



# BMJ Open Stakeholder's perspectives on acceptable interventions for promoting hypertension medication adherence in Namibia: nominal group technique

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**To cite:** Nakwafila O, Sartorius B, Shumba TW, *et al*. Stakeholder's perspectives on acceptable interventions for promoting hypertension medication adherence in Namibia: nominal group technique. *BMJ Open* 2023;**13**:e068238. doi:10.1136/bmjopen-2022-068238

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2022-068238>).

Received 17 September 2022  
Accepted 07 May 2023



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## ABSTRACT

**Objective** To determine the most acceptable hypertension intervention package to promote hypertension adherence based on stakeholders' perspectives.

**Design** We employed the nominal group technique method and purposively sampled and invited key stakeholders offering hypertension services and patients with hypertension. Phase 1 was focused on determining barriers to hypertension adherence, phase 2 on enablers and phase 3 on the strategies. We employed the ranking method based on a maximum of 60 scores to establish consensus regarding hypertension adherence barriers, enablers and proposed strategies.

**Setting and participants** 12 key stakeholders were identified and invited to participate in the workshop in Khomas region. Key stakeholders included subject matter experts in non-communicable diseases, family medicine and representatives of our target population (hypertensive patients).

**Results** The stakeholders reported 14 factors as barriers and enablers to hypertension adherence. The most important barriers were: lack of knowledge on hypertension (57 scores), unavailability of drugs (55 scores) and lack of social support (49 scores). Patient education emerged as the most important enabler (57 scores), availability of drugs emerged second (53 scores) and third having a support system (47 scores). Strategies were 17 and ranked as follows: continuous patient education as the most desirable (54 scores) strategy to help promote hypertension adherence, followed by developing a national dashboard to primarily monitor stock (52 scores) and community support groups for peer counselling (49 scores).

**Conclusions** Multifaceted educational intervention package targeting patient and healthcare system factors may be considered in implementing Namibia's most acceptable hypertension package. These findings will offer an opportunity to promote adherence to hypertension therapy and reduce cardiovascular outcomes. We recommend a follow-up study to evaluate the proposed adherence package's feasibility.

## INTRODUCTION

It is well known that hypertension, the major risk factor for cardiovascular diseases (CVD), is

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ We included the target population, patients with hypertension, in the sample.
- ⇒ The nominal group technique consensus approach allowed multiple barriers, enablers, and strategies for hypertension adherence to be determined with a balanced group of participants' involvement.
- ⇒ We did not include pharmacists or health insurance stakeholders, meaning their perceptions of hypertension are not part of the study.
- ⇒ Provincial managers and Supervisors at the Ministry of Health and Social services were involved in recruiting some key stakeholders due to the nature of the study.
- ⇒ We included study participants who were able to speak English only, which might have limited the participants to express their views in their local languages.

a vital cause of premature death and disability worldwide.<sup>1</sup> Recent estimates indicate that 1.4 billion adults worldwide have hypertension, of which more than half live in low-income and middle-income countries.<sup>2</sup> Data from the WHO (2020) reported that hypertension deaths in Namibia reached 428 or 2.53% of total deaths. The age-adjusted death rate was 37.70 per 100 000, ranking Namibia at number 28 globally.<sup>3</sup> Non-adherence to chronic medication is a complex issue that affects clinical outcomes,<sup>4</sup> health expenditure and the health system's operation.<sup>5 6</sup> Several implementation research studies have revealed that it is imperative to involve the relevant stakeholders to recommend interventions effectively and agree on long-term decisions to improve patient compliance.<sup>7-9</sup>

Since hypertension barriers diverge for specific geographic settings, it is advisable to develop interventions addressing the specific barriers to hypertension.<sup>10</sup> The National Health and Nutrition Examination Survey

(NHANES) in the USA, conducted between 1998 and 2018, identified that factors most often associated with non-adherence were related to the following: patient socioeconomic factors; medication; healthcare system; patient-related issues such as visual or hearing impairments, lack of education and condition-related such as disease severity.<sup>10</sup> The survey further revealed that for the barriers identified to be addressed, specific interventions concerning the barriers needed to be proposed. Among the proposed interventions included health systems strategies, real-time counselling, open-ended discussions, visual aids and patient diaries, technologies to integrate reminder notices, simplification of regimes, elimination of out-of-pocket costs and home blood pressure (BP) monitoring systems.<sup>10</sup>

