

Communication

Indigenous Knowledge on the Uses, Sustainability and Conservation of African Ginger (*Siphonochilus aethiopicus*) among Two Communities in Mpumalanga Province, South Africa

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Abstract: Harvesting of medicinal plants in the wild has an impact on sustainability of medicinal plants, which leads to the need for intervention in terms of conservation strategies. *Siphonochilus aethiopicus*, commonly known as African ginger or wild ginger is used to cure a variety of health conditions/illnesses, such as coughs, colds, asthma, nausea, headaches and pains. This study explored the potential role of indigenous knowledge on the uses, sustainability, and conservation strategies for African ginger among two communities in Mpumalanga province. Qualitative method entailing in-depth interviews were used for this research. We used a non-probability sample (snowballing) to recruit ten (10) participants that comprised of four traditional health practitioners, four knowledge holders and two herbalists, considered as experts on African ginger in the study area. The data was analysed using thematic analysis. The diverse indigenous knowledge on the uses of African ginger were divided into two categories (diseases and spiritual/cultural purposes) among the local communities. African ginger is indigenous to South Africa and the plant species in the wild is mainly lost to commercial trade. As revealed by the participants, the multiple uses of African ginger are major contributing factors exacerbating the demands for the plant. The uses of African ginger have resulted in the scarcity and possibly extinction of this plant species in the wild, which remain a major concerns to several stakeholders especially traditional health practitioners. Harvesting of the rhizomes of African ginger is recommended instead of the root given the relative ease and higher chances for survival and regeneration. To ensure the sustainable utilisation of African ginger, its cultivation was recommended by the participants. However, there is a need for further intervention to assess how the community members can be assisted with developing and adopting indigenous conservation protocols for the continuous sustainability of African ginger. In addition, it is pertinent to strongly discourage the indiscriminate destruction of natural habitats and create more awareness on the importance of designating protected areas among local communities.

Keywords: African Ginger (*Siphonochilus aethiopicus*); conservation; indigenous knowledge systems; medicinal plants; pains; traditional healers



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1. Introduction

Indigenous knowledge entails the systematic knowledge that the local communities accumulate over time which is dominantly disseminated through oral teachings and practices as well as ancestral dreams for survival in a particular environment [1–4]. Indigenous knowledge related to medicinal plants is a foundation of primary health care for treatment

of several human and animal diseases among local communities, especially in developing countries [5–8]. Medicinal plants are an integral part of the indigenous knowledge systems which encompass cultural system and a reliable source for local communities for millennia [5,9]. A significant portion of the South African black population consult traditional health practitioners for basic health care needs regarding treatment for diseases such as HIV and AIDS, tuberculosis, cancers, asthma, mental disturbance and for cultural purpose [10–12].

One of the key factors that has resulted in the extinction of various plant species is increased human activities especially their indiscriminate over-harvesting [4,13–15]. Even though demand is increasing, many medicinal plant species remain uncultivated. In Africa, about 700,000 tons of the raw plant material is harvested from the wild and traded for human consumption which is valued at around \$150 million [16]. As indicated by Mander [17], about 20,000 tons of the dried and processed plant materials from over 700 plant species is traded in the South African herbal medicine market annually, at a price of about R270 million (US\$60 million). The large quantity of tons of harvested medicinal plant species hugely increased pressure on habitats, resulting in numerous local extinctions [18,19].

In South Africa, medicinal plants are traded through a variety of channels including small and major *muthi* markets [20]. From a South African context, *muthi* markets are informal commercial places where medicinal plant species, which have been harvested from their natural environments by the plant gatherers, are traded to the public including the traditional health practitioners [18,20]. However, the informal trade in medicinal plant species has raised concerns on the detrimental effects of over-harvesting from their natural environment. In addition, the commercialization of popular medicinal plant species and changes in land use coupled with an increasing human population have resulted in demand being exceeded for many plant species. This has led to the scarcity and local extinction of medicinal plant species [19,21,22]. A few examples of such medicinal plant species that are experiencing local extinction are *Adenium swazicum*, *Mondia whitei* and *Siphonochilus aethiopicus* [19]. The harvest and trading of these medicinal plants for product development and commercialisation continue to increase the demand thereby posing challenges to the conservation status of these medicinal plant resources [23].

In South Africa, *Siphonochilus aethiopicus* (family: *Zingiberaceae*), commonly known as African ginger is a popular medicinal plant that is currently over-harvested for trade in the informal *muthi* markets [19,23,24]. In addition, the plant species is in high demand from local companies to formulate medicines in form of tablets, capsules and syrups [24]. Researchers are continuously exploring different conventional means to ensure the increasing demand of African ginger is met national and international [25–28]. However, the limitations of these approaches including the low level of uptake and acceptable among local communities remain a concern [29]. Different cultures are known to possess indigenous knowledge and practice for the conservation and sustainability of their natural resources especially medicinal plants [30–33]. This study explored the potential role of indigenous knowledge for sustaining the uses and conservation of African ginger among two local communities in Mpumalanga province. The study was guided by the following research questions:

- What are the traditional uses of African ginger?
- Which traditional approaches are adopted for harvesting African ginger from natural environment?
- How are indigenous strategies and practices used to conserve African ginger?

