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Assessment of Blood Pressure Status Awareness and Screening Among Adults in the Sawegbeh Community, Brewerville Township, Liberia: A Survey Study



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ABSTRACT

High blood pressure is the single largest contributor to global morbidity and mortality, with sub-Saharan Africa having a prevalence as high as 38% to 46% in adults aged 25 years and older. However, there is an under-reportage of the prevalence of hypertension in many rural communities in SSA countries due to the lowest rates of awareness of blood pressure status, poor blood pressure screening, and financial burden. The study aimed to assess the rate of community awareness of blood pressure status and frequency of blood pressure screening and to assess the challenges to high blood pressure management in Sawegbeh Community in Brewerville Township, Liberia. This was a community-based descriptive cross-sectional study conducted for two months. There were 134 participants with a mean (SD) age of 48.6 (± 15.37) with females constituting 65% of the study population. At the first health outreach, 66.1% of the study participants were not aware of their blood pressure status. The mean (SD) systolic and diastolic blood pressure readings of participants were 139.1 (± 27.22) mmHg and 84.3 (± 15.51) mmHg respectively. During the second health outreach, there was an increase (74.3%) in participants' awareness of their blood pressure status. They had mean systolic and diastolic blood pressure readings of 142.1 (± 28.02) mmHg and 91.2 (± 17.32) mmHg respectively. The major challenge among participants (54.6%) with high blood pressure was the lack of finances for purchasing antihypertensive medications. The current study demonstrated an improvement in the rate of awareness of blood pressure status and screening among rural community participants. Thus, to improve blood pressure awareness and screening, a structured and regular health education program should be initiated for rural dwellers irrespective of their level of education and social status. Pharmacists are therefore an integral part of the health care team and the most accessible members that could improve awareness and patient care among rural dwellers.

INTRODUCTION:

Hypertension, commonly known as High Blood Pressure, is the most common cardiovascular disorder that affects nearly one billion people globally. It is the single largest contributor to global morbidity and mortality, accounting for nearly 9.4 million non-communicable disease-related deaths per year ^[1,2]. The burden of hypertension is reported to have shifted from high-income countries to low and medium-income countries including sub-Saharan Africa ^[3] (SSA); where reported prevalence is as high as 38% to 46% in adults aged 25 years and older ^[3,4,5] and was projected to rise to 216.8 million by 2030 ^[6]. However, there is under-reportage of the prevalence of hypertension in many communities in SSA countries due to lack of awareness, poor blood pressure screening, and financial burden in the rural communities ^[3]. Findings from a prospective urban-rural Epidemiology (PURE) study revealed that low-income countries have the lowest rates of awareness, treatment, and control of high blood pressure globally ^[7].

In Africa, compared to other regions, SSA has low levels of awareness, screening, treatment, and control of high blood pressure especially in rural communities ^[8]. It was reported that low community blood pressure screening and awareness, and poor control are attributed to lack of or poor health infrastructures with poverty now a major underlying cause ^[9]. Therefore, even though national prevalence estimates are known, there is a paucity of information on community-level for blood pressure screening and awareness. Many people lack blood pressure screenings and may not be aware of their blood pressure status ^[4].

In Liberia, a significant segment of the population between 30 – 70 years is at risk of high blood pressure and cardiovascular diseases ^[10]. Persons with high blood pressure systolic blood pressure, including those on medications for high blood pressure, are reported to account for 30.7% of the adult population ^[11]. High blood pressure accounts for up to 7% of health facility visits ^[12] and if high blood pressure is not timely diagnosed and managed, this may lead to devastating complications which may include stroke, myocardial infarction, cardiac failure, and renal failure ^[6]. High blood pressure remains the major underlying cause of death and accounts for nearly 11.4 % of deaths in Liberia, that is, about 1 of every 164 deaths ^[10]. The study aimed to assess the rate of community awareness of blood pressure status and frequency of blood pressure screening and to assess the challenges to high blood pressure management among participants in the Sawegbeh Community, Brewerville Township, Liberia.

MATERIAL AND METHODS:

This was a community-based descriptive cross-sectional study conducted between December 2020 and January 2021, in the Sawegbeh Community, Brewerville Township, Liberia. Sawegbeh community has no primary health facility nor a community pharmacy. Residents usually walk several miles or are transported by motorcycles to get to nearby health care facilities for treatment of minor or major health conditions.

