The Use of Herbal Health Products and Home-Based Remedies for Protection Against Covid-19

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Abstract

Natural medicinal products and home-based remedies have been in use for centuries by people across the world. Tradition, belief, cultural practice, and previous experience are associated with the use of herbal products. The trend is observed to be on the increase since covid-19 Pandemic hit the global stage. In the early days of the Pandemic, people protected themselves by practicing measures that would safeguard them from getting infected with the deadly virus. This study evaluated prevalence, risks, harms, benefits, and other issues associated with using herbs and home-based remedies to prevent and treat Covid-19. It highlights various measures of prevention and treatment practiced by employees and customers of a Regional Corporation by capturing the demographic characteristics, reasons, and associated factors for using alternative medical products. A descriptive cross-sectional survey in a hybrid online was carried out from February 2022 to April 2022. Data of independent and dependent variables was collected using a well-structured hybrid (online and paper and pencil) questionnaire. Prevalence of steam inhalation was 51%, essential oils, including menthol crystal vapour inhalation, was 61%, herbal supplements was 20.6%, and natural health products was 100% (n = 286). Nonallopathic medicinal products, home-based remedies, and other preventive health measures were on the increase in prevalence during covid-19 Pandemic. Large studies are required to assess the efficacy and safety of herbal supplements and home-based remedies to protect users from unnecessary dangers inherent in their use.

Keywords: Covid-19 pandemic, Herbal health supplements, Home-based remedies, Infection, Prevalence, Natural products, Regional corporation.

Introduction

Herbal health products are used in various forms. They are dispensed in capsules, gels, creams, powder, tea, and other preparations. Home remedies used by people of all ages and backgrounds include garlic, gingerroot, beetroot, lemongrass, cayenne pepper, turmeric, and so on. Steam inhalation, menthol crystal vapour, and other essential oils are inhaled routinely in the ongoing Covid-19 Pandemic. Consumption of herbal health supplements in general, can improve the immune response [1]. Natural products are used for the prevention and control of the Covid-19 pandemic [2]. Some herbal products can cause serious health problems if used in combination with some pharmacological drugs such as aspirin, digoxin, spironolactone, warfarin, and diuretics.

Due to uncertainty about the coronavirus in its early stage of pandemic and scientism surrounding vaccines produced in record time, the use of herbal products and home remedies gained more popularity than was the case before the advent of Covid-19 Pandemic.

Covid-19 daily infection and death rates were higher compared to reported rates in neighboring Island countries. This caused serious concern for the government and the people.

The hypothesis tested reads "the use of herbal health products and home-based, natural

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Accepted: 08.11.2022 Published on: 30.03.2023 Corresponding Author: fagbola98@yahoo.com remedies for prevention and self-treatment was high in this current Covid-19 Pandemic.

Gingerroots (Zingiber officinale) have been used as a spice and medicine for over 200 years in Traditional Chinese Medicine [3] to treat cold symptoms, pain, and vomiting. Based on research findings [4], a combination therapy using ginger with a validated medication can be a promising candidate for the treatment of Covid-19. Some health benefits of Ginger are pain relief through its anti-inflammatory property, blood sugar improvement/regulation, anti-emetic, and lowering of cholesterol. 10% ginger gel preparation can reduce knee joint pain due to its anti-inflammatory effect [5] produced by the active compounds contained in red ginger.

Mounting evidence suggests that ginger can promote healthy ageing, reduce morbidity, and prolong a healthy lifespan [6]. It has been demonstrated to possess antioxidant, antiinflammatory, anticancer, and antimicrobial properties, as well as an outstanding antiviral activity due to a high concentration of antiviral compounds. It is cytotoxic and cardiotonic and shown to have anti-tumour activities, antipyretic, anti-platelet, anti-inflammatory, antihyperglycaemic, antioxidant, anti-diabetic, anticlotting and analgesic properties [3].

