SciForschen
Open HUB for Scientific Research

ISSN 2469-6714

Clinical Research: Open Access

Research Article | Volume: 3.3 | Open Access

Challenges of Hypertension Diagnosis in Urban Informal Settlements: A Case of Kibera Slum, Nairobi Kenya

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Received date: 31 Jul 2017; **Accepted date:** 21 Aug 2017; **Published date:** 25 Aug 2017.

Citation: Tecla N, Joram O, Ng'endo K, Victor M, Mercy O, et al. (2017) Challenges of Hypertension Diagnosis in Urban Informal Settlements: A Case of Kibera Slum, Nairobi Kenya. Clin Res Open Access 3(3): doi http://dx.doi.org/10.16966/2469-6714.123

Abstract

Background: Hypertension prevalence of raised blood pressure in Kenya is estimated at 23.8%. Hypertension readings of systolic 140-159 and diastolic of 90-99 without risk factors should be confirmed on three separate occasions of at least 6 hours apart for diagnosis to be made as stipulated in Kenya Ministry of Health non-communicable diseases (NCDs) protocol. The objective of this study is to evaluate the hypertension diagnosis process and to find out reasons for non-completion of follow-up visits following initial high blood pressure (BP) screening.

Methodology: This is a retrospective cohort study where patients reached with hypertension screening between October 2015 and March 2016 was followed up for diagnosis. Data was recorded in manual linkage registers and analysis done for individuals with initially elevated BP who came for subsequent readings to final diagnosis. Descriptive statistical method was used to analyse the data. Two focus group discussions (FGDs) were conducted to find out reasons for low uptake of hypertension services.

Results: A total of 34,779 people were screened for hypertension between the period of October 2015-March 2016, of which 17.7% (n=6,150) had initial high BP. About 32% (n=1,972) of the patients with an initial elevated BP returned for subsequent readings and completed the diagnosis process; diagnosed with hypertension was 23% (n=1421). Main reasons for non-completion of follow up visits as documented from focus group discussions were: long waiting hours in a health facility; stigma; perception of well-being; long diagnostic process of three readings; and poor health seeking behaviors among people with raised blood pressure.

Conclusion: There was a high attrition rate along the hypertension diagnosis process with about with about 68% being undiagnosed cases. The study highlighted the following possible factors as contributing to high attrition: long diagnostic process of three readings, long waiting time at the facility, stigma, asymptomatic nature of hypertension; and poor health seeking behaviours among people with raised BP.

Keywords: Hypertension; Cardiovascular diseases

Background

Cardiovascular diseases (CVD) account for approximately 17 million deaths globally every year, of these, 9.4 million deaths are as a result of hypertension complications. Hypertension is the most prevalent risk factor for coronary heart disease and most modifiable risk factor for stroke accounting for at least 45% and 51% of deaths due to heart disease and stroke respectively [1]. Statistics of hypertensive rose from 600 million in 1980 to 1 billion in 2008 [2]; approximately 40% of people aged 25 and above had been diagnosed with hypertension in 2008. The prevalence of hypertension was highest in Africa at 46% for adults aged 25 and above stating that on average, high income countries have a lower prevalence of hypertension (35%) than other income economies whose prevalence is 40% [3]. Hypertension is more prevalent in low- and middle-income economies because there are more people living in those countries as compared to high income countries [4]. Additionally, a higher number of people with hypertension in the former are undiagnosed, untreated and have uncontrolled BP because of the weak health systems [1]. The high prevalence is also attributed to population growth, ageing and behavioural factors, such as sedentary lifestyle, harmful use of alcohol and smoking, lack of physical activity, excess weight and persistent stress. Therefore, lack of or late diagnosis of hypertension has a significant socio-economic impact in low- and middle-income countries nearly 80% of deaths occur as a result of cardiovascular diseases [5]. There is a growing concern of Non Communicable Diseases (NCDs) burden in Kenya of its aging population among other major contributors that include lifestyle change and urbanization [2]. Statistics indicate that 17% of the Kenyan population is aged over 50 and the number is expected to triple by 2050 that is from 21 to 60 million; and research has shown that half of all hospital admissions and deaths are due to NCDs [6].

Similar studies indicated that hypertension is the leading cause of NCDs related morbidity and mortality in Kenya with the prevalence of elevated BP in Kenya being 23.8% [7]. In a bid to address this burden, the Ministry of Health developed a protocol for management of hypertension which states that an elevated BP reading without risk factors should be confirmed on three separate occasions for diagnosis of hypertension to be made. This was adopted for management of hypertension related complications in urban informal settlements of Kibera to help in early diagnosis and treatment of the condition. Similar global challenges of initial indefinite hypertension diagnosis or delayed diagnosis contributed to high attrition rate along the hypertension diagnosis process following the three blood pressure readings. Example, the diagnosis of 'resistant hypertension' is very common in clinical practice, yet it is often used to improperly define patients with difficult or challenging forms of hypertension [8].

