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Anika Bushra Boitchi

Shabnam Naher

Sabbir Pervez

Md. Mujibul Anam

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Research article

Patients' understanding, management practices, and challenges regarding hypertension: A qualitative study among hypertensive women in a rural Bangladesh

Anika Bushra Boitchi^a, Shabnam Naher^{a,b,*}, Sabbir Pervez^c, Md. Mujibul Anam^{d,e}^a Department of Public Health and Informatics, Jahangirnagar University, Savar, Dhaka, 1342, Bangladesh^b Graduate Assistant, Department of Health Science, University of Alabama, Tuscaloosa, USA^c Department of Statistics, Jahangirnagar University, Savar, Dhaka, 1342, Bangladesh^d Department of Anthropology, Jahangirnagar University, Savar, Dhaka, 1342, Bangladesh^e Research Fellow, Department of Rural Health, The University of Melbourne, Australia

HIGHLIGHTS

- Lack of awareness and underestimation of hypertension is prevalent more than a quarter of the adult world population.
- Knowledge gap about symptoms, risk factors, and management practices of hypertension are predominant among participants.
- Study participants prefer the self-management practices of hypertension without taking medication.
- Financial hardship, forgetfulness in taking medication, anxiety, and stigmas create challenges to manage hypertension.
- Comprehensive, integrated and structured intervention programs should be developed to control hypertension.

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ABSTRACT

Background: Hypertension, as one of the main predisposing factors of many non-communicable diseases, is generally underdiagnosed among women with a significant uncontrolled rate. This study explores the understanding, management practice and challenges related to hypertension among hypertensive women in rural Bangladesh.

Methods: A qualitative study was conducted among hypertensive rural women at Kumarkhali Upazilla, Kushtia, Bangladesh, using purposive and snowball sampling technique. Data was collected through in-depth interviews among twenty-three hypertensive women until they reached saturation. Data were analyzed thematically.

Results: Findings of the study found that a small number of participants perceived the symptoms, risk factors, management and treatment of hypertension based on biomedical understanding. Also, their awareness level and adherence to preventive practices reflected a significant gap between biomedical preventive practices and local practices. A substantial number of participants preferred home management and alternative treatment for hypertension over the medication adherence and hospital treatment. This investigation revealed that poor socio-economic conditions, such as financial insufficiency, and, gender-based negligence impacted women's perception of and practice for hypertension and resulted in risky hypertension management behaviors.

Conclusion: Based on the study, formulation of a comprehensive health education program for creating awareness, provisioning of significant interventions services related to hypertensive care are needed. Further intensive research is needed at the community-level to manage this chronic disease.

* Corresponding author.

E-mail address: shabnam@juniv.edu (S. Naher).

1. Introduction

Hypertension is one of the notable risk factors of heart disease, stroke, kidney failure, disability, and premature death, and already it has reached epidemic proportions globally [1]. A higher prevalence of high blood pressure (HBP) is responsible for a higher rate of cardiovascular diseases (CVDs) and correlated morbidities [2, 3, 4]. According to the World Health Organization (WHO), hypertension contributes to closely 9.4 million deaths per year [5]. It is estimated that more than 1.5 billion people are likely to be affected with this disease worldwide by 2025 [6, 7]. Like other developing countries of South Asia, Bangladesh is also transitioning to higher ratios of communicable to non-communicable diseases [8] such as cardiac arrest, hypertension, and diabetes, which leads to death, disability, and health burden for various communities and for the country, in general [9]. The important reasons behind hypertension in these regions are rapid growth of urbanization, increased life expectancy, unhealthy lifestyle amongst others [10]. A study conducted from 2004 to 2014 in Bangladesh found that the pooled estimate for hypertension prevalence was around 21 % among the study population [8]. However, limited evidence has been found on the understanding and the experience of hypertension among people. Moreover, their health outcome is influenced by their knowledge about disease pattern and the experience of becoming ill [11, 12]. As a supplement to this, a significant shortage of routine surveillance of chronic diseases [9] is missing in studies to date.

Evidence also revealed that research on women, specifically related to CVDs, was utterly inadequate [10]; although, hypertension was on a regular increase among women [13]. Moreover, women typically did not obtain the optimal management and treatment needed against hypertension, and were frequently exposed to poorer health outcomes, compared with men [14]. In comparing some nation-wide surveys in Bangladesh, it had been found that the prevalence of hypertension was about 18 % in general with 18 % and 17 % being men and women, respectively [15]. Another study discovered that the overall prevalence of hypertension was around 26 %; while 20 % was among men, and 32 % was among women [16]. In a recent study, overall hypertension and prehypertension among rural women were found as around 21 % and 17 %, respectively [17]. Furthermore, in comparison to men, rural women are usually faced with less availability and accessibility to information and related sources and less exposure to media and intensive campaigns, impacting their health outcomes. Additionally, lack of health-care-seeking practices also prevails among women [18]. In this connection, the prevalence of hypertension among women in Bangladesh should not be underestimated.

Women in rural areas are even surrounded by a number of inequalities as a result of socioeconomic limitations and gender disparities [19, 20]. The social determinants of health such as health care access and quality, education access and quality, social and community context, economic stability, neighborhood and built environment also have a great impact on their health outcome and quality of life [21, 22]. These social determinants define who will live longer, get sicker, and die sooner. Again, the unequal distribution of resources and *lower social status of women* within the social hierarchy paves the way for the maintenance of health inequality. Even, these hierarchy can lead to chronic exposure to stress, damage of tissue and end up with increased rate of illness and unexpected deaths [23]. Hypertensive situation among women is not out of this discussion. Like other health disparities, the disparities between social status of men and women could affect hypertension treatment and prevention practices.

Patients' self-management, particularly blood pressure (BP) monitoring, is a practical approach at reducing their BP [24, 25] and the treatment of hypertension [26, 27]. Thus, recognition of the above factors from the perspective and experiences of the patients will lead to a more precise understanding of the disease; which can influence the production of knowledge related to it, and help healthcare professionals as well [28]. Additionally, compliance with the understanding of the

disease mechanism, having information on the proper management of the health problems, and reducing challenges to hypertension control, are some critical initiatives aimed at preventing the complications of hypertension. Therefore, this qualitative study attempted to examine women's understandings about hypertension, their experiences of symptoms and complications related to this, lifestyle modification and medication adherence, prevention, management practices, and the barriers they faced in controlling hypertension.

2. Methods

2.1. Study design

A qualitative study design was applied using the conventional narrative analysis approach. The study was carried out from July to August 2019 to understand the patient perspective and the management of hypertension and challenges facing the management of hypertension among 23 hypertensive women. An in-depth interview was conducted among participants to gather the data. Study participants were understandably prepared to share their experiences associated with hypertension. It allowed a resilient exploration of participant's understanding and coping strategies, which might not be uncovered by the quantitative approach [29, 30]. Furthermore, employing the phenomenology approach that entails understanding their viewpoint based on their daily lives, has helped to investigate the patient's insights concerning their hypertension [31].