The WHO dimension model of adherence factors has also propped similar adherence-related factors with corresponding interventions identified by the NHANES.<sup>11</sup> Although hypertension adherence factors with corresponding interventions are known, previous studies conducted in high-income countries have indicated that the most common facilitators for hypertension control were social support, knowing how to control hypertension and community resources.<sup>12</sup> The most common barriers were a lack of hypertension knowledge and medication, provider–patient communication gaps and disease awareness.<sup>12–14</sup> Studies often focus on hypertension barriers more than facilitators, which creates a gap in patient–physician communication or the health sector regarding patients’ concerns about medication.<sup>12–14</sup> On the other hand, a study conducted in Iran indicated that physician communication training improves physician–patient communication skills, hypertension outcomes and medication adherence.<sup>15</sup> Similarly, another study found that the perceived availability of support and beliefs about the condition and treatment influences hypertension management.<sup>16</sup> Patient-centred approach, including engagement of the patients in their care by self-blood pressure monitoring, can also significantly improve medication adherence.<sup>17–18</sup> The current study addresses both barriers and facilitators, including communication barriers, contributing to filling the gap identified in previous studies.<sup>12–14–16</sup> Interventions for hypertension adherence, such as community health worker-led multi-component intervention, drug monitoring programmes, have been studied in countries such as Argentina and evidenced to produce good outcomes.<sup>19</sup> Similar strategies can also be considered in Namibia.

Information on multilevel hypertension prevention, detection and control interventions is quite evident.<sup>19–20</sup> Despite the information, Namibia lacks a well-established surveillance system or strategy for non-communicable diseases (NCDs). A few studies in Namibia have reported hypertension adherence predicting factors, including supplying enough medication, support of friends/family and maintaining scheduled follow-ups.<sup>21–22</sup> Based on the studies conducted in Namibia, the authors recommended strengthening adherence monitoring, investigation of

social-demographic characteristics such as transport, and collaboration of public and private health facilities in preparing the country to practice universal access to medication fully.<sup>21–22</sup>

To our knowledge, there is no such study in Namibia that has focused on enforcing medication adherence, although universal access is one of the targets of the Namibia strategic plan in response to reducing NCDs.<sup>23</sup> Nonetheless, through consultation with stakeholders, including WHO, Namibia developed The National Multi-sectoral Strategic Plan for the prevention and control of NCDs for the next 5 years, 2017/2018–2021/2022. The strategic plan aims to reduce morbidity, mortality and disability due to NCDs and achieve a healthy and productive population.<sup>23</sup> Hence in our study, we conducted a stakeholder workshop to determine the acceptable hypertension intervention package to help promote hypertension adherence in Namibia. The results of this study will help guide the design and implementation of the most acceptable hypertension intervention for Namibia, which will be used to help reduce cardiovascular outcomes among patients with hypertension.

## METHODS

This paper adheres to the Standards for Reporting Qualitative Research reporting guidelines.<sup>24</sup> We invited key stakeholders offering hypertension services and patients with hypertension to participate in the nominal group technique (NGT) workshop in Khomas region, Namibia. The study was part of a multi-phase study aimed to determine factors influencing the implementation of interventions to promote adherence to hypertension in Namibia.<sup>21–25–26</sup> We employed the NGT method. The NGT method, commonly referred to as the consensus method, is a highly structured face-to-face group interaction that empowers participants by providing an opportunity to have their voices heard and opinions considered by other members.<sup>27–28</sup> The aim is to achieve a general agreement or convergence of opinion around a particular topic to solve a problem, generate an idea, and, especially in the health sector, develop guidelines and identify research priorities.<sup>29–30</sup> NGT consists of four key steps: silent generation of ideas, round-robin where participants discuss individual ideas, clarification of ideas, narrowing exhaustive idea list into key themes and voting (ranking or rating), scoring respondents’ perceptions for importance or preference.<sup>29–31</sup> The scoring is usually done on a maximum 5-point scale, which we applied in our study. The workshop took place at Unam Hage-Geingob Campus, Windhoek, Khomas region, on 27 November 2021.

## Study participants and sampling

The PI (principal investigator; ON) invited the key stakeholders, including blood pressure patients, via email by means of invitation letters and purposely sampled 12 key stakeholders. We defined key stakeholders as subject matter experts (SMEs) in NCDs, including primary

healthcare professionals, family medicine and representatives of our target population (hypertensive patients) who have an interest in the implementation of the most acceptable hypertension package in Namibia. All the key stakeholders included in the study were over 18 years and above and resided in Windhoek, Khomas region. The key stakeholders included an NCD expert from the WHO, public and private healthcare professionals, an academic, a medical scientist, a field epidemiologist and patients with hypertension.

The researchers informed the participants that their participation is voluntary, and in the event of refusal/withdrawal of participation, the participants will not incur penalty or loss of treatment or other benefits to which they are usually entitled. The data collected was kept safely on a computer with a password to which the PI only had access. The information was only shared with authorised research team members. No harm was intrigued to participants as no human sample was collected.

### Patients

The patients or participants were recommended for the study by community health workers who work closely with them. Interest in the study was then discussed with a prospective participant in person and through a phone call by the PI. During recruitment, the PI considered patients' demographic characteristics, including age, marital status, employment, place of residence and facility ownership (public or private), to ensure a balanced representation. Four participants were considered part of the stakeholders, two from public health facilities and two from private facilities. The study information sheets were sent to interested participants, and signed consent was obtained prior to the workshop.

