Management of diabetes and hypertension among Zulu traditional health practitioners: A study of focus group interviews

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Abstract

Introduction: On the African continent, the rising cost of Western medication that is accessible for the treatment of both diabetes and hypertension encourages people to rely on traditional medicine assisted by traditional health practitioners to mitigate the effects of these chronic conditions. This study was carried out to explore Zulu traditional health practitioners' perspectives on managing both diabetes and hypertension.

Methods: Five focus group discussions sessions were held in June 2018, using a semi-structured interview guide. Discussions were audiotaped and the content was thematically analysed. Sixty-seven traditional health practitioners (39 females and 28 males) were purposely selected from the three geospatial locations (urban, traditional or tribal, and farm areas) in uMshwathi (UMgungundlovu District) and Emnambithi/Ladysmith (uThukela District), KwaZulu-Natal, South Africa.

Results: The majority of Zulu traditional health practitioners regarded diabetes and hypertension as the same condition, since one (having diabetes) leads to the other (hypertension).The following symptoms – weight loss, sweating easily, shortness of breath and eyesight problems – were the most commonly reported clinical features for both diabetes and hypertension by Zulu traditional health practitioners in this study.Although many traditional health practitioners were secretive about the recipes used in their practice, a few indicated using herbal mixtures containing *Aloe vera* and *Allium sativum* (garlic) for the management of both diabetes and hypertension.

Conclusions: Some similarities exist between Zulu traditional health practitioners and orthodox conventional medicine in terms of the description of clinical features of diabetes and hypertension. Ethnopharmacological preparations consisted mainly of two medicinal plants, *Aloe vera* and *Allium sativum*, for the management of both diabetes and hypertension by Zulu traditional health practitioners. *Ethiop. J. Health Dev.* 2019; 33(4):219-228]

Keywords: Diabetes,hypertension,polyherbal formulations,herbal mixtures,traditional health practitioners

Introduction

Many people living in sub-Saharan Africa consult traditional health practitioners (THPs) for their health care needs, either as the only source of healing or as the first person in their pathway to care(1). Besides, due to the high cost of Western medication for the treatment of both diabetes and hypertension, people rely on traditional medicine, assisted by THPs, to control the effects of these chronic conditions(2,3).

The World Health Organization (WHO) defines a traditional health practitioner as "a person who is recognized by the community where he or she lives as someone competent to provide health care by using plant, animal and mineral substances and other methods based on social, cultural and religious practices" (4). THPs employ non-conventional approaches(spiritual beliefs, local wisdom and herbs) to cure diseases (5). The Traditional Health Practitioners Council of South Africa (THPCSA) is tasked with the regulation of THPs' activities in all nineof the country's provinces.The South African Traditional Health Practitioners Act recognizes herbalists (*izinyanga/amaxhwele*), diviners (*izangoma,umthandazi* or *amagqirha*), traditional surgeons(*iingabi*) responsible for circumcisions, and traditional birth attendants (*ababelethisi* or *abazalisi*)(6).The THP Act recommends that these four main categories of practitioners should undergo a minimum period of training within a stipulated time to practice: herbalist (12 months), diviner (12months), traditional surgeon (5 years) and traditional birth attendant (12months) (7).

A report released by the International Diabetic Federation (IDF) in 2017 indicated that, globally, 425 million people are diabetic(8) and that the condition accounts for 5 million deaths every year. In the USA, it has been estimated that about 30.3million people have diabetes (9), while India has approximately 40.9 million people known to be diabetic(10). Data documented by IDF in 2017 revealed that there are 0.5 million people with diabetes in Cameroon,0.7 million people in Kenya, and approximately 3.2 million in South Africa(8). It has been established that one third of adults globally suffer from hypertension (11), with approximately 1.56 billion adults projected to be hypertensive by 2025 (12). Poland has the highest prevalence rate (women 72.5% and men 68.9%) of hypertension among the global population(13), while astudy conducted in Ghana indicated aprevalence rate of between 25% and 48% among the population(14), with the higher rate in urban areas (14). In South Africa, a quarter of the population aged 15-64 years old is known to be hypertensive (15). Studies conducted on the African continent reveal the assistance offered by THPs to patients in the treatment of both diabetes and hypertension(2,3).