A free community health outreach was organized by the authors to create blood pressure status awareness, screen for high blood pressure, and assess the challenges to high blood pressure management among rural dwellers. The health outreach was conducted on Sundays to allow the residents to go for their daily chores and then have time for the health outreach on Sundays. The health outreach was organized into two stages: in stage 1, participant's blood pressure status was evaluated, they were screened for high blood pressure, and were then educated about the importance of blood pressure monitoring, management, and its complications. Participants whose blood pressure levels were SBP \geq 140 mmHg were advised to seek further medical care. Participants whose blood pressure levels were SBP 120 - 139 mmHg and DBP 80 – 89 mmHg were educated about high blood pressure and the importance of lifestyle changes. They were also advised to seek further medical care. In stage 2 of the outreach, the participants were contacted through mobile phones and asked to attend the second outreach where they were again assessed about their blood pressure status. They were screened for high blood pressure again and given more tailored health education.

At enrollment, patients' characteristics, including sex, age, weight, education, and blood pressure measurements were recorded. Blood pressure was measured in a sitting position with the patient's feet flat on the floor after at least \geq 3 minutes of rest^[13] using portable sphygmomanometers (OMRON[®] HEM – 720 – E, OMRON-Healthcare-Co in Kyoto, Japan). Body weight was measured in kilogram (Kg) to the nearest 0.1 kg using a PH – 2015A brand electronic weight scale. Patients were considered to have high blood pressure if on the average of two measurements, SBP \geq 140 mm Hg, DBP \geq 90 mm Hg, or when s/he presented with continuous SBP \geq 140 mm Hg, DBP \geq 90 mmHg at the second visit of the outreach, or self-reported current use of antihypertensive medications. Moreover, blood pressure was considered “controlled” if his/her SBP was $<$ 140 mm Hg and DBP was $<$ 90 mm Hg. Blood pressure was categorized according to the Eighth Joint National Committee on the Detection, Evaluation, and Treatment of hypertension^[14] (JNC 8). The participants were considered

“aware” if they gave a positive response to the question “were you ever told by a doctor or a health professional that you have high blood pressure”?

All adult participants aged ≥ 18 years, who are residents of the community and willing to participate in the study were included. Participants who were not willing to participate, pregnant, mentally unstable, dementia, or cognitively impaired were excluded. Primary outcome measures were blood pressure status awareness, blood pressure readings, and barriers to management of high blood pressure.

A total of 256 participants took part in the community health outreach. Each adult participant who came to the health outreach was asked to join the study. The nature of the study was explained to participants where they were informed of their rights to withdrawal at any time of the study. A sample size of 134 eligible persons was conveniently recruited for the study.

Data Analysis:

Dichotomous variables such as gender, education level, and mean blood pressure were analyzed by descriptive statistics. All missing values were purely by chance and excluded from the data analyses. The analyses were performed using the IBM SPSS 25.0 (IBM Corp., Armonk, NY, USA).

Ethics Approval and Consent to participate:

The study was approved by the Health Research Ethics Committee of the John F. Kennedy Memorial Hospital. Participants were fully informed about the study objectives, their role, the risks involved in the study, the voluntary nature of their participation, and that they could decline or pull out of the study any time they wished. Verbal consent was given by participants to participate.

RESULTS AND DISCUSSION:

RESULTS:

There were 134 participants recruited for the study with a mean (SD) age of 48.6 (± 15.37). 87 females were constituting 65% of the study participants. Mean (SD) weight and waistline of participants were 56.22 (± 13.10) Kg and 32.44 (± 4.01) cm respectively. Most (43.3%) of the participants had secondary education (**Table 1.0**). The mean (SD) systolic blood pressure of participants at the first health outreach was 139.1 (± 27.22) mmHg while the mean (SD)

diastolic blood pressure was 84.30 (± 15.51) mmHg (Table 2.0). The mean BMI of participants was 21.7 Kg/cm². At the second health outreach, 131 participants returned with a mean systolic blood pressure of 142.1 (± 28.02) mmHg.

