



Indigenous Medicinal Plants Administered for the Prevention and Treatment of Influenza

Sejabaledi Agnes Rankoana¹ 

¹ Department of Sociology and Anthropology. University of Limpopo, Limpopo Province, South Africa.

ABSTRACT

Influenza infection remains the most contagious disease and was recently linked to the COVID-19 pandemic. More research is currently designed to explore the potential benefits of indigenous plant-derived medicine to prevent and cure influenza. The purpose of this study was to determine medicinal plants used to treat influenza from a list of 89 plant species identified during previous ethnobotanical research conducted between 2012 and 2019. The study was conducted among four rural communities of Bapedi in Limpopo Province, South Africa. A mixed-methods approach was used to collect data. The study findings indicate that influenza is a seasonal and highly spread illness. The most often used methods of preventing influenza susceptibility were fumigating one's residence and courtyard with indigenous plant-derived remedies, administering infusions and decoctions orally, as well as therapeutic steam and incense. Isolation is another method of avoiding influenza from spreading to other family members. Currently, this method is being used to stem the spread of the COVID-19 pandemic. The study's results augment existing data about indigenous plant-derived medicines that show promise in combating the COVID-19 pandemic.

Correspondence

Sejabaledi Agnes Rankoana

Email:

sejabaledi.rankoana@ul.ac.za

Publication History

Received 18th September, 2022

Accepted 14th November, 2022

Published online 22nd November, 2022

Keywords: *Indigenous knowledge, plant-derived medicine, influenza, pandemic, COVID-19*

INTRODUCTION

Indigenous health care is an ancient method of health care that is used for curative, preventative, and rehabilitative purposes. Indigenous health care techniques are effective, culturally distinctive ways of maintaining good health that have a long history of use in South African communities. Such practices attempt to sustain human health in order to reach comprehensive well-being. This is best accomplished through curative and preventive health care, which is primarily delivered through the use of indigenous plant-derived medicine. The majority of the medicines used in preventative health care are designed to delay the onset of disease and limit its spread. Influenza is one of the most prevalent infectious diseases that can be successfully treated at home with native plant medicines. These medicines can be administered by an elderly relative, a neighbor, or a traditional health practitioner.

Despite substantial research conducted in South Africa on the use of indigenous plant-derived medicines to maintain human health, few studies have looked at the use of such medicines to cure infections, particularly influenza. The current study seeks to fill this gap by focusing on the knowledge and skills of members of four local communities in treating influenza through the administration of plant-derived medicine. The findings of a mixed-methods study demonstrate the holistic character of the community response to influenza. To lessen the impact of influenza, an integrated approach

including health promotion, disease prevention, and patient care using indigenous plant-derived medicine is used. The use of indigenous plant-derived medicines for influenza prevention and treatment may be tested for efficacy and safety, allowing a larger community to use readily available, safe, inexpensive, and culturally acceptable medications to address COVID-19-related symptoms.

LITERATURE REVIEW

The outbreak of the COVID-19 pandemic has motivated many researchers to explore the potential of indigenous health care practices in the cure and prevention of the pandemic.¹ The main goal was to describe the possible use of traditional medicine to cure and limit the spread of the main infectious symptoms of the pandemic.² Influenza, is one such infectious disease and it is recently known as one of the common symptoms of COVID-19. It is a communicable illness and one of the most prevalent transmissible diseases.³ It is defined by Yoshino et al. as a common viral infection worldwide.⁴ According to the World Health Organization (WHO), 5–15% of the population is affected by annual epidemics of influenza infection in the upper respiratory tract, and many people die from influenza-related diseases annually.⁵ The common unfavorable symptoms of influenza which start normally one to two days after infection are chills, high fever, watering and sore eyes, and rash.⁶

Traditional medicine is gaining popularity as a kind of health care, having been utilized for both general health maintenance and the treatment of diseases regarded as minor ailments such as influenza.⁷ It is well-accepted that medicinal plants have a history of use to treat a variety of infectious diseases.⁸ Medicinal plants have been utilized around the world, even in regions with advanced health care systems, and numerous traditional communities continue to rely on indigenous medicinal plants for the treatment of infections.⁹ Ancient countries employed traditional herbal treatments to prevent or cure colds and flu by clearing viral respiratory illnesses.¹⁰ In some regions of the globe, medicinal plants constitute a vital element of basic health care¹¹ and are increasingly being exploited to make contemporary therapeutic medications necessary to treat infectious diseases.¹² The use of herbal pharmaceuticals as widely accessible alternatives to synthetic chemical therapies has grown in popularity worldwide due to their compatibility with the body and fewer negative effects.¹³

¹ Fanghua Qi and Wei Tang, “Traditional Chinese Medicine for Treatment of Novel Infectious Diseases: Current Status and Dilemma,” *BioScience Trends* 15, no. 4 (August 31, 2021): 2021.01263, <https://doi.org/10.5582/bst.2021.01263>.