2. Materials and Methods

2.1. Description of the Study Area

The study was conducted in two villages, namely Godide and Hlalakahle. These villages are located in the Bushbuckridge local municipality within the Ehlanzeni District (Figure 1). The municipality is one of the four local municipalities of Ehlanzeni District and

is in the lowveld sections of Mpumalanga and Limpopo provinces, in the north-eastern part of Mpumalanga and the south-eastern part of Limpopo. The Kruger National Park, a hazardous watershed, and the Drakensberg woodlands border the eastern side of the municipality [34].

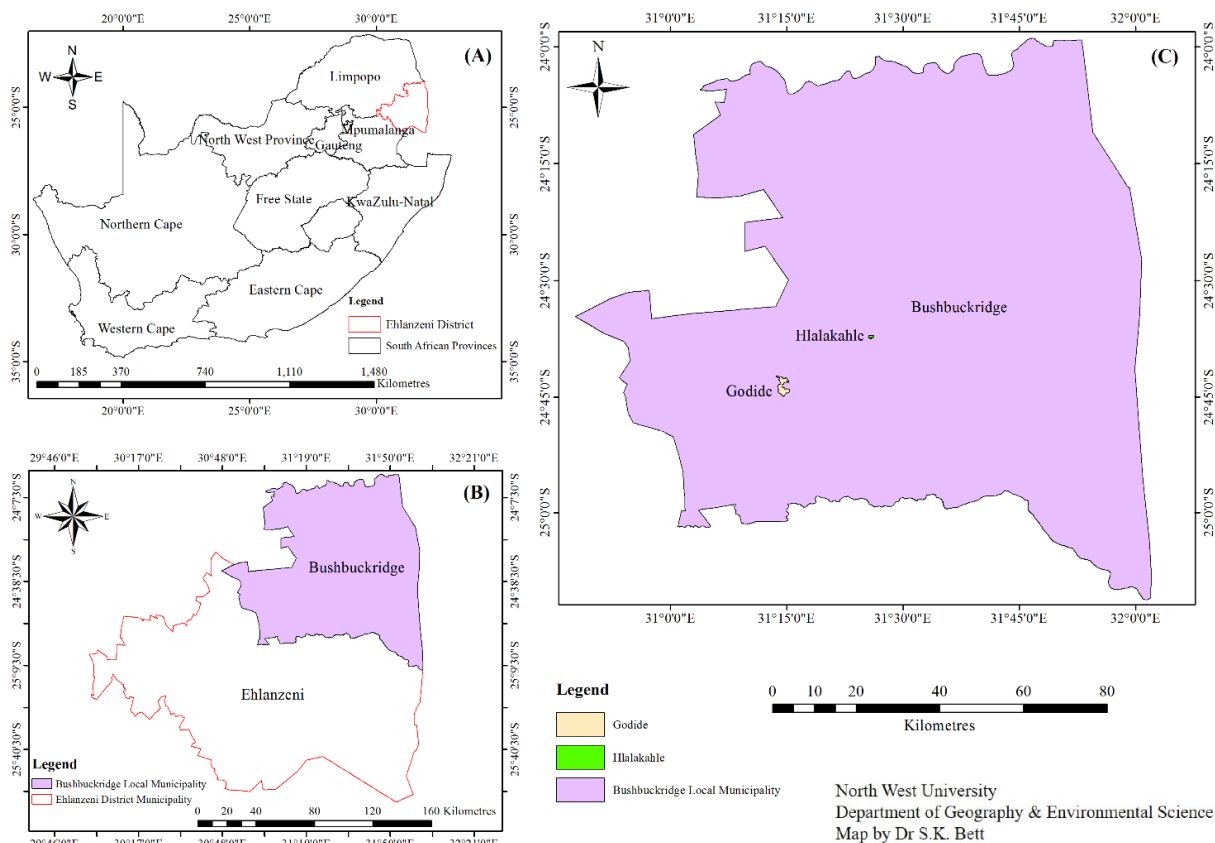


Figure 1. Study sites in Mpumalanga Province, South Africa (A) South Africa; (B) Ehlanzeni district and (C) selected communities in Bushbuckridge.

Acornhoek, Thulamahashe, Marite, Dwarsloop Bushbuckridge and Mkhuhlu are among the small towns in the Bushbuckridge local municipality [35]. The rural areas also known as villages make-up most of the Bushbuckridge local municipality, accounting for about 29% of the human population and dense rural villages accounting for 61% [36]. Bushbuckridge municipality consists of 135 ethnic settlements with 541,245 inhabitants and 135,197 households [36].