Findings from studies carried out by researchers regarding the management of diabetes and hypertensionby THPs in various countries report a range of successes and challenges. In Kenya, for example, Chege *etal.* (2015) report that Nairobi THPs rely on the reported signs and symptoms of diabetes by their patients, rather than a physical examination of

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patients as employed in orthodox conventional medicine (OCM) for diagnosis purposes. One of the challenges faced by Nairobi THPs is the non-standardization of the dosage of herbal mixtures they prescribe for patients with diabetes(16). A study conducted in Zambia revealsthat Lusaka THPs relyon divination for diagnosis purposes, which cannot be evaluated scientifically(17). In South Africa, THPs practicing in the former Northern Province (now Limpopo) describeclinical features such as polyuria, blurred vision and poor wound healing associated with diabetes, which is in agreement with the scientific literature. Moreover, THPs in the study stated that some of the diabetic patients were cured of diabetes within two weeks of takingtheir herbal mixtures (18).Similarly,Van Huyssteen*etal*. Report similarities between the description of clinical features (dry mouth, poor wound healing, and persistent hunger) for diabetes provided by THPs' in Nelson Mandela Metropole and those of OCM. Ironically, however, these THPs lacked a basic understanding of terms such as 'hyperglycemia' (high sugar levels) and 'hypoglycemia' (low sugar levels). This was reported as a major challenge of the study(19).

The current study aimed to contribute to addressing the scarcity of information regarding the management of diabetes and hypertension by THPs in uMshwathi (UMgungundlovu District) and Emnambithi/Ladysmith (uThukela District), KwaZulu-Natal, South Africa.The participants were purposely selected from the three geospatial locations (urban, traditional or tribal, and farm areas) in both uMshwathi and Emnambithi/Ladysmith.The specific objectives of the study wereto determine the diagnosis, description of clinical features, and the ethnopharmacological and treatment approaches used by Zulu THPs in the management of diabetes and hypertension. Findings of the study will help THPs, researchers and health authorities to fashion a robust strategy for the management of these conditions.

Methods

Study design: A qualitative study using focus group discussions (FGDs) was conducted among THPs in KwaZulu-Natal on 22 June 2018 in Emnambithi/Ladysmith (uThukela District).

Study setting: The study took place in KwaZulu-Natal Province, South Africa, with the principal researchers (PRs) conducting FGDs with 67 THPs (39 females and 28 males) from uMshwathi (UMgungundlovu District) and Emnambithi/Ladysmith (uThukela District) in the local town hall in Ladysmith on 22 June 2018.The main purpose of a focus group discussion (FGD) is to explore the opinion of particular group of people.Taking into account the availability of the three geospatial locations (urban, traditional or tribal, and farm areas) in both districts, participants (THPs) were purposely selected with the help of executives (key informants) from the two districts' traditional healers' associations. A key informant is an individual (a member of a study population) who facilitates research by educating the researcher on a given subject of examination (21).

Procedure for recruitment and selection of participants: Contacts from the provincial association of THPs led the research team to the district associations in the study areas. With the help of leaders in the district associations, initial contacts were made with participants included in this study.

Study population, sampling technique, and sample size: This study included THPs aged 18 years old and above, irrespective of gender. THPs were drawn from urban, traditional or tribal, and farm areas. THPs experienced in the management of diabetes and hypertension were eligible for this study. Purposive sampling was used to select participants.