² Qi and Tang, “Traditional Chinese Medicine for Treatment of Novel Infectious Diseases: Current Status and Dilemma.”

³ Qi and Tang, “Traditional Chinese Medicine for Treatment of Novel Infectious Diseases: Current Status and Dilemma.”

⁴ Tetsuhiro Yoshino et al., “The Use of Maoto (Ma-Huang-Tang), a Traditional Japanese Kampo Medicine, to Alleviate Flu Symptoms: A Systematic Review and Meta-Analysis,” *BMC Complementary and Alternative Medicine* 19, no. 1 (December 18, 2019): 68, <https://doi.org/10.1186/s12906-019-2474-z>.

⁵ World Health Organization, “Influenza,” 2003, <http://www.who.int/mediacentre/factsheets/2003/fs211/en/>

⁶ Dhivya Rajasekaran et al., “Identification of Traditional Medicinal Plant Extracts with Novel Anti-Influenza Activity,” *PLoS ONE* 8, no. 11 (November 27, 2013): e79293, <https://doi.org/10.1371/journal.pone.0079293>.

⁷ Qi and Tang, “Traditional Chinese Medicine for Treatment of Novel Infectious Diseases: Current Status and Dilemma.”

⁸ Ain Raal et al., “Complementary Treatment of the Common Cold and Flu with Medicinal Plants – Results from Two Samples of Pharmacy Customers in Estonia,” *PLoS ONE* 8, no. 3 (March 6, 2013): e58642, <https://doi.org/10.1371/journal.pone.0058642>.

⁹ Qi and Tang, “Traditional Chinese Medicine for Treatment of Novel Infectious Diseases: Current Status and Dilemma.”

¹⁰ Yoshino et al., “The Use of Maoto (Ma-Huang-Tang), a Traditional Japanese Kampo Medicine, to Alleviate Flu Symptoms: A Systematic Review and Meta-Analysis.”

¹¹ Parvaneh Mehrbod et al., “South African Medicinal Plant Extracts Active against Influenza A Virus,” *BMC Complementary and Alternative Medicine* 18, no. 1 (December 27, 2018): 112, <https://doi.org/10.1186/s12906-018-2184-y>.

¹² Yoshino et al., “The Use of Maoto (Ma-Huang-Tang), a Traditional Japanese Kampo Medicine, to Alleviate Flu Symptoms: A Systematic Review and Meta-Analysis.”

¹³ Mehrbod et al., “South African Medicinal Plant Extracts Active against Influenza A Virus.”

METHODOLOGY

Study area

The paper discusses indigenous plant species that have been discovered as potential sources of treatment for influenza connected with COVID-19 symptoms. The research was done in Limpopo Province, South Africa, among four Bapedi communities. Limpopo Province is located in northern South Africa. It spans an area of 123,910 km² and is home to an estimated 5.7 million inhabitants, translating to a population density of 44 persons per square kilometer. Limpopo's population of 5.9 million people accounts for 9.9 percent (5.9 million) of South Africa's 54 million population. Limpopo is South Africa's fifth biggest province. It is home to 5.6 million people.¹⁴

Study design

The researcher conducted the study using a mixed-methods approach. This necessitated the utilization of both qualitative and quantitative investigations concurrently. The study's objective was to identify plants that are used as medicine by members of four rural communities to treat influenza from a list of 89 medicinal plants identified during several medical ethnobotanical studies conducted in Limpopo Province, South Africa, between 2012 and 2019. The study's participants were community members who were knowledgeable about medicinal herbs. Residents of four communities in four districts of the province totaled 230 (115 males and 115 females). The sample size was 230 people, ranging in age from 29 to 87 years. To ascertain their medicinal ethnobotanical knowledge, participants were invited to complete a semi-structured questionnaire.