It is available mainly in three forms. These are fresh root ginger, dried ginger and preserved powder and ginger in liquid forms. Pharmacological activities are due to its constituents pythocompound 6-gingerol, 6shogaol, zingerone, phenolics and flavonoids. Gingerroots are used in China, India, Caribbean and many other countries in flavouring foods, baking and as preservatives. In a molecular study [7] showed that gingerol (6-gingerol, 8-gingerol, and 10-gingerol) and Shogaol (6-shogaol, 8shogaol, 10-shogaol) had the best binding affinities to the receptor protein in disease conditions such as diabetes, inflammation, obesity, and SARS-CoV-2.

Beetroot (*Beta vulgaris*) is a root vegetable known by many names such as red beet, table beet, and garden beet. It contains essential nutrients and is a great source of fibres vitamin B9 (folate or folic acid), potassium, iron, manganese and Vitamin C. It is rich in nitrate (NO3), antioxidants phenolic compounds that improve cardiovascular function and exercise performance [8]. Nitrate-rich vegetable consumption, such as beetroot, should be included in the diet during confinement from Covid-19 outbreaks to alleviate the potential negative effect of home confinement on cardiovascular health [9]. Beetroot has numerous health benefits, including improved blood flow, lower blood pressure, and increased exercise performance. They may have anticancer anti-inflammatory properties which are due to their high content of inorganic nitrates. Research study showed that nitrate-rich nutritional formula improves oxygen saturation in patients with Covid-19 [10].

The use of Garlic (allium sativum) in all its existing forms (cloves, powder, oil etc.) is well documented in published research papers. It has antioxidant, antimicrobial, anti-cancer, haematological and other properties [11]. Other properties are reduction of cardiovascular risk factors, liver protection, and suppression of carcinogen formation through allucin, its active compound by acting as an antioxidant. Lipoprotein modification and inhibition of LDL uptake and degradation by macrophages are two of the known mechanisms of its action. When used in excess, Hippocrates, the father of medicine, was said to have prescribed garlic for a variety of health conditions [12]. Although the studies were not consistent in relation to the dosage, standardization of garlic preparations, and period of treatment, most findings suggest cholesterol that garlic decreases and triglycerides levels in patients with increased levels of these lipids.

Lemongrass (Cymbopogancitratus), also known as fever grass, might help prevent the growth of some bacteria and yeast. Aqueous extracts of Cymbopogoncitratus (Cy) leaves are used in traditional medicine for the treatment of inflammatory conditions [13]. However, little is known about their mechanisms of action. The findings of a research study [14] give strong support to the consideration of Lemongrass essential oil as a potentially valuable antifungal and anti-inflammatory agent for the prevention and treatment of acute inflammatory skin conditions. Its use is not limited to human benefit. It was found to prevent aflatoxin production [15].

Echinacea is herb widely used in North America, Asia, and Europe. Archaeologists have found evidence that it may have been used by Native Americans for more than 400 years to treat infections and wounds and as a cure-all medicinal plant. Clinical application of the proprietary standardized Echinacea purpurea extract (Echinaforce) demonstrated efficacy as a preventive cold treatment option over a 4-month This study duration [16]. showed that Echinacea's long-term prevention was associated with a reduction in the total number of cold episodes, a reduction in the number of days with colds, and a reduction in cold episodes requiring additional medication. In another study, Echinacea products been shown to provide benefits for treating colds [17] although it is possible there is a weak benefit from some Echinacea products.

Turmeric (curcumin or curcumina longa) has a lot of health benefits, possibly through its antioxidant and anti-inflammatory mechanisms. The benefits are best achieved when turmeric is combined with other agents like piperine which known to significantly increase is its bioavailability [18]. It helps in the management of oxidative and inflammatory conditions, metabolic syndrome, arthritis, anxiety, and hyperlipidemia. It may also help in the management of exercise-induced inflammation and muscle soreness, thus enhancing recovery and performance in active people. Among the benefits of turmeric [19] are analgesic, antibacterial, anti-inflammatory, anti-tumor, anti-allergic, antioxidant, antiseptic, antispasmodic, appetizer. astringent, cardiovascular, carminative, cholagogue, digestive and diuretic.