2.2. Data Collection and Analysis

We obtained permission to access and conduct the research in Godide and Hlalakahle from the Mnisi Traditional Council, Bushbuckridge region in Islington village (Mpumalanga). Non-probability sampling (snow-balling) was used to select participants from the targeted population. A key feature of non-probability sampling is the selection of participants based on the researcher's subjective judgment. Some of the criteria used to include participants were their extensive (at least 10 years) experience on the use of African ginger, resident of the selected community and older than 25 years. The study sample size was determined by reaching data saturation with the ten (10) participants. The participants comprised of four traditional health practitioners, four knowledge holders and two herbalists.

In-depth interviews were used to collect the data on the uses, sustainability and conservation of African ginger. The in-depth interviews were conducted with each participant in Sepedi, which is the local language in the study area. The detailed interview schedule was divided into four sections: Section 1 focused on demographic information of the partic-

ipants such as name, age, household size and level of education; Section 2 focused on the uses of African ginger. Section 3 focused on the qualitative data pertaining to traditional knowledge about the sustainable harvesting while Section 4 captured questions relating to indigenous knowledge for the conservation of African ginger.

The qualitative information obtained from the in-depth interviews was analysed using thematic analysis. This technique enabled the interpretation of the data.

2.3. Ethics Approval

The Faculty of Natural and Agricultural Sciences Research Ethics Committee (FNAS-REC) of the North-West University approved (NWU 01229-99-S9) the research. The permission to access the communities was granted by the traditional leadership within the Bushbuckridge local municipality. The prior consent form was issued to the participant for them to sign to be part of the research and all the briefing was provided about their right of withdrawal at any time if they feel uncomfortable to continue. The participants were informed that their identity would be kept confidential, and a Non-disclosure Agreement was signed with the participants, hence codes were used in the study to identify participants to ensure their privacy and confidentiality.

3. Results and Discussion

3.1. Demography of the Participants

An overview of the demographic characteristics of the participated is shown in Table 1. In this study, males (60%) were more involved than women in terms of the indigenous knowledge associated with African ginger. The data is contradictory to some existing evidence in literature that women are the custodians of the indigenous knowledge because they are the ones who often diagnose and treat the diseases in their households [37,38]. Likewise, da Costa et al. [39] revealed that females had more indigenous knowledge on the use of plants in health care delivery systems when compared to males. On the other hand, the study of Teklehaymanot et al. [40] in Ethiopia and Moichwanetse et al. [41] in South Africa aligned with the current findings that men are more knowledgeable about the indigenous knowledge associated with medicinal plants. However, it is evident that the dominance of indigenous knowledge by one gender over the other is often dependent on the type of health conditions and study area [37]. In the current study, the approach was based on the recruitment of participants with indigenous uses on African ginger which inevitably resulted in the dominance of men over females.

Table 1. Demographic characteristics of the participants in two (2) communities of Bushbuckridge local municipality, Mpumalanga province, South Africa.

Feature	Frequency (n)	Percentage (%)
Age group		
26–40	3	30
41–54	1	10
55–69	4	40
70 and above	2	20
Type of stakeholder		
Traditional healer	4	40
Knowledge holder	4	40
Herbalist	2	20
Gender		
Male	6	60
Female	4	40
Marital status		
Widower/widow	4	40
single	1	10
married	4	40
divorced	1	10

Table 1. Cont.

Feature	Frequency (n)	Percentage (%)
Religion		
African tradition	7	70
Christian	3	30
Years of experience with the use of African ginger		
11–20	3	30
21–30	2	20
30 and above	5	50
Formal educational level		
None	7	70
Primary	1	10
Secondary	2	20
Tertiary	0	0
Work status		
Employed	2	20
Unemployed	1	10
Self-employed	1	10
Retired	6	60

Relative to the 10 participants in our study, the age distribution was highest (40%) with individuals aged 55–69 years old while 41–54-year-old individuals were the least (10%). According to Semanya and Potgieter [42], a significant portion of traditional health practitioners were aged 41–60 years in a study conducted in Limpopo, South Africa.

The majority (70%) of the participants had no formal education and 10% had at least primary level education. This correlates with the nature and characteristics of indigenous knowledge holders. Generally, indigenous knowledge is obtained through ancestral dreams which is some form of communication with the spiritual world or the ancestors not through formal education [43]. The practice of traditional medicine has also been linked to powerful ancestral lineage that an individual may inherit once chosen by the ancestors [44].