The questions were constructed around the following themes: knowledge of therapeutic plants, plant names, plant components utilized, methods of preparation and administration, and the sorts of ailments and diseases treated. Face-to-face interviews with participants were done in their homes, followed by transect walks to locate and collect plant voucher specimens for botanical identification. The vouchers were placed at Limpopo's Larry Lach Herbarium. The researchers analyzed qualitative data using the Thematic Content Analysis (TCA) approach. This technique was used to ascertain the existence or absence of certain words or ideas inside a text or group of texts. The researchers analyzed the data by categorizing it according to themes, ideas, or comparable characteristics. Quantitative data was evaluated using a statistical tool, and the results are presented in Table 1.

Table 1. List of Indigenous Plants Used for the Prevention and Cure of Influenza

Family Name, Scientific Name & Species No.	Vernacular	Habit	Plant Material used	Treatment of influenza symptoms
Amaryllidaceae <i>Crinum Macowanii</i> L. (SAR 20)	<i>Letotse</i>	Herb	Bulb	Cure: Infusion orally taken for coughs
Asclepiadaceae <i>Asclepias fruticose</i> (SAR 69)	<i>Fore</i>	Herb	Stem	Cure: ash taken with water orally for cough
Asteraceae <i>Artemisia afra</i> . Jacq. ex. Wild (SAR 31)	<i>Lengana</i>	Herb	Leaf	Cure: Infusion taken for fever
<i>Dicona gerrardii</i> (Harv. ex. Fc Wilson (SAR 26)	<i>Phalalegola na</i>	Herb	Root	Cure: Decoction treats cough,

¹⁴ Statistics South Africa Mid-Year Population Statistics. (2021). Available at: <http://statistics.South Africa.org>.

Canellaceae <i>Warburgia salutaris</i> (G. Bertol) (SAR 19)	<i>Molaka</i>	Tree	Bark	Cure: Infusion cures coughs
<i>Eucomis autumnalis</i> (Mill) Chitt. (SAR 57)	<i>Mathubadifala</i>	Herb	Bulb	Cure: Decoction treats fever
Hypoxidaceae <i>Cf Hypoxix L.</i> (SAR 73)	<i>Phela</i>	Herb	Bulb	Cure: Decoction treats coughs and fever
Mmoraceae <i>Ficus burkei</i> (Miq) (SAR 37)	<i>Mokumu</i>	Tree	Bark	Cure: Infusion treats colds, and throat infection
Myrtaceae <i>Syzygium cordatum</i> Hochst. ex. (SAR 66)	<i>Monthlo</i>	Tree	Root	Cure: Decoction reduces sneezing and running nose
<i>Lycium</i> sp. (SAR 72)	<i>Ngangi</i>	Shrub	Root	Cure: Decoction treats fever
Verbenaceae <i>Lippia javanica</i> Burm F. (SAR 78)	<i>Mošunkwane</i>	Herb	Leaf	Cure: Infusion treats, running nose and fever
Vitaceae <i>Rhoicissus tridentata</i> (L.F) Wild& Dumm (SAR 47)	<i>Mopidikwa</i>	Herb	Root	Cure: Decoction treats cough and running nose
Amaranthaceae <i>Amarantus hybridus</i> (SAR 44)	<i>Sebjane</i>	Herb	Root	Prevention: Root decoction is orally applied for prevention against attack by influenza
Capparaceae <i>Cadaba aphylla</i> (Thunb) Wild (SAR 42)	<i>Monnamotšho</i>	Herb	Root	Prevention: The root is crushed to make powder which is used as a strong protective measure against influenza
Rhamnaceae <i>Berchemia discolor</i> (Klotzsch) hemsl. (SAR 43)	<i>Monoko</i>	Herb	Root	Prevention: The root chips soaked into water, the mixture is sprinkled in the household or courtyard to prevent attack by influenza
Crassulaceae <i>Cotyledon orbiculata</i> L. (SAR 48)	<i>Seredile</i>	Herb	Leaf	Prevention: Dried leaves make a protective medicine taken orally for protection against influenza
Hyacinthaceae <i>Drimia robusta</i> Bak. (SAR 76)	<i>Phaya-bašimane</i>	Herb	Leaf	Prevention: Infusion of the bulbs and leaves taken orally for protection against influenza
Zingiberaceae <i>Siphnochilus aethiopicus</i> (SAR 45)	<i>Serokolo</i>	Herb	Bulb	Prevention: The rhizomes are chewed rubbed on the body for protection against influenza

