Dnyaneshwar Bhonde/The Golden Sparrow

# Can mobile message reminders help in treating TB in Pakistan?

Although tuberculosis (TB) is a curable infectious disease, it remains a major public health burden in the world. There are over nine million people diagnosed annually with TB, of which one third are neither accurately diagnosed nor effectively treated. In 2015, Pakistan was among the 30 countries with a high TB burden, with an estimated 510,000 cases.

Treating TB involves following a six-month World Health Organization-mandated, directly observed therapy regimen. TB patients often miss doses, which drastically affects their treatment outcome and disease transmission. Mobile phones-based health (m-health) interventions are increasingly used as a cost-effective way of communicating with patients to promote treatment adherence. However, limited evidence exists on the efficacy of such interventions, particularly on TB treatment.

There have been limited attempts at integrating m-health into TB control programmes, most of which have not moved beyond the pilot stage. To bridge this gap, 3ie funded a randomised evaluation conducted by researchers at Interactive Research and Development (IRD). The study gauged the impact of the *Zindagi* (which means life) intervention, a two-way short message service (SMS) reminder system, on the treatment outcomes of people with treatable TB in Karachi, Pakistan.

Main findings

- While 85 per cent of the TB patients who were enrolled to receive SMS reminders responded to the reminder system at least once, the response rate of all participants during their six-month treatment course was low, at 29 per cent.

- The study found no difference in the treatment success rate between the group that received the SMS reminder along with a motivational message and the comparison group that did not receive the SMS reminders. There was no significant difference in treatment success rates within any of the subpopulations.

- The intervention did not contribute to the physical or psychological well-being of participants.

- Qualitative findings indicate that patients primarily rely on personal reminders or family members to remind them about their medication doses. SMS reminders only served to reinforce these existing mechanisms..
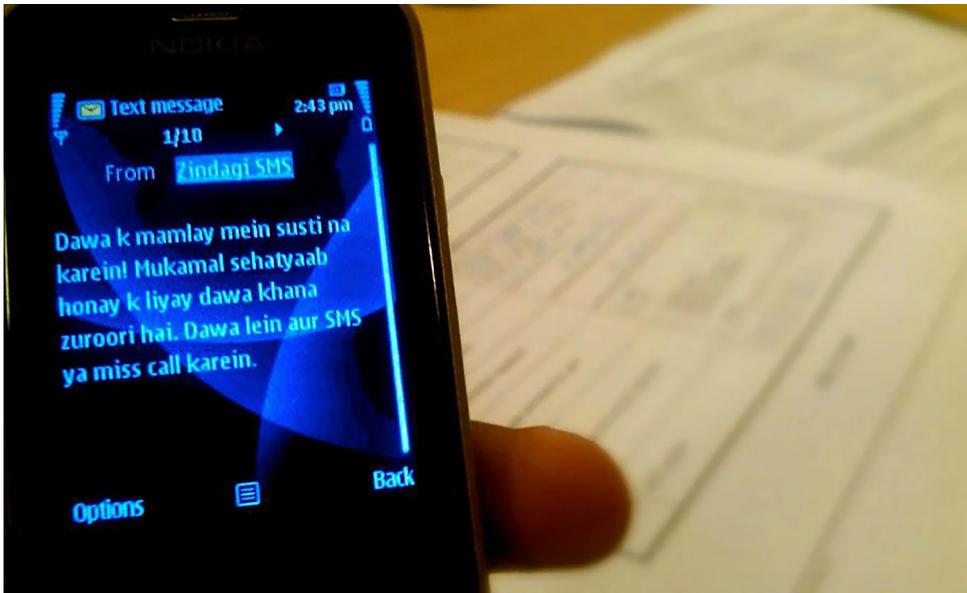
The intervention

The *Zindagi* SMS system sent three daily medication SMS reminders to TB patients. The first reminder included a motivational message, which was followed by a reminder to patients to respond via SMS or by calling (using a missed call) to indicate that they had taken their medication. Once the system received a response or a missed call, the patient received a confirmation message. The project reimbursed patients for the cost of their response messages.

Patients who did not respond to the messages after seven days received a phone call from the system to keep them engaged and motivated to continue their treatment. IRD researchers conducted the randomised evaluation over three years. More than 2,200 female and male participants aged 15 years and above were recruited from different clinics across Karachi. The study also involved qualitative in-depth interviews with TB patients to understand their experiences during treatment. Treatment outcomes were analysed using self-reported data on medication adherence.

Lessons for future research and practice

Future research needs to address underlying socio-economic factors that contribute to patients stopping their treatment. The impact evaluation reported several limitations, which future researchers need to avoid.

These include measuring treatment outcomes using an objective measure for medication adherence instead of, or in addition to, self-reported adherence. Clinics that recorded clinical treatment outcomes may have incorrectly reported data to meet the expected success rates of the national TB programme. This is likely to have affected the results between treatment and control groups. A more independent assessment of clinical and government data on TB medication adherence and treatment outcomes may be needed to address this limitation.

Policymakers and researchers may look at other m-health interventions for people with TB. For example, an m-health approach could be combined with off-site clinical support by reminding patients about their medication and clinic appointments. The SMS reminders could also be combined with financial or other incentives to motivate participants to continue their treatment.