3.2. Sources of Indigenous Knowledge on African Ginger

In the study area, African ginger was referred to as *serokolo* and *xirungulo* in the local language. In terms of the source of indigenous knowledge about African ginger, this was either from grandparents (70%) or training from more experienced experts (30%). Both aforementioned sources are closely-linked to the process of becoming a traditional healer in a typical African community [44]. Most of the participants indicated that they learnt the indigenous knowledge from their grandparents who probably passed the knowledge through training about plant species used to treat human diseases. Valuable knowledge (including the use of plants for healing) are well-treasured and often shared among members of households and communities. This usually happens during the one-on-one consultation with the traditional health practitioner, prescribing a certain plant species for the preparation to treat diseases. In the current study, 30% of the participants attained indigenous knowledge regarding the medicinal uses of African ginger from their training initiative known as *uku-thwasa*. This is the training initiative for someone to be a traditional health practitioner provided by *Gobela* (trainer). In Limpopo province of South Africa, traditional health practitioners tend to learn about the medicinal plants uses and their knowledge from the trainers [42]. Similarly in Namibia, findings by Cheikhyoussef et al. [45] support the current observation that traditional health practitioners learned their indigenous knowledge about medicinal plants during their training period taught by their trainers.

3.3. Indigenous Uses of African Ginger

The uses for African ginger mentioned by the participants were categorised into medicinal and spiritual aspects.

3.3.1. Medicinal Uses of African Ginger

African ginger has diverse medicinal value as revealed by the participants (Table 2). Although nine (9) health conditions were indicated, treatment of asthma, chest pains, cough, menstruation disorder, stomach-ache and sexually transmitted infections were the dominant (mentioned by 7–10 participants) ones. In Africa, several ethnic groups are known to utilise African ginger for treating cough, colds, asthma, pain-related conditions, headache and respiratory problems [24].

Table 2. Medicinal uses of African ginger in the two selected communities of Bushbuckridge local municipality, Mpumalanga province, South Africa (n = 10).

Disease/Health Conditions		Number of Mention	Relative Frequency	Percentage (%)
Common Name	Local Name			
Asthma	Bolwetši bja mafahla	10	1	100
Chest pains	Go baba ga mafatlha	10	1	100
Cough	Go gohlola	8	0.8	80
Headache	Go remiwa ke hlogo	10	1	100
Influenza	Mokomana	3	0.3	30
Menstruation pains	Go bona ngwedi ka maima	2	0.2	20
Navel pains	Khubjana yago baba	1	0.1	10
Sexually transmitted infections	Bolwetši bjo bo fetelago ka thobalano	7	0.7	70
Stomach-ache	Mpa yago baba	8	0.8	80

In this study, the type and frequency of the diseases/health conditions recorded may be linked to the gender distribution of the participants. Women are known as important players for the documentation of indigenous system of medicine and health-care needs [37]. As reported in the study area, African ginger is used for managing menstruation pains among women in southern Africa [24,46]. African ginger is chewed by woman to relieve menstruation pains. In addition, African ginger is commonly used to meet women health care needs across different countries. It is used to cure the female infertility and endometriosis in Benin [47] while the juice from the plant is used as a douche for vaginal thrush in South Africa [48].

The participants further indicated that African ginger can be used to treat navel problems or pains in children. In this case, the elder will chew the rhizome of the African ginger and split the small particles to the navel and bandage the child to alleviate the pain. Given the importance of medicinal plants for managing childhood diseases among rural communities [7], the current findings expand the pool of plants for children health care in rural areas which often have limited access to western healthcare facilities.

In the current study, 70% of the participants use African ginger alone without combining it with other medicinal plants (Figure 2). In some instance, African ginger is mixed with other medicinal plants such as *khathaza* or *Aloe vera*. The participants indicated that combining African ginger with other plants is essential for some specific diseases, and when instructed by the ancestors through dreams who provide direction and guidance for usage of African ginger in combination with other plants to treat diseases. In Limpopo province of South Africa, Bapedi traditional healers are known to treat asthma with herbal remedy that consist of African ginger and fresh bulbs of *Hypoxis hemerocallidea* [49].

3.3.2. Spiritual and Cultural Uses of African Ginger

In the study area, African ginger was used for healing spiritual problems (Figure 3). All the participants stated that the spiritual uses of African ginger are to protect the yard against the evil spirits, strengthen the yard, and bathing to prevent evil spirits or bad luck. About 60% of the participants indicated that African ginger protects the divine bones (*ditaola*) from all evil spirits when a person comes with a different intention to the hut of traditional health practitioner. In African traditional medicine, the importance of divination

bones cannot be overemphasized especially for the diagnosis and healing of diseases by the traditional healers [44,50].