Correspondingly, SAGE study conducted in middle-income countries demonstrated a high drop off rate of patients with raised blood pressure before diagnosis as hypertensive with 66% and 73% undiagnosed and untreated cases respectively [9]. In equivalent study in rural Uganda.

30 persons were confirmed to have not linked to care. Of these, 27 persons were interviewed and barriers to care assessed; 3 persons could not be interviewed and care status was determined by close informants' report. Feeling well (59%), expensive transportation (59%), transportation difficulty/inconvenience (33%), fear of being reprimanded by the clinic staff for missing a scheduled appointment (26%), family obligations (22%), and responsibilities at work (22%) were the most common barriers for not linking to care. Notably, no participant cited stigma as a barrier in open-ended interview questions [10].

Use of manual data collection tools also posed a challenge when tracking patients returning for subsequent readings. Manual documentation required voluminous files on site leading to limited storage. Staff experienced difficulties in locating records, sorting documents and identifying key pieces of information. Needless to say, that when access is not optimized, the clinical staff's ability to render services in a timely manner is inhibited. This results in lower quality of patient care, burdened staff and overlooked information; in addition paper records can only be in one place at a time, meaning they are not always accessible to the person who needs them [11].

This was a retrospective cohort study that employed mixed methods design. The first objective of this study was to determine the proportion of patients completing diagnosis following initial screening. The second objective was to find out reasons for non-completion of follow-up visits following initial high BP screening.

Study Methodology

Study design

Mixed methodology including quantitative via medical files and qualitative methods via focus group interview was used. Quantitative data was collected retrospectively between the periods October 2015–March 2016 to determine the proportion of patients completing follow-up following initial screening; and qualitative data was collected prospectively to find out reasons for non-completion of follow-up visits following initial high BP screening. Further to the low rates in uptake of hypertension diagnosis services, two FGDs of people who had an initial raised blood pressure and did not return for subsequent visits for follow-up were conducted to explore factors associated with completion of follow after the initial high blood pressure screening.

Study area

The study was conducted in six health facilities in Kibera that included Uhuru Camp dispensary, Karanja beyond zero clinic, Kibera community, Lang'ata, Ushirka and Kibera D.O health centers between October 2015 and March 2016. All the sites serve the general population but targeting low income earners from Kibera urban informal settlement. The sites predominantly offered HIV/AIDS treatment.

Kibera urban informal settlement a division of Nairobi area, Kenya and neighborhood of the city of Nairobi, 5 kilometers' (3.1 mi) from the city centre. Most residents live in extreme poverty, earning less than $1.00 per day with a majority lacking access to basic services that include electricity, running water, and medical care. 10% of people are shack owners while 90% of residents are tenants with no rights as most of the land is majorly owned by the government [12]. The slum has an estimated population of 250,000 and is one of the biggest slum in Africa [13].

Study population

The study included all patients who had an initial elevated blood pressure between October 2015 and March 2016 accessing hypertension screening services. It excluded patients who had an initial normal blood pressure.

Hypertension uptake services involved offering all patients aged above 18 years at the community and health facilities hypertension awareness, screening, diagnosis and treatment services by health care providers and trained community health volunteers (CHVs). CHVs were equipped with digital blood pressure machines and reporting tools (screening, linkage registers and referral slips to track successful follow-up) to screen first and second blood pressure readings. All screened patients between October 2015 to March 2016 were recorded in the screening register while those with elevated blood pressure of ≥ 140 and/or ≥ 90 were transferred to the linkage register for tracking. There were two categories of determining follow-up and outcome in the linkage register: First category, patients with extreme high blood pressure of ≥ 160 and/or ≥ 110 were given a control dose and referred to a high level health facility of preference for observation and management. Second category was patients who had a BP reading of between of 140 and/or 90 to 159 and or 109. These were advised to come back for subsequent readings on three separate days and their outcome documented either as normal, enrolled, declined enrolment, unreachable, relocated. Those who did not come back were reminded at least with three phone calls and their response recorded. Thereafter, FGDs were conducted for patients who did not come back for follow-up.

Data collection

The data was collected using routine project data collection tools - screening register, linkage register, treatment register and focus group interview guide. Screening register captured all patients who received screening services and required details documented; those who had an elevated blood pressure were then transferred to the linkage register for follow by CHV and outcomes recorded. After, all those who were diagnosed were allocated a serialized patient file and information updated on every visit. Focus interview guide was customized to help find out reasons for non-completion of follow-up visits and it comprised of different set of questions: Open-ended, closed, follow-up, probing and prompted questions.