RESULTS AND DISCUSSION

Description and symptoms of influenza

Influenza in the study was described as *mokhuhlwane/mpshikela* (flu). Many people become susceptible to influenza at the beginning of winter. Additionally, it was classified as a seasonal sickness characterized by a range of symptoms including fever, headache, runny nose, sneezing, chills, cough, sore throat, and exhaustion. These symptoms were considered trivial and were often self-diagnosed or identified by a family member. Similarly, these symptoms are self-treated using homemade treatments that are familiar to the individual's parents, grandparents, friends, or neighbors. The most frequently reported transmissible methods were: touching an infected person or their belongings can transmit the infection to a healthy person; when an infected person sneezes or coughs, droplets containing the influenza pathogen can infect the person nearby; and touching objects or areas touched by an infected person can transmit the infection to a non-infected person. Influenza is often characterized by fatigue, weakness, muscle and joint discomfort, followed by fever, headache, and cough with rhinitis.¹⁵ The majority of symptoms are self-diagnosed and self-treated using homemade herbal remedies.¹⁶ The treatment of infectious illnesses requires consideration of a broad variety of social elements that define the illness, determine its mode of transmission, and impact preventative and therapeutic approaches.¹⁷

Prevention

Fumigation of houses and courtyards

Berchemia discolor root chips are soaked in water and the resultant mixture is scattered over the dwelling or courtyard to ward against infectious illnesses such as influenza. The combination is thought to be anti-infective and has a three-month shelf life (Table 1).

Infusion/decoction taken orally to prevent attack by influenza

Table 1 lists five indigenous plant species whose leaves, roots, and bulbs are gathered for the purpose of producing preventative medicine. Plant materials are well-known and frequently utilized as sources of medicine, reducing susceptibility to infectious illnesses and used for self-medication. Participants said that they seldom seek physicians for influenza symptoms. Self-medication by the administration of recognized plant-derived medications was a prevalent practice described. Typically, one's parents, grandparents, relatives, or friends would advise on the most appropriate course of therapy for the symptoms.

Isolation

Since influenza was recognized as the most prevalent infectious disease, anybody exhibiting these symptoms was isolated from the rest of the family to undergo treatment; a similar technique was used in the case of COVID-19. The objective is to minimize influenza transmission by avoiding direct contact with the ill family member. The three preventative methods used by participants are intended to reduce susceptibility to influenza and to aid in its prevention in cases when a family member is afflicted. The practices used to prevent influenza susceptibility are consistent with the primary healthcare goal of education about prevalent health problems and methods for preventing and controlling them, vaccination against major infectious diseases, and prevention and control of locally

¹⁵ Raal et al., "Complementary Treatment of the Common Cold and Flu with Medicinal Plants – Results from Two Samples of Pharmacy Customers in Estonia."

¹⁶ Angelo Mathes and Renee Bellanger, "Herbs and Other Dietary Supplements," *Journal of Pharmacy Practice* 23, no. 2 (April 11, 2010): 117–27, <https://doi.org/10.1177/0897190009358711>.

¹⁷ Johannes Sommerfeld, "Social Dimensions of Infectious Diseases," in *International Encyclopedia of Public Health*, ed. Stella R. Quah (United Kingdom: Academic Press, 2017); Stephen Birch, Terje Alraek, and Sascha Gröbe, "Reflections on the Potential Role of Acupuncture and Chinese Herbal Medicine in the Treatment of COVID-19 and Subsequent Health Problems," *Integrative Medicine Research* 10 (2021): 100780, <https://doi.org/10.1016/j.imr.2021.100780>.

endemic diseases, as specified by Van Rensburg.¹⁸ Early management of influenza with traditional medicine in individuals with mild to moderate illness significantly reduces disease progression to a severe or critical stage.¹⁹ The use of indigenous plant-derived medicine to treat influenza is substantiated by claims that ancient people often employed complementary and alternative remedies to treat or prevent respiratory virus illnesses.²⁰

The existing data on the efficacy of traditional Chinese medicine prompted their application to the treatment of COVID-19-related symptoms, including influenza, despite the absence of scientific evidence to support this claim.²¹ The primary reason for this is that herbal remedies include a variety of substances, which are customized to a patient's symptoms and environmental circumstances and often operate holistically.²² Isolation, as utilized in this research, is most often used when a patient is suspected of having a contagious (transmissible from person to person) viral or bacterial infection.²³