### Other key stakeholders

Potential participants were approached in person or via phone call by the PI. We also used the snowball or chain referral technique to recruit suitable stakeholders. During recruitment, the PI considered stakeholders' demographic characteristics, including age and employment, to ensure a balanced representation. We included eight SMEs in the study. The study information sheets were sent to interested participants, and signed consent was obtained prior to the workshop.

### Eligibility criteria

We included individuals aged 18 years and above who met one of the following inclusion criteria:

- ▶ Health professionals working in Khomas region in the domain of family medicine or primary healthcare division for at least 3 months.
- ▶ Health professionals employed in Khomas region at NGOs such as WHO with a focus on NCDs.
- ▶ Health professionals employed by a clinical reference laboratory and involved in testing for biochemistry analysts

- ▶ A senior academic whose research interest is in NCDs, including hypertension.
- ▶ Patients with hypertension residing in Khomas region who have at least completed a 6month cycle of hypertensive medication.
- ▶ Individuals who are able to communicate in English language.

### Exclusion criteria

- ▶ Personnel who work in pharmacies and health insurance companies.
- ▶ Patients who are taking other chronic medication apart from hypertension.
- ▶ Individuals who are mentally challenged to give consent to participate in the study.

### Workshop programme

The nominal group process<sup>32</sup> was conducted in three phases in a highly structured group discussion to achieve a group consensus on the priorities in response to our specific research questions. Phase 1: consensus on the prioritisation of barriers that influence hypertension adherence. Phase 2: consensus on the prioritisation of enablers that currently influence hypertension adherence. Phase 3: consensus on the prioritisation of the most acceptable hypertension intervention strategies to address the barriers and enablers.

- ▶ Phase 1: What are the barriers to hypertension adherence?
- ▶ Phase 2: What are the enabling factors for hypertension adherence?
- ▶ Phase 3: What are the most acceptable strategies for the proposed barriers and enablers to promote hypertension adherence?

During the nominal group process, we arranged the participants into four subgroups of three, ensuring that each group contained one representative of the target population and two SMEs. The PI served as the convener and moderator for the group.

#### Phase 1

We requested key stakeholders to share their views on barriers to hypertension adherence. On instructions from the facilitator, stakeholders independently grouped their suggestions into themes. The PI (ON) listed the themes in a voting form to enable voting through ranking. Participants were then requested to rank the themes according to the severity of hypertension barriers. The ranking score was between 1 and 5.

#### Phase 2

We requested key stakeholders to share their views on the enablers to hypertension adherence. On instructions from the facilitator, stakeholders independently grouped their suggestions into themes. The PI (ON) listed the themes in a voting form to enable voting through ranking. Participants were then requested to rank the themes based on the most important enabler for hypertension adherence. The ranking score was between 1 and 5.

### Phase 3

During this phase, we requested key stakeholders to suggest the most acceptable strategies for hypertension adherence based on the barriers and enablers proposed in phases 1 and 2. The PI listed the themes in a voting form to enable voting through ranking. Participants were asked to rank the themes according to the effectiveness of promoting hypertension adherence. The ranking score was between one and five, with one being the least effective and five being the most effective strategy.

After the workshop, a report presenting the results of NGT was compiled by the PI (ON) and shared with key stakeholders for comments. The transcripts from the qualitative component of this study are available in online supplemental file 1.

### Data management and analysis

For the quantitative data gathered during the ranking step in the nominal group process, the total importance score for each barrier was calculated by summing the participants' scores; for phase 2, a total importance score for each enabler was summed up based on the most important enabler for hypertension adherence. In phase 3, a total importance score for each strategy was calculated to indicate perceived effectiveness to help address the barriers and enablers identified in phases 1 and 2. The ranking scores were between 1 and 5. We analysed the qualitative data using thematic content analysis to inductively identify the themes that emerged from the data presented during the discussion using NVivo V.12 pro software, QSR International. The data analysis was based on the naturalistic paradigm, with conventional content analysis<sup>33</sup> in which coding categories were derived directly from the text data to reduce bias as a result of preconceived ideas or other theoretical views. The first and fifth authors performed data analysis.

### Patient and public involvement

Patients or members of the public were not involved in the research design nor dissemination of the findings; however, because patients were part of the stakeholders, they were involved in the analysis and interpretation of the results. Provincial managers and Supervisors at the Ministry of Health and Social services were involved in recruiting key stakeholders. The data will be shared with the public through publication; and presentations.

## RESULTS

We recruited eight SMEs and four representatives of the target population aged between 33 and 59. The participants were equally distributed in terms of sex: males 6 (50%), females 6 (50%). All the participants were employed. The SMEs represented as follows: a specialist in NCDs from WHO, two internal medicine specialists who are practicing privately; two key stakeholders employed in primary healthcare in the state; medical scientist; a research expert in chronic diseases from a

higher institution, and the last key stakeholder was a field epidemiologist who also works closely with the fishing industry. Refer to [table 1](#) for the characteristics of the study participants.

