

# Motivating better diabetes self-care with SMS text messaging

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Good self-management is crucial for experiencing a healthy life with diabetes. Diabetes Self-Management Education (DSME) and Diabetes Self-Management Support (DSMS) activities provide a process for people living with diabetes to gain the knowledge and skills needed to modify their behaviour. DSME and DSMS also help people with diabetes self-manage the disease and related conditions. The implementation of DSME/DSMS takes different forms depending on the organisation of care for people with diabetes including their healthcare system and their healthcare provision. The impact of the cultural and socio-economic environment in which they live is also an important factor.

In recent years, the fast increasing penetration and use of mobile technology worldwide has been seen as a potential game changer to enhance current approaches to DSME/DSMS. Mobile technology today provides a variety of health enhancing tools for people and professionals connected to diabetes. For example, smartphone technology can be directly linked to blood glucose measuring equipment enhancing patient and professional collaboration. For enhanced motivation and better self-care behaviours, lifestyle-based short-message-service (SMS) text messaging can be delivered to people with diabetes.

The TEXT4DSM study was developed to find out how mobile

phone technology can be used in a simple but intelligent way for diabetes programmes in a variety of settings. Evaluating the impact of mobile technology on the challenges associated with diabetes will also be vital once the study is complete. These challenges include changes related to physical health, feelings of control, utilisation of healthcare services and self-management behaviour.

## Study

We designed a randomised controlled trial for people with diabetes from existing diabetes programmes in three countries: Democratic Republic of the Congo (DRC), Cambodia and the Philippines. Each site



The BRIDGES evaluation team visiting a peer educator group in Cambodia. Photo: Tim Nolan

recruited 480 participants. All study participants (exposure and control groups) continued to receive diabetes care and DSME in their normal setting and all participants received a new mobile phone. In addition, the exposure group received short-message-services related to different dimensions of diabetes self-management such as advice related to diet and exercise, self-monitoring and how to handle emergencies. Exposure participants were also encouraged to use their phone when they had questions or felt the need for support on self-management requirements. In this instance participants were encouraged to contact their healthcare provider.

Data collection for all participants occurred before the start of the intervention as well as one-year and two-year completion. Data included biomedical and anthropometric variables (HbA<sub>1c</sub>, BMI, WC, WHR) as well as information related to participant knowledge, attitudes, perceptions, practices and feelings of control. After six months, we also performed an intermediate data collection restricted to the biomedical and anthropometric variables. In our study analyses, we will focus on the evolution of outcome variables in all three settings and assess possible differences. For instance, we will evaluate how different mechanisms may have been triggered

by a participant's usage of mobile technology for diabetes.

### Context of study settings

The estimated prevalence of diabetes for each study country according to the *IDF Diabetes Atlas*:<sup>1</sup>

- DRC: 6.1%
- Cambodia: 3.0%
- Philippines: 6.9%

The programme in the DRC is a 40-year-old network of 80 primary care centres located in the capital city of Kinshasa. These centres deliver diabetes care as part of a basic package to approximately 8,000 people with diabetes. The first contact person for the person with diabetes is a nurse. Every



Saturday, people with diabetes can come to the health centre for education sessions and a urine glucose test. Every two months anyone with diabetes who has access to a primary care centre sees a doctor and is given a blood glucose test, blood pressure monitor and a foot examination. They can also buy prescribed medicines at a subsidised price. People on insulin generally receive their injections at the health centre, rather than self-administer.

In Cambodia, the diabetes programme, initiated in 2005, operates through community-based peer educator networks. Currently, there are 130 peer educators working with 7,000 people with diabetes. Peer



*Project Manager explaining the study in an information meeting for potential participants in DRC*



*Diabetes Educator in a Diabetes Self-Management Education session with patients in Barangay, the Philippines*

educators work an average of one and a half days per week and receive a small financial incentive for each education activity they help facilitate. They are supported by the NGO, MoPoTsyo Patient Information Centre, located in the capital city of Phnom Penh. The information centre also organises access to local medical services, a revolving drug fund and laboratory examinations.

In the Philippines, people with diabetes receive primary care and DSME in a healthcare facility. DSMS is community-based and provided by Community Health Workers (CHWs) in the “First Line Diabetes Care Project” (FiLDCare). FiLDCare is operational in one urban area where the primary contact for

people with diabetes is a family physician. However, there are also education nurses, dieticians, pharmacists, and medical specialists available. FiLDCare is also offered in two rural areas where the CHW provides DSMS alongside the rural health unit physician who provides DSME. At present, 70 CHWs in the programme support approximately 1,000 people with diabetes.

### **Progress to date**

At the time of writing this report, the project was in the midst of its implementation phase. We have been able to include 480 patients in each country and collect their baseline data. Contracts with local telephone providers for the provision of 480 cellular phones (to match the 480 participants in

each setting) have been signed. Currently, the study team is sending daily text messages to each of the 240 participants. Overall, SMS messages covering all nine dimensions of the DSME guidelines<sup>2</sup> have been sent for one year at a rate of five per week. To date, the study team has collected data from all participants one year after their inclusion. Processing of the information is ongoing.

The main challenges for the TEXT4DM study relate to authenticating sent and received SMS messages and the follow-up of participants. All participants received a new cellular phone and a new mobile number, which TEXT4DM used to send the study messages. In all countries, we met people who had lost, broken or given away their study phones. We realised that most people had access to another phone and used the alternative “study mobile number” for messages. We had specific constraints in Cambodia, where we wanted to be able to communicate in the local language (Khmer), which would have required special font phones. We decided to shift to voice-SMS or sending SMS as voice-mails to participants there.

In the follow-up of study participants, we have lost roughly 5% either due to death or participant movement to a different area. The first results

of the analysis will be published in peer-reviewed journals.

### Possible expectations beyond the initial rationale

The partly unforeseen difficulties in the implementation of a mobile phone support intervention have brought to light some of the limitations and barriers to mobile health solutions that could be posed on a larger scale. Nevertheless, the feedback and discussion of the first analyses of the baseline data from practitioners and people with diabetes in each setting have led to new insights and enthusiasm about ways to improve diabetes care and DSME/DSMS.

The TEXT4DM study has turned out to be an enriching experience in many ways. Collaborating in a joint research programme meant learning opportunities for everyone associated with the TEXT4DM’s international consortium. The capacity for designing, implementing and analysing research has grown in all the study settings. The sharing of diabetes practices between the sites has helped to enhance diabetes care knowledge as well as other contexts. Most importantly, this project has provided insights on how to effectively use technological resources for access to DSME and DSMS.

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### BRIDGES project

Mobile phone Diabetes Self-Management Support: a multi country analysis of its implementation in existing Diabetes Self-Management Education programmes in the Democratic Republic of Congo, Cambodia and the Philippines

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### References

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