**Service Priorities and Programmes**

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# Is smart phone based telemonitoring on blood pressure among hypertensive patients in primary care setting always better than usual care ? – A Randomized Controlled Trial

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## Introduction

Hypertension remains a key risk factor for cardiovascular disease causing worldwide morbidity and mortality. There is conclusive evidence confirming the benefits of home blood pressure (HBP) monitoring in improving patient's compliance and hypertension control. Recent meta-analysis concluded that home telemonitoring may represent a useful tool to improve BP control. Since 2012, a local primary care clinic has made innovations by mobilizing community resources in conducting hypertension workshop and encouraging HBP monitoring with improvement in BP control. There is currently no published local study evaluating whether smart-phone based telemonitoring would further facilitate BP control and self-management than usual care.

## Objectives

To evaluate whether hypertensive patients who participate in smartphone-based BP telemonitoring will conduct more HBP monitoring, better self- management behavior and greater reduction in BP from baseline to 6 months follow- up than those receiving usual care.

## Methodology

210 hypertensive patients, recruited from a primary care clinic, satisfied the eligibility criteria and consented to block randomization to either control (N=105) or intervention

(N=105). Both groups received identical 2-hours hypertension self-management workshop before randomization, encouraged to do HBP monitoring with control using paper HBP recordings while intervention group had applications downloaded to their smartphones and taught the functions for recording HBP readings. Aside from automated message response features based on inputted BP readings, the apps also had reminder prompts to facilitate BP reading recordings. Data collection was performed at baseline, 3-months and 6-months post-intervention. Regular HBP monitoring was defined as measurement of home BP reading of more than 3x per week.

**Result**

Intention to treat were performed to 210 subjects who participated from January-December 2014. Both groups didn't differ with regards to baseline demographic characteristics and outcome variables with mean age 59 (+/-9) and 58 (+/-9); mean average clinic systolic BP(SBP) and diastolic BP (DBP): 131.7(+/-11.1)/79.5(+/-7.8) and 131.1 (+/-8.9)/79.2 (+/-7.2) in control and intervention group, respectively. Self-efficacy for managing chronic disease (SEM-CD) and Morisky Medication Adherence Scale (MMAS) were used to assess patients' self-management behavior. There were improvement seen in compliance to HBP monitoring, mean average clinic SBP and mean average home SBP within both groups but no statistical difference between groups. There was improvement in self-efficacy and medication adherence in both groups but no statistical difference between groups. In summary, smartphone-based telemonitoring didn't show additional advantage in BP control and self-management behavior to usual care hypertensive patients in a primary care setting with robust pre-existing hypertension self-management program.