A review of many studies on the effects of Cayenne pepper (*Capsicum annuum*) and its constituent capsaicin has shown health beneficial effects on humans in metabolic syndrome and other medical conditions [20]. Capsaicin (trans-8-methyl-N-vanillyl-6-none-amide) is the pungent principle of the Capsicum red pepper meaning the main source of taste or smell of the pepper.

Various types of red peppers, including Chili and sweet peppers, have been in use dating back to 7000 BC. Indian Ayurvedic and Traditional Chinese Medicine use Cayenne pepper because of its spicy nature. Cayenne pepper in various preparations is used to suppress appetite, boost immunity, treat sore throat and relieve arthritis pain. The antimicrobial properties of Chile peppers are used in Mayan medicine [21].

Probiotics is classified as dietary supplements. Probiotics are live microorganisms processed for consumption in yogurt and other fermented foods and dietary supplements. Many of the microorganisms in probiotic products are the same as or similar microorganisms that naturally live in our bodies. Types of microorganisms in probiotics are Lactobacillus and Bifidobacterium. They may also be Yeasts such as Saccharomyces boulardii are also used in probiotics. Probiotics are used in the prevention of antibiotic-associated diarrhoea, necrotizing enterocolitis, and sepsis in premature infants, treatment of infant colic and periodontal disease, and in the maintenance of remission in ulcerative colitis. There is increasing interest concerning Probiotics from the public. researchers, governmental organizations (such as the WHO (World Health Organization, FAO (Food and Agricultural Organization), and medicinal and food companies [22].

Menthol Crystals has engaged the focus of and current research papers on its various uses, especially in aromatherapy. It is widely used and safe. Only one fatal case of heavy exposure was reported in the literature [23] of a twenty -one years old peppermint factory worker who went inside a tank to clean it. He was found unconscious after being exposed to heavy menthol toxic fumes, which he inhaled. Menthol has been shown to reduce dyspnoea in many respiratory conditions [24]. It is a naturally occurring cold receptor agonist that specifically activates the transient receptor potential melastatin 8 (TRPM8) channels in the skin and mucous membranes. Menthol cooling sensation appears to reduce the perception of respiratory effort without altering the temperature.

Menthol Crystal Regime of periodic inhalation [25] was found to be both preventive and therapeutic for Covid-19 infection. Covid-19 patients who were administered menthol crystal vapour continuously over a period of five minutes every eight hours for three days became negative for the virus when tested on the fourth day.

The use can cause hypersensitivity reactions. Essential oils containing pinene and linalool are known to cause a wide variety of respiratory complications, including seasonal asthma and rhinitis in allergic patients [26]. Some individuals are sensitive or allergic to specific components of essential oils and, upon exposure, may develop a wide range of allergic reactions, including contact dermatitis [27].

The use of steam inhalation (local hyperthermia) in the treatment and prevention of Covid-19 is gaining popularity. Its effectiveness was demonstrated in a clinical trial [28]. In one study, [29] were administered five cycles of four minutes for twenty minutes for four consecutive days at a temperature of 55°C and 65°C in the first 4 to 5 min after the initiation of water boiling. The patient had a towel draped over their and back. Their airway mucosal head membranes were exposed to the steam. At 24 each cycle of treatment, hours after measurement of viral shedding was done by RT-PCR (Reverse Transcription Polymerase Chain Reaction) on collected swabs from the nose and pharynx (rhino pharyngeal swabs). Viral load was found to be reduced.

The objective of this research was to evaluate the prevalence of the use of herbs, home-based remedies, and other health habits practiced by employees and customers of Regional Corporations during this currently ongoing Covid-19 Pandemic. The specific objectives were to identify the demographics of people engaged in the use of herbal product, and homebased remedies use, explore the advantages and disadvantages of natural health remedies, assess pre-existing health conditions in people taking herbal products, highlight herbal products' benefits (if any), and possible harmful effects, determine the knowledge and attitude of people who indulge in the practice and find out the factors associated with the use of herbs.

