IVR FOR mLEARNING PLATFORM

Delivering refresher trainings to health care providers in Senegal

SERVICE DELIVERY

Implementation date: 2013

In-service training reinforces and updates health care providers' knowledge, but it is often expensive and requires providers to leave their posts[1]. When health workers are away from their posts for training, there may be no one else to deliver health services in their place. Most mHealth applications to train health workers require smartphones or digital tablets and Internet connectivity[2,3,4,5] or use short message service (SMS) text systems to provide training, guidance, and updates[6,7,8].

The IntraHealth International-led CapacityPlus Project developed, deployed and assessed an innovative mLearning system that used a combination of Interactive Voice Response (IVR) and SMS text-messaging to deliver refresher training to family planning providers in Senegal, focusing on management of contraceptive side effects and counseling to dispel misconceptions. The course was aligned with Senegal's national policies and international guidelines[9,10,11]; it used a spaced education approach, where content is spaced and repeated over time[12,13,14].

About IVR for mLearning

The Project used IVR technology—possible with any type of phone—to deliver information via audio recordings and allow users to provide feedback by pressing a number key. The mLearning system allows for the delivery of more robust information than SMS text but does not require Internet connectivity.[15,16] The system used a set of custom scripts ("middleware") that manage interactions between open source IVR software tools and learning solutions, including Gammu, FreeSwitch, and Moodle. The project prioritized open source technologies because of their low cost and ability to easily undergo local adaptation.

The application was piloted among 20 midwives, nurses, nursing assistants, and health agents, chosen in coordination with the Ministry of Health, in two districts in the Thiès region of Senegal.

The training content (in the form of 20 multiple-choice questions and accompanying detailed explanations on family planning) was delivered to the trainee's mobile phone and was compatible with all basic phone models. Whenever the trainee was available and ready—even if hours or days after the initial reminder—they texted the mLearning system to prompt a call. Trainees then responded to audio-recorded questions using their phone keypad. The system indicated whether the answer was correct or incorrect and provided a detailed explanation via audio recording. The same questions and explanations were delivered a second time to the trainees until all questions were answered correctly twice.

Evaluation and Results

To assess acceptability, trained data collectors visited trainees at their health posts within five weeks of course completion to administer a post-training survey about participants' opinions and experiences. To assess changes in knowledge, participants completed a written test—comprised of 20 multiple-choice and true/false questions—at an orientation to the system (pre-test), at the same time as the post-training survey (post-test), and again during a supervision visit 10 months after the training. The pilot application was carried out among a limited number of participants to allow for careful assessment and modifications before larger-scale implementation.
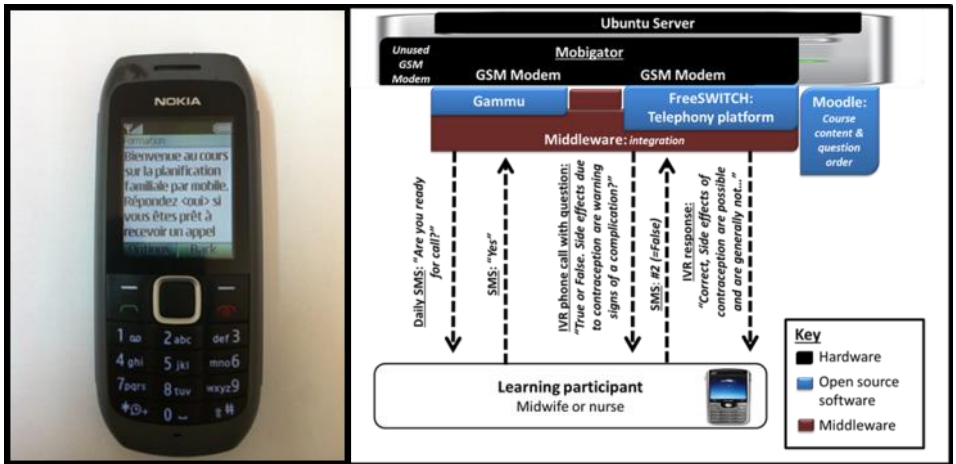
Participants reported that the overall experience of using a mobile phone to complete in-service training was either good (35 percent) or very good (65 percent). Participants greatly appreciated the convenience and flexibility of the mLearning system: 60 percent liked the ability to determine the course's pace and 55 percent liked being able to access the course when convenient. The largest criticism (35 percent) was poor network reception.

Overall, participants' knowledge of contraceptive side effects and misconceptions was relatively high at baseline and significantly increased ($p < 0.05$) from an average of 12.6 correct questions (out of 20) before the training to 16 out of 20 after the training. There was a slight decline in average knowledge scores ten months after the post-test (14.8 out of 20), but the gains in knowledge were still significantly higher than before the training ($p < 0.05$).

Lessons Learned

- An IVR and SMS mLearning system is appropriate, feasible, acceptable, and associated with sustained gains in knowledge

- Trainees accessed IVR most frequently during non-regular working hours and the average call duration was 13 minutes, suggesting that the training did not disrupt health workers' service delivery schedules

- Providing pertinent written materials and incorporating different interactive exercises enhances learners' experiences

- Sufficient time is necessary to pre-paid and post-paid (or contract) mobile phone mechanisms before starting course delivery

Conclusion

The IVR mLearning platform using a spaced education approach has the potential to be an effective, efficient, and low-cost means of providing refresher training and/or updates on National health guidelines, policies, and protocols (see panel). The pilot experience provides compelling evidence that the mLearning system could be scaled up to other training topics and geographic areas in Senegal and beyond.

Geographic Coverage: Two districts in Thiès region, Senegal

Implementation Partners: IntraHealth International (implementers), in coordination with the national, regional, and district Ministry of Health

Funder: USAID-Washington through the CapacityPlus project

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