May Measurement Month 2019: an analysis of blood pressure screening results from Ulaanbaatar, Mongolia

Maral Myanganbayar1, Khatantuul Boldbaatar1, Khulan Tuvdendarjaa1,2, Thomas Beaney3,4, Giles Partington3, Uurtsaikh Baatarsuren1, Nomin-Erdene Bayarsaikhan1, Orkhonselenge Davaadamdin1, Andreas Bungert1, Norm R. C. Campbell5,6,7, Neil R. Poulter3, and Naranjargal Dashdorj1*

1Onom Foundation, 3 Governance Academy Street, 15 Khoroo, Khan-Uul District, Ulaanbaatar, Mongolia
2Asian Development Bank, Ulaanbaatar, Mongolia
3Imperial Clinical Trials Unit, Imperial College London, Stadium House, 68 Wood Lane, London W12 7RH, UK
4Department of Primary Care and Public Health, Imperial College London, St Dunstan’s Road, London W6 8RP, UK
5Libin Cardiovascular Institute of Alberta, Calgary, AB, Canada
6O’Brien Institute for Public Health, Calgary, AB, Canada; and
7University of Calgary, Calgary, AB, Canada

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Mortality from haemorrhagic stroke and ischaemic heart disease per 10 000 people in Mongolia ranks among the highest in the world. The main risk factor being hypertension. We aimed to screen hypertension for the working people in their workplace who rarely visit primary clinics. Two hundred health care volunteers were trained for blood pressure (BP) measuring technique and providing healthy lifestyle advice. Screening was performed at 80 sites, the majority were workplaces, over a period of 60 days when the May Measurement Month (MMM) campaign launched in May 2019. Hypertension was defined by the standard MMM guidance, as systolic BP ≥140 mmHg or diastolic BP ≥90 mmHg (based on the mean of the second and third measurement), or taking anti-hypertensive medication. Blood pressure measuring digital devices (Omron-M3, Microlife A6 PC) were all clinically verified and approved for clinical use. A total of 6522 individuals (majority 67.8% male and mean age 37.0 ± 10.4) were screened. The proportion of hypertensive adults was 32.5%, of whom, 62.2% were aware of their hypertension, and 50.1% were on medication. The control rate for those on treatment was 27.1%. Non-communicable disease risk factors were 51.2% (3342) overweight/obese (19.5% obese), 38.7% (2523) smoking, 64.4% (4200) alcohol consumption, 4.5% (294) previously diagnosed with diabetes, and 1.3% and 1.1% with a heart attack or stroke, respectively. We conclude that hypertension management needs to be prioritized and increased awareness is required in the population.

*Corresponding author. Tel: +976 70122006, Fax: +976 70122006, Email: dashdorj@onomfoundation.org

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Introduction

Increased blood pressure (BP) contributed to 10.8 million deaths globally in 2019. In Mongolia, a nationwide STEPS survey in 2013 reported that a prevalence of hypertension [systolic blood pressure (SBP) ≥ 140 mmHg/diastolic blood pressure (DBP) ≥ 90 mmHg] of 23.6%. A recent STEP wise prevalence study conducted specifically in Ulaanbaatar, reported that hypertension prevalence was 25.6% with a 24.0% control rate. Since 1992, cardiovascular disease has been the number one killer in Mongolia. According to Mongolian Health Development Center indicators, mortalities due to ischaemic heart disease and haemorrhagic stroke recorded highest at 7.75 and 4.52 per 10 000 people, respectively. Moreover, males in the working group were affected almost two times higher than their female counterparts. In 2019, Mongolia participated in the MMM campaign for the first time, and we utilized MMM methods to screen individuals in organizations and workplaces for hypertension.

