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SURVEY OF THE STATUS OF THE MEDICINAL PLANT TRADE IN DURBAN, SOUTH AFRICA.

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ABSTRACT

Background
This study aimed to identify important plants and parts of medicinally harvested species traded in the Durban medicinal (muthi) market. A better understanding of the extent of the medicinal plant trade is necessary to enable conservationists and municipal managers to better manage threatened species and to take preventative action to protect this valuable resource.

Methods
Thirty traditional healers from the Durban muthi market in KwaZulu-Natal were interviewed and information was gathered on important plants and parts that were traded. Information was compared to previous data to ascertain whether muthi plants were being exploited.

Results
Approximately 13 species were widely harvested and sold at the Durban muthi market which includes: *Siphonochilus aethiopicus, Hypoxis gerrardii, Aloe aristate, Scilla natalensis, Eucomis autumalis, Senecio serratuloides, Warburgia salutaris, Chrysanthemoides monilifera., Artemisia afra, Bidens Pilosa, Aloe ferox, Haworthia limifolia, Ocotea bullata.* These species are sold to cure a wide variety of ailments. The most common plant parts that are traded are the leaves and the stems although other parts are also collected. Single species are preferred rather than a mixture of parts from different plants. Approximately 22% of individuals interviewed indicated that they practiced unsustainable harvesting mainly due to poor harvesting practices and a lack of knowledge of the threatened status of many important species.

Conclusion
Domestication and mass cultivation may be key strategies to redress exploitation and unsustainable harvesting practices.

Recommendation
To address these issues, a multifaceted approach is required, including community engagement, improved regulatory enforcement, and initiatives to promote sustainable harvesting and cultivation practices.

Keywords: *Traditional medicine, Muthi market, Traditional healers, Medicinal plants*
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INTRODUCTION

The World Health Organisation (WHO) estimates that 80% of people living in developing countries almost exclusively use traditional medicines (WHO, 2013). Traditional medicine used in developing countries is gaining popularity as present antibiotics become ineffective (Coopoosamy et al., 2023). Medicinal plants play an important role in the spiritual and physical well-being of rural dwellers, especially those who have no access to proper healthcare facilities. In the KwaZulu-Natal Province, approximately 70-80% of the black population consult traditional healers for health-related problems and utilize traditionally prescribed medicines most of which are derived totally from species indigenous to the region (Coopoosamy et al., 2010). Medicinal plants play a crucial role in the healthcare systems of many communities in Durban, particularly among the Zulu people. Medicinal plants are used to treat a variety of ailments ranging from common colds to more serious conditions, such as hypertension and diabetes. The trade not only supports traditional healers (known as sangomas and inyangas) but also provides income for many informal

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vendors who rely on the sale of these plants to sustain their livelihoods (Xego et al., 2021).

The major medicinal plant markets are situated in Durban, Umlazi, and Isipingo, although there is trade in important species and products throughout the province. Since most of the population in KwaZulu-Natal lives in Durban and surrounding areas, these markets serve as a central hub for the supply and distribution of medicinal plant products to indigenous dwellers. Medicinal plants can be sold in many forms depending on which part of the plant the active ingredients are present i.e., leaves, stems, bark, roots, or in certain instances, the fruits and seeds. In most instances, medicinal knowledge is passed from generation to generation and rarely recorded. Patients consult a traditional healer or inyanga who according to his or her traditional knowledge will then mix a concoction of plant parts depending on the specific illness (Mothibe and Sibanda, 2019). One of the greatest drivers for the demand for indigenous medicine is the widely held views by the black community that certain illnesses are "cultural" sicknesses that can only be treated by indigenous medicine (Xego et al., 2021). This reliance on traditional medicine, in turn, leads to overexploitation of medicinal plant resources with subsequent loss of biodiversity. Most rural dwellers also do not have access to primary health care and have no alternative but to consult traditional healers. Past government policies in South Africa discriminated against Indigenous healing practices and generally labeled the activities as primitive and even legislated against witchcraft practices (Mothibe and Sibanda, 2019; Xego et al., 2021). However, legislation changed after the advent of democracy (1994) to allow for the administering of medicinal plant cures by traditional healers.