The research teamconducted five FGDs in both uMshwathi and Emnambithi/Ladysmith municipalities. The five FGDs each consisted of no more than 14 participants (22), except for FGD3, which had an extra participant. The five FGDs were denoted bycodes, i.e. FGD1: group 1(GP1), which had 14 participants; FGD2: group 2(GP2), with 14 participants; FGD3: group 3(GP3), with 15 participants; FGD4: group 4(GP4), with 14 participants; and FGD5: group (GP5), with 10 participants. FGDs were conducted in isiZulu language with the help of two research assistants (RAs) who served as moderators. It is significant to point out that a pilot project was conducted to test the suitability of the data collection instrument.Before each session, participants were asked to complete a questionnaire that included information on demographics. One research assistant (RA) operated the digital voice recorder and audiotaped conversations based on an interview guide,while the other listened attentively and took notes about conversations in each session. In each session (typically lasting about an hour), the two RAs introduced themselves and explained briefly what the study was about and encouraged THPs to express themselves freely. The two RAs made sure that clarity was sought, in case participants missed important information from a statement made by a participant. Participants were asked to comment on statements made during FGDs to indicate whether they agreed or disagreed with them.The RAs made sure that discussions were held until no new information was added to a topic under consideration. The PRs made sure that everything was in order during FGD sessions. Field notes were collected in each of the FGD sessions. The following observations were made: First, the compositions of GP1, GP2 and GP3 were predominantly female. Second, participants expressed adesire to offer information during the discussions,which were held cordially. However, the mood of the participants changed when the RAs asked participants to name medicinal plants and other constituents of their herbal mixtures used in the management of diabetes and hypertension.

Data analysis:Data collection and analysis were conducted concurrently;audiotaped conversions were transcribed verbatim by the assistants of RAs who were fluent in isiZulu language.Transcripts were analysed by a PR (a PhD research scholar trained and prepared in workshops organized by experienced tutors and researchers in the field of qualitative research, both in

South Africa and abroad) and two independent qualitative researchers, following Tesch's recommendation of identifying themes and sub-themes in the raw transcribed data (23) (seeTable 1). The following steps were followed: First, transcriptions were read thoroughly, and general ideas were written down; second, an attempt was made to get a general understanding of the statements made by THPs in the study; third, similar topics were clustered together; fourth, topics were abbreviated, and the codes were written down. Topics identified from step 4 were turned into categories. A decision was taken on each abbreviated category and codes were alphabetized. The final step, a preliminary analysis, was performed to arrange data belonging to each category(23).

Quantitative data analysiswas carried out using SPSS version 20(24). Numerical values (age) and years of experience were expressed as mean± standard deviation, while other parameters were expressed in frequencies (n) and percentages (%).Thematic content analysis was used for the qualitative part of this study(25). To adhere to the trustworthiness of the analysed data, THPs' quotes have been reported verbatim.Checking was done whereby participants were given the findings of the study to assess whether they were in line with their experiences.

Ethics approval

The study received approval from the Biomedical Research Ethics Committee (BREC) of the University of KwaZulu-Natal under reference number BE 567/17.The purpose of the study and procedural formalities were explained to participants. Participation was voluntary, and in the various FGD sessions, participants were requested to give informed consent before being interviewed. Further findings of the study are presented thematically to ensure anonymity.

Table 1:Identified themes and sub-themes from analysed raw transcribed data of Zulu THPs' responses

Major themes	Sub-themes
Theme 1: Perceptions of diabetes and hypertension	• Understanding diabetes and hypertension • Are diabetes and hypertension curable or manageable? • Identifying a person with diabetes and hypertension • Perceived causes of diabetes and hypertension • Perceived major complications of diabetes and hypertension
Theme 2: Treatment modalities for diabetes and hypertension	• Ethnopharmacological interventions • Non-pharmacological interventions
Theme 3: Prescribing practices for diabetes and hypertension	• The severity of a patient's condition;high/low concentration of a mixture and age
Theme 4: Effectiveness of prescribed medication	• TM vs Western medication
Theme 5: Concurrent use of TM andWestern medication	• Encouragements and instructions to follow when on these two medications
Theme 6: Contraindications of medication	• Avoidance of takingTM and Western medication simultaneously
Theme 7: Feedback and monitoring of patients	• Positive feedback report from patients
Theme 8: Challenges faced in the management of diabetes and hypertension	• Inaccessibility of medical tools for diagnosis
Theme 9: Recommendations to improve diabetic and hypertensive care in South Africa	• Collaboration with biomedical health professionals(BHPs) • Endorsement and recognition from the government

Results

Socio-demographic characteristics of respondents: Table 2 presents the socio-demographic characteristics of respondents. Of the 67 participants recruited for this study, 58.2% were females. The mean age of respondents was 50.06 years ±14.13, with mean years of work experience as a THP of 18.83 years ±13.52.Nearly half of the respondents were married (47.8%); had a high school education (50.7%); and reported following a traditional religion (47%).The majority of THPs in this study (58.2%) used both divination and herbal practices.Most of them (95.5%) were registered with the Traditional Health Practitioners Council of South Africa (THPCSA), while less than half (47.8%) were registered with their local district associations.