### Stakeholders' perspective on the barriers to hypertension adherence

The stakeholders reported 14 factors as barriers to hypertension adherence. The voting results showed that lack of knowledge on hypertension (57 scores) was voted as the most barrier; shortage of hypertension medication emerged second position (53 scores), followed by not having a social support system (47 scores). Having to take multiple medications emerged last (27 scores). [Figure 1](#) shows barriers to hypertension adherence.

### Stakeholders' perspective on the enablers to hypertension adherence

The stakeholders reported 14 factors as enablers to hypertension adherence. The voting results showed that patient education scored first position (57 scores); availability of drugs emerged second position (53 scores), followed by having a support system (47 scores). The provision of a national health fund emerged last (27 scores). [Figure 2](#) shows enablers to hypertension adherence ranking results.

### Stakeholder's perspective on the most suitable intervention package for hypertension adherence

All 12 participating stakeholders were requested to suggest hypertension strategies based on the suggested barriers and enablers and rank them according to their potential effectiveness. [Table 2](#) shows 17 suggested hypertension strategies in ascending order of their ranking score. Key stakeholders ranked continuous patient education from initiation of treatment as the most desirable (54 scores) strategy to help promote hypertension adherence, followed by setting up of a national dashboard to primary monitor medication stock (52 scores) and community support groups for peer counselling (49 scores).

### Reported barriers and enablers versus proposed strategies

Our results show a relationship between the identified barriers and enablers to promote hypertension adherence. Patient education has been proposed as the most important strategy that could help address barriers due to lack of knowledge concerning hypertension medication, social stigma, lack of proper diet and adverse side effects resulting from medications or non-adherence. It will also help understand enabling factors on hypertension assessment interventions that are culturally appropriate. [Table 3](#) is informed by the WHO model of medication adherence guidance.<sup>34</sup>

### Feedback from stakeholders on proposed strategies

All 12 participants (P) from the workshop were requested to comment on the proposed strategies to promote hypertension adherence. They all read the report and agreed with the results.

**Table 1** Characteristics of the participants

ID	Sex	Age range (years)	Highest qualification	Title	Designation
1	Male	40–45	PhD Epidemiology	WHO consultant (NCD specialist)	SME
2	Male	50–55	MBBch, DA	Physician/Health Former Minister	SME
3	Male	50–55	MMED (Internal Medicine)	Physician (Internal medicine)	SME
4	Female	45–49	Postgraduate (BNSc Advanced Practice)	Diabetes nurse educator	SME
5	Female	45–49	Diploma in nursing & BA Community and Health Psychology	Registered nurse: SHPO-FH, PHC	SME
6	Male	42–45	MSc Field Epidemiology	Medical scientist Epidemiologist	SME
7	Male	31–36	PhD Physiotherapy	Academic researcher Lecturer	SME
8	Female	30–35	MSc Field Epidemiology	Registered nurse Epidemiologist	SME
9	Male	31–36	Grade 12	Community healthcare worker	Target population representative
10	Female	35–39	Grade 12	Self-employed	Target population representative
11	Female	40–45	Grade 9	Self-employed	Target population representative
12	Female	54–60	Diploma in Economics	Sales manager	Target population representative

NCD, non-communicable disease; PHC, primary healthcare; SHPO, senior health programme officer—family health; SME, subject matter experts.

