Lancet Diabetes Endocrinol. 2016 Jan;4(1):52-63. doi:
 10.1016/S2213-8587(15)00381-2. Epub 2015 Dec 1.

Effectiveness of an mHealth intervention to improve the cardiometabolic profile of people with prehypertension in low-resource urban settings in Latin America: a randomised controlled trial.

Rubinstein A(1), Miranda JJ(2), Beratarrechea A(3), Diez-Canseco F(2), Kanter R(4), Gutierrez L(3), Bernabé-Ortiz A(2), Irazola V(3), Fernandez A(3), Letona P(4), Martínez H(5), Ramirez-Zea M(4); GISMAL group.

Author information:

(1)South American Center of Excellence for Cardiovascular Health (CESCAS),
Institute for Clinical Effectiveness and Health Policy (IECS), Buenos Aires,
Argentina. Electronic address: arubinstein@iecs.org.ar.
(2)CRONICAS Center of Excellence in Chronic Diseases, Universidad Peruana
Cayetano Heredia, Lima, Peru.
(3)South American Center of Excellence for Cardiovascular Health (CESCAS),
Institute for Clinical Effectiveness and Health Policy (IECS), Buenos Aires,
Argentina.
(4)INCAP Research Center for the Prevention of Chronic Diseases (CIIPEC),
Institute of Nutrition of Central America and Panama, Guatemala City, Guatemala.

(5)RAND Corporation, Santa Monica, CA, USA.

Comment in

Lancet Diabetes Endocrinol. 2016 Jan;4(1):7-8.

Lancet Diabetes Endocrinol. 2016 May;4(5):387-8. Lancet Diabetes Endocrinol. 2016 May;4(5):388.

BACKGROUND: Poor diet and physical inactivity strongly affect the growing epidemic of cardiovascular disease worldwide. Mobile phone-based health interventions (mHealth) have been shown to help promote weight loss and increase physical activity and are an attractive approach for health-care systems with limited resources. We aimed to assess whether mHealth with advice for lifestyle improvements would reduce blood pressure, promote weight loss, and improve diet quality and physical activity in individuals with prehypertension living in low-resource urban settings in Latin America.

METHODS: In this parallel-group, randomised controlled trial, we recruited individuals (aged 30-60 years) with systolic blood pressure between 120 and 139 mm Hg, diastolic blood pressure between 80 and 89 mm Hg, or both from health-care centres, workplaces, and community centres in low-resource urban settings in Argentina, Guatemala, and Peru. Participants were randomly assigned to receive either monthly motivational counselling calls and weekly personalised text messages to their mobile phones about diet quality and physical activity for 12 months, or usual care. Randomisation was stratified by country, and we applied minimisation by sex and age groups. Study personnel collecting and analysing data were masked to group assignment. The primary outcomes were mean between-group differences in the changes in systolic and diastolic blood pressure from baseline to 12 months in an intention-to-treat analysis of all participants who completed assessments at 12 months. Secondary outcome measures were changes in bodyweight, waist circumference, and self-reported target behaviours from baseline to 12 months. The trial is registered with ClinicalTrials.gov, number NCT01295216. FINDINGS: Between March 1, 2012, and Nov 30, 2012, we randomly assigned 637

participants to receive intervention (n=316) or usual care (n=321). 266 (84%) participants in the intervention group and 287 (89%) in the control group were assessed at 12 months. The intervention did not affect change in systolic blood pressure (mean net change -0.37 mm Hg [95% Cl -2.15 to 1.40]; p=0.43) or diastolic blood pressure (0.01 mm Hg [-1.29 to 1.32]; p=0.99) compared with usual care. However, we noted a significant net reduction in bodyweight (-0.66 kg [-1.24 to -0.07]; p=0.04) and intake of high-fat and high-sugar foods (-0.75) [-1.30 to -0.20]; p=0.008) in the intervention group compared with the control group. In a prespecified subanalysis, we found that participants in the intervention group who received more than 75% of the calls (nine or more, from a maximum of 12) had a greater reduction of bodyweight (-4.85 [-8.21 to -1.48]) and waist circumference (-3.31 [-5.95 to -0.67]) than participants in the control group. Additionally, participants in the intervention group had an increase in the intake of fruits and vegetables and a decrease in diets high in sodium, fat, and simple sugars relative to participants in the control group. However, we found no changes in systolic blood pressure, diasatolic blood pressure, or physical activity in the group of participants who received more than 75% of the calls compared with the group who received less than 50% of the calls. INTERPRETATION: Our mHealth-based intervention did not result in a change in blood pressure that differed from usual care, but was associated with a small reduction in bodyweight and an improvement in some dietary habits. We noted a dose-response effect, which signals potential opportunities for larger effects from similar interventions in low-resource settings. More research is needed on mHealth, particularly among people who are poor and disproportionally affected by the cardiovascular disease epidemic and who need effective and affordable interventions to help bridge the equity gap in the management of cardiometabolic risk factors.

FUNDING: National Heart, Lung, and Blood Institute (US National Institutes of Health) and the Medtronic Foundation.

Copyright © 2016 Elsevier Ltd. All rights reserved.

DOI: 10.1016/S2213-8587(15)00381-2

PMID: 26653067 [Indexed for MEDLINE]