Table 2:**Socio-demographic characteristics of THPs selected for the study**

Variables	Mean ± SD	n (%)
Age(years)	50.06(14.13)	N/A
Years of experience	18.83(13.52)	N/A
Gender	Female	39(58.2)
	Male	28(41.8)
Marital status	Cohabiting	2(2.9)
	Married	32(47.8)
	Single	30(44.8)
	Widows	3(4.5)
Religion	Christian	12(17.9)
	Traditional	31(46.3)
	Traditional and Christian	21(31.3)
	Other (Nazareth)	2(3.0)
	N/A	1(1.5)
Education	Nil	3(4.5)
	Primary school	29(43.3)
	Tertiary	1(1.5)
	High school	34(50.7)
Kind of practice	Both divination and herbal	39(58.2)
	Divination	2(3.0)
	Herbal	26(38.8)
Type of practice	Full-time	31(46.3)
	Part-time	35(52.2)
	N/A	1(1.5)
Place of practice	Home	63(94.0)
	Home and market	1(1.5)
	Office	3(4.5)
Registration (THPCSA)	No	3(4.5)
	Yes	64(95.5)
Registration(THA)	No	35(52.2)
	Yes	32(47.8)

THPCSA (Traditional Health Practitioners Council of South Africa; National body); THA(Traditional Healers Association; Local association in respective districts); SD(Standard deviation); N/A(Not applicable)

Summary of themes from the focus discussion groups (FGDs): In total, five FDGs were conducted with THPs.Themes were identified from the responses of the 67 Zulu THPs, which are briefly explained below

A) Perceptions of diabetes and hypertension

Understanding diabetes and hypertension

Most of the participants in this study described diabetes as a sugar disease:

*"It is a sugar disease."*Female 1, GP1

*"Diabetes can be one of the high sugar levels or low blood sugar levels."*Female 3, GP2

In addition, the majority of the THPs regarded diabetes and hypertension asthe same condition,since having diabetes leads to hypertension:

*"Diabetes and blood pressure (BP) are related. It is a norm that people who suffer from high BP are alsoaffected by diabetes because of the imbalance between sugar and salt in the body."*Female2, GP1

*"Diabetes and BP are more or less the same."*Male 2, GP2

Are diabetes and hypertension curable or manageable?

With regard to the question of whether diabetes and hypertension are curable, the majority of the THPs indicated that they were not. Across FDGs, there was a strong consensus that these two diseases could only be managed:

"Diabetes not curable it can only be managed." FGD participants in all the groups

*"We don't fully heal totally, because these two diseases cannot be completely cured but controlled."*Female 4, GP1

Identifying a person with diabetes and hypertension

Some of the THPs relied on the spiritual realms and ancestral spirits to diagnose the two diseases. Mostof the THPs relied on the condition of the patient, including their description of complaints and symptoms (weight loss, sweating easily, shortness of breath, eyesight problems), while others relied on the clinical diagnosis done byone of the BHPs at hospitals and local clinics:

*"People with BP or diabetes sweat a lot."*Male 3, GP4

"*Loses weight, sweats a lot, eyes become affected too."*Female 3, GP1

"*Person goes to the doctor to check sugar levels and then they come back to me for treatment."*Male 2, GP1

*"When the person comes, the sprits do the talking(mine) and the patient's ancestral spirits 'amadlozi' will lead me into knowing what is troubling the person and also how I can be of help to treat the person and for how long."*Female 4, GP1

Perceived causes of diabetes and hypertension

The perceived cause of both diabetes and hypertensioncan be illustrated by the statements below made by study participants:

a. Diabetes: consuming too much sugar, fatty, and junk food, lack of physical activities.