## Major responses from the top three hypertension strategies proposed

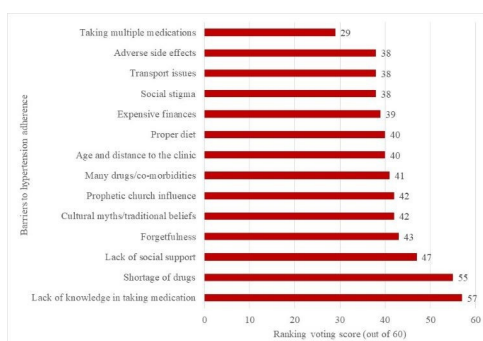
### Patient education

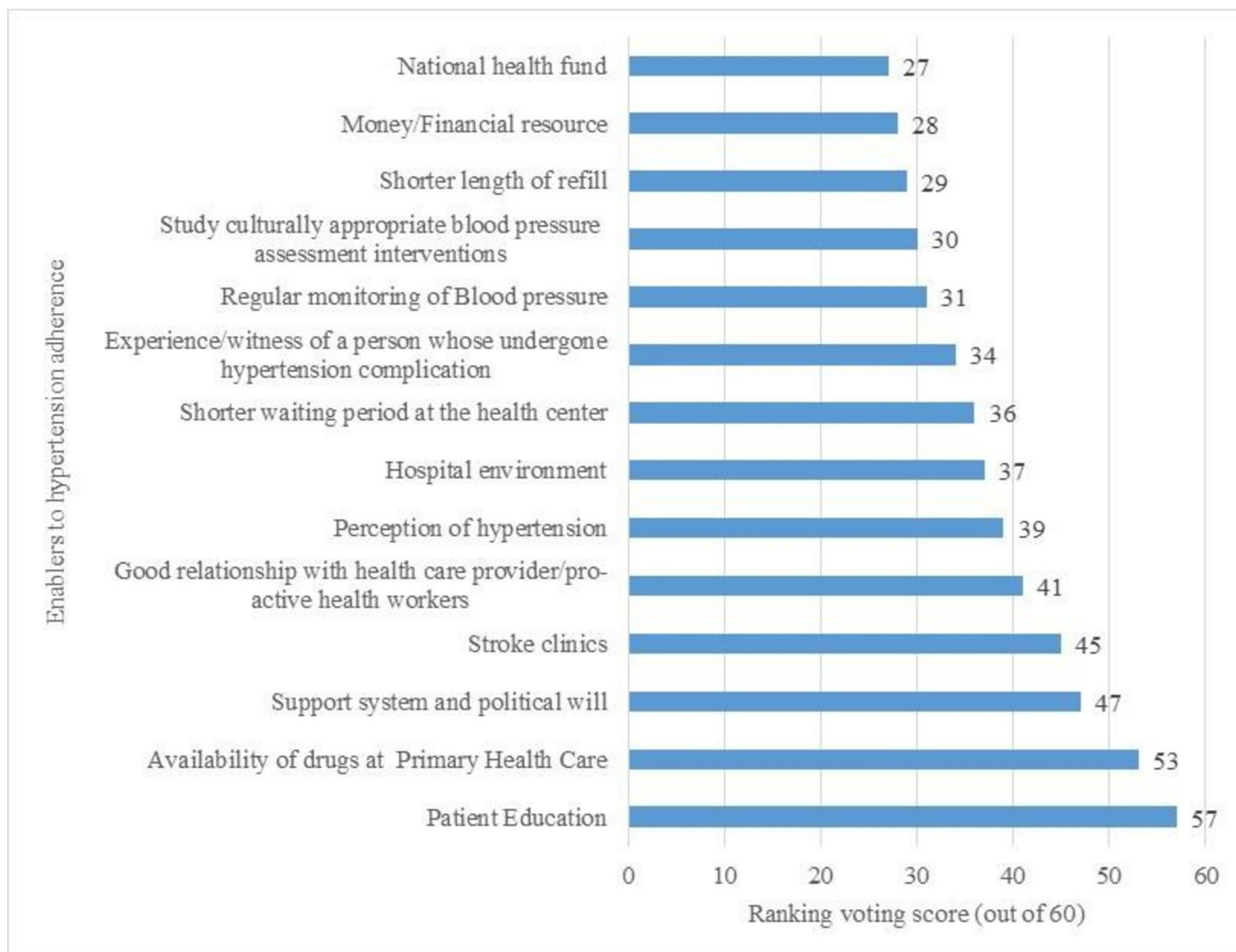
The key stakeholders suggested patient education as one of the key strategies that can be employed to promote hypertension adherence, emphasising continual education by healthcare workers, including community health workers, from the initiation of treatment. Health Education should focus on hypertension, its signs and symptoms, treatment, reference ranges, side effects, complications due to non-adherence and the importance of counseling sessions in relation to hypertension. Promotion of a healthy diet, physical activity, religion and beliefs should all be part of the package. Stakeholders also suggested

that patient education be conducted in local languages through different media platforms such as radio and TV as well as community leaders. Spouses of patients with hypertension were suggested to be part of patient education. Some of the participants indicate that:

I think every time patients go to the hospital; they should get brochures indicating (What is hypertension; what are the signs and symptoms of hypertension; how hypertension is treated; what are the side effects; consequences of a lack of adherence to the medication). All this information should be well explained to the patients. Hypertension is physiological; hence patients need to be reminded and explained what it means if they default when hypertension is controlled, and they no longer see signs and symptoms and what they need to do in terms of taking medication. Patients need to fully understand the importance of adherence that moment you stop taking your medication, your heart loses the ability to control the blood, so the problem will still come back again. (P1)

Education is an ongoing process with every follow-up. Ongoing education on diet and exercise. Sometimes there is a shortage of manpower the clinics are overcrowded. When dealing with NCDs there is a broad spectrum of NCDs; therefore, we need to capacitate


**Figure 1** Barriers to hypertension adherence.



**Figure 2** Enablers to hypertension adherence.

and strengthen community health workers. From nurses to pharmacists. Hypertension is a silent killer, hence Education (P7)

This whole patient education should be from day one, it is not just at the beginning, it has to be every day, when they come to the hospital, the health care workers must check in the patients log books if they are taking their medication. Patients must see a counselor first and be explained hypertension figures and what they mean; we do not even know what some of the values of the figures mean. Information is power (P4)