Data management and analysis

Data was managed by project staff using manual records and reported using a customized excel sheet. The study sought to find out age adjusted prevalence of hypertension instances among adults of ≥ 18 years in Kibera by selected demographic and health characteristics. Percentages for qualitative variable was used to analyse sex, outcome status while average was used to analyse age of the participants.

Definition of hypertension

Hypertension or raised blood pressure was defined as an average systolic blood pressure of ≥ 140 mmHg and diastolic of ≥ 90 mmHg.

Limitations and strengths of the study

This is a health facility based study so it was not possible to generalize the findings to the general population. However one key strength was the use of mixed methodology that provided additional evidence and support for the findings.

Results

Proportion of patients completing hypertension diagnosis cascade

A total of 34,779 patients received hypertension screening services between October 2015 – March 2016, the same data showing a prevalence of about 17.7% (n=6,150).

The table 1 showed that more women were reached through the screening services and had a higher prevalence with minimal diagnosis among men.

About 32% (n=1,972) of patients with initial elevated BP completed hypertension cascade with final outcomes documented as enrolled, lost to follow-up, normal BP, relocated or declined. Overall, 72% (n=1421) of patients who completed follow-up process were diagnosed with raised blood pressure as shown in the chart.

Reasons for non-completion of follow up visits

Low uptake of hypertension diagnosis services instigated this study. Two FGDs comprising of patients who had an initial raised blood pressure and did not return for subsequent visits for follow-up were conducted to explore factors associated with completion of follow after the initial high blood pressure screening. Further it aimed to find out the perception of well-being, health seeking behaviour's, knowledge of symptomatic and asymptomatic diseases and the perception of hypertension treatment among others.

Challenges with access to services: It was also apparent from the discussions that the participants preferred the hypertension screening and treatment services to be provided in the community by community health workers who walk from door to door. One participant said: "*For us to have come here, the one who did the screening came to the community, she comes from where we come…we were just screened then and there while carrying on with our businesses…that's even better";* another participant reiterated the significance of community health workers "*The Community Health Workers really help the doctors because the doctors cannot be able to reach all of us*".

There were certain challenges with service provision that were also directly mentioned as factors discouraging people from seeking health services from the facilities. Long queues and the time spent in the queue was a major challenge to the access of hypertension treatment services.

Table 1: Participant characteristics

Gender	Screened	Elevated	Diagnosed
Female	21740	4,268	912
Male	13039	1,882	509

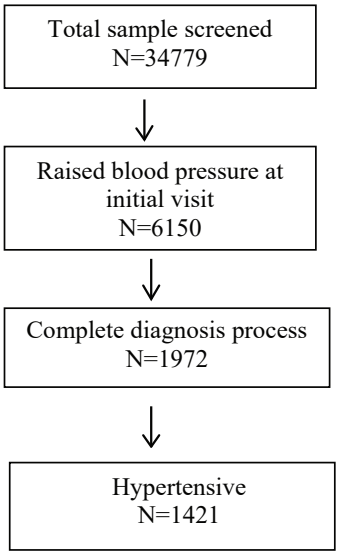

Chart: Proportion of patients completing follow-up following initial screening

Patients often had to queue for a long time, sometimes even close to a whole day in order to access services and one participant identified this as the 'biggest challenge', especially for those who were self-employed; "*The time to go and collect those drugs is a challenge to many because if one is self-employed that day you won't get something to eat or if you are employed, that day you won't go to work…that's the biggest challenge*". One participant suggested "*we should be separated so that one doesn't feel the inconvenience of queuing*".

Stigma: Stigma was also identified as a challenge. The six sites offered hypertension screening and treatment but they predominantly offer HIV/AIDS services.

The project envisioned integrating hypertension and other NCDs management with that of HIV/AIDS due to the already existing structures considering that once started on hypertension drugs one cannot quit. As a result leading to negative perception as one participant put it:

"*Most of us we haven't accepted our status, I don't want someone to know that I have high blood pressure or that I have HIV... when I used to go take those hypertension drugs I was discriminated against because people thought I had HIV. What kind of drugs would you go and queue for from morning till evening?*"

Asymptomatic nature of the disease: The study sought to find out how perception of well-being influenced the uptake of follow-up services. Lack of symptoms such as headaches and pain was often associated with a state of well-being and good health. One female participant said, while describing a state of well-being, "*You don't feel any pain anywhere or any pain symptoms*". Others maintained the notion that if there is a deviation from the normal feeling in their body then they associated that with ill-health as depicted by this statement from a female participant; "*If I wake up in the morning and don't feel the way I usually feel then there must be a problem*". Some however maintained that the only true way to know if you are healthy or unhealthy was by seeking the opinion of the doctor; a male participant said "*You can only know that you are well through the doctor, when he tests and finds out about your health status*". Asymptomatic nature of hypertension has been a major contributor to poor linkage of people with raised blood pressure.

There was a clear understanding that the occurrence of certain diseases is insidious with no apparent symptoms at the onset of the disease and this was directly associated to non-communicable diseases such as diabetes and hypertension and in some cases to infectious diseases such as HIV/AIDS.

"*Most of us have been affected in one way or another sometimes you wonder what the problem is. When you go to the doctor he tells you that you have been sick for a while and you didn't know*" (female participant)

"*Yes, there are such diseases like blood pressure, diabetes and even HIV, you can have them for a while but they don't show*" (male participant)

Poor health seeking behavior

Poor health seeking behaviour is predominant in low-income populations' because of different competing interests. When experiencing symptoms such as headache and fever, the participants said that the first instinct and usually the first action is to self-medicate and they only decide to seek medical services when the symptoms persist. One participant said:

"*When you feel you have a headache and you are feeling feverish, you say there's no point of going to the hospital, you just go and buy these common drugs like Action, Hedex and after taking them you start feeling better…it takes sometime then again you start feeling the same symptoms, then you decide to go to the hospital and get tested more*" (female participant).

However there was a general consensus that getting help from health facilities and being treated by the doctors was more effective. One woman said:

"There's a big difference, the chemist gives you the drugs but he doesn't know what you are suffering from but when you go to the hospital you will be tested and given the appropriate drugs…and you'll stay for long without taking any other medication" (male participant).

Discussion

The findings showed that high blood pressure prevalence of people screened in Kibera slum was 18% which was comparable to 17% prevalence according to a similar study done in Tanzania. Further, the same study and a related study [14] found out that Uganda and Pakistan had a higher prevalence of 26% that was almost similar to what other studies had estimated as the prevalence in Kenya of 27% [15]. 32% of patients who had raised blood pressure had final outcomes where 72% of them were diagnosed to have raised blood pressure. There was similar findings demonstrated low utilization of healthcare services after hypertension screening in Tanzania [16]. Accordingly, Gessler and his colleagues had similar results as this study where only 32% follow-up was reported after hypertension and diabetes screening in Cameroon despite using linkage intervention [17]. Similarly, a recent study in Kenya found poor linkage to care after community-based screening (31%) but had a very small sample size (35 persons) [18]. Based on the findings, Kotwani and his friends felt that there has not been a robust assessment of hypertension linkage to care following community-based screening in sub-Saharan Africa [10]. Therefore it can be estimated from this study that 30% (1253) of patients who didn't complete their follow-up could be hypertensive. The findings demonstrate that a significant proportion of people who received hypertension services and had an initial raised blood pressure risk facing adverse effects of high blood pressure that include stroke, pre-mature deaths.

Follow-up of subjects who did not link to care after initial elevated blood pressure allowed us to conduct focus group discussions' to identify potential barriers to care faced by residents of Kibera urban informal settlement. Cchallenge's with access to services (long waiting time at the healthy facility, stigma, asymptomatic nature of the disease and poor health seeking behavior were prominent issues, which were consistent reasons found out in a study in rural Uganda (*ibid*). Improvement of patient education with more reinforcing messages surrounding asymptomatic nature of hypertension seems indispensable to effectively link patients to care and treatment. Home-based and workplace follow-up for subsequent blood pressure readings are optional strategies that seems essential to link and follow-up patients with raised blood.

Ethical Considerations

All registers with patient information were kept confidential in lockable cabinets within the clinics. Only authorised personnel were authorised to access the patients' data including the audio recordings. FGD patients were taken through consenting process and signed consent forms to participate in the study and to allow audio recording of the sessions. The audio recordings were destroyed after transcribing and analysing the findings.

Conclusion

Hypertension prevalence of patients aged 18 and above whom received screening services the period October 2015 – March 2016 was lower than expected. Manual documentation compromised tracking of patients to their final outcome contributing to high attrition rate along hypertension cascade. The following four major reasons that hindered patients to complete hypertension follow-up for diagnosis perception of well-being, health seeking behaviour, challenges with access to services; and stigma.

The findings of the study will help policy makers, researchers and academicians' to address issues in hypertension diagnosis in urban informal settlements. It will help them to understand complex health and social factors in the area of non-communicable diseases which is slowly becoming a global epidemic. It will provide a platform of assessing different dynamics explored in an attempt to deliver positive impact interventions in urban informal settlements.

Recommendations

The study recommended an introduction of electronic data collection method to improve data capture (screening, linkage and treatment) of patients. This will effectively improve linkage thus improving patient outcomes. Similarly developing an automated two way text messaging follow system to send reminders to patients so as to reduce attrition after initial BP.

Task sharing among CHVs and health care workers to counter long queues in the health facility.

Lastly, advocate for reinforcing messages to the residents of Kibera community through the Ministry of Health on the dangers of hypertensions.

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