*"Too much sugar, too much salt intake and eating fatty foods."*Female 5, GP2

*"Too much salt, eating fatty and junk foods."*Male 3, GP2

b. Hypertension: stress, thinking too much, eating too much salt and fatty foods.

*"Excessive intake of salt, fat and other unhealthy foods."*Male 1, GP2

Perceived major complications of diabetes and hypertension

Most THPsin this study perceived major complications of both diabetes and hypertension, as follows:

a. Diabetes: stroke, eyesight problems, and amputation as a result of diabetic wounds.

*"If diabetes/BP, a person can have stroke."*Female 2, GP4

*"Wounds which are difficult to heal for people with diabetes (some not all) others even get amputated because of the serious condition they suffer from."*Male 1, GP2

b. Hypertension: nerve damage, heart diseases, and stroke.

*"Stress levels can become high, which will cause the condition to progress to the next stage, leading to a stroke or fatality."*Male 4, GP2

*"Hypertension leads to heart diseases."*Male 3, GP5

B) Treatment modalities for diabetes and hypertension

Ethnopharmacological interventions

MostTHPs recommended the use of herbal mixtures to manage the two diseases, specifically garlic and aloe vera:

*"We mix different herbs according to the level of illness. These are very bitter to taste but they help. However, we use different mixtures because we learn how to do so differently."*Female 1, GP1

*"Reduce salt intake, drink lots of water, regular exercise, eat fruits (apples), spinach, other vegetables, and avoid using cooking oil or fat when cooking."*Male 3, GP5

*"Mixture of various herbs,'amakhambi',are used to control these conditions; also garlic is used to control these conditions."*Male 2, GP1

*"Aloe and garlic are used for this disease."*Male 4, GP4

Non-pharmacological interventions

The majority of the THPs highlighted the significance of exercise in the management of both diabetes and hypertension:

*"The sick should avoid eating fatty foods, should exercise to enhance proper blood circulation."*Male 1, GP5

*"In my case, if someone says that they have BP, I simply use my hand to heal using massage therapy; due to massaging the person, the diastolic and systolic will automatically change."*Male 4, GP5

C) Prescribing practices for diabetes and hypertension

The severity of a patient's condition;high/low concentration of a mixture and age

Most THPs in this study believed that the dosage of their prescribed medications depended on the severity of a patient's condition and theirbody's response to consuming a certain quantity of herbal mixtures:

*"…I look into the eyes to check if the herbal mixture prescribed is making any improvements; so, I tell them to take a dosage of two teaspoons/tablespoons, because if they take overdose their condition might get worse and I also risk going to jail for making them drink more they should."*Female1, GP1

"Mixture of different herbs,'amakhambi', cooked, boiled or soaked, are given to the sick using a dosage which is line with the person's level of sickness or age" Female 3, GP2

*"The dosage depends on how strong the mixture is because most of the mixtures are organic and very bitter."*Male 2, GP4

D) Effectiveness of prescribed medication

TM vs Western medication

Most THPs acknowledged the fact that their prescribed mixtures were made from natural products and therefore were more effective thanWestern medication:

*"We know that traditional medicines are [more] effective than what the doctors prescribe because the patient's health improves."*Male 3, GP2

*"People go to the doctor for medication and when they don't see any improvements, they come to me for effective treatment and most of them stop doctors' medicine because they have strong faith in what I give them. After taking my medication I refer them to the hospital for check-ups and they always come out with positive results."*Female 5, GP 1

"There are people on BP treatment from the hospitals/clinics who do not improve – proof

*that these pills are not what the sick people need. Hence, our natural methods are effective, even if it is just by consulting the sick (talking to them). We also get healing powers spiritually."*Male4, GP5

E) Concurrent use of TM and Western medication

Encouragements and instructions to follow when on these two medications

Most of the participants were not against the concurrent use of TM and Western forms of medication by their clients, but believed that both TM and Western forms of medication should be taken at different times:

*"I encourage them not to stop the medicine from the doctors."*Female 5, GP1

*"I don't discourage anyone to stop taking medicine given by doctors;they can take my medicine together with the doctors so that none of the medicine's effectiveness to treat the disease is reduced. For example if the doctor says medicine should be taken in the morning then they take my mixture beforebedtime. Or if the doctor says the medicine should be taken at night, I tell my patients to cook porridge in the morning as early as 5am, then drink what I have given them."*Female 6, GP1

F) Contraindications of medication

Avoidance of takingTM and Western medication simultaneously

Most of the participants believed that TM and Western medication should not be taken simultaneously to avoid contraindications:

*"People can use medicines from the doctors and traditional healers' medicines, although at different times because our medicines also clean human organs/system (including Western medication) in the process of treatment."*Female 7, GP3

G) Feedback and monitoring of patients

Positive feedback report from patients

The majority of the THPs contended that they do follow-ups oftheir patients, and some report back voluntarily to inform that their health has greatly improved after taking their prescribed medication:

*"We do follow-ups on our patients, and the patients, they do come to us voluntarily to inform that their health has greatly improved after taking our medication."*Female 4, GP4

*"After taking the THP's medicine for threedays, I encourage the patients to go for a check-up. If the report says the levels are reducing, I tell the patients to take the mixture again for the next 3 days."*Male 3, GP4

H) Challenges faced in the management of diabetes and hypertension

Inaccessibility of medical tools for diagnosis

Most of the THPs in the study complained aboutthe lack of scientific diagnostic tools, such as glucometers and sphygmomanometers, to assist them to make diagnoses:

*"I do not have any devices to do proper check-ups."*Female 1, GP3

*"Having testing devices will be very helpful to us traditional healers because estimating as we do now imposes a risk of the patients dying either from taking too much or too little as the mixture we prepare."*Female 8, GP3

*"Without devices, it is difficult for us to diagnose the patients."*Male 2, GP4

I)Recommendations to improve diabetic and hypertensive care in South Africa

Collaboration with biomedical health professionals

Most of the THPs in the study suggested collaboration with BHPs to assist in the management of diabetes and hypertension:

*"It wouldbe ideal if we worked together with doctors, share knowledge, ideas, and equipment. We can learn more from them on the types of diabetes and how to approach their treatment schemes because diabetes can be one of the high or low blood sugar levels.While other mixtures are meant for those with high sugar levels, giving them the wrong mixture will cause problems."*Female 9, GP2

Endorsement and recognition from the government

The majority of the Zulu THPs believed that the government should endorse this health tradition to make it more acceptable in the public domain:

*"The government should stand its ground to endorse traditional healers and to enforce our practice in a way that is known and accepted by the general public, in the same way 'Western ideologies'are accepted."*Male 5, GP5

Discussion

This study explored THPs'understanding of the management of diabetes and hypertension in KwaZulu-Natal.Respondents in this study recognized that diabetes and hypertension were not curable, contrary to findings from a similar study conducted in the northern province of South Africa, where traditional healers and faith healers stated that diabetes is curable(18).The definition of diabetes as a 'sugar disease' in the local dialect is in agreement with astudy conducted in South Africa in which both faith and traditional healers identified diabetes as a sugar disease (18). It is also in agreement with a similar study conducted in Kenya (16).

THPs in this study noted that diabetes and hypertension were related, with one condition leading to the other, and that people who suffered from hypertension could also suffer from diabetes due to the imbalance of sugar and salt in the human body. A study conducted in the USA has shown that 30% oftype 1 diabetic patients were also diagnosed with hypertension(26). Furthermore, Landsberg&Molitchreport that 50-80% of type 2 diabetic patients were more likely to be diagnosed with hypertension(26).

Likewise,aprospective cohort study conducted in the USA revealed that patients living with hypertension who were taking beta-blockers other than thiazide diuretic or angiotensin-converting-enzymeinhibitors to manage the condition had a greater risk(28%)of acquiringtype 2 diabetes(27).

When identifying a person with diabetes and hypertension, some THPs diagnose them spiritually.This is similar to the findings of studies conducted in Zambia and South Africa, where THPs diagnosed their patients spiritually to know the cause of diseases (17,18).Gumede stresses the need to take into account the linkage between spirituality and an individual's health to understand THPs' practices better. Moreover, within the African context of healing, divination is seen as the principal way of revealing the cause of disease affecting an individual(28).Some of the traditional healers relied on the condition of the patient, including a description of complaints and symptoms, while others relied on diagnosis done at hospitals and local clinics, with the help of BHPs.This is in agreement with a similar study conducted in Kenya, where THPs encouraged people to make use of their local clinic services to manage diabetes (16).The signs and symptoms (weight loss, sweating easily, shortness of breath, eyesight problems) of these two diseases by the THPs in the current study are in agreement with scientific literature(29-32).

Perceived causes of diabetes described by THPs in this study (eating junk foods, too much sugar and salt in the diet, lack of exercise) and hypertension (stress, eating too much sugar and salt), were mostly in agreement with what has been reported in the literature(33-35).THPs in this study also reported eyesight problems (retinopathy) and stroke as some of the major complications of diabetes and hypertension. Patients affected by both diabetes and hypertension are more likely to develop microvascular (retinopathy) and macrovascular (stroke) complications than those living without these chronic conditions (36). Regarding treatment modalities used in the management of diabetes and hypertension, most of the THPs mentioned herbal mixtures ('amakhambi'in isiZulu language) as being the form of medication often used.Similar studies conducted across the African continent report the usage of herbal mixtures by THPs to manage diabetes and hypertension.THPs in Kenya reported the use of herbal mixtures for the management of type 2 diabetes mellitus (16); this is equally true for the management of hypertension in Zambia(17). A clinical trial study revealed the effect of polyherbal formulation (*Momordica charantia*, *Trigonella foenum graecum*, *Withania somnifera* and *Mucuna pruriens*) to reduce blood glucose and HbA1cin type 2 diabetic patients within two weeks ($p<0.001$)(37). Moreover, patients with diabetic retinopathy who were administered with diabecon (polyherbal formulation)for three months experienced resorption of retinal and vitreous hemorrhage in their eyes (38).

THPs in this study were very secretive about revealing the contents of their herbal mixtures for fear of losing sensitive information to researchers who invent drugs from their knowledge without given them recognition.This is in agreement with a similar study carried out in Kenya, where theTHPs withheld information about the constituents of their herbal mixtures (16).Some mentioned specifically the use of aloe and garlic to treat both diabetes and hypertension.A recently published article reveals the contribution of garlic supplement in the regulation of blood glucose levels in type 1(within 2 weeks) and type 2(24 weeks) diabetic patients (39).Experimental results also showed the effect of aloe vera in the reduction of blood sugar levels of type 1 and type 2 diabetic rats(40).Moreover, spinach, a green leafy vegetable used by THPs in the management of diabetes, is known for its antioxidant potential(elevated concentrations of vitamin c and beta carotene),which might help reduce the risk of diabetes(41).

Individualized treatment options for THPs'patients were most preferred. A study conducted in Kenya revealed similar findings concerning individualized treatments by THPs(16).The THPS felt that managing diabetes at its early stage is essential to achieve effective results and to avoid serious complications, such as amputation.It has been established that diabetic patients with foot ulcers (approximately 43%) have had their limbs amputated (42).

Regarding prescribing practices, good dietary regimen, eating a lot of fruits and vegetables, and taking regular exercise, were suggested by THPs in this study to manage diabetes and hypertension, as has been reported in the literature. Some researchers argued that there is evidence to support the limited use of salt and sugar in dietary regimens (rich in vegetables) to prevent hypertension and its complications(43). These same researchers recommended the consumption of low salt intake (3.8 g/d) and a diet rich in vegetables (8-10 servings/d) by patients(43).The need for patients to exercise regularly, as indicated by the THPs in the current study, is in agreement with findings of other authors(44,45), who noted the significance of exercise in preventing and managing both diseases.