2.2. Sample population and sampling technique

The study was carried out in a rural Kumarkhali Upazilla of Kushtia district, Bangladesh, made up of 201 villages and about 328,457 residents, within about 79,008 households. The female population with 164,996 inhabitants constitutes about half of the total population [32]. The average literacy rate was below 40 %; with 41 % for males, and 35 % for females [33]. Participants were selected based on their age, between 35 and 65 years, while men and non-cooperative women were excluded from the study. Their illness was already diagnosed by doctors at the nearest hospital and by the pharmacist. To increase the validity of appropriate participant selection following the study context, the prescription and medicine related to hypertension were thoroughly checked. Purposive as well as the snowball sampling techniques were used, and data was collected until saturation was reached [34]. Consequently, interviews were expected to be conducted among the 30 participants (pre-listed). Consent was taken from them before the interview to ensure their participation. Finally, a total of 26 hypertensive women agreed to take part in an in-depth interview (IDI). Interviewing ended after interviewing 23 participants due to rich information gathered; further findings were not derived from the participants' responses.

2.3. Data collection procedure

An unstructured questionnaire for the IDI was prepared in English language, and further, it was translated into the participant's native language (Bengali language) and reviewed by the authors. Another expert independent translator (who had proficiency in translating colloquial language) conducted back-translation from the Bengali into the English language, and then again it was cross-checked by the authors to ensure the essence of the language. Participants were encouraged to interact and share their thoughts according to their experiences [35]. The first part of the questionnaire included participants' details, such as age, marital status, level of education, and profession. The second part included IDI-related issues (Table 1), which were designed to evaluate the participant's understanding and experiences related to hypertension, its preventive measures, health care expectations, and challenges. Before the data collection, the questionnaire was pilot-tested among seven hypertensive women not included in the study population. It helped in

Table 1. Interview guide.

Before being affected with hypertension, did you know about this disease?
How did you get informed about it?
How did you diagnose hypertension in your body?
Do you think hypertension as a major disease? Please explain your thoughts.
Can you please describe the symptoms you face during hypertension?
How does this disease occur? When do you mostly felt having high blood pressure?
Do you know about the predisposing factors? Can you describe it?
What kind of problems you have faced due to having hypertension? How it impacts on you?
What do you know about the severe complications of hypertension?
Can you explain the management of those complications? From where did you hear about this?
How important it is to have proper knowledge about management of hypertension among women? Please explain your thoughts.
Do you think hypertension can be prevented? What are the preventive measures?
What do you know about the importance of having regular blood pressure checkups?
How often and when you monitor your blood pressure?
What is the importance of a healthy diet for controlling blood pressure?
Have you tried to modify your dietary habit for preventing hypertension?
Is there any relation between obesity and high blood pressure? Can you explain your thoughts?
What kind of medicine do you take to control hypertension? How often you are taking it?
Have you tried any alternative treatment, apart from hypertensive medicine?
Have you faced any barriers to lifestyle modification? Can you mention those issues?
What are the challenges you have faced due to being hypertensive?
What are the barriers to prevent hypertension among women?
Have you got proper hypertensive care facilities from the health care institution? If you have faced any barriers in it, can you describe it?
What can be done to reduce the problems of hypertensive women in your area?

testing for content validity, face validity, and clarity [36]; and for additional editing in the questionnaires, as per study context.

The first author, who conducted the interviews, had previously received training on qualitative interviews and data collection. Two community health care providers (CHCPs) assisted her in accessing the participants in their residents. Informed consent was written in Bengali, and the interviewer read it out before starting each interview. They also read statements following the Helsinki Declaration of 1975. The consent was written about the study motives, interview duration, participant's autonomy, confidentiality of their verbal response, and audio recording. Additionally, they were also allowed to refuse to answer any question or suspend the interview. When the participants agreed, they signed the consent form. Then the interviewer stated the study topic, objectives, and goals to the participants. Later, participants were requested to be seated for at least 5 min, and then the arm was restfully supported in semi-flexion at heart level [37] to check their BP. As per WHO instruction, a Sphygmomanometer (Brand name: Omron, jpn 2) was used to measure the BP of the participants. The BP measurement was taken to cross-check their hypertensive problem.

Participants were encouraged to give probes during the discussion when needed. Examples include: "What are the challenges you have faced due to being hypertensive? Can you please elaborate on some of them?" For the interviews, the interviewer followed the interview guide shown in Table 1. During the whole conversation with participants, audiotaping was carefully done for each interview. Information security and confidentiality were meticulously maintained. The duration of the IDI was approximately 45 min to one and a half-hours.

2.4. Data analysis

Data was analyzed by following the thematic analysis guidelines presented by Kiger et al. (2020) in a previous study [38]. The interviews were transcribed in Bengali by hearing the audio clips and later

translated into English. Codes were developed from the textual data pertaining to the study context. After critically reviewing the codes, and based on their similarities and uniqueness, some themes and sub-themes were identified and merged. Descriptive statistics for variables related to socio-demographic characteristics were done by calculating frequency distribution. To manage textual data, Microsoft Excel was used.

2.5. Data trustworthiness

Qualitative data trustworthiness, based on the parameters such as dependability, credibility, confirmability, and transferability [37] were ensured in this study [39]. For example, to better understand their experiences, the interviewer engaged the study participants in discussion after careful and intensive rapport building. After data collection, the first author also discussed the reviewed data with the CHCPs serving as healthcare providers in rural areas. It helped assess the data consistency respective to their culture and finding the scenario of available health-care facilities in those areas according to their commentary. Data credibility was done by pretesting the questionnaire, using continuous data comparison [28], spending intensive time in the field, and regular debriefing sessions of the interviewer with other team members. The rest of the authors reviewed the interviewed data and records and measured coding accuracy and inter-coders' reliability to verify the data dependability. Data confirmability was maintained by the organized collection and management of the data and regular investigator's meeting. To ensure data transferability, two sampling techniques and data saturation methods were applied. The final research documents were reviewed and approved by the authors with the institutional review board of "Biosafety, Biosecurity, & Ethical committee" at Jahangirnagar University, Dhaka, Bangladesh.

3. Results

A total of 23 women participated in the study, of which most of the women were married (around 91 %) and housemakers (around 74 %). Educational status was below the satisfactory level, since about 43 % of participants were illiterate, and 30 % had primary education only. Detailed information about the socio-demographic characteristics of the participants is presented in Table 2.

Three major topics were derived from qualitative analysis of the data. These topics described their knowledge and experiences associated with hypertension managements that they practiced and their challenges in controlling this health problem. Themes and sub-themes of the study are displayed precisely in Figure 1.

