aluttis, C., Bishaw, T., & Frank, M.W. (2014). The workforce for health in a globalized context: global shortages and international migration. *Global Health Action*, 7. doi: 10.3402/gha.v7.23611
- Campbell, N., Schiffer, E., Buxbaum, A., McLean, E., Perry, C., & Sullivan, T. M. (2014). Taking knowledge for health the extra mile: participatory evaluation of a mobile phone intervention for community health workers in Malawi. *Global Health: Science and Practice*, 2(1), 23–34. doi: 10.9745/GHSP-D-13-00141
- Gayen, K., & Raeside, R. (2010). Communicative actions, women's degree of social connectedness and child mortality in rural Bangladesh. *Child: Care, Death and Development*, 36(6), 827-834.
- Nartker, A. J., Stevens, L., Shumays, A., Kalowela, M., Kisimbo, D., & Potter, K. (2010). Increasing health worker capacity through distance learning: a comprehensive review of programmes in Tanzania. *Human Resources for Health*, 8(1), 30. doi: 10.1186/1478-4491-8-30
- Rogers, E. M. (1995). *Diffusion of innovations* (p. 12). New York: Free Press of Glencoe.
- Streatfield, P. K., & Karar, Z. A. (2008). Population challenges for Bangladesh in the coming decades. *Journal of Health, Population and Nutrition*, 261–272. doi: 10.3329/jhpn.v26i3.1894
- Valente, T.W. (1996). Social network thresholds in the diffusion of innovations. *Social Networks*, 18(1), 69–89. doi: 10.1016/0378-8733(95)00256-1
- Wutoh, R., Boren, S.A., & Balas, E.A. (2004). eLearning: a review of Internet-based continuing medical education. *Journal of Continuing Education in the Health Professions*, 24(1), 20–30. doi: 10.1002/chp.1340240105
- Zere, E., Suehiro, Y., Arifeen, A., Moonesinghe, L., Chanda, S. K., & Kirigia, J. M. (2013). Equity in reproductive and maternal health services in Bangladesh. *International Journal for Equity in Health*, 12(1), 90. doi: 10.1186/1475-9276-12-90