Educate patients on the implications of nonadherence and what hypertension is. Patients need to be congratulated/be encouraged when they are adherent as well (P7)

Health education is key and must address the aspect of religion because it is a common challenge. Yes, God will save you, but the same God who will save you is the one who provided knowledge to the health workers and scientists to come up with the medication; therefore, one needs to adhere (P8)

Education is the most strategy that you can use, if you are not educating, the people will not adhere. Educate all the stakeholders involved, especially outreach. Capacitate our health workers (P7)

There are so many ways that can be used to spread information on adherence. We can use media, TV presentations, adverts, and community awareness, for example, church pastors, traditional leaders, and the heads of households, key members of the community who influence our decisions; all those people are extremely important. Your own husband can be a barrier to taking your medication, maybe he disapproves of you taking your medication, so maybe we need to use quite a number of platforms (P6)

Information sharing should be done at least twice a month in local languages. If the person could not be available for the first broadcast, they will have another chance on the next Everything must be explained, even me the medication that I am taking, I cannot even read that name (all participants laugh) it's true, I cannot read it, (other participants concur with her) Even if you want to do some research on

**Table 2** Proposed hypertension strategies to promote hypertension adherence

Proposed strategies for hypertension adherence	Summing by votes 1=less effective 5=highly effective					Total number of voting scores (weighted sum=number of votes×ranking score)
	1	2	3	4	5	60
Enabling community healthcare workers to refill	2	2	4	1	3	37
Creating common low-cost community transport	2	2	2	5	1	37
Family support to the BP initiation treatment		6		4	2	38
Sports interventions to target man	1	3	3	2	3	39
National health fund—critical pillar for universal health coverage		5	2	1	4	40
Construction of health facilities		3	3	5	1	40
Change in health workers attitude towards patients	1		7	2	2	40
Employment opportunities	1	2	3	3	3	41
Collaboration of hypertension programme and fishing industry		3	3	2	4	43
Appropriate measures to regulate prophetic churches and so called healing medicines	1	1	3	3	4	44
Simplification of regimes		2	2	4	4	46
Mobile clinics—provision for hypertension outreach programmes			4	5	3	47
Involvement of social worker in adherence counselling		1	2	5	4	48
Patient reminders			4	4	4	48
Community support groups-peer counselling		1	2	4	5	49
National dashboard—stock availability		1	1	3	7	52
Patient education			1	4	7	54

BP, blood pressure.

the medication, you cannot because you cannot read it. (P4)

#### National dashboard: stock availability

The national dashboard was suggested with the primary aim of monitoring medication stock shortage which is an issue in state hospitals. Additionally, minimise unexpected out-of-pocket expenses, prevent stealing medication in the state facilities, and avoid unnecessary transport costs and wrong prescriptions. Some of the participants indicate that:

If we have the national dashboard where authorized persons have access to it, this way you will have many people looking at the dashboard, and if there are flags, someone will be able to alert the person at the central medical store that this region the stock is low, send some stock. Countries like Rwanda have a national dashboard. Instead of you working with those cards, they used to take stock, a very primitive physical thing. The National dashboard will be like a calendar for a Google meeting. Some of the government employees even steal the medication; therefore, the dashboard will help with this. (P11)

We need to prevent stock-outs of medication at the central medical store, stock control from the supplier, from Central medical store and local pharmacies. If

you know your stock is less, then you need to add. Stock-outs are a result of poor planning (P7)

The person responsible for ordering the drugs should ensure an ever availability of the drugs, and they should at least announce on social media or on the radio in advance that there is no stock available on this date, and the way this pharmacist is responding to you, that there is no medication, they are very rude. Imagine sitting there the whole day, and when you come to the pharmacy, the person is very rude with you (all participants concur). At least if they can announce that we do not have high blood pressure medicine this month, it saves us from going there. (P4)

Proper procurement at the hospitals should be exercised to have a batch of drugs available at all times and should be treated as an emergency. If we have run out of stock, there must be a way where the medication can be procured because patients need the medicine (P1)

In Namibia, we have a tendency of a bottleneck, you already have two or more committees to the procurement, then later you still want to add another committee, and this committee there will be a middleman that needs a share from the tender, so

**Table 3** Matching hypertension barriers and enablers to promote hypertension adherence with proposed hypertension strategies