3.1. Theme 1: patients' perception of hypertension

3.1.1. Awareness of hypertension and its causes

The participants were all diagnosed with hypertension, so almost all of them were aware of it as a disease. However, excluding three participants, none of the other women were accustomed to the term 'hypertension.' Rather, they perceived it as 'increased pressure or high pressure.' The acceptable BP range (120/80 mmHg) was unknown by most of them. While participants were asked about the likely causes of hypertension, they spoke of not being briefed on the disease's mechanism, rather they knew about the probable influential factors which were accountable for increasing their BP. The experiences of one of the participants were as follows:

'I usually have much concern about my family and my children. I keep all the pieces, and nobody's here to help me. I think when I feel stressed, high blood pressure occurs inside me.' [IDI-22, Age-53]

Other hypertensive women expressed similar sentiments, and a particular participant said the following:

Table 2. Background characteristics of participants (N = 23).

Indicators	Category	Number (n %)
Age group (Years)	35–39	1 (4.35)
	40–44	1 (4.35)
	45–49	4 (17.39)
	50–54	9 (39.13)
	55–59	6 (26.09)
	60–64	2 (8.70)
Education	Illiterate	10 (43.48)
	Primary	7 (30.43)
	Secondary	2 (8.70)
	Higher secondary or above	4 (17.39)
Marital status	Married	21 (91.30)
	Widow	2 (8.70)
Occupation	Teacher	1 (4.35)
	Housewife	17 (73.91)
	Field level health worker	2 (8.70)
	Cleaning services at school	1 (4.35)
	Domestic worker	2 (8.70)

‘I don’t know a lot about why I became affected by this health problem. I did not have it before [...]. But I guess when I don’t eat my meal properly, my BP gets high.’ [IDI-4, Age-50]

A majority of the participants were unaware that genetics has a role to play in hypertension [40]. They had no idea about the mechanism of

action of hypertensive medicine to reduce their BP. Though some participants perceived this disease as a common problem, they were also distressed about it, because they often faced a recurrence of hypertensive events. However, the perception level varied among the participants; but they were interested in finding out more about this disease.

3.1.2. Sources of information and diagnosis of the disease

Participants gained information about hypertension from different sources, such as hospital doctors, pharmacy medicine sellers, relatives, or neighbors. Many participants expressed that they were not aware of the symptoms that happened to them. After being influenced by the suggestions of the surrounding people, they went to the hospital. Hence, this disease was diagnosed by the hospital doctors and others by the nearby pharmacy. However, this was a common occurrence among hypertensive women:

‘I felt illness in my body, but I never checked my BP before. One day, my son took me to hospital, and there I measured my BP and came to know I had a problem with BP.’ [IDI-09, Age-53]

There was no clue about disease screening among all participants. They did not know that hypertension can also be asymptomatic, which is a significant reason for the lower rate of diagnosis of this disease among rural women. This is what one participant had to say:

‘I went to the hospital thinking that I might have gastric problems. However, the doctor told me I had high pressure. But usually, I didn’t get symptoms. I thought the doctor was incorrect.’ [IDI-21, Age-52].

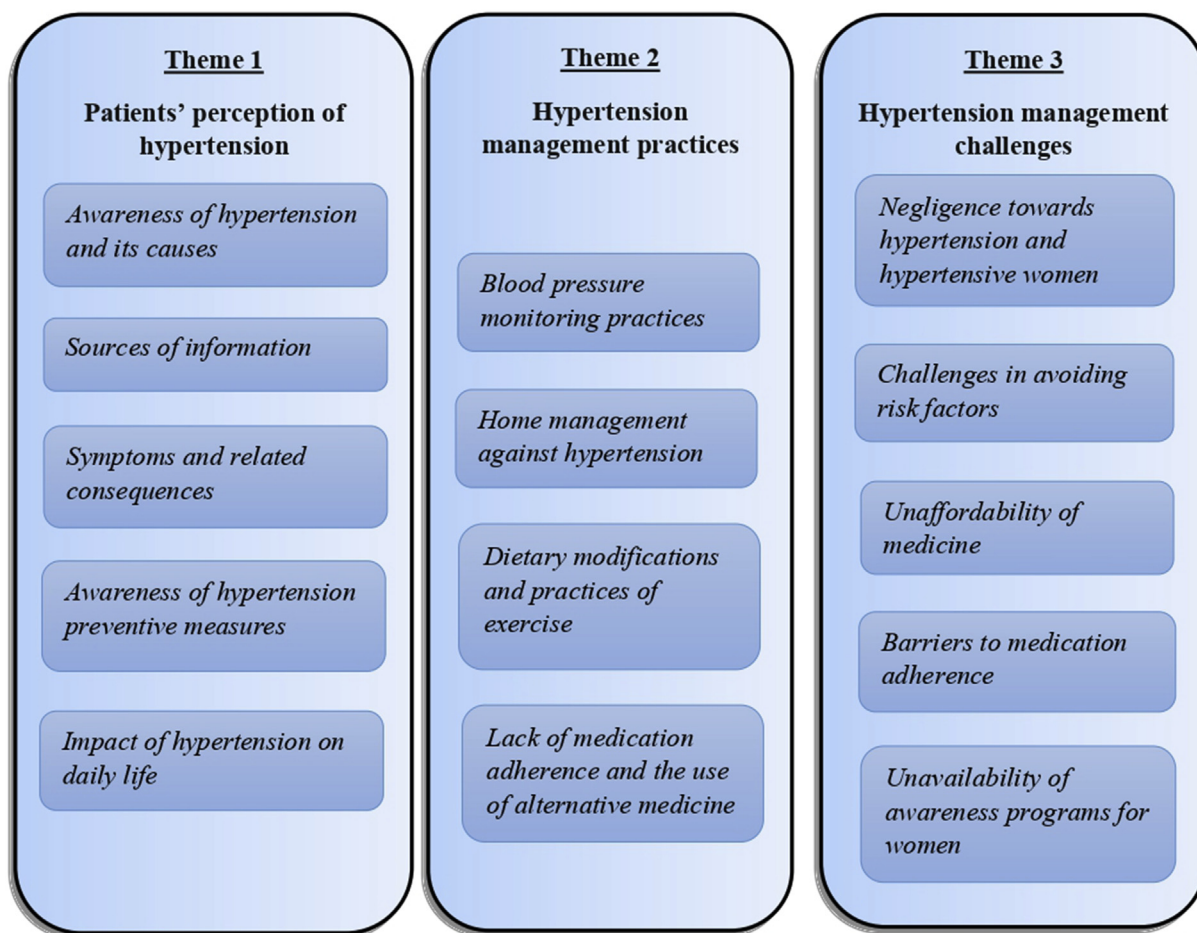


Figure 1. Diagram illustrating key themes and subthemes of the study.