The low socio-economic plight of the great majority of people in KwaZulu-Natal, especially in rural areas, ensures that many use cheaper traditional methods of healthcare compared to Westernized medicine (Xego et al., 2021). Traditional healthcare practitioners play a crucial role in providing healthcare products to most of the population and are highly revered in rural environments. Products that are collected by gatherers are generally unrefined pieces of whole or part of plants. Unfortunately, overexploitation has led to the loss of several species such as *Siphonochilus aethiopicus* (Schweif.) B. L., which has become extinct in the natural environment (Coopoosamy et al., 2010). The demand for this plant continues to be high due to its perceived medicinal value and is currently on the severely endangered list. Several plant species have been exploited to such an extent that they are seldom found in unprotected areas (Parkash et al., 2018).

Many researchers have taken note of traditional cures from commonly harvested species and have validated their use in numerous trials thus allowing for the formulation of several traditional remedies that can be frequently found in pharmacies and markets throughout the country. There are approximately 27 million consumers of traditional medicine in South Africa (Xego et al., 2021; Coopoosamy et al., 2023). Population growth coupled with rapid urbanization creates an ever-increasing demand for traditional medicines to cure a variety of illnesses. The study aimed to identify important plants that are traded at the Durban medicinal plant market and to obtain current information on parts that are traded. A better understanding of the extent of the medicinal plant trade is vital to protect and manage rapidly declining resources and to ascertain the impact of this degradation on the communities that rely on traditional remedies.

MATERIALS AND METHODS

Study site

This study was conducted in the Durban muthi market in KwaZulu-Natal, South Africa (-29.844776, 31.014339). The Durban Muthi Market, also known as the Victoria Street Market or the Muthi Market, is in the central part of Durban, South Africa. The market is an integral part of the city's cultural and commercial landscape, especially for those involved in traditional African medicine and healing practices.

Study design

The research employed a qualitative approach based on semi-structured interviews of individuals who know traditional medicinal plants used for various purposes in the study area. The surveys will be carried out via face-to-face visits. No other specific criteria were used to select participants other than their knowledge of and use of traditional medicines. The use of native language (Afrikaans/Xhosa) aided in recording the list of species used and field guides were used to identify species.

Data collection

A total of 30 questionnaires were administered and collected and the responses were tabulated in Tables 1 and 2 and Figure 3.

Sampling and interview of traditional healers

Most traditional healers had difficulty understanding English, therefore the structured questionnaires were

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discussed on an individual basis and explained by an interpreter conversant in both Zulu and English. The results were then transcribed by the interpreter as most traditional healers were illiterate.

Identification of plants

Many of the traditional healers provided the local names of the plants being sold. Validation and verification of medicinal plants were performed by a plant taxonomist and voucher specimens, where necessary, were housed within the Medicinal Plant Research Laboratory, Mangosuthu University of Technology, Umlazi, South Africa

Informed consent

Before the study, a signed consent form from each interviewee was obtained. These individuals constituted traditional healers from the Durban muthi market.

Study Ethics

This study is registered at the Mangosuthu University of Technology (Registration Number NSci 04/2010) and consent was obtained by the University Ethics Committee.

RESULTS AND DISCUSSION

Durban is one of the major medicinal urban markets in KwaZulu-Natal, South Africa that handles composite aspects in terms of the quantity, number or range of species sold and the number of people relying on the trade for an income (Botha et al., 2004). The bulk trade in medicinal plant products takes place at informal street markets and involves the sale of relatively large quantities of unprocessed (whole) or semi-processed products (powdered). Most of the plant material is unprocessed (Table 1) and the parts are simply cut, chopped, or sliced into smaller pieces. It is a prerequisite that most plant parts are fresh as traditional healers believe that the potency of the medicine is diminished if stale material is used to form crude extracts. Tubers, bulbs, and leaves are therefore frequently collected as fresh material is essential to retain its curative properties. Whole plants are sometimes collected (Table 1) and either ground to a paste or sold in powdered form to treat various ailments.