Methods

The study involved 6522 participants aged 18 and above from over 80 organizations in Ulaanbaatar, Mongolia. Organizations included schools, district police stations, private dental clinics, city health department workers, city thermal power station workers, etc. The study was conducted from May to July 2019, for approximately 60 days and was a cross-sectional survey. Over 200 volunteers were recruited. Volunteers included medical students, healthcare professionals, and non-healthcare professionals. They were divided into five teams consisting of two to ten volunteers in each team in rotating shifts. Each team was headed by a site coordinator. Blood pressure (BP) measurement technique and survey conducting instructions were specifically taught to the observers by site coordinators. The promotion of the study campaign mostly involved social media, television, and traditional media. Participants or managers from workplaces were contacted mostly by making a phone call or messaging on social media. The standard MMM 2019 survey interview questionnaire was translated into Mongolian. After each questionnaire was completed, participants’ BP was measured three times, at 1-min intervals, in a sitting position, with arms rested. Two types of validated BP monitors, Microlife (A6 PC) and Omron (M3 Intellisense) were used. The mean of the second and third measurements was considered as the subject’s BP. If the mean SBP was ≥ 140 mmHg or the mean DBP was ≥ 90 mmHg, or if the subject was currently taking anti-hypertensive medications, the participant was considered hypertensive. Height and weight were also measured. Subjects considered hypertensive were given standardized advice for health care professional referral and printed evidence-based dietary and lifestyle advice. Data were entered on paper forms and later transferred to spreadsheets. Data were analysed centrally by MMM project team and multiple imputations performed to impute the mean of the second and third readings where this was missing.

No ethical approval was required since it was part of a quality improvement initiative to contribute to the annual national hypertension screening program and conducted in collaboration with the City Health Department of Ulaanbaatar. The study was funded by Onom Foundation.

Results

A total of 6522 participants were enrolled in the study, mean age of 37.0 years (SD ± 10.4). 4420 (67.8%) participants were men and 2102 (32.2%) were female. Mean SBP and DBP recorded were 125.0 mmHg and 81.7 mmHg, respectively. 1063 (16.3%) of the participants stated that they were on anti-hypertensive treatment. All of the 6522 participants were Mongolian or East Asians. 1302 (20.0%) of the participants stated that they never had their BP measured. Aspirin and statins were used by 4.0% and 2.0% of the patients, respectively.

From a total of 6522 participants, 2123 (32.5%) had hypertension (Table 1), out of which, 62.2% were aware and only half, 1063 (50.1%) of them were on anti-hypertensive medication. The proportion of those on medication with controlled BP was 54.1%, while the BP control rate for all hypertensives was only 27.1%. Out of 5459 participants not on anti-hypertensive medication, 1060 (19.4%) were hypertensive. Non-communicable disease (NCD) risk factors include 51.2% (3342) of all the participants were either overweight or obese, 38.7% (2523) were current smokers, 64.4% (4200) stated that they took alcohol 1-3 times per month or once or more per week, 4.5% (294) were previously diagnosed with diabetes, and 1.3% and 1.1% had had a previous heart attack or stroke, respectively.

Discussion

The aim of the study was to detect untreated or inadequately treated hypertension and associated factors mostly among the working adult population. In our findings, out of 6522 participants, 32.5% were hypertensive. From those with hypertension, 62.2% were aware of their hypertension and 50.1% of them were being treated. The BP control rate among all hypertensives was low at 27.1%. The proportion of awareness, treatment, and control in this study were in accordance with the previous study where these rates were 69.7%, 46.8%, and 24.0% respectively. However, the proportion with hypertension was almost 10.0% higher when compared with a previous study. Moreover, NCD risk factors such as tobacco use, alcohol intake, and raised body mass index were relatively more common. These elevations may be because males were overrepresented in this MMM study since screening took place at workplaces.

Our findings on workplace screening are of significant importance to promote awareness since working age, mostly middle-aged men, tend to focus more on work rather than health, which can be interpreted from the country’s average men’s life expectancy which is 8 years lower than women. Hence, screening and prevention for this group of people at their workplace are critical.

Potential biases in this study include that the sample was not random and that it could not be nationally...
representative. In 2019, Mongolia was involved with the MMM project for the first time. We utilized MMM methods to target mostly working-age adults and the screening took place at their work sites. To conclude, we emphasize the importance of hypertension management for the adult population, particularly for the working male population.

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