3.1.3. Symptoms and related consequences of hypertension

Participants most often could guess about their HBP by self-diagnosing the symptoms of it. A majority of the participants had experienced “dizziness” and “pain in the neck” as the primary and acute hypertensive symptoms. Some women have reported various symptoms like breathing problems, migraine, strained feeling in the chest, light-headedness, and asthenia. The comment of a participant illustrates this:

‘I usually can assume once hypertension arises within me. I feel like something heavy is sitting on my neck; hence, I cannot move my head easily [...]. Time by time, I begin to feel uncomfortable in my chest. These problems continue to grow unless I take my medications.’ [IDI-7, Age-55]

Besides hypertension, some participants had some other comorbidities, more frequently mentioned as diabetes, heart disease, and pregnancy complications associated with. They usually prioritized those comorbidities, more than hypertension. One patient stating:

‘I have been suffering from diabetes for the last four to five years. A physician told me that I also have problems with HBP. However, I am too poor to take many medicines. I often take insulin only, but usually, I neither go to a physician for monitoring BP nor taken any hypertensive medication.’ [IDI-23, Age-58]

Few women knew about the severe hypertension complications and mentioned them as cardiovascular disorder, diabetes, heart attack, and organ damage. The following quote supported this assertion:

‘Due to the complications of hypertension, one’s kidney may be damaged.’ [IDI-5, Age-54]

3.1.4. Awareness of hypertension preventive measures

Except for a few women, all other participants also had knowledge of specific predisposing factors. They identified the excessive stress and anxiety, which they regarded as the main risk factors for hypertension. Some women have been told about foods, which might make their BP high. As one participant explained:

‘When I was diagnosed with hypertension, I have been told that sweet, meat, salt influences HBP. So, I try to avoid these.’ [IDI-15, Age-51]

Participants were asked about the preventive measures of hypertension, although all women were unable to give an accurate answer. Some of them mentioned that the preventive measures of hypertension included the exclusion of meat, egg, oil, salt from their diet, taking hypertensive medicine, and reducing stress. The following quote supports this assertion:

‘Proper diet should be maintained for hypertension prevention [...]. When I eat something and realize that it has increased my BP, then I usually avoid further consuming that food.’ [IDI-6, Age-53]

Other participants said that, despite appearing healthy, all women must know about their health. This is evident in the following comments:

‘It’s important to have the knowledge about hypertension management among women and regular BP checkup. It is especially important for pregnant women. If they have hypertension and eat milk, egg, etc. then they may start to show symptoms of eclampsia suddenly.’ [IDI-20, Age-55]

3.1.5. Impact of hypertension on the participants’ daily life

The majority of the participants reported that hypertension hampered their daily work a lot because it made their body so weak that they sometimes have to stop working. They simply took a break by lying on the bed. Others reported some physical, mental, and occupational barriers due to hypertensive issues. One participant had to say:

‘During hypertension, I typically have a headache and feel pain while talking with others. I used to feel like my breathing will be stopped [...]. I

have always been afraid of it, that I may have a heart attack at any time.’ [IDI-11, Age-60]

Thus, hypertension had disrupted the normal lives of many participants. The physical consequences of it have kept them from carrying out their household chores and hindered their children’s care. However, several times, they had to ignore these types of diseases and continue to work with persistent physical weakness.

3.2. Theme 2: hypertension management practices

3.2.1. Blood pressure monitoring practices

Irregular monitoring of BP was common among most participants. They measured their BP, only when they felt uncomfortable or felt a distinct symptom of hypertension. However, many of them supported the fact that regular checking of BP is important among hypertensive people but few practiced it regularly. Some women didn’t go to the doctor, as they had so much work to do for their family, and just had to ignore their health condition until it became intolerable. So, going to the hospital for only BP checkup was quite trivial to them rather than doing household activities. This is evident in the following comments:

‘I know what I have to do and what not. However, I cannot maintain regular checkups for high pressure. I am a poor housewife [...]. In fact, I hardly go to a hospital or outside my house.’ [IDI-18, Age-45]

Very few participants were also used to BP monitoring practices regularly. BP monitoring is maintained especially by those who had facilities to measure BP at home.

3.2.2. Home management against hypertension

Many participants ignored the hypertensive symptoms until they worsened. They usually did not feel the need to monitor BP. They depended on self-management only and following advice from people around them. One hypertensive woman made the following comment:

‘When I am affected with hypertension, I used to stay steady and put oil and water on my hair. People around me suggested eating raw garlic with water at that time. Again, I have been told that water mixed with tamarind can reduce hypertension. Normally, I follow all of these administrations.’ [IDI-23, Age-58]

Most participants confessed that women should have a good knowledge about hypertension management, but they generally ignored their unfavorable health condition and kept themselves occupied with their jobs. One participant stated:

‘I have observed that women are affected more with hypertension than men. However, they have huge patience and usually do not give importance to their health problems [...]. The number of women who die of cardiac disease is less than men. So, they don’t prioritize prevention of it. However, they should know more information about hypertension prevention and management for their well-being.’ [IDI-3, Age-38]

3.2.3. Dietary modifications and practices of exercise

An appropriate diet and exercise are two of the most important self-management strategies for hypertension. Our participants had positive thinking about the relationship between excessive weight and HBP; hence few of them were trying to reduce their weight. However, many of them were reluctant to exercise regularly. This is evident in the following comments:

‘Usually, I have to do many works at my home. How could I go for exercise daily? I’m working hard by doing household activities. So, it works as an exercise for me, I think.’ [IDI-18, Age-45]

An exception to this kind of view was also found. The following quote supports this assertion:

'I do not think there is any kind of relation to our weight with HBP. I also have seen many slim people have this disease' [IDI-8, Age-57]

Almost all participants were concerned about reducing salt intake and avoiding added salt in their meal. Still, the participants somewhat knew about a healthy diet, but they barely kept it daily. This is what a woman had to say:

'When I went to the doctor, he suggested that I avoid meat and oily foods and told me to take vegetables and fruits. However, it is difficult to maintain these kinds of diet. Resisting taking favorite food sometimes becomes difficult for many people, isn't it?' [IDI-13, Age-42]

3.2.4. Lack of medication adherence and the use of alternative treatments

Participants did not take their medication regularly. They didn't take medicine until health problems became intolerable; some women could not even remember the name of the medicine they were taking. They could only describe their appearances by color or shape. They didn't think it was necessary to remember the names all the time. However, those participants who had to remember the name of the medicine they were taking, they just remember the names as Angilock and Indever (generic name, Losartan Potassium and Propranolol Hydrochloride, respectively). One woman said she had a hypertensive crisis once; she had to take drug infusion intravenously.

A few participants had conceptions about the treatment of hypertension. They regarded herbal or Ayurveda medicine (i.e., garlic, tamarind) as an alternative to allopathic medicine. They figured these might eventually reduce their BP. Our study illustrates this with one participant's comments:

'My neighbor suggested me to take homeopathic medicines for treating high pressure. She told me that those medicines are safe and effective.' [IDI-17, Age-46]

3.3. Theme 3: hypertension management challenges

3.3.1. Negligence towards hypertension and hypertensive women

For a disease like hypertension, women usually didn't get significant support from their family and other fellow members. Moreover, sometimes they suffered negligence due to *being a woman* and because of their disease conditions, the message conveyed was that *women should not get sick*.