Table 1: Plant parts harvested in the Durban Muthi market in 2024

Part used	Form in which the product is sold	Characteristics of product
Bark sections	Chopped pieces	Dried bark is ground into powder
Roots	Whole portions	Fresh root material is used or dried into powder if fresh material is not available
Bulbs	Whole portions	Fresh material is essential
Whole plants	Mostly small herbaceous specimens	Material is ground into a mixture
Leaves and stems	Whole portions	Fresh material is ground into a paste
Tubers	Whole portions	Fresh material is used however material can be ground into a powder
Mixtures of different plants	A variety of plant leaves or roots	Mostly fresh material is used but different dried specimens can be combined
Fruit	Whole fruit	Usually combined with parts from the same plant
Seed	Dried seed	The seed is ground into a powder

In KwaZulu-Natal, an estimated 4500 tons of plants are traded annually, with approximately 1500 tons marketed in Durban alone. Approximately 16,000 harvesters, predominantly rural black women, operate in KwaZulu-Natal (WHO, 2013). Four hundred or more of the 700 medicinal plant species traded in South Africa can be found in Durban's medicinal plant market (Nzimpande, 2006). However, approximately thirteen species are highly sought after as these plants serve as cures for a variety of ailments (Table 2). Most of these species (Table 2) are exploited to such an extent that some plants have become extinct in the wild and are usually found only in protected areas. The demand for these plants is unrelenting as they serve mainly as immune boosters and can cure a variety of commonly occurring illnesses. The parts that are commonly used involve grinding the leaves to make a smooth paste and involve direct application to cure skin diseases, or ingestion, to cure commonly occurring illnesses such as headaches and diarrhoea.

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Table 2: Common species sold in the Durban muthi market in 2024

Species	Common Name	Traditional Name (Zulu)	Part Used	Treatment
Siphonochilus aethiopicus	Wild ginger	Isiphephetho/ Indungulu	Bulb	Immune booster
Hypoxis gerrardii Baker	African potato	Inkomfa	Bulb	Immune booster
Aloe aristate Haw.	Aloe	Umathithibala	Whole plant	Purgative Prevent lightning
Scilla natalensis bauerii	Blue hyacinth/ squill	Inguduza	Bulb	Back complaints
Eucomis autumalis (Mill.) Chitt.	Pineapple flower	Umbola	Bulb	Sores
Senecio serratuloides DC.	Two-day cure	Unsukumbili	Whole plant	Sores
Warburgia salutaris (G.Bertol.) Chiov.	Pepper-bark	Isbhaha	Leaves	Colds/Flu Toothache
Chrysanthemoides Monilifera L.	Brother berry	Itholanja	Leaves/ fruit	Impotence Blood strengtheners Treat fever
Artemisia afra Jacq. ex Willd.	Worm wood	Umhlonyane omncane	Leaves/ stem	Headaches Colds Malaria Constipation
Bidens Pilosa L.	Blackjack	Uqadolo	Leaves Root	Diarrhea Arthritis
Aloe ferox Mill.	Bitter aloe	Inhlaba	Leaves	Wounds
Haworthia limifolia (Marloth) G.D.Rowley	File leaf		Leaves	Blood purifiers, treat skin rashes, burns
Ocotea bullata (Burch.) Baill.	Black stinkwood	Unukane	Bark	Cures diarrhea, headaches, emotional and nervous s disorders, urinary disease

The total value of plant products that are traded in the Durban muthi market every year is approximately R21 million (Williams and Whiting 2016). The most common plant parts that are traded are the leaves and stems of medicinal plants (Figure 1). The roots and the bark are also highly sought after although harvesting these products may contribute to the decline of existing vulnerable populations. Surprisingly, combining more than one plant forms only 3% of the market proportion (Figure 2) which suggests that single species are preferred, rather than mixing parts from different species. The plant parts that were sold in 1998 (Figure 1) are similar to the parts that are currently traded (Figure 2). However, this investigation showed that traditional healers are now selling muthi made using fruit and seeds of scarce plants. In most instances, the fruit is eaten raw, and the seeds are ground to a powder and then made into a decoction before being ingested. These findings imply that the pressure on vulnerable species is increasing, and traditional healers must look at alternative parts to make muthi. In most instances, especially when commonly used plant parts are scarce, other parts of the same plant are collected to cure the same ailment. Unfortunately, this also implies that certain highly sought species can be harvested almost to the brink of extinction.

