

Recording patient responses in low-income countries: does the tool make a difference?

Karen Cheng^a

Increasingly, health-care providers in low-income countries are using information and communications technology (ICT) for routine data collection. Nongovernmental organizations and health research teams often use handheld computers, such as personal digital assistants (PDAs), to conduct household and behavioural risk surveys.¹ Similarly, some hospitals and clinics are using handheld and desktop computers to record information during patient visits.² This technology can facilitate the retrieval of patient data, the identification of trends in a patient's chart and the aggregation of data so that group trends may be identified more quickly.

While the advantages of using ICT in health settings have been widely touted, the introduction of technology into a setting that did not produce the design of that technology poses unique challenges. Some of the infrastructure challenges in low-resource settings include unreliable sources or complete lack of electricity, harsh environmental conditions and few staff trained to support the ICT hardware and software. Another challenge that has received little attention is the sociocultural context in which ICT is used. In low-income countries, only a small proportion of people have daily encounters with ICT. For example, only 4.7% of Africans access the internet on a regular basis compared to 71% of people in the United States of America (USA).³ Similarly, cell phone penetration in Africa is approximately 6.2%⁴ and 84% in the USA.⁵ The lack of daily familiarity with ICT may lead to unexpected problems when it is introduced to health-care settings in low-income countries.

In the course of a recent randomized controlled trial done in Luanda, Angola,⁶ we surveyed 231 people to assess their risk for HIV infection. In half of the surveys, the interviewers used a PDA to note participant responses. In

the other half, the interviewers used paper and pencil. Other than the difference in these tools to record responses, the two groups were essentially the same: the same interviewers conducted the interviews, the same questions were asked and the same procedures for recruitment and informed consent were used. People in the PDA group gave, on average, 2.4 socially desirable responses (out of 9 possible), compared to 1.4 for participants in the paper-and-pencil group [$t(221) = 2.8, P < 0.01$]. That is, people seemed to exaggerate how safe their behaviours were when they were faced with an interviewer using a PDA.

Because the two groups differed only in the way the responses were recorded, we concluded that the PDA cued people to alter their responses. Perhaps the participants were concerned about what would happen to their data because they were not familiar with the technology. Alternatively, they may have perceived the interviewer using the PDA to be of higher status and wanted to impress the interviewer.

This finding suggests that the good intentions of introducing ICT into health-care settings in low-income countries may have unintended consequences if tests of its effects are not done beforehand. Biases in patient responses may lead to inaccurate assessments of their vulnerability for certain diseases or of the prevalence of a disease in a particular community. For example, if a patient underestimates his or her number of unsafe sexual acts to a health worker, the health worker may underestimate that patient's risk for HIV and may not recommend HIV testing.

When introducing ICT to a health-care setting in a low-income country, researchers and health-care providers may wish to consider the following steps:

- Engage in discussions with local stakeholders from a wide range of economic and educational levels.

Probe about patients' and health workers' perceptions of ICT and how those perceptions could be barriers to accepting the technology. Consider modifying work practices to account for the barriers.

- Identify the social characteristics (for example, gender, class and education level) that may affect the relationship between the patient and the health worker. Develop protocols to ameliorate those barriers that may affect the relationship between the patient and the health worker who uses ICT.
- Conduct a short study, comparing the responses received when ICT is used and when paper and pencil is used.
- Conduct periodic checks on patient records to see if using ICT has affected accuracy of patient responses.
- Determine the degree of inaccuracy that is acceptable. The advantages of ICT may still be worth some level of bias in patient reporting.

This technology has the potential to improve the quality of health services in low-income countries when introduced in a culturally appropriate manner. Further research should be done to identify specific sociocultural barriers and facilitators to patient or client comfort with ICT in low-income countries. Barriers and facilitators may include age, gender, class, education level, national or regional culture, level of urbanization, political climate and professional culture. Such information can help health-care providers determine how to introduce this technology into their work to maximize its potential. ■

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^a Charles Drew University of Medicine and Science, Los Angeles, CA, United States of America.

Correspondence to Karen Cheng (e-mail: karencheng@cdrewu.edu).

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