

May Measurement Month 2017: results of a blood pressure screening campaign in Malawi—Sub-Saharan Africa

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Elevated blood pressure (BP) is a growing burden worldwide, leading to over 10 million deaths each year. May Measurement Month (MMM) is a global initiative aimed at raising awareness of high BP and to act as a temporary solution to the lack of screening programs worldwide. A World Health Organization and Ministry of Health STEPS Survey conducted in 2009 in Malawi found that 32.9% tested positive for age-standardized hypertension. The survey further showed that three-quarters (75%) of the participants never had their BP measured before and 94.9% with high BP were unaware of the hypertensive condition. An opportunistic cross-sectional survey of volunteers aged ≥ 18 was carried out in May 2017. BP measurement, the definition of hypertension and statistical analysis followed the standard MMM protocol. The screening took place in cities of Lilongwe and Blantyre mostly in hospitals, clinics, marketplaces, workplaces, and churches. About 4009 individuals were screened during MMM17. After multiple imputations, 849 (22.3%) had hypertension. Of individuals not receiving antihypertensive medication, 697 (19.1%) were found to have hypertension. Only 152 individuals were receiving antihypertensive medication, and of these 78 (51.4%) had uncontrolled BP. MMM17 was the largest BP screening campaign ever undertaken in Malawi. The results identified a large number with hypertension who were not on treatment and over half of those on antihypertensive treatment who were uncontrolled, indicating the need for better management of cases. These results suggest that opportunistic screening can identify significant numbers with raised BP.

Background

A World Health Organization (WHO) and Ministry of Health STEPS Survey conducted in 2009 in Malawi found that 32.9% (1237 of 3727) tested positive for age-standardized hypertension ($\geq 140/90$ mmHg).¹ The survey further showed that three-quarters (75%) of the participants never had their

blood pressure (BP) measured before and 94.9% with high BP were unaware of their hypertensive status.

In Malawi, cardiovascular events such as stroke and related premature deaths are a common occurrence, and often reported in the media as noted in various health facilities. With hypertension as the primary cause, the next logical step in Malawi was to become involved with initiatives that may increase local awareness of hypertension. Due to membership of the International Society of Hypertension (ISH), we obtained knowledge of the global May Measurement Month (MMM) 2017 campaign, which

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created the ideal opportunity. MMM17 was designed, initiated, and implemented by the ISH as the largest global hypertension awareness campaign ever.² This global initiative was discussed with Prime Health Consulting and Services and the Ministry of Health for support and approval.

Methods

The study was co-ordinated by Moyowathu HealthCare Services, Prime Health Consulting and Services, and Ministry of Health with support from Women in Infectious, Non infectious Diseases/Health Research Network in Malawi (WIDREM) and Community Against Diabetes and Hypertension (CADH).

Ethical clearance was not required as we were complementing efforts by the Ministry of Health to raise awareness and get people screened for raised BP. In addition, no biological samples were collected from participants.

There were 14 screening sites. Screening took place in the cities of Lilongwe and Blantyre, and mostly in locations such as Area 49, Area 51, Ntandire, Mtsiliza, and Kamuzu Central Hospital in Lilongwe and Blantyre Market, Queen Elizabeth Central Hospital and Blantyre Flea Market in Blantyre. There were 34 volunteer investigators comprising qualified health workers, medical students, and non-health workers.

The lead investigator in Malawi attended a briefing by the ISH President in Cape Town, South Africa, and obtained all logistical information from the *maymeasure.com* website created by the ISH. The other investigators were briefed and referred to the materials prepared by ISH.

Non-health workers were specially trained on the use of BP Machines, data collection and supervised by qualified health workers. Funding was provided by Moyowathu HealthCare Services, Prime Health Consulting and Services, and ISH.

Local Leaders used locations such as churches, schools, hospitals, clinics, workplaces, and marketplaces as entry points. Leaders were first briefed and screened, then notified their communities about MMM, arranging the days and places themselves. MMM awareness was also published in newspapers like Malawi News and there were interviews on Times and Seventh Day Adventist Televisions.

Screening took place for a minimum of 5 days in locations due to limited resources, especially lunch allowances for the screeners. However, in clinics/hospitals it was throughout the period as it was taken as routine service. Automated Omron devices (Omron Health, Tokyo, Japan) were used to take the BP measurements. All BP measurements were done while sitting and done three times per participant, as per the protocol. Hypertension was defined as systolic BP ≥ 140 or diastolic BP ≥ 90 mmHg and/or in those on treatment.

Weight and height was mostly estimated except in clinics/hospitals where it was measured. However, where it was not possible, the measurements were not taken. Data were collected using a hard copy with 10 entries per page. It was then entered onto Microsoft Excel spreadsheets. Data were cleaned locally by H.N.

Results

The study enrolled a total of 4009 participants; 2432(60.7%) female, 1565(39%) male, and 12(0.3%) unknown sex from the age of 18 years and above. The mean age of the participants was 34.1 (SD 13.9) years.

The total number on antihypertensive treatment consisted of only 152 (3.8%) participants.

About 3757 (93.7%) of ethnicities recorded, were black participants.

The total number of participants with hypertension was 849 (22.3%). The total number of participants with hypertension and not receiving treatment was 697, which was 82.1% of the total with hypertension and 19.1% of all of those not receiving treatment.

The total number of participants receiving treatment was 152 (17.9% of those with hypertension). About 78 (51.4%) of these had uncontrolled BP, whereas 74 (48.6%) had controlled BP.

Discussion

The study found that 22.3% of participants were hypertensive, 17.9% of those with hypertension were being treated, and 51.4% of those on treatment still did not have their BP controlled (to $< 140/90$ mmHg). From the total sample of hypertensives, only 8.7% were on treatment and had controlled BP.

MMM impacted the communities where BP levels were screened. This was evident from screeners being contacted by communities after the initial screening for follow-up BP measurements, especially those with hypertension.

Phone calls/emails were also received from places that were not covered by the MMM17 campaign, particularly after communities had read about the campaign in newspapers or on television. Interest in the screening campaign was therefore clearly created, and due to follow-up contact it is clear that communities want to be involved. The use of the automated BP devices, where participants saw their own readings themselves, also created further interest, and made the initiative attractive, which resulted in the news being spread in communities.

To be part of an international campaign resulted in the volunteer screeners to feel motivated and inspired by being recognized as participants of the initiative.

MMM differed from any previous prospects for routine screening in Malawi as MMM was not selective, but open to everybody of 18 years and above. Hence it was the largest ever BP awareness and screening campaign ever conducted in Malawi.

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