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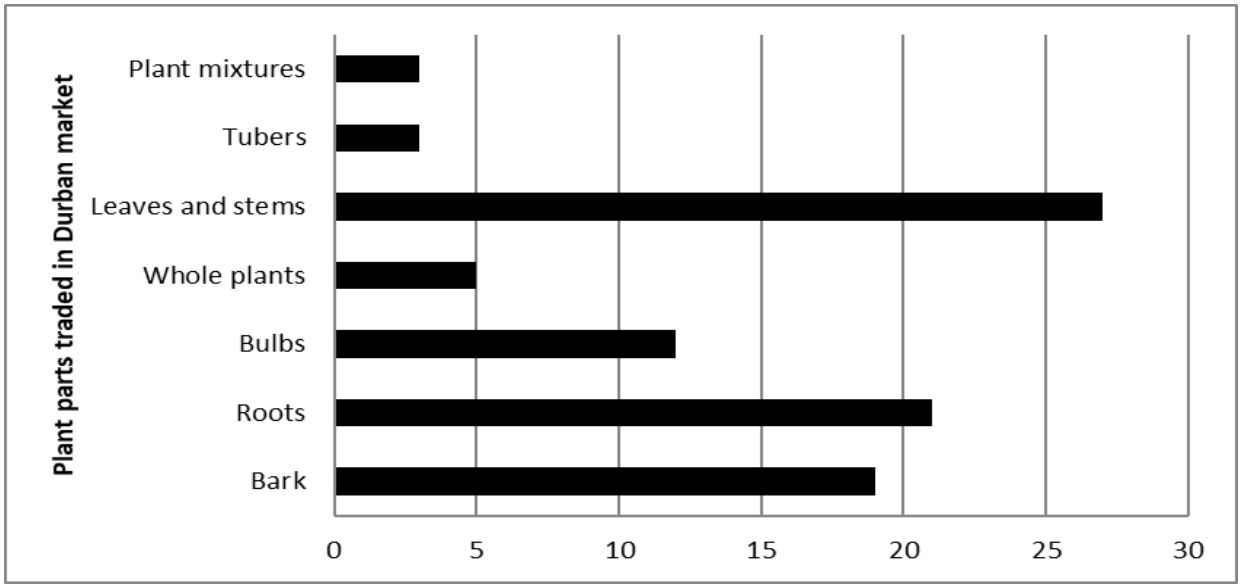

Figure 1: Plant parts sold in the Durban Muthi market

Rising demand for medicinal plants has led to increased pressure on wild plant populations. Commercial medicinal plant harvesters involved in the trade are mostly numerous jobless native individuals who seek to make ends meet (Khan and Ahmad, 2019). Due to the low levels of formal education and/or absence of education, harvesting is done indiscriminately without considering biodiversity sustainability which emerges from resource management. To this end, 22% of individuals practice unsustainable harvesting resulting in total mortality of the targeted species (Figure 2). To ensure some form of sustainability, 53% of traders harvest only a few plants in a specific area to allow species regeneration and to ensure population integrity (Figure 2).