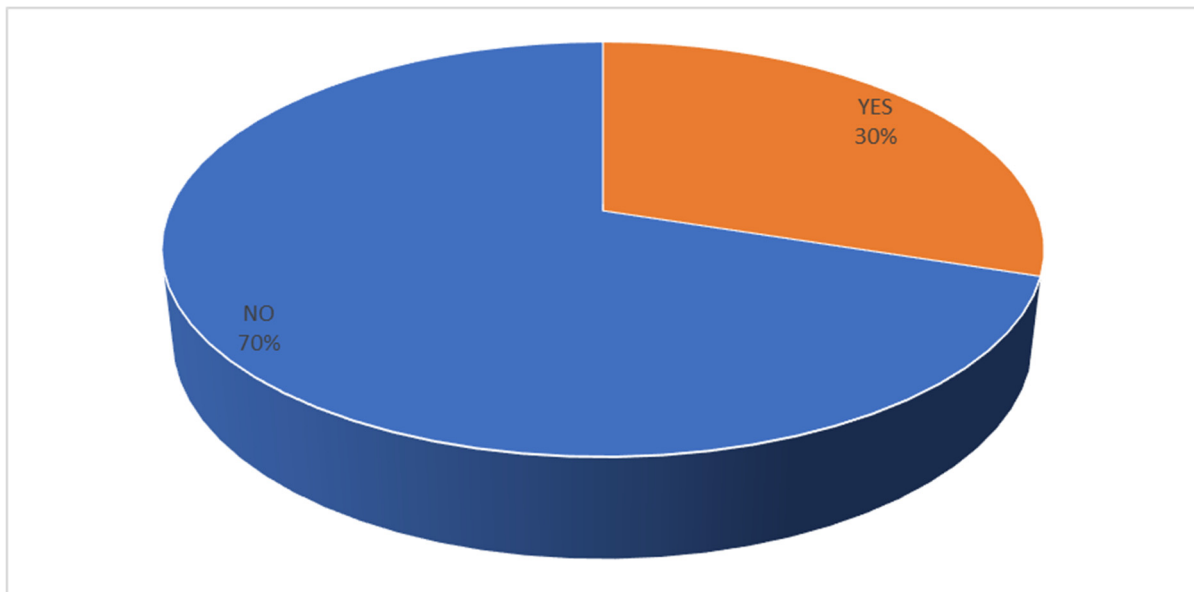


Figure 2. Response (%) of participants on the need to combine African ginger with other medicinal plants for managing health conditions in humans.

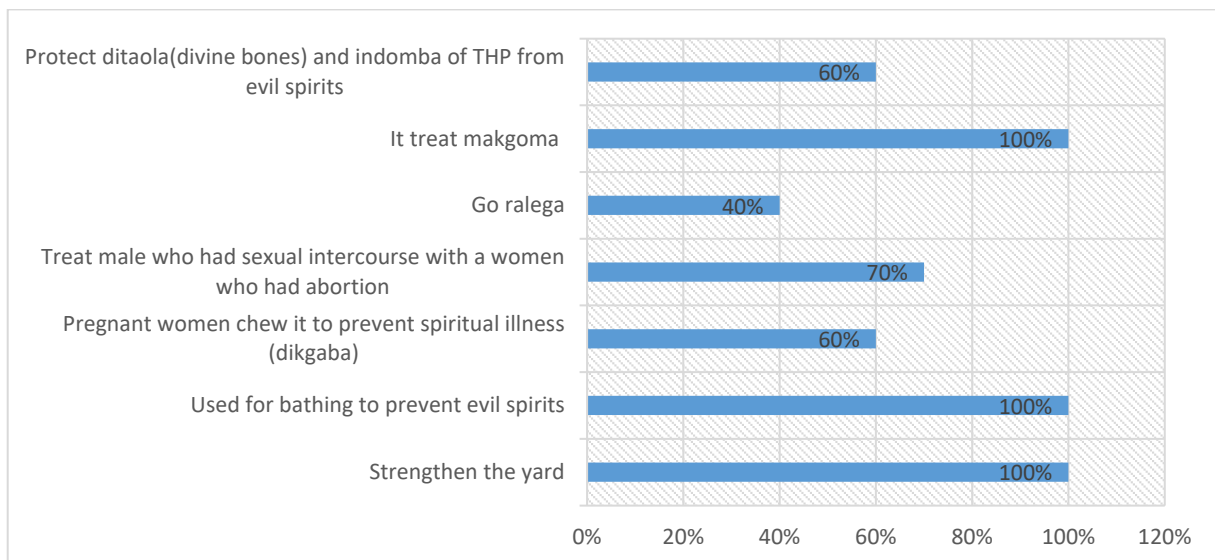


Figure 3. Distribution (%) of the spiritual and cultural uses of African ginger in the study area. THP= traditional health practitioners. *Makgoma*: diverse cultural/spiritual illness/conditions and repercussion from the violation of taboos; *Go ralega*: protection of children from spiritual attacks that may be contact from individuals that had abortion or miscarriage that is kept as a secret.

The participants further stated that African ginger protects the yard against the evil spirits that may be tormenting them or if the spirits are in the yard '*fafatsa*', mixing it with water and pouring over the yard or planting it in the yard for protection. Existing literature also supports the spiritual uses of African ginger for protection. For example in KwaZulu-Natal of South Africa, the plant is used by the Zulu people to protect themselves from lightning and snakes [51]. Likewise in Limpopo, African ginger is used as a preventive and protective medicine by community members and traditional health practitioners [52].