'If I would have fever or injury, everybody could see that. Since other people around me cannot see the visible symptoms of high pressure within me, they do not give priority over it. They cannot feel what is happening inside me.' [IDI-19, Age-53]

Since hypertension remained most prevalent among men, many people had a misconception that it was not pertinent to women. Additionally, other people also believed it was a less-severe disease among women and is more common among men, so it should be taken care of by *self-care*. Thus, women became demotivated to take care of themselves, to deal with hypertension individually and to feed their expectation to get rid of this health problem. This underestimation causes women to monitor their blood pressure less regularly and leads to less medication adherence, and greater uncontrolled hypertension rates.

3.3.2. Challenges in avoiding risk factors of hypertension

Most of the participants were informed about the importance of a healthy diet in preventing hypertension, but they could not maintain a healthy diet because of different reasons, such as financial difficulties to afford sufficient food, family responsibilities and workload, lack of knowledge about healthy food, and aversion towards specific foods. Despite knowing that excessive salt could increase their pressure, some women still consume it. These are some of the comments by a participant:

'I know little information about a healthy diet, but diet maintenance is not so easy for us. Actually, I am too poor to eat good food. Sometimes I have nothing to eat except rice with salt, onion, and pepper.' [IDI-16, Age-50]

According to the participants, if they had less anxiety, they could have handled their hypertension more effectively. The majority of them reported that they had to do a lot of work at home, including taking care of children and cooking meals several times a day. This is coupled with an extra workload for some of them during harvesting time. All of these responsibilities increased their level of stress and anxiety.

3.3.3. Unaffordability of medicine

Since most participants were not financially stable, purchasing medicine remained a challenge for them. The following quote supports this assertion:

'I have no one who can put water on the head when I become ill. I have been suffering from HBP and diabetes for a long period. I take medicine when I can manage money to purchase it. Then my pressure becomes higher due to not taking medicine regularly [...]. I have also tried to commit suicide once, but I failed. My sons do not look after me either. When I encounter severe BP, it becomes so intolerable that I want to die.' [ID-7, Age-63]

Hypertensive medicine was not available at the nearest government hospital; for that reason, people bought it from the market. Usually, the majority of women in rural families were not allowed to go to the market. So, they usually relied on others to bring those medicines. This is evident in the following comments:

'My husband is usually busy with his works. When I asked him to purchase medicine, he forgot it several times. Again, if I go to the nearest government hospital, they told me they do not have that medicine. So, the problems have been hidden within me. What else could I do?' [IDI-1, Age-49]

Most participants complained about the unavailability of free hypertensive medicine at government hospitals. Despite severe financial hardship, they had to buy it from the pharmacy.

3.3.4. Barriers to medication adherence

Drug adherence requires persistence, which is important for controlling hypertension and related complex disorders. However, the reasons for insufficient medication adherence varied among the study participants. Some women had expressed that they usually forgot to take medicine; particularly, they also did not have any specific support which could remind them of taking medicine regularly.

Other women emphasized the *negative* effects of medicine; they were afraid of taking it because of side effects. Some participants thought hypertensive medicine caused indigestion among them, which made them avoid taking it further. One of them stated:

'I do not think medicine can cure my disease; I have taken medication several times earlier. Now I am not a regular in taking medicine. Most importantly, medicine initiates indigestion whenever I consume it.' [IDI-12, Age-59]

3.3.5. Unavailability of awareness programs for women

There was a lack of awareness programs for the causes, management and prevention of hypertension and other cardiovascular diseases. According to the participants, they did not have any campaigns in their area to get more information on this topic. Some participants said women should be more conscious and take care of their health. They should go to the hospital sometimes to check BP and see the doctor when they get sick. Some of them also expected awareness to be created among them to prevent this disease. Although they had a willingness about these issues,

due to these diverse barriers, they could not manage to do that. One participant made the following comment:

'Rural women usually do not care about high pressure until it becomes unbearable. People around here also do not prioritize it as a disease. Lack of awareness may be the main cause of it.' [IDI-10, Age-51]

4. Discussions

This study has highlighted the hypertensive women's understanding of their disease, their experiences about the symptoms, complications, impact, and different barriers they were facing to cope with the disease. Here, in this study, several participants did not know about the screening of diseases, and it was diagnosed by chance in a hospital or pharmacy. Equally, in another study, patients were diagnosed with hypertension due to an infrequent visit to a healthcare institution [41]. Findings from our study also revealed that stress was the foremost dominant risk factor of hypertension. These results are in line with other studies [42, 43, 44]. Additionally, hypertension greatly impacted the participants' physical and psychological health and affected their everyday life.

A previous study showed that patients with chronic illnesses tend to learn how to deal with those diseases, which will result in the improvement of their health condition [12]. In the current study, a significant knowledge gap already existed regarding hypertension and its management among the participants. For example, although some of them knew about hypertension complications, they were not eager to monitor BP or take hypertension medication regularly. Again, some disagreed with the importance of a healthy diet and exercise in preventing hypertension. Unwillingness to avoid risk factors of hypertension and ignoring medication adherence also reflected the knowledge gaps among them, causing less hypertension prevention. Thus, they might develop uncontrolled hypertension gradually.

Since many families were less concerned about the adverse health consequences of their women's family members, women had to rely on home management of hypertension rather than consulting with doctors. Here, the family was playing as an agent of structural disparities as a result of which women were confined to the home environment and took less health care management. Consequently, the conventional treatment and management of disease occurred more at home; healthcare institution is less prioritized [12]. At home, many patients relied on their familial guidance and adjustment of lifestyle behaviors to manage their HBP [28]. However, the participants were not habituated with proper self-management practices. For instance, they prioritized tamarind juice over hypertensive medicine and hardly monitored their BP. According to one previous study, non-adherence had been identified as the main reason of the failure of controlling hypertension [45]. Whereas, without the proper knowledge about the unrestrained BP complications, it is tough to motivate patients to medicate for a long time [46]. Although adherence to medication is one of the most important preventive measures for unbridled hypertension, this practice was not significantly noticeable among the study participants. They were advised to take medicine by the doctor but were not adhering. This was especially due to their inability to afford the expensive medicines because of financial constraints, *consciousness* and lack of family support in controlling high blood pressure. Again, *not getting sick* made them more reluctant to take preventions and medications. Hence, personalized disparities have an impact on women's decision making [47].

Similarly, another study found that instead of knowing about the target line of BP level, patients were taking antihypertensive medicine [48], which means that patients' level of knowledge and disease awareness was not enough to optimize their BP. Other studies have found that side effects of medicine and the concern about medication addictions among the patients had led to lower adherence to hypertensive medicine [43]. Patients

also had the misperception that those medications would lead to the kidney failure [36]. In the present study, few participants uttered that they had avoided hypertensive medicine because of indigestion. Some women also confessed that they had taken homeopathy and herbal medicine since they thought those medicines are harmless and free of side effects. The prevalence of using orthodox therapies as an alternative method for BP control was also found in other studies [36, 49].

However, findings of the study reported significant gender-stereotyped ideology and segregation regarding diseases including hypertension. Perelman et al. (2012) have found that women's use of healthcare was underestimated owing to the social inequalities between men and women [50]. Social determinants of good health like education, occupation and wealth index have the greatest influence on gender-based health patterns; for example, in many regions, women are disadvantaged in accessing economic opportunities and higher social status [51]. In Bangladesh, chronic diseases, like hypertension, are still under-diagnosed among many women.

The current study has also pointed out the challenges such as underestimation of hypertension among women, unaffordability of healthy foods, unavoidable causes of anxiety, forgetfulness about taking medicine, financial insufficiency to buy medicine, and unavailability of appropriate awareness programs. Several other obstacles found in other studies include: costs of transportation to health care facilities, distance to the hospitals, long waiting time, scarcity of therapeutic supplies at government clinics and poor access to specialist care [41, 52], which differed from our study. In the present study, participants only complained about the inaccessibility of hypertensive medicine, and specialist doctors in the hospital. Some women conceded that they had to rely on their men for access to medicine, and to get permission to visit a doctor. Here again, structural disparities were found related to conventional words concerning women *being more vulnerable* to hypertension than men. However, the "differential vulnerability hypothesis" showed that women and men responded differently to structural factors, mostly with social predictors, life events, psychological issues, and capital having a greater impact on women [53]. Therefore, when a disease is being *stereotyped* based on gender differences, then its influence is distinctly expected from societal perspectives. This will in turn have an impact on every step of disease outcome such as diagnosis, prevention, treatment and control. Hence, it is important to find out those structural factors influencing women's hypertension management and practices to reduce the health burden.

However, biosocial notions of medical stimuli are crucial, particularly when serving low-income populations; for example, the *natural history* of any of the disease cannot be clarified without addressing the social factors such as racism, inadequate housing, and poverty because social and environmental factors can restrict the efficacy of interventions [54, 55, 56]. In the world's poorest countries, the extent of structural disparities and violence is more apparent. Again, the paucity of social and economic rights is a key factor in the continued existence of structural disparities; in that case, structural interventions can have a huge effect towards health outcomes [56]. Though, being a lifelong illness, hypertension requires continued treatment; therefore, identifying and controlling its risk factors can help prevent this disease and its complications [28, 57, 58]. Furthermore, structural determinants may also influence health outcomes and access to preventive and recovery services; thus, well-designed structural interventions are critical for optimizing rural women's security and avoiding structural inequalities by continually upgrading and enhancing interoperability and viability of such programs [59].

Since patient's feelings and beliefs of being well can change their behavior [48], more awareness should be created to strengthen their belief. This will help them modify their lifestyle, regular BP monitoring practice, and medication adherence to avoid uncontrolled hypertension. Screening of hypertension and providing health education among rural women can be a fruitful strategy to improve their knowledge and initiate appropriate management of it.

5. Significance and limitation of the study

The study is important because of its in-depth examination through IDIs as a method, which helps explore understandings and experiences related to hypertension among women. It reflected their self-management practices and misconceptions regarding hypertension thoroughly, through which we can assess the knowledge gaps persisting among them. In turn, these can help formulate awareness programs and provide needed health interventions and services among them. Findings of this study have allowed for the identification of barriers to hypertension prevention and management. Therefore, it reflected the factors that are needed more to make women accessible to hypertensive care services. Also, this is one of the few qualitative studies investigating the case of hypertensive women in rural Bangladesh. Therefore, the result of the study can help policymakers formulate interventions related to chronic health care services in a gender and socio-cultural perspective.

Apart from the strengths, this study has some limitations; language compensation of the translation was not biased. The study also lacks focus group discussions (FGDs) among the participants, which would have revealed more new themes related to the study context. Again, this study lacks generalizability; particularly rural women have been taken as study participants here; so, the findings would probably differ somewhat from other studies, which had been conducted among the hypertensive population from urban or urban slum areas. Moreover, the inclusion of a participant observation method could have brought more in-depth understanding from an intensive cultural perspective.

6. Conclusion

In essence, the results of this study reflected that few participants perceived symptoms, risk factors, management and treatment of hypertension in terms of biomedical understanding. Furthermore, a significant gap was found among them in their awareness in understanding and controlling hypertension. It can guide any evidence-based intervention in the provision of improved access to hypertension management among hypertensive patients. More research is needed to promote health education by examining peoples' understanding and management practices of hypertension. It will assist in formulating effective preventive measures to combat this problem in the prospect of rural Bangladesh.

Declarations

Author contribution statement

Anika Bushra Boitchi: Conceived and designed the experiments; Performed the experiments; Wrote the paper.

Sabbir Pervez: Performed the experiments; Analyzed and interpreted the data.

Shabnam Naher: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Md. Mujibul Anam: Contributed reagents, materials, analysis tools or data.

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Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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References

- [1] D. Neupane, C.S. McLachlan, R. Sharma, B. Gyawali, V. Khanal, S.R. Mishra, B. Christensen, P. Kallestrup, Prevalence of hypertension in member countries of South asian association for regional cooperation (SAARC): systematic review and meta-analysis, *Med. (United States)* 93 (2014) 1–10.
- [2] D. Mozaffarian, E.J. Benjamin, A.S. Go, D.K. Arnett, M.J. Blaha, M. Cushman, S. De Ferranti, J.P. Després, H.J. Fullerton, V.J. Howard, M.D. Huffman, S.E. Judd, B.M. Kissela, D.T. Lackland, J.H. Lichtman, L.D. Lisabeth, S. Liu, R.H. Mackey, D.B. Matchar, D.K. McGuire, E.R. Mohler, C.S. Moy, P. Muntner, M.E. Mussolino, K. Nasir, R.W. Neumar, G. Nichol, L. Palaniappan, D.K. Pandey, M.J. Reeves, C.J. Rodriguez, P.D. Sorlie, J. Stein, A. Towfighi, T.N. Turan, S.S. Virani, J.Z. Willey, D. Woo, R.W. Yeh, M.B. Turner, Heart Disease and Stroke Statistics-2015 Update: A Report from the American Heart Association, 2015.
- [3] R. Merai, C. Siegel, M. Rakotz, P. Basch, J. Wright, B. Wong, P. Thorpe, CDC grand rounds: a public health approach to detect and control hypertension, *Morb. Mortal. Wkly. Rep.* 65 (2016) 1261–1264.
- [4] M. Espejo, S. Magabo, A. Rivera-Castro, M. Faiz, L. Ramirez, C. Robles, T. Shabarek, M.A. Shariff, B. Kanna, Qualitative study of knowledge, perception, and behavior related to hypertension and cardiovascular disease risk reduction among hypertensive african-Americans in urban inner city of South bronx, New York, *J. Racial Ethn. Heal. Disparities.* 6 (2019) 197–206.
- [5] A. WHO, Global Brief on Hypertension: Silent Killer, Global Public Health Crisis: World Health Day 2013, 2013. https://ish-world.com/downloads/pdf/global_brief_hypertension.pdf.
- [6] M.H. Olsen, S.Y. Angell, S. Asma, P. Boutouyrie, D. Burger, J.A. Chirinos, A. Damasceno, C. Delles, A.P. Gimenez-Roqueplo, D. Hering, P. López-Jaramillo, F. Martinez, V. Perkovic, E.R. Rietzschel, G. Schillaci, A.E. Schutte, A. Scuteri, J.E. Sharman, K. Wachtell, J.G. Wang, A call to action and a lifecourse strategy to address the global burden of raised blood pressure on current and future generations: the Lancet Commission on hypertension, *Lancet* 388 (2016) 2665–2712.
- [7] H. Legido-Quigley, A. Naheed, H. Asita De Silva, I. Jehan, V. Haldane, B. Cobb, S. Tavajoh, N. Chakma, A. Kasturiratne, S. Siddiqui, T.H. Jafar, J.D. Clemens, M. Hasnat, A. Hameed, A.Z. Khan, C. Ranasinha, E. Fin-Kelstein, M. Bilger, A. Pryseley, M. Gandhi, S. Ebrahim, E. Turner, Patients' experiences on accessing health care services for management of hypertension in rural Bangladesh, Pakistan and Sri Lanka: a qualitative study, *PLoS One* 14 (2019) 1–23.
- [8] S. Chowdhury, P. Chowdhury, Prevalence of hypertension among the Bangladeshi adult population: a meta-analysis of studies between 2004 and 2014, *Cardiovasc. J.* 7 (2015) 104–107.
- [9] M. Rahman, G. Williams, A. Al Mamun, Gender differences in hypertension awareness, antihypertensive use and blood pressure control in Bangladeshi adults: findings from a national cross-sectional survey, *J. Health Popul. Nutr.* 36 (2017) 23.
- [10] C. Melloni, J.S. Berger, T.Y. Wang, F. Gunes, A. Stebbins, K.S. Pieper, R.J. Dolor, P.S. Douglas, D.B. Mark, L.K. Newby, Representation of women in randomized clinical trials of cardiovascular disease prevention, *Circ. Cardiovasc. Qual. Outcomes.* 3 (2010) 135–142.
- [11] G.M.A. Higginbottom, "Pressure of life": ethnicity as a mediating factor in mid-life and older peoples' experience of high blood pressure, *Sociol. Health Illness* 28 (2006) 583–610.
- [12] A. de F.A. Balduino, M. de F. Mantovani, M.R. Lacerda, M.J.S. Marin, M.L. Wal, Experience of hypertensive patients with self-management of health care, *J. Adv. Nurs.* 72 (2016) 2684–2694.
- [13] T.S. Geraci, S.A. Geraci, Considerations in women with hypertension, *South. Med. J.* 106 (2013) 434–438.
- [14] J. Gahagan, K. Gray, A. Whynacht, Sex and gender matter in health research: addressing health inequities in health research reporting, *Int. J. Equity Health* 14 (2015) 12–15.
- [15] A.K.M. Monwarul Islam, A.A.S. Majumder, Hypertension in Bangladesh: a review, *Indian Heart J.* 64 (2012) 319–323.
- [16] M.A.B. Chowdhury, M.J. Uddin, M.R. Haque, B. Ibrahimou, Hypertension among adults in Bangladesh: evidence from a national cross-sectional survey, *BMC Cardiovasc. Disord.* 16 (2016) 1–10.
- [17] A.B. Boitchi, S. Naher, S. Pervez, M.M. Hossain, Prevalence of hypertension and associated risk factors among women in a rural community in Bangladesh: a cross-sectional study, *Millenn. J. Humanit. Soc. Sci.* 20 (2021) 1–19.
- [18] Y. Jahan, M. Moriyama, M.M. Rahman, K. Kazawa, M. Mizukawa, A. Rahman, A.S.M. Sayeem Bin Shahid, S.K. Das, A.S. Golam Faruque, M.J. Chisti, Disease

- perception and experiences among rural Bangladeshi hypertensive women: a qualitative approach, *Health Promot. Perspect.* 10 (2020) 66–73.
- [19] B. Hartmann, Jhagrapur: poor peasants and women in a Bangladesh village, *Bull. Concerned Asian Scholars* 11 (1979) 72–73.
- [20] S.C. White, *Arguing with the Crocodile: Gender and Class in Bangladesh*, Zed Books, 1992.
- [21] U.S. Department of Health and Human Services, *Social determinants of health - healthy people 2030*, U.S. Dep. Heal. Hum. Serv. (n.d.), <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>.
- [22] G. Singh, G. Daus, M. Allender, C. Ramey, E. Martin, C. Perry, A. Reyes, I. Vedamuthu, *Social determinants of health in the United States: addressing major health inequality trends for the nation, 1935-2016*, *Int. J. MCH AIDS.* 6 (2017) 139–164.
- [23] D.A. Barr, *Health Disparities in the United States: Social Class, Race, Ethnicity, and Health*, second ed., Johns Hopkins University Press, 2014. <https://psycnet.apa.org/record/2014-19908-000>.
- [24] M.I. Jones, S.M. Greenfield, E.P. Bray, S. Baral-Grant, R. Hobbs, R. Holder, P. Little, J. Mant, S.K. Virdee, B. Williams, R.J. McManus, *Patients' experiences of self-monitoring blood pressure and self-titration of medication: the TASMINH2 trial qualitative study*, *Br. J. Gen. Pract.* 62 (2012) 135–142.
- [25] R.J. McManus, J. Mant, E.P. Bray, R. Holder, M.I. Jones, S. Greenfield, B. Kaambwa, M. Banting, S. Bryan, P. Little, B. Williams, F.D. Richard Hobbs, *Telemonitoring and self-management in the control of hypertension (TASMINH2): a randomised controlled trial*, *Lancet* 376 (2010) 163–172.
- [26] J. Barlow, C. Wright, J. Sheasby, A. Turner, J. Hainsworth, *Self-management approaches for people with chronic conditions: a review*, *Patient Educ. Counsel.* 48 (2002) 177–187.
- [27] T. Bodenheimer, *Patient self-management of chronic disease in primary care*, *J. Am. Med. Assoc.* 288 (2002) 2469.
- [28] A. Shamsi, N.D. Nayeri, M. Esmaili, *Living with Hypertension : a qualitative Original Article*, *Ijcbnm* 5 (2017) 219–230. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5478742/pdf/IJCBNM-5-219.pdf>.
- [29] C. Pope, N. Mays, *Qualitative Research: reaching the parts other methods cannot reach: an introduction to qualitative methods in health and health services research*, *BMJ* 311 (1995) 42.
- [30] F. Saleem, M.A. Hassali, A.A. Shafie, M. Atif, *Drug attitude and adherence: a qualitative insight of patients with hypertension*, *J. Young Pharm.* 4 (2012) 101–107.
- [31] H. Starks, S.B. Trinidad, *Choose your method: a comparison of phenomenology, discourse analysis, and grounded theory*, *Qual. Health Res.* 17 (2007) 1372–1380.
- [32] Bangladesh Bureau of Statistics, *Government of the Peoples Republic of Bangladesh, Population and Housing Census, 2015*. http://203.112.218.65:8008/WebTestApp/lication/userfiles/Image/PopCen2011/C_Kushtia.pdf.
- [33] *Banglapedia*, Kumarkhali Upazila, 2014. http://en.banglapedia.org/index.php/Kumarkhali_Upazila.
- [34] Michael Quinn Patton, *Qualitative Research and Evaluation Methods*, CA: Sage publication, Thousand Oaks, 2002. https://books.google.com.bd/books/about/Qualitative_Research_Evaluation_Methods.html?id=FjBw2oi8El4C&redir_esc=y.
- [35] J. Kitzinger, *The methodology of Focus Groups: the importance of interaction between research participants*, *Sociol. Health Illness* 16 (1994) 103–121.
- [36] C.S. Tan, M.A. Hassali, C.F. Neoh, F. Saleem, *A qualitative exploration of hypertensive patients' perception towards quality use of medication and hypertension management at the community level*, *Pharm. Pract.* 15 (2017) 1–11.
- [37] A. A, V. R, L. Jwm, D.J. T.T, *The position of the arm during blood pressure measurement in sitting position*, *Blood Pres. Monit.* 11 (2006) 309–313. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed7&NEWS=N&AN=2006563783>.
- [38] M.E. Kiger, L. Varpio, *Thematic analysis of qualitative data: AMEE Guide No. 131*, *Med. Teach.* (2020) 1–9.
- [39] R. Forero, S. Nahidi, J. De Costa, M. Mohsin, G. Fitzgerald, N. Gibson, S. McCarthy, P. Aboagye-Sarfo, *Application of four-dimension criteria to assess rigour of qualitative research in emergency medicine*, *BMC Health Serv. Res.* 18 (2018) 1–11.
- [40] P. Ranasinghe, D.N. Cooray, R. Jayawardena, P. Katulanda, *The influence of family history of Hypertension on disease prevalence and associated metabolic risk factors among Sri Lankan adults* *Chronic Disease epidemiology*, *BMC Publ. Health* 15 (2015) 1–9.
- [41] M. Perera, C.K. De Silva, S. Tavajoh, A. Kasturiratne, N.V. Luke, D.S. Ediriweera, C.D. Ranasinha, H. Legido-Quigley, H.A. De Silva, T.H. Jafar, *Patient perspectives on hypertension management in health system of Sri Lanka: a qualitative study*, *BMJ Open* 9 (2019).
- [42] I. Solomon, M. Adjuik, W. Takramah, W. Kudzo Axame, R. Owusu, P. AttaParbey, M. Takase, E. Tarkang, M. Kweku, *Prevalence and awareness of hypertension among urban and rural adults in Hohoe Municipality, Ghana*, *J. Media Res.* 3 (2017) 136–145. http://www.medicinarticle.com/JMR_20173_10.pdf.
- [43] I.J. Marshall, C.D.A. Wolfe, C. McKeivitt, *Lay perspectives on hypertension and drug adherence: systematic review of qualitative research*, *BMJ* 345 (2012).
- [44] N.D. Nayeri, M. Dehghan, S. Iranmanesh, *Being as an iceberg: hypertensive treatment adherence experiences in southeast of Iran*, *Glob. Health Action* 8 (2015).
- [45] K. Lee, H.H. Mokhtar, S.E. Krauss, B.K. Ong, *Hypertensive patients' preferences for complementary and alternative medicine and the influence of these preferences on the adherence to prescribed medication*, *Complement, Ther. Clin. Pract.* 20 (2014) 99–105.
- [46] B. Bajorek, K. Lemay, P. Magin, C. Roberts, I. Krass, C. Armour, *Patients' attitudes and approaches to the self-management of hypertension: perspectives from an Australian qualitative study in community pharmacy, high blood press*, *Cardiovasc. Prev.* 24 (2017) 149–155.
- [47] C.P. Jones, *Levels of racism: a theoretic framework and a gardener's tale*, *Am. J. Publ. Health* 90 (2000) 1212–1215.
- [48] E.P. Jolles, R.S. Padwal, A.M. Clark, B. Braam, *A qualitative study of patient perspectives about hypertension*, *ISRN Hypertens* (2013) 1–10.
- [49] Z.M. Siti, A. Tahir, A.I. Farah, S.M.A. Fazlin, S. Sondi, A.H. Azman, A.H. Maimunah, M.A. Haniza, M.D. Siti Haslinda, A.K. Zulkarnain, I. Zakiah, W.C.W. Zaleha, *Use of traditional and complementary medicine in Malaysia: a baseline study*, *Complement, Ther. Med.* 17 (2009) 292–299.
- [50] J. Perelman, A. Fernandes, C. Mateus, *Gender disparities in health and healthcare: results from the Portuguese national health interview survey, cad*, *Saude Publica* 28 (2012) 2339–2348.
- [51] M. Charles, *A world of difference: international trends in women's economic status*, *Annu. Rev. Sociol.* 37 (2011) 355–371.
- [52] H. Legido-Quigley, P.A.C. Lopez, D. Balabanova, P. Perel, P. Lopez-Jaramillo, R. Nieuwlaat, J.D. Schwalm, T. McCready, S. Yusuf, M. McKee, *Patients' knowledge, attitudes, behaviour and health care experiences on the prevention, detection, management and control of hypertension in Colombia: a qualitative study*, *PLoS One* 10 (2015) 1–16.
- [53] M. Denton, S. Prus, V. Walters, *Gender differences in health: a Canadian study of the psychosocial, structural and behavioural determinants of health*, *Soc. Sci. Med.* 58 (2004) 2585–2600.
- [54] M. Thomas, *The Role of Medicine: Dream, Mirage, or Nemesis?*, 1980. <https://press.princeton.edu/books/hardcover/9780691643663/the-role-of-medicine>.
- [55] D. Porter, *How did social medicine evolve, and where is it heading?* *PLoS Med.* 3 (2006) 1667–1672.
- [56] P.E. Farmer, B. Nizeye, S. Stulac, S. Keshavjee, *Structural violence and clinical medicine*, *PLoS Med.* 3 (2006) 1686–1691.
- [57] U. Laaser, J. Breckenkamp, V. Bjegovic, *Treatment of hypertension in Germany: is there a social gradient?* *Int. J. Publ. Health* 57 (2012) 185–191.
- [58] V.E. O'Collins, G.A. Donnan, M.R. MacLeod, D.W. Howells, *Hypertension and experimental stroke therapies*, *J. Cerebr. Blood Flow Metabol.* 33 (2013) 1141–1147.
- [59] A.F. Brown, G.X. Ma, J. Miranda, E. Eng, D. Castille, T. Brockie, P. Jones, C.O. Airhihenbuwa, T. Farhat, L. Zhu, C. Trinh-Shevrin, *Structural interventions to reduce and eliminate health disparities*, *Am. J. Publ. Health* 109 (2019) S72–S78.