Materials and Methods

The study location was at the Princes Town Regional, one of the fourteen Municipalities in the country that provides essential services to its burgesses. The population is 102,957 of which 52,382 were males, and 49,992 were females, according to the 2011 census. The population density is 165 persons per km2. Site selection was based on the reality of the daily increase in the number of Covid-19 cases. Distribution and collection of questionnaires were done in safe zones where sanitization, social distancing, and wearing of facemasks were complied with.

Study population were the employees and members of the public who visited the Corporation for various business transactions on an appointment basis because of Covid-19 pandemic restriction measures. Paper and Pencil Questionnaires were distributed to the indoor staff in the main building and members of the public who came to the Corporation to transact business. Online questionnaires were sent via Whatsapp to field workers and those in the departments not located within the main building.

Determination of sample size was done using Raosoft online platform calculation formula used in the cross-sectional survey. Raosoft calculator recommended sample size was 278. Sampled population was 1000. The Confidence Level was set at 95%, and the level of significance was *p*-value <0.05. The sample size of 286 was chosen after correcting for questionnaires that were distributed but not returned with answers. The rate of response was 95% online and 97% in paper and pencil format.

Inclusion Criteria

Males and females who were above 18 years of age and volunteered to participate.

Exclusion Criteria

Males and females who were less than 18 years and those unwilling to participate.

The Variables

The dependent variables were allopathic medications, non-allopathic, employment status, knowledge of self-medication, Covid-19 test result, medicinal products, and other measures of prevention and treatment of Covid-19 infection that were self-prescribed and administered. Demographic characteristics sex, age, level of education, marital status, and employment status were the independent variables. Modifiable variables included access to products used in self-medication and the personal knowledge of respondents.

Sampling Procedure/Technique

The period of survey was twelve weeks. (mid-January 2022 to early April 2022) during the 3th wave of the Covid-19 Pandemic in the country. This slowed down data collection because of public health protocol the respondents had to observe. Visit to the Corporation by the members of the public was by appointment. The self-selection method was used whereby respondents chose whether or nor not to take part in the Hybrid survey of online and paper and pencil formats. In the former, a link was sent to individuals with known contact phone numbers. The link took them to a clickable Google website to answer the survey questions. In the latter, research assistants drew the attention of employees and members of the public to the desk where the questionnaires were placed. Willing individuals picked questionnaires, supplied answers, and put them in a collection box provided.

Survey Instrument

An interview questionnaire was used to obtain information on demography, use of selfmedication, and other health habits practised by the participants. Pretesting of the instrument was done to test the reliability and validity of interview guide tools of open and closed-ended questions structured in three parts of A, B, and C. Part A was the background information, and it consisted of seven (7) questions. Part B was self-medication with antibiotics and consisted of nineteen (19) questions. Part C was on various health habits practised by the participants to prevent and treat Covid-19 infection, and it consisted of eight (8) questions.

Data Collection

Google Developers (a software development application) owned by Google was used. It was launched in 2005. It offers a variety of application programming interfaces. Data collection and analysis were facilitated using two productivity tools offered by Google Developers with Google Forms and Google Charts. Consent form was attached to the threepage interview with clear instructions on how to answer the questions after signing the consent form by participants. The purpose of the survey was explained, and the contact of the Principal Investigator was provided in the introduction.

Demographic information such as age, sex occupation, education level and marital status of participants was collected. Data on health habits, health status, knowledge about herbal products, names of medications, reasons for engaging such habits, and sources of information on for the habits were gathered. The online questionnaire was created using Google Forms, which is a survey administration software and collaboration tool. It allows the user to create online forms and surveys and share them via a link. The advantage of using Google Forms over a physical survey is that it allows the user to make certain responses mandatory and the participant will not be able to submit the survey until he/she has answered all the required questions.

Data Analysis

The responses from both the online and physical questionnaires were merged using Google Charts. Google Chart is an interactive web service that creates graphical representation from data provided by the user. Data to be charted were listed with selected options to customize each chart, and the chart was created using embedded Java Scrip, which is a programming language. The charts were then compiled and copied onto the research paper.