In the last FGD session (FGD5), a male THP specifically mentioned the effect of massage on a hypertensive patients' diastolic and systolic pressures.An observational study revealed the effect of massage in 29 healthy male subjects, with an increase in muscle blood volume being observed in these individuals compared to the volume in their rest period ($p<0.05$)(46).

THPs in this study voiced different opinions on the prescribed practices of medication provided to patients and were very cautious, as overdosing could kill a patient and land them in jail.Some THPs pointed out that prescribed dosage depends on the severity of a patient's condition and their age.Their mixtures are made from natural products and are considered to be more effective than the Western form of medication used to treat the same conditions.There has been a surge in TM use by people in Africa, with little documentation of adverse effects(47). Most THPs in this study were not against the concurrent use of TM

and Western medication by their clients and advised them to take these forms of medication at different times. Moreover, THPs in this study were very cautious regarding the issue ofcontraindications and advised their patients not to take TM and Western medication simultaneously. Significantly, detailed examples regarding the need for patients to take herbs and prescribed conventional medication at different times have been documented to avoid adverse effects(48).

KwaZulu-Natal THPs acknowledged the significance of finding out whether their clients'conditions have improved after consulting them. They did follow-ups to know the health status of their clients. THPs in a similar study conducted in Kenya monitored the progress of the health of their patients by doing consultations over the phone (16).

In this study, THPs expressed their willingness to co-operate with BHPs to manage diabetes and hypertension in South Africansociety. To improve diabetic and hypertensive care, they suggested the need for training regarding their management. They also indicated the need to have access to scientific tools, such as glucometers and sphygmomanometers, to assist in accurate diagnosis, and as a way of improving the services provided to people, some of whom are not able to access hospitals and clinics for a variety of reasons, such as distance to health facilities and lack of money to afford Western medication. In a study conducted in Uganda, inhabitants in Bugiri and Iganga Districts cited affordability of TM as one of the main reasons why they use this form of medication(2).

Conclusions

THPs in this study regarded diabetes and hypertension as being the same, since one condition could lead to the other.The description of clinical features by Zulu THPs for both diabetes and hypertension in this study has a lot in common with OCM literature regarding the signs and symptoms for these two chronic conditions.Overall,THPs in this study were very secretive in revealing the composition of their herbal mixtures; however, most of the participants mentioned the use of *Aloe vera* and *Allium sativum*(garlic) in the management of both diabetes and hypertension. Further studies are needed to determine whether other local indigenous communities manage diabetes and hypertension using the same approaches and treatment modalities.

Implications of results

In this study, THPs' willingness to co-operate with BHPs to manage diabetes and hypertension would be a way to assist affected individuals who contact these practitioners as their first line of care. A study conducted in South Africa reveals that despite THPs' willingness to co-operate with BHPs in HIV/AIDS management, some (43%) were hesitant to refer patients to receive the needed medical attention from clinics(50). In recognition of the important role that THPs play in providing health care to many people, for whom the THPis their first point of contact with a care provider, their contribution to addressing some chronic conditions needs to be enhanced. This could include encouraging them to refer patients to health care facilities timeously to avoid complications associated with both conditions.Some researchers suggested that THPs' delay in referring patients to receive medical treatment could have dire consequences forthe health of such individuals(51). Researchers indicated the significance of collaboration between THPs and BHPs as a step in the right direction to mitigate the effects of these chronic conditions affecting people's lives (52).

Limitations of the study

The findings of this study may not be generalizable for the entire population due to the small size of the population and because it occurred in the two districts in central KwaZulu-Natal. The use of FGDs to collect information from a specific group of participants in research has been criticized for not making use of hierarchal structures within a group, which might influence the contents produced by the group(49). In addition, there was inability of researchers to reach out to all THPs in the studied area to take part in this research. Last but not the least, there may be inaccuracies in the interpretation of facts because of transcription of verbatim quotes by THPs in isiZulu and which were translated into English. However, these limitations donot affect the main findings of this study.

Authors' contributions

FEK and MN conceived and drafted the paper, and accepted the final version of the manuscript for publication.

Conflict of interest

Authors declare no conflict of interest.

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