Cure

Thirteen medicinal plant species from thirteen different families have been discovered as potential sources of medicine. The leaves, roots, bulbs, and bark are used to create infusions, decoctions, and therapeutic steam to treat influenza-related symptoms such as fever, coughing, and sore throat (Table 1). These results corroborate the findings of Mhlongo and Van Wyk's and Lam et al. findings that indigenous plant-derived medication is often utilized to treat influenza symptoms.²⁴ The use of indigenous medicinal herbs to combat influenza is well documented in various regions of the globe, where Lawal et al. report continued and widespread use even throughout the COVID-19 pandemic's symptoms.²⁵

CONCLUSION

The present study presents participants' knowledge of influenza, its symptoms, and indigenous practices for prevention and treatment. Participants are aware of influenza as the most contagious sickness that occurs at the start and conclusion of winter. The most often utilized techniques of preventing influenza susceptibility were fumigating the dwelling and courtyard with indigenous plant-derived treatments and oral administration of infusions and decoctions, as well as therapeutic steam and incense. Isolation is another strategy for preventing the transmission of influenza to other family members. This strategy is currently being utilized to halt the spread of the COVID-19 pandemic. The study's preventative methods exemplify the Primary Health Care Model's purpose of focusing on prevention rather than treatment. Three types of preventative care were identified in the research; however curative treatment is performed only by the oral administration of plant-derived medicine.

¹⁸ H. C. J. Van Rensburg, *Health and Health Care in South Africa* (Hatfield, Pretoria: Van Schaik Publishers, 2004), <https://www.worldcat.org/title/health-and-health-care-in-south-africa/oclc/56127962>.

¹⁹ Jun-ling Ren, Ai-Hua Zhang, and Xi-Jun Wang, "Traditional Chinese Medicine for COVID-19 Treatment," *Pharmacological Research* 155 (May 2020): 104743, <https://doi.org/10.1016/j.phrs.2020.104743>.

²⁰ Haider Abdul-Lateef Mousa, "Prevention and Treatment of Influenza, Influenza-Like Illness, and Common Cold by Herbal, Complementary, and Natural Therapies," *Journal of Evidence-Based Complementary & Alternative Medicine* 22, no. 1 (January 22, 2017): 166–74, <https://doi.org/10.1177/2156587216641831>.

²¹ Fu-Sheng Wang and Chao Zhang, "What to Do next to Control the 2019-NCov Epidemic?," *The Lancet* 395 (February 1, 2020): 391–93, [https://doi.org/10.1016/S0140-6736\(20\)30300-7](https://doi.org/10.1016/S0140-6736(20)30300-7).

²² Yuewen Ding et al., "The Chinese Prescription Lianhuaqingwen Capsule Exerts Anti-Influenza Activity through the Inhibition of Viral Propagation and Impacts Immune Function," *BMC Complementary and Alternative Medicine* 17, no. 1 (December 24, 2017): 130, <https://doi.org/10.1186/s12906-017-1585-7>.

²³ John Gammon and Julian Hunt, "A Review of Isolation Practices and Procedures in Healthcare Settings," *British Journal of Nursing* 27, no. 3 (February 8, 2018): 137–40, <https://doi.org/10.12968/bjon.2018.27.3.137>.

²⁴ L.S. Mhlongo and B.-E. Van Wyk, "Zulu Medicinal Ethnobotany: New Records from the Amandawe Area of KwaZulu-Natal, South Africa," *South African Journal of Botany* 122 (May 2019): 266–90, <https://doi.org/10.1016/j.sajb.2019.02.012>.

²⁵ Ibraheem Oduola Lawal et al., "Ethnobotanical Survey of Plants Used for Treating Cough Associated with Respiratory Conditions in Ede South Local Government Area of Osun State, Nigeria," *Plants* 9, no. 5 (May 20, 2020): 647, <https://doi.org/10.3390/plants9050647>.

The study's results are relevant to studies on the use of indigenous plant-derived medicines to combat the spread of COVID-19 pandemic.

RECOMMENDATIONS

- The study findings are relevant to existing data on the role of traditional medicine in the prevention of the transmission of COVID-19. Therefore, it is recommendable for scientists to conduct more detailed efficacy and safety research on indigenous plant-derived medicines administered by the members of local communities for prevention against influenza. The resulting evidence-based data could be used to develop health care policies that incorporate culture-specific health promotion approaches.
- Future research is recommended to explore the use of plant-derived medicines recorded in the study as sources of new derivatives for potential pharmaceutical drugs to treat infectious diseases like COVID-19, complementing the need for formalization of the use of traditional medicine in health promotion.

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ABOUT AUTHOR

Professor Sejabaledi Agnes Rankoana is an established researcher in the field of medical anthropology with special focus on medical ethnobotany, food security and climate change.