Barriers	Enablers	Strategies
Expensive finances, transport issues	Duration of hospital stay reduced, money or financial resource	Enabling community healthcare workers to refill
Expensive finances, transport issues	Money/financial resource	Creating common low-cost community transport
Lack of social support	support system, perception of hypertension	Family support for blood pressure initiation treatment
Social stigma	support system, perception of hypertension	Sports intervention to target man
Expensive finances	Money/financial resources, national health fund	National health fund as a critical pillar of universal health coverage
Shorter waiting period at the health centre	Shorter waiting period at the health centre, hospital environment improved	Construction of health facilities
Forgetfulness, adverse side effects	A good relationship with healthcare providers/proactive health workers	Change in health workers' attitudes toward the patients
Expensive finances	Money/financial resources	Employment opportunities
Shortage of drugs	Political will	Collaboration of hypertension programme and fishing industry
Prophetic church influence	Patient education, political will	Appropriate measures to regulate prophetic churches and so-called healing medicines
Too many daily medications	National health fund	Simplification of regimes
Shortage of drugs, lack of knowledge, transport issues	A shorter length of refill	Mobile clinics—provision for hypertension outreach programmes
Lack of social support	Experience/witness of a person who has undergone hypertension complication	Involvement of social worker in adherence counselling
Forgetfulness	Availability of drugs at primary healthcare, shorter waiting period at the health centre	Patient reminders on the phone
Lack of social support	Experience/witness of a person who has undergone hypertension complications, stroke clinics	Community support groups-peer counselling
Shortage of drugs	Availability of drugs at primary healthcare	National dashboard—stock availability
Lack of knowledge, social stigma, proper diet, adverse side effects	Study interventions of blood pressure assessment that are culturally appropriate	Patient education

the only way is to shorten the process of buying this life-saving drugs. (P2)

The national dashboard should be able to cater to the people who work in the sea to help the Fisherman, that way they are not left out (P10)

#### Community support groups-peer counseling

The key stakeholders suggested community support groups as one of the strategies that can be employed to promote hypertension medication. This is to avoid stigma and forgetfulness; patients are most likely to adhere when a fellow patient has gone through, for example, a stroke. Some of the participants indicate that:

We need to have support groups for hypertension in the community just like we have for HIV and TB. We are putting so much on tertiary treatment and not primary prevention. Our focus is more on once they

have had the stroke is when we start putting them in a group, we are not really proactive enough in preventing hypertension in developing into a stroke, so more emphasis is needed on putting them in groups, let them share ideas, interact, because one of the major causes of a stroke is defaulting, so I believe maybe if you put more resources into primary prevention, by actually implementing some of these techniques within the community may, or even, within hospital set ups (P1)

When you are diagnosed with hypertension at 35 years of age, for instance, instead of having doubts about whether you will leave long enough (participants laugh), when you are introduced to a fellow patient who has been having hypertension for years and is surviving for many years, you might be encouraged to adhere to medication and build hope. And

then the issue of having children, some will tell you I have been on medication before I got married, now I have my 7 children (all participants laugh), so when you are being told by someone who is a living example, it really encourages and helps you. (Other participants concur) (P2)

Encourage people with hypertension to join support groups in the community and also support from the family. People with the same diseases join and do activities together like poultry farming, and gardening and encourage each other. Just like the ones for HIV programs. The clinic in charge should encourage patients with hypertension or community health workers to set up support groups in the community. Every community health worker can form in a village where they are allocated. (P10)

Community support is important. You could have your family's support, but the community members are still looking down on you. There is a need for community sensitization of what hypertension is, how these people are supposed to survive or live within the community because some people discriminate, like some people will say how am I going to employ you if you are hypertensive, so I think it's a spectrum on community sensitization, the community support up to the family support as well (P2)

## DISCUSSION

This study presents the consensus of key stakeholders' most acceptable intervention package for promoting hypertension adherence in Namibia. The stakeholders reported multiple barriers and enablers to the uptake of antihypertensive medication and proposed compressive integrated strategies to address the barriers and enablers. The findings from the current study are in coherence with WHO guidelines for medication adherence.<sup>34</sup> Lack of knowledge in taking medication, shortage of drugs and lack of social support were identified as the top three barriers and, at the same time, enablers to hypertension adherence, which means that the top three enablers identified in this study were comprehensive patient education, availability of drugs at PHC, and having a social support system. Our findings on the most severe barriers and enablers identified corroborate with many studies conducted across the globe.<sup>14 35–38</sup> A scoping review qualitative study on factors contributing to medication adherence in patients with a chronic condition revealed that information and knowledge of diseases and their treatment, communication, support and adequate resources appeared to be the critical barriers and facilitators in medication adherence.<sup>14</sup> Similar findings were reported from a study conducted in Malaysia which concluded that a lack of knowledge on targeted blood pressure levels has led to poor blood pressure monitoring among the participants.<sup>35</sup>

Contrary to our findings, a study conducted in Nigeria indicated that the availability of affordable health insurance was considered one of the most important resources for providing high-quality hypertension care to the local, primarily poor, population.<sup>39</sup> The findings from Nigeria may have differed from ours because they included primary healthcare providers and insurance managers as opposed to our study, which included the target population, hypertensive patients. Nonetheless, our findings, including those on medication availability, interestingly agree with factors that were identified as predictors for hypertension in Namibia, which include supplying enough medication, support of friends/family and maintaining scheduled follow-ups.<sup>21 22</sup> This shows how much the barriers and enablers, as identified earlier, are significant to hypertension management and adherence.

