Text messaging to support physical activity in patients with heart disease

Coronary heart disease (CHD) is a disease characterized by accumulation of cholesterol deposits (plaques) in the heart arteries. When these plaques compromise blood flow to the heart muscle, heart attack or chest pain (angina) can occur. Globally, CHD is the leading cause of morbidity and mortality. Patients with prior CHD remain at high risk for repeat events. Behaviour modification is a key component for preventing disease progression and repeat events. Physical inactivity is widely accepted as a major risk factor for CHD. Regular physical activity improves control over multiple cardiovascular risk factors such as cholesterol levels, obesity, blood sugar and blood pressure levels. Regular physical activity can lower cardiac mortality by 25–30% in patients with established CHD. Despite this evidence, only a minority of patients engage in guideline-recommended levels of regular physical activity (i.e. 30 min a day for 5 days per week or equivalent). These target may be accomplished in various physical activity domains: viz. recreational physical activity (gym, swimming, volleyball), travel related physical activity (riding bike or walking to work or shops), and occupational physical activity (standing rather than sitting at desk, lifting or manual work at job).

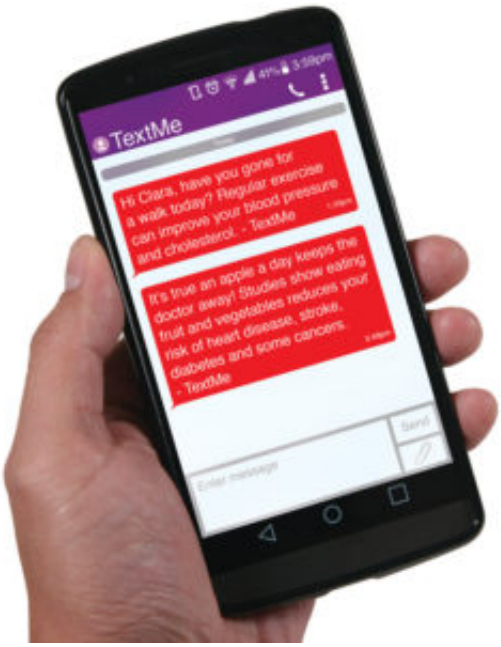

Fig. 1.

Traditionally, interventions to augment physical activity in patients with CHD include supervised exercise sessions (known as Cardiac rehabilitation (CR)), motivational and educational information delivered during brief consultations with doctors. CR programs, whilst gold standard have

performed poorly; limited by cost, time and travel constraints. Participation in CR among the eligible population remain low at 20-50% only. There remains a need for innovative strategies that can be circumvent these limitations, provide support for adequate duration and be scalable for wider delivery. Mobile phone text messaging may be one such solution.

In the TEXT ME (**T**obacco **EX**ercise and die**T Me**ssages) study, we evaluated the role of mobile phone text message program to support lifestyle changes in adult patients with CHD. 710 participants with mobile ownership and English language proficiency sufficient to read messages, were recruited from a university-affiliated tertiary care hospital in western Sydney, Australia. Approximately, half the patients received conventional care as determined by their doctors (control arm) and other half received additional text messaging support (experimental arm). A computerized software sent messages 1/day, 4 random weekdays, between 10:00 and 16:00 hours, for 6 months. The message content was semi-personalized, non-repetitive and offered information on four major lifestyle areas: physical activity, diet, smoking cessation and general cardiac education. The programme delivered at least one physical activity message (one for each lifestyle area) per week. The focus of this research was to assess effects of text message intervention on physical activity domains and sedentary times (time spent sitting or reclining). For this we used World Health Organization recommended questionnaire (GPAQ).

We identified, at study initiation, large proportion of participants (85%) reported low levels of physical activity and high sedentary times (approximately 10 hours). At study conclusion (6 months), compared with control group, the experimental arm reported significantly higher recreational physical activity (471 vs. 307 units) and travel related physical activity (230 vs. 128 units). The participants in the experimental arm also reported lower sedentary times (494 vs. 587 minutes). Even in participants receiving CR, receipt of text messages provided incremental benefits.

Our findings support the utility of text-message based programmes in motivating physical activity change in patients with CHD. Its many features: automated delivery, personalized messaging, need for minimal resources and implementation through existing telecommunications network, make it an attractive tool for population targeted preventative health care.

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