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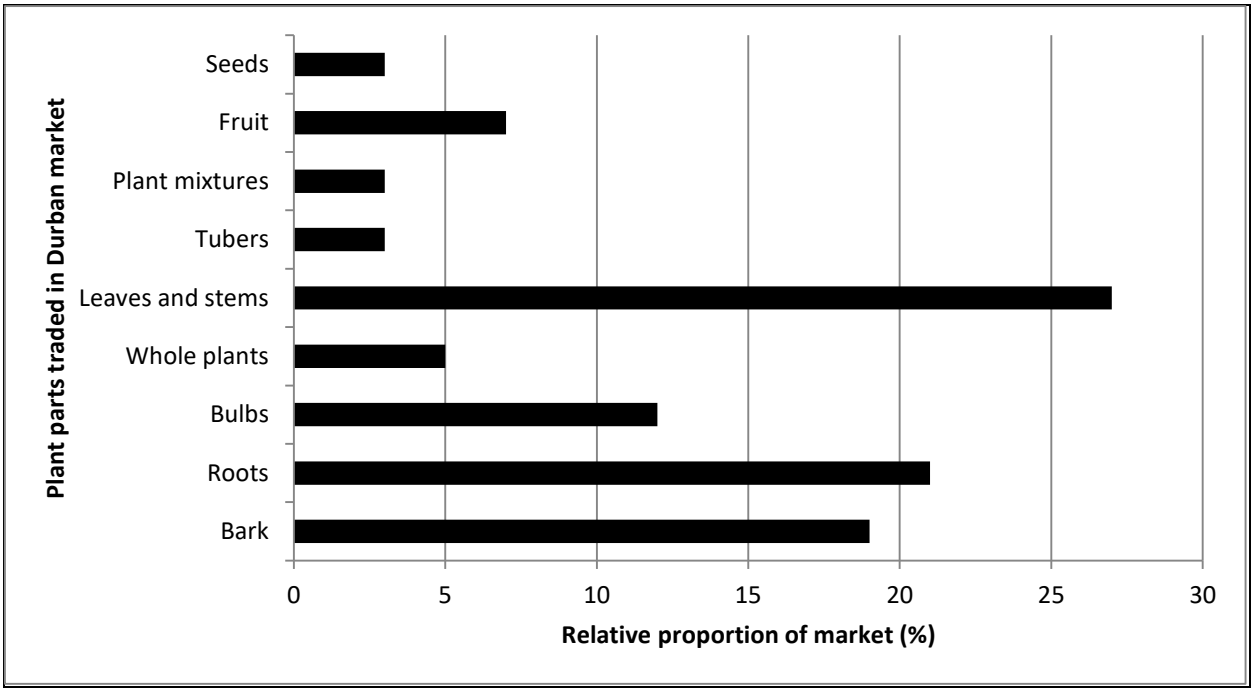

Figure 2: Plant parts sold in the Durban Muthi market

Furthermore, plant parts such as the leaves are harvested without endangering the species thus ensuring a sustainable harvest of plant parts. Only 25 % of individuals practice partial sustainability (Figure 3). This combined with shrinking habitats, means that many species in South Africa are now facing local extinction (Williams and Whiting, 2016) Domestication and cultivation have been mooted as key strategies in meeting demand for medicinal plants (Williams and Whiting, 2016; SANBI, 2018).

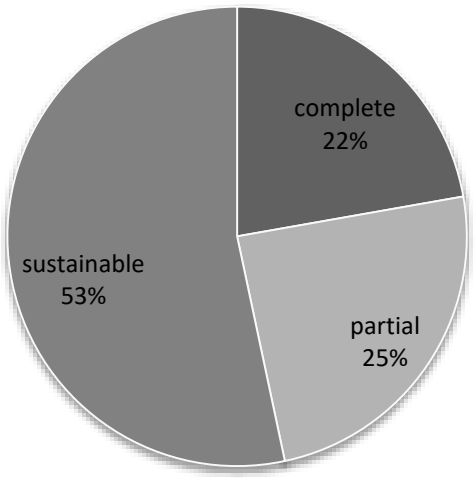

Figure 3: Harvesting pressure practices based on interviews at the Durban muthi market

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It is common knowledge that some Indigenous people who consult and use traditional medicine after consultation with a traditional healer may become sick, may be hospitalized and in some cases die (Mothibe and Sibanda, 2019; Xego et al., 2021). The problem in South Africa is that the traditional medicine industry is not regulated, and some healers are self-taught rather than being trained by an experienced practitioner. According to Mothibe and Sibanda, 2019, these problems emanate from three factors namely:

- Mistakes committed by the traditional healers when administering or prescribing medicines due to their inadequate knowledge and skills concerning the identification and correct use of traditional medicines.
- Mistakes committed by consumers or clients who forget the verbal directions on the use of some medicines resulting in overdosing or ingesting poisonous medicines which can be attributed to poor or no proper labeling of medicinal products and,
- Mistakes committed by patients who share medicines prescribed or prepared according to their health conditions with other people who would not have been consulted by traditional healers

Most South African conservation agencies have now initiated community-based conservation programs with traditional healers and, more recently, those involved in the trade are considered. However, mass conservational cultivation is required if the national demand for medicinal plants is to be met without erosion of biodiversity. Most traditional healers are between the ages of 35-45 and most are women (Table 2; Figure 4). Most have an in-depth knowledge of traditional healing and plants which are routinely collected to cure certain ailments.