In the study area, African ginger is commonly known to be used for managing *makgoma* which entails diverse cultural and spiritual related conditions arising from different actions.

Currently, *makgoma* have different interpretation among traditional health practitioners which justifies the call for further investigation [53]. For instance, one of the participants described *makgoma* as cultural or spiritual illness that a person commonly gets when entering a room of sick person and after sexual intercourse with a widow. The current results are also similar to the findings by Kock [54], whereby *makgoma* is associated with violation of taboos. Shirindi and Makofane [55] asserted that “*makgoma*” is in relation to violations of taboos that lead to different ailments, such as contamination of the body due to non-observance of certain cultural practices. However, *makgoma* is classified as sexually transmitted infections (STIs) by Bapedi traditional health practitioners in the Blouberg area, South Africa [53]. The symptoms associated *makgaoma* that is contracted following sexual intercourse with a widow include swollen parts of the body, especially the stomach which has a close resemblance to pregnancy [53]. When left untreated, *makgoma* can be fatal.

3.4. Indigenous Protocols for Harvesting of African Ginger

Traditional beliefs and rituals are used by rural communities to preserve indigenous plants [30–33]. Particularly, taboos are prescribed to safe-guard and protect some medicinal plant from over-harvesting. Sharma et al. [56] identified taboos that are followed relating to cultural perception, customs and belief which help in the management of resources. In the current study, 70% of the participants indicated that African ginger lacks taboos and there are no rituals for its harvesting (Figure 4). A similar observation was reported by Manzini [29] who indicated the absence of taboos associated with the harvesting or cultivation of African ginger. In Benin Republic, *Strychnos spinosa* which is a popular fruit tree harvested in the wild with no taboos as a conservation strategy to protect it from being over-exploited [57].

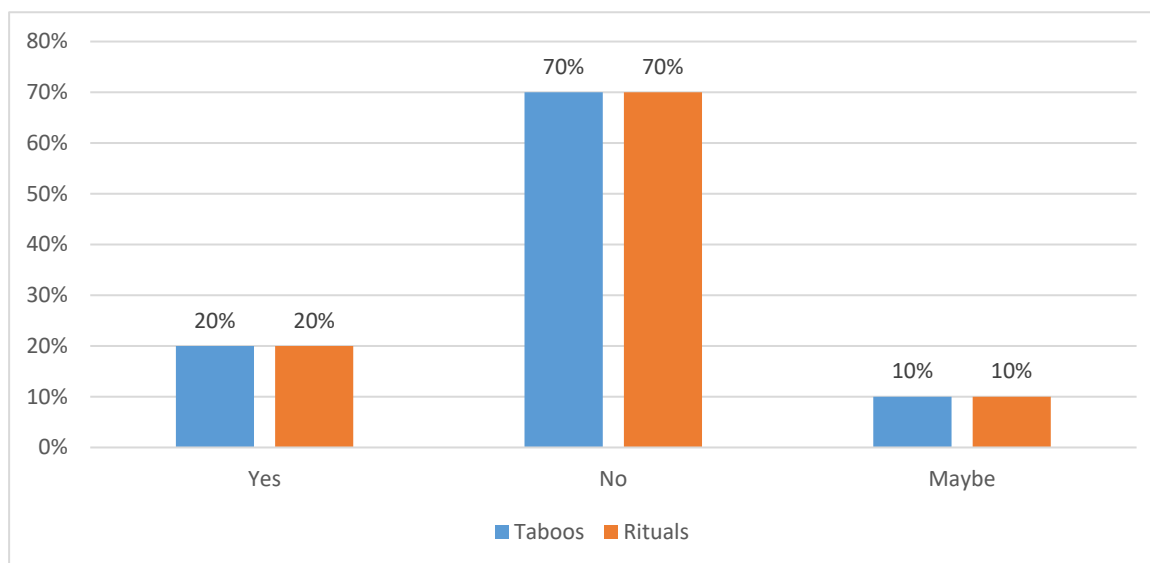


Figure 4. Responses (%) on the importance of rituals and taboos for African ginger harvesting by the participants.

However, 20% of the participants stated that African ginger as a medicinal plant has taboos and needs rituals to be performed before harvesting to ensure that it re-grows. In addition, 10% indicated that to perform rituals or follow certain taboos regulation for harvesting African ginger is optional. This may depend on how as an individual work when it comes to harvesting of medicinal plants. An individual may adapt the same indigenous protocols used for other medicinal plants. As an example of taboo related to African ginger, pregnant woman or a widow is not allowed to harvest the plant. According to Rankoana [52], as a method for conserving medicinal plants and ensuring their availability for future use, the community of Mantheding in Limpopo province explore different practices including the use of taboos to mitigate over-exploitation of medicinal plants. In

the study area, the taboo is called “*oya ikilela*” and prescribed to ensure that the plant will not die. The basis for this aforementioned taboo remains a secret and not commonly shared with outsiders. Similar findings were evident in the study by Kurui et al. [58] whereby taboos are common practice during the harvesting of medicinal plants. They are used to indicate who can harvest the medicinal plant, and who is not supposed to undertake this activity. Traditional management practices such as taboos, seasonal, and social constraints served to limit the harvesting of medicinal plant thereby allowing for their sustainable use. For example, a woman of reproductive age is prohibited from practicing herbal medicine, and a childbearing mother is prohibited from harvesting medicinal plants for the treatment of her children. Participants further stated that taking a bathing or being in sexual intercourse before harvesting is a taboo. According to Semanya and Maroyi [59], harvesting medicinal herbs should be done by someone who has had no sexual intercourse in the last two days prior to harvesting to assure purity. There is a ritual called “*go phasa*” that should be performed which is a way of informing or communicating to the ancestors about the harvesting of African ginger to ensure its effectiveness when used by the patient.

3.5. Indigenous Conservation Methods for African Ginger

Several indigenous tribes have made conservation of natural resources including biodiversity, a priority for continued survival [2,3]. In the current study, the indigenous knowledge is applied for the conservation of African ginger to ensure its sustainability for future generation. The common strategies for the conservation of African ginger include the cultivation of the plant at the backyard, harvesting only the needed plant material of African ginger.

African ginger is mainly over-harvested because of its medicinal value, the Bapedi (Mapulane) cultural group explore indigenous knowledge for the conservation of African ginger. Due to increased harvesting for commercial purpose, it is becoming difficult to find the plant in the wild [29]. Given the increasing strain on the wild populations, the cultivation of medicinal plants is essential in ensuring their sustainability for the future generations [23,29,30,32,60]. In this study, the majority (70%) of the participants harvested the African ginger from the mountains for cultivation in their backyards (Figure 5). Similar finding by Semanya and Potgieter [42] indicated that Bapedi traditional health practitioners prefer to propagate medicinal plant species in their own backyard gardens. On the other hand, 20% of the participants purchase African ginger from the *muthi* shops and 10% sourced the planting material from the neighbours (Figure 5). To enhance the conservation strategies for African ginger, to ensure the long-term viability of African ginger, in-situ and ex-situ conservation techniques could be implemented [24]. In-situ cultivation of African ginger in home gardens help to protect native species and preserve natural communities. Cultivation of medicinal plants has been recommended as a means of reducing the dependence on wild populations [23,60]. Over exploitation or harvesting of medicinal plants without approach mechanism in place may contribute to environmental degradation and loss of genetic diversity of valuable plant resources [23,25].

Harvesting only the required plant material is another way of conservation as highlighted by the participants. In the study area, the participants indicated that as practicing traditional healer, they do have permits issued from the provincial government for harvesting in the wild or at a protected area. This could serve as a conservation method to ensure that the plant collector do not have access to the plant that could help for the sustainable utilisation of the medicinal plant. However, the traditional health practitioners want the government to enforce the restriction of plant harvesting to reduce the over-exploitation of medicinal plants [4]. Often, traditional health practitioners may enact new rules to protect plants or animals that are facing extinction [61]. It was also observed that after harvesting the rhizomes, the roots were often covered with soil to protect and promote its regeneration.

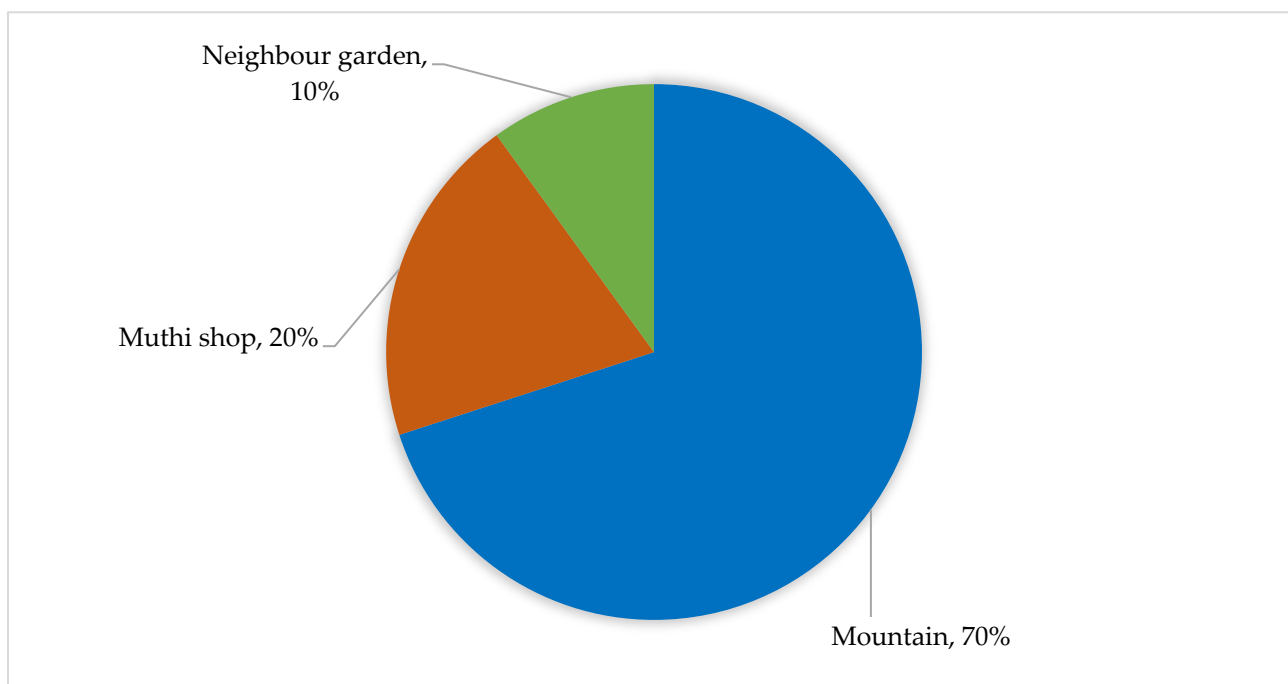


Figure 5. Distribution (%) source of African ginger for cultivation by the participants.

3.6. Preservation Methods for African Ginger

As a means of preservation and conserving African ginger, several aspects such as the collection of required part, efficient preparation and storage were identified as important factors in the study area. Participants indicated that rhizomes referred as '*sekgwere*' is an important part of the plant species used to treat the diseases. To mitigate the plant from being over-harvested, they prefer to harvest the rhizomes and cover the roots with soil to ensure re-growth thus its sustainability. The use of alternative plant part as a mean of ensuring conservation and sustainability remain a crucial approach in African traditional medicine [23,62].

In this study, participants use the indigenous knowledge that was passed to them for the conservation of African ginger. This include sun-drying as a method of preservation that would result in the plant being kept for a longer duration. According to Okoye and Oni [63], indigenous people often use sun-drying for preservation because it is inexpensive and readily accessible. The participants that harvest African ginger from the wild indicated that they harvest more of it and sun-dried which is followed by crushing (*tula*). Thereafter, the ground materials are stored in glass or plastic bottles with lids which is believed to guarantee the life-span (at least two years) of the plant. The lid tops for the bottles are perforated to allow the air to penetrate through the medicinal plant and by doing so, the plant could last longer while still serving the same purpose. However, the safety of medicinal plants stored in plastics remain a great concern based on recent evidence as this may lead to deterioration in the quality of the plant material due contamination by microbial growth [64].

Following storage, the medicinal potency of the plant material remains high as compared to freshly harvested one. Evidence of the medicinal effects of the stored (up to 16 years) plant materials have been demonstrated for popular plants in South African traditional medicine [65,66].

4. Conclusions

Based on the responses from the 10 participants (recognized as experts involved in African ginger), we established that African ginger remain a popular indigenous plant species for diverse health and spiritual/cultural purposes in the study locations.

The scarcity of African ginger remains evident in the study areas which align with its critically endangered conservation status. As one of the provinces of South Africa that still have wild population of African ginger, Mpumalanga experiences influx of commercial plant gatherers from outside the community remain a major contributing factor to over-harvesting of the remaining wild populations. Indigenous methods of storage and preservation are well-established for African ginger in the study areas. In order to mitigate the over-harvesting, indigenous practices including ritual and taboos are applied to conserve African ginger albeit at low scale. Generally, the participants have embraced the need to cultivate African ginger in their home gardens to ensure availability when required for their immediate needs. Most of the participants confirmed that the medicinal and spiritual effects of home-grown African gingers are similar to the wild populations collected from the mountains. There is a need for intervention to assess how the community can be helped to develop or adopt other indigenous-based conservation methods for African ginger to ensure its sustainability for future generations. The provision of stock plant materials suitable for cultivation will be essential in order to mitigate the continuous dependence on wild populations. It is also pertinent that biodiversity management strategies and protocols for African ginger follow international norms and regulations to ensure their long-term usage and protection in the wild or natural habitat. For instance, there is a need to strongly discourage the indiscriminate destruction of natural habitats where many valuable plants thrive better. In addition, local communities need to identify and encourage some of their habitats as protected areas. Such measures will contribute to the long-term survival of African ginger in the wild, while ensuring that the livelihoods of local communities and traditional health practitioner are met.

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Informed Consent Statement: Informed consent was obtained from all the participants involved in the study.

Data Availability Statement: Primary data collected during the survey are available upon request to the corresponding author of this manuscript.

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