The most important key strategies identified by the current study were the promotion of patient education through different delivery platforms, having a national dashboard, and encouraging community support groups-peer counselling. In our study, stakeholders suggested that health professionals give continuous education in local languages through platforms such as radio and television and community awareness through the leaders in the community. The stakeholders added that education through platforms such as television should be done at least two times a month so that if a person is not available for the first broadcast, they will have another chance on the next broadcast. Our findings agree with similar studies conducted in South Africa, Bangladesh, Pakistan, Sri Lanka and South Korea, which demonstrated that educational interventions, organisational interventions aimed at delivery care, and SMS reminder systems could effectively manage chronic medication adherence.<sup>40–43</sup> Additionally, one of the Lancet commission's articles on hypertension agrees with our findings on hypertension health promotion and strengthening of the care system.<sup>44</sup>

Similar findings were reported in a study conducted in China which found that interactive education workshops may be the most effective strategy in community-based health promotion education programmes for hypertensive patients.<sup>45</sup> Similarly, a qualitative study, where knowledge was found to be a barrier, suggested that developing a more personalised approach to education and communication could be effective.<sup>46</sup> Similar findings on the involvement of health practitioners including nurses, pharmacists and community health workers in giving educational sessions and disseminating information are supported through a systematic review study.<sup>47</sup> Our study suggested a national dashboard to monitor medication stock so that patients do not run out of medication and end up paying 'out of pocket'. The stakeholders in our study believed that this method worked very well in countries such as Zimbabwe with HIV and tuberculosis programmes. Similar results on the national dashboard were reported in five Indian states, which found that an adaptive strategy of community-based drug distribution through community or social workers and home

delivery appears feasible and may help improve access to hypertension care.<sup>48 49</sup> In Namibia community based strategies have been reported to be successful with for example directly observed treatment on tuberculosis and community-based antiretroviral therapy.<sup>50 51</sup> The dashboard monitors the drugs and identifies patients at risk of potentially hazardous prescribing.<sup>52</sup>

Social support was identified as the third most important strategy in the current study. Similar findings were reported by a study conducted in Nigeria, which indicated that adherence clubs for hypertension control are feasible and led to a statistically significant and clinically meaningful improvement in self-reported medication adherence, resulting in BP reduction.<sup>53</sup> Similar results were also stated in a study conducted in China.<sup>54</sup> Group hypertension education classes are an effective way to care for patients.<sup>55</sup>

The collaboration with stakeholders on perceptions of the most suitable hypertension strategy resulted in multiple strategies and how to implement them, especially in the current setting and Namibia at large. Therefore, we propose conducting a discrete choice experiment with patients with hypertension to determine Namibia's most acceptable hypertension package. The stakeholders recommended a multifaceted educational intervention package that targets patient and healthcare system factors. Since education is paramount, we recommend that the package incorporate continual reminders on hypertension information, including the importance of medication adherence, and the consequences of not taking medication throughout an organisational-drug reminder system. Reminders can be sent once, weekly.

## CONCLUSIONS

Hypertension key stakeholders in Namibia perceived patient education as the most acceptable intervention package to help promote medication adherence for their population. Therefore, it presents the most common recent barriers and enablers to hypertension adherence which will offer an opportunity to implement a strategy for promoting adherence to hypertension therapy consequently reducing cardiovascular outcomes. Before implementing the proposed intervention, we recommend a follow-up study to determine the most preferred hypertension strategy by different population groups from different regions across Namibia.

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**Acknowledgements** We would like to thank and acknowledge all the stakeholders who participated in this workshop. A special thanks to Dr Shumba Washington for co-moderating the workshop and Ms Esther Muhepa who assisted with recording and transcribing. We would also like to thank the NCD coordinator and Primary health Care Supervisors at the Namibia Ministry of Health and Social services (MoHSS) for their assistance with recruiting some of the workshop participants. A special thanks to the University of Namibia for providing a venue to conduct the workshop. The authors would also like to thank the University of KwaZulu-Natal (UKZN) for providing the platform to set up and conduct this research study.

**Collaborators** N/A.

**Contributors** The study has been conceptualised and designed by ON, BS and TPM-T. Data collection was done by ON and TWS. ON and TPM-T performed data analysis assisted by TWS and TD. All authors reviewed and approved the final draft of the manuscript. ON is responsible for the overall content as the guarantor.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** This study involves human participants and was approved by The Namibia MoHSS National Ethics Committee (Approval number: (17/3/3 ON), University of KwaZulu Natal Biomedical Research Ethics Committee (Approval number: BRE/00000944/2020) Participants gave informed consent to participate in the study before taking part.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** All data relevant to the study are included in the article or uploaded as supplementary information. All data relevant to the study are included in the article and uploaded as supplementary information 1.

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