Table 3: Age categories and practicing experience of respondents

Age category (years)	Number of respondents	Total respondents (%)	Experience (number of years)
25-40	25	31.25	5-15
40-60	45	56.25	20-35
>60	10	12.5	30-40

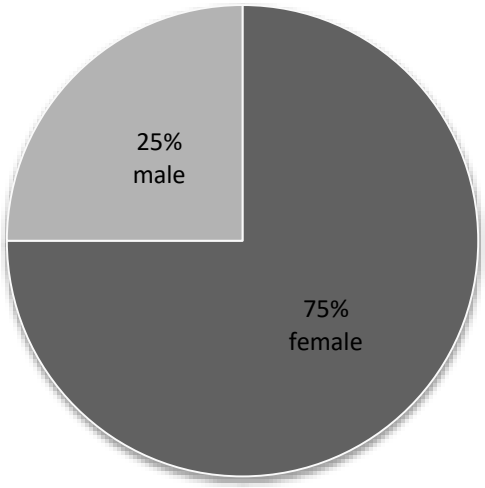

Figure 4: Percentage of male and female respondents

Cooperation in conservation strategies and policies is required at regional, national, and international levels while ensuring that management initiatives take into account local market conditions and the socio-economic realities facing

both consumers and those who depend on the trade for their livelihoods (SANBI, 2018). However, certain agencies such as the Silverglen Medicinal Plants Nursery in Durban play a crucial role in ensuring that medicinal plants in danger of extinction are being protected for future generations.

CONCLUSION

Certain species of plants are extremely valuable to traditional healers however unsustainable harvesting of these species results in loss of biodiversity. Although many traditional healers do practice sustainable harvesting a few are unscrupulous and overharvest to the point of extinction. In these instances, harvesting is driven by profits and motivated by the high unemployment rate in South Africa. The abundance of plant materials that are collected further emphasizes that traditional healers are highly revered in rural communities and the material they administer can be used to treat a wide variety of ailments.

The medicinal plant trade in Durban is a vital part of the city's cultural heritage and economy. However, it faces significant challenges related to sustainability, regulation, and ethical use of indigenous knowledge. Addressing these issues requires a multifaceted approach that includes community engagement, better enforcement of regulations, and initiatives to promote sustainable harvesting and cultivation practices. Ensuring the long-term viability of this trade will not only preserve an important aspect of South Africa's cultural heritage but also support biodiversity conservation and economic development in the region.

LIMITATIONS TO THE STUDY

It must be understood that traditional healers cannot disclose specific ingredients used in their concoctions to prevent their ideas from being stolen. The assistance and cooperation of the traditional healers is therefore dependent on the principle of good faith. However, the authors are reasonably sure that the information supplied was accurate based on previous surveys and ongoing cooperative agreements with various traditional associations. Furthermore, traditional healers and vendors were hesitant to disclose the full extent of their trade due to the secretive nature of their practices or concerns about legal repercussions, leading to underreporting.

RECOMMENDATION

Future research should include a broader range of stakeholders, such as traditional healers, vendors, harvesters, and consumers, to capture a more complete picture of the trade. Engaging with community leaders and employing culturally sensitive approaches may increase participation. In addition, future studies should extend their scope to include rural areas where medicinal plants are harvested. Understanding the supply chain from source to market is crucial for assessing sustainability and the impact on local ecosystems.

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COMPETING INTERESTS

All authors declare no competing interests.

CONFLICT OF INTEREST

No conflict of interest was declared.

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AUTHORS' CONTRIBUTION

The conception of the idea, initial manuscript drafting, analysis, result interpretation, and subsequent manuscript revisions were collaborative efforts among all authors who reviewed the initial draft and subsequently contributed to further revisions of the manuscript and granted approval for the final version of the manuscript.

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