Table No. 1: Demographic Characteristics

SN	Category	Frequency (n)	Percent (%)
Gender of Participants			
1	Males	47	35
2	Females	87	65
Level of Education			
3	Cannot read nor write	17	12.7
4	Primary	35	26.1
5	Secondary	58	43.3
6	Tertiary or above	24	17.9

n: number of participants, %: percent

Table No. 2: Clinical Characteristics

SN	Category	Frequency (n)	Min - Max	Mean (SD)
1	Age (years)	134	18 - 77	48.6 (± 15.37)
2	Weight (Kg)	134	24.0 - 94.0	56.22 (± 13.10)
3	Waistline (cm)	134	20.0 - 42.0	32.44 (± 4.01)
4	First outreach: Systolic BP (mmHg)	134		139.1 (± 27.22)
5	Second outreach: Systolic BP (mmHg)	131		142.1 (± 28.02)

n: number of participants, SD: Standard Deviation, Min: Minimum, Max: Maximum, Kg: Kilogram, cm: Centimeters

Table No. 3: Blood Pressure Category and Awareness Level

SN	Blood Pressure (mmHg)	Category	First Visit Frequency (%)	Second Visit Frequency (%)
1	≤ 120	Normotensive	37 (27.6)	46 (34.3)
2	120 - 139	Pre - hypertensive/controlled	61 (45.5)	35 (26.1)
3	≥140	Hypertensive/uncontrolled	36 (26.9)	53 (39.6)
Are you Aware of your Blood Pressure Status				
4	Yes		33 (33.9)	97 (74.3)
5	No		64 (66.1)	34 (25.7)
Challenges To High Blood Pressure Management				
Category			Frequency (n)	Percent
5	No Clinic or pharmacy in the community to measure blood pressure		13	13.4
6	Lack of transportation fare to get to the city for medications		31	32.0
7	Lack of finances for purchase of medications		53	54.6
8	Have not had my BP medicines for some time now because I do not have money		50	53.2

n: number of participants, %: percent

DISCUSSION:

In this study, the proportion of females was higher than males despite the rigorous effort to include equal numbers of males and females by operating the health outreach on Sundays, which is a non-working day in Liberia [15]. The proportion of females in this study was similar to another study that had 60% of its participants as females [16]. A study revealed that females have better health-seeking behavior than males and they would use any opportunity to have their health status assessed [17].

A larger population of the participants in this study had some form of literacy, i.e., primary and secondary education [15]. Literacy was associated with a higher blood pressure awareness among people with high blood pressure [18]. Thus, patients who had received any form of

formal education were more likely to understand and be aware of their health status than those who did not.

In this study, a high proportion of the participant's blood pressure was controlled ^[14]. However, a quarter of the participants' blood pressure levels were within the hypertension category or uncontrolled ^[14]. This study revealed that more than half of the participants claimed not to be aware of their blood pressure status and were only told about their blood pressure status during the health outreach and later diagnosed after seeking further medical care. The diagnosis was based on a repeated blood pressure measurement of the patient at a ten minutes' interval while they sat with their feet flat on the ground ^[13]. Those that were aware chose not to seek medical care due to several reasons as indicated in Table 3.

Many barriers affected the management of high blood pressure among participants. The major barriers were the cost of purchasing medications, the cost of transportation from a rural community in getting to central Monrovia, and the lack of local health facilities or community pharmacies to meet the health needs of the local people. Similar to this study, most studies from sub-Saharan Africa participants have identified the inability to afford the cost of medications as an important barrier to improving outcomes in the management of high blood pressure ^[19,20,21]. An explanation could be that in many African studies, a high number of people belong to the low socioeconomic class, making it difficult to access treatment on time when the need arises ^[19,22]. Other studies have indicated that self-monitoring and management, lifestyle modifications, and home blood pressure monitoring were important points for blood pressure control in Sub-Saharan Africa ^[23,24].

CONCLUSION:

There was a low rate of blood pressure awareness and screening among participants. The present study, however, helped improve the rate of high blood pressure awareness and screening among rural dwellers in Liberia despite the many socioeconomic barriers that were needed to be overcome. Thus, to improve blood pressure awareness and screening, a structured and regular health education program should be initiated for rural dwellers irrespective of their level of education and social status. Pharmacists are therefore an integral part of the health care team and the most accessible members that would improve high blood pressure awareness and screening among rural dwellers.

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