The software further analyzed the participants' responses in real-time by offering a "summary of responses" feature that created a visual representation of open and close-ended questions (e.g., multiple choice, checkbox). The form creator adjusted the settings to ensure that the participants were unable to make changes to the questionnaire. Descriptive statistics such as frequency and percentage were used to present the combined data in histograms, graphs, tables, bar charts, and line graphs as applicable.

Calculation using Confidence Interval, Zscore, Chi square was performed with the use of online calculator on various variables of respondents to derive statistical significance of p-value <0.05. Descriptive statistics (percentage, frequency etc.) was used for data presentation in bar charts, pie charts, tables, line graphs, bar graphs, and histograms. Total samples and percentages of responses to questionnaires was calculated for each item chosen by respondents. The measured output was the prevalence. Factors associated with self-medication such as accessibility, information from family members and friends, previous experience etc., were determined by calculation. A p-value of < 0.05 was set as statistically significant. Analysis was carried out using descriptive statistics at 95% confidence intervals.

Ethical Considerations

Permission was sought and granted by the Research Ethics Committee in the jurisdiction where the survey was conducted. Consent forms were given to participants to sign to document their willingness to participate in the study. Participants' names and places of residence were not required to be supplied in the questionnaires. Data gathered was not and will not be shared inappropriately.

Quality Control of Collected Data

The questions were written the English Language with no slang or abbreviation. The filled questionnaire was placed in a locked collection box with a padlock to which only the Principal Investigator and two research assistants had access.

Result Analysis and Discussion

Demographic Characteristics

The research aim was to find out the prevalence of the use of herbal products and home-based remedies for prevention and treatment of Covid-19 by the targeted population of a Regional Corporation in South Trinidad in the current Covid-19 Pandemic.



Figure 1. Research Instruments used for Data Collection Process and Main Findings

Table 1. Age Range of the Participants

Age	18-25	26-35	36-45	46-55	Above 56
Frequency	31	77	78	56	43
Percentage	9.1%	28.8%	28.8%	19%	14.2%



Figure 2. The Age Range of the Participants

Sex: Females outnumbered males. Office staff members are overwhelmingly female. Field employees are males in the majority. In the PTRC, over 60% of the workforce were females which is so reflected in the results of the current research study.

	Sex	Male	Female	
	Frequency	127	158	
	Percentage	44.4%	55.6%	
Sex 55.69	6	44.	4%	Male Female

Table 2. Sex of the Participants



Marital Status

Most participants were married. Thirty-three respondents did not indicate their marital status, as done by two hundred and eight-four people. 49.3% (n = 140) were married, 37.7% (n = 107) single, 8.8% (n = 25) divorced and 4.2% (n = 12) separated. In some study papers reviewed, married respondents were also in the majority.

Marital Status	Single	Married	Separated	Divorced
Number	107	140	12	25
Percentage	37.7%	49.3%	4.2%	8.8%



 Table 3. Marital Status

Figure 4. Marital Status

Level of Education

Most of the participants were well-educated. Very few respondents did not indicate their level of education. This is similar to the regional average of Primary, Secondary, and Tertiary/University levels of education attained.

Education Level	Primary	Secondary	Tertiary	Other
Respondents	32 (11.2%)	91 (31.8%)	157 (54.95)	Post graduate degree (1)
				Postgraduate diploma (1)

Table 4. Level of Education



Figure 5. Level of Education

Health Status

excellent (24.3%), good (55.6%), fair (15%), and not ideal (2.2%).

The Health Status of the respondents was

Health Status of Respondents	Excellent	Good	Fair	Not ideal
Frequency	69	158	43	12
Percentage	24.3%	55.6%	15.0%	2.2%



What is your health status as informed by your doctor?



Self-medication was taken for body ache/pain, headache, sore throat, fever, diarrhoea, and vomiting in that order of most to the least. Other complaints were pulmonary embolism, sinusitis, hypertension, fatigue, head congestion, and common cold. Toothache, diabetes, migraine, menstrual cramps, depression, cough & congestion, high

cholesterol, chronic cough, and stomach pain, to keep immunity up and prevent illness.

Bar Chart 1. Complaints for which Participants used Herbal Products and Home-based Remedies

Your choice of herbal medicine is based on what?	
(Select more than one if applicable). Respondents	
A. Recommendation by community pharmacists	112
B. Opinion of family members	62
C. Opinion of friends	23
D. My own experience	127
E. Based on previous experience	66
F. Doctor's prescription	97
G. Advertisement	11
H. Other	Studies of natural & alternative medicine (1)
	Internet (1)
	Herbalist (1)
	My expertise (1)
	Google search (1)
	Online suggestions (1)
	My knowledge as a pharmacist (1)

Table 6. Choice of Herbal Products and Home-based Remedies by the Respondents





Figure 7. Reasons for Choice of Herbal Medicine and Home-based Products

For most of the participants, the choice of herbal medicinal products was based on the recommendation of community pharmacists. This is understandable. Some pharmacy outlets are licensed to sell over-the-counter products, including oral hypoglycaemic drugs, namely Glucophage. Other influencing factors were on the opinions of friends, personal experience, doctor's prescription, and advertisements read in the newspapers, on social media, and those seen on television.



Figure 8. Sources of Information for Herbal Medication

Over two hundred participants obtained information on herbal products from community pharmacies, followed by leftovers from previous filled prescriptions, online shopping/epharmacies, herbal stores, kitchen gardens, and other sources.



Select all the home measures and remedies you use

Figure 9. Types of Home Remedies used by Respondents

How the respondents use home-based remedies
Make teas with natural herbs/spices (32)
Make smoothies (3)
Lime juice with honey (2)
Menthol crystal inhalation (8)
Steam inhalation (19)
Eat raw garlic/onion/ginger (3
Cook with natural herbs & spices (11)
Aromatherapy with essential oils (3)
Topical application of natural herbs (3
Consuming fresh juice (3)
Nasal spray (1)
Drink herb-infused water (2)
Tablets/capsules (2)

Please briefly state exactly how you use/apply the remedies



Figure 10. Application of Home Remedies

Respondents made teas with natural herbs/spices, inhaling steam, cooked with natural herbs/spices, and inhaling menthol crystal vapour. Steam inhalation, Menthol crystal vapour inhalation, Ginger roots,

Turmeric, Garlic, and Lime juice were heavily used. Onion, Herbal products, Cayenne pepper, other Essential oils and Vitamin K essential oils were used as well.

All the home measures and remedies used	by Respondents
Steam inhalation	139
Menthol Crystal vapour inhalation	143
Essential Oils	29
Herbal Health Capsule, Powder	52
Cayenne pepper	27
Turmeric	103
Lime juice	99
Garlic	105
Onion	59
Gingerroots	120
Beetroots	-
None	(3)
Others	All (1)
	Cannabis (1), Wonder of the
	world leaf (1)
	Exercise (2), Daily
	multivitamins (1)
	Bay leaf, mauby bark (1),
	Galangal, moringa (1)
	Moringa (1), Lemongrass (2)
	Apple cider vinegar (1),
	orange peel (1)
	Honey (2)
	Spanish thyme tea, a mixture
	of all of the above (1)

Table 8. Herbal Products and Home Remedies Used for Covid-19 Prevention and Treatment

Discussion

Prevalence of steam inhalation was 51.0% (n = 146), Essential oils inhalation is 61.9% (n = 170), herbs is 20.6% (n = 52), and home-based remedies is 100% (n = 286). Table 9 shows the overall prevalence and individual prevalence of steam inhalation, essential oils, and herbal products.

Multivariate Regression Analysis of Individual Independent Variables Vs. One Dependent Variable (Selfmedication)

Age group 26 -35: COR 0.15, 95% CI 0.04, 0.51, P-value 0.00129 is significantly associated

with use of self-prescribed pharmacological drugs. Females have 0.96 COR over males on self-medication (95% CI (0.59, 1.59). Marital status: respondents separated from their spouses have COR 2.48 over single, married, and divorced respondents (95% CI (1.02, 6.06). There was no significant relationship between gender and use of herbal products (P=0.553). study in Nigeria [30] revealed that knowledge of Covid-19 symptoms did not significantly predict self-medication (Table 10).

Respondents	*Overall use of Steam and	Steam	Natural Health	All Essential Oils Inhalation	Menthol Crystal	Herbal
	Essential oil inhalation,	Inhalation	Products Ginger roots,		Vapour Inhalation	products
	herbs and Home-based		Lime juice, Onion,			
	remedies to prevent or		Cayenne pepper,			
	treat Covid-19 Infection		Garlic, Turmeric			
Cumulative frequency	201	146	286	170	140	59
Prevalence	71.6 %	51.0%	100%	61.9%	49%	20.6 %

 Table 9. *Overall prevalence is 71.6%

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Variables: Dependent →		Use of H	erbal Products	OR	CI 95%	<i>P</i> -value	Z - score
		and Hon	ne-based Remedies				
Independent 🔶		Yes	No				
Age	18 - 25	24	11	1	-	I	-
	26 - 35	59	4	0.15	(0.04, 0.51)	0.00129	3. 0235
	36 - 45	59	24	0.89	(0.38, 2.09)	0.392	0.2725
	46 - 55	39	19	1.06	(0.43, 2.61)	0.447	0.1329
	Above 56	33	14	0.93	(0.36, 2.39)	0.4365	0.1596
Sex	Male	85	42	1	1	I	1
	Female	107	51	0.96	(0.59, 1.59)	0.4436	0.1418
Marital Status	Single	28	29	1	-	I	-
	Married	101	39	1.04	(0.59, 1.83)	0.4476	0.1315
	Divorced	6	3	0.89	(0.23, 3.54)	0.4381	0.1557
	Separated	13	12	2.48	(1.02, 6.06)	0.0229	1.9960
Level of Education	Primary	21	11	1	-	I	-
	Secondary	63	28	0.85	0.36, 1.99)	0.3531	0.3768
	Tertiary	123	34	0.53	(0.23, 1.2)	0.0638	1.5233
	Others	1	2	3.82	(0.31, 46.9)	0.1476	1.0466
Employment Status	Employed	144	75	1	-	I	-
	Not Employed	74	23	1.0172	(0.5712, 1.8113)	0.9538	0.058
Knowledge about Self-prescribed Medication	Yes	137	72	•	-	I	-
	No	51	26	0.9700	(0.5587, 1.6843)		0.108

The crude odds ratio of employment and practice of herbal products and home remedies self-medication is 1. 0172 times the odds of not being employed and practice of self-medication. (95% CI 0.57 to 1.81, *p*-value 0.9538).

The crude odds ratio of having knowledge about self-medication and practicing it is 0.9700 times that of not having the knowledge and practicing self-medication. It is not statistically significant at p 0.140.

Online Calculator Used https://www.gigacalculator.com/calculators/odd s-ratio-calculator.php.

In a nested case-control study conducted in Ghana [31], the prevalence of usage of homebased remedies to prevent Covid-19 was 29.6% (n = 261).These include drinks (34.1%) (n = 100), changes in eating habits/food (33.8%) (n = 99)), physical exercise (18.8% (n = 55), steam inhalation (9.9% (n=29)), herbal baths (2.7% (n=8)), and gurgle (0.7 (n=2)). Participants who practiced any form of homebased therapy were protected from SARS-CoV-2 infection (OR = 0.28)(0.20 - 0.39)),severe/critical Covid-19 (OR = 0.15 (0.05-(0.48)), hospital admission (OR = 0.15 (0.06-(0.38)), and death (OR = 0.31 (0.07 - 1.38)).

Steam inhalation and herbal baths were associated with 26.6 (95% CI=6.10-116.24) and 2.7 (95% CI=0.49-14.78) times increased risk of infection, respectively. Modification of diet (AOR = 0.01 (0.00-0.13) and physical exercise (AOR = 0.02 (0.00-0.26)) remained significantly associated with a reduced risk of infection. Essential oil vