May Measurement Month 2019: an analysis of blood pressure screening results from Malawi

Henry L.L. Ndhlovu1*, Maureen L. Chirwa2, Mary K. Mbeba3, Nancy M. Nyirenda4, Lucia D. Mbulaje5, Thomas Beaney6,7, Xin Xia6, and Neil R. Poulter6

1Moyowathu HealthCare Services, Area 49, Off Kaunda Road at Shoprite Bus Stage, Near old C.C.A.P, Lilongwe, Malawi
2Prime Health Consulting and Services, Plot No Area 47/5/240, Malingunde Road Area 47, Lilongwe, Malawi
3Kamuzu College of Nursing, Blantyre Campus, Malawi
4Phiri Singo, Mtetete Village, Nkhatabay
5Queen Elizabeth Central Hospital, Blantyre, Malawi
6Imperial Clinical Trials Unit, Imperial College London, Stadium House, 68 Wood Lane, London W12 7RH, UK; and
7Department of Primary Care and Public Health, Imperial College London, St Dunstan’s Road, London W6 8RP, UK

KEYWORDS
Hypertension; Blood pressure; Screening; Treatment; Control

May Measurement Month (MMM) is a global initiative that aims at raising awareness and screening people for high blood pressure (BP). Malawi has participated in MMM since 2017. A 2017 STEPwise Survey conducted in Malawi by the Ministry of Health and World Health Organisation among 4187 participants found that 65.2% had never had their BP measured before, 26.8% had their BPs measured but not diagnosed, 3.9% were diagnosed but not within the last 12 months, and 4.1% were diagnosed within the last 12 months.1

Malawi began its participation in May Measurement Month (MMM) from its inception in 2017 as a way of ensuring that the general public were aware and screened for high BP. The MMM 2017 campaign was conducted in the cities of

Introduction
Non-communicable diseases are estimated to account for 32% of all deaths in Malawi.1 Cardiovascular conditions like high blood pressure (BP), stroke, and related premature deaths due to these conditions are very common and reported widely in the media.

In a 2017 STEPwise Survey conducted in Malawi by the Ministry of Health and World Health Organisation among 4187 participants, it was found that 65.2% had never had their BP measured before, 26.8% had their BPs measured but not diagnosed, 3.9% were diagnosed but not within the last 12 months, and 4.1% were diagnosed within the last 12 months.1

Malawi began its participation in May Measurement Month (MMM) from its inception in 2017 as a way of ensuring that the general public were aware and screened for high BP. The MMM 2017 campaign was conducted in the cities of

*Corresponding author. Tel: +265999635269, Email: hendhlo@yahoo.com
Published on behalf of the European Society of Cardiology. © The Author(s) 2021.
This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (http://creativecommons.org/licenses/by-nc/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact journals.permissions@oup.com
Blood Pressure (SBP) as a treatment position.

Ommom BP machines donated to ISH by OMRON Healthcare.

ings or on treatment for hypertension.4,5 Among those on treatment for BP, control was defined as a systolic BP <140 mmHg and diastolic BP <90 mmHg). Multiple imputations were used to impute BP readings where these were missing, based on global data.5

New variables were introduced from 2017/18; these included the use of aspirin, statins, and also number of hypertension medications taken.

Data were collected in hard copy with 10 entries per page then entered into an excel file. Data cleaning was completed locally by Henry Ndhlovu.

Results

A total number of 9723 participants (Table 1), all of black ethnicity were screened with a mean age of 42.0 (SD 16.6) years. Of these participants, 4145 (42.6%) were female and 5560 (57.2%) were male. Eighteen (0.2%) were unknown.

The number and proportion of participants who had never had their BP measured within last 12 months were 8444 (86.8%). After imputation, the number with hypertension was 2559 (26.3%) of 9723 participants (Table 1) and the number with hypertension of those not on antihypertensive treatment was 2169 (23.2%) of 9333. Only 390 (4.0%) of all participants were taking antihypertensive medication, representing 15.2% of all hypertensive participants. Of all hypertensives, only 7.9% were controlled. The number and proportion using statins were 8 (0.1%) while those using aspirin was 244 (2.5%).

Discussion

The study found that 2559 (26.3%) of 9723 screened participants had hypertension, 445 (17.4%) were aware that they had the condition, 390 (15.2%) were being treated while only 202 (7.9%) had their BP under control. The proportions of participants with hypertension and controlled BP are similar to previous findings from MMM screening in 2017 and 2018.

There has been increased awareness of hypertension in the areas that took part in the campaign with a request for MMM to continue in future years. However, in 2019, MMM only took place in three districts and in a few areas. For MMM to have a greater impact, there is a need to provide BP screening in an increased number of districts in the country. This would call for funding for the initiative going forward.

MMM19 was deployed in selected areas and participants were not randomly selected. Screening took place in specific locations and on specific days; even so not all were screened.

Acknowledgements

We would like to thank the following for making MMM19 a success: Dr Bridget Malewezi, Takondwa Roy Nyirenda, Nyembezi Chinkhombe, Ruth Luwe, Rose Banda, Tony Zikapanda, Melynda Kambwili, Ida Mbulaje, Tinkhani Chanadenga, Malcolm Mangali, Ezra Mangali, Block Leader Piyo, Block Leader Bonongwe, and all Block Leaders and communities of Area 49 Proper, Area 51, Habitat, Federation and Chigumbuli in Lilongwe, Machinjiri, Lunzu, Lunzu Women village bank, St Columba Church, HIV/AIDS Guardians at Queen Elizabeth Central Hospital,
communities of Bvumbwe, and business persons from Lunzu market in Blantyre.

**Funding**
ISH, Moyowathu HealthCare Services, Prime Health Consulting and Services, and WIDREM.

**Conflict of interest:** none declared.

**References**
1. Malawi Ministry of Health. Malawi National STEPwise Survey for Non-Communicable Diseases Risk Factors 2017 Report. 2017.
2. Ndhlou HLL, Masiye JK, Chinula G, Chirwa M, Mbeba M, Beaney T, Xia X, Kobeissi E, Poulter NR. May Measurement Month 2017: results of a blood pressure screening campaign in Malawi-sub-Saharan Africa. *Eur Heart J Suppl* 2019;21:D74-D76.
3. Ndhlou HLL, Masiye JK, Chirwa ML, Nyirenda NM, Dhlamini TD, Beaney T, Ster AC, Poulter NR. May Measurement Month 2018: an analysis of blood pressure screening results from Malawi. *Eur Heart J Suppl* 2020;22:H80-H82.
4. Beaney T, Burrell LM, Castillo RR, Charchar FJ, Cro S, Damasceno A, Kruger R, Nilsson PM, Prabhakaran D, Ramirez AJ, Schlaich MP, Schutte AE, Tomaszewski M, Touyz R, Wang J-G, Weber MA, Poulter NR, the MMM Investigators. May Measurement Month 2018: a pragmatic global screening campaign to raise awareness of blood pressure by the International Society of Hypertension. *Eur Heart J* 2019;40:2006–2017.
5. Beaney T, Schutte AE, Stergiou GS, Borghi C, Burger D, Charchar F, Cro S, Diaz A, Damasceno A, Espeche W, Jose AP, Khan N, Kubo Y, Maheshwari A, Marin MJ, More A, Neupane D, Nilsson P, Patil M, Prabhakaran D, Ramirez A, Rodriguez P, Schlaich M, Steckelings UM, Tomaszewski M, Unger T, Wainford R, Wang J, Williams B, Poulter NR, on behalf of MMM Investigators. May Measurement Month 2019: the global blood pressure screening campaign of the International Society of Hypertension. *Hypertension* 2020;76:333-341.

| Total participants | Number (%) with hypertension | Number (%) of hypertensive aware | Number (%) of hypertensive on medication | Number (%) of those on medication with controlled BP | Number (%) of all hypertensive with controlled BP |
|--------------------|-----------------------------|---------------------------------|------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| 9723               | 2559 (26.3)                 | 445 (17.4)                      | 390 (15.2)                               | 203 (51.9)                                    | 203 (7.9)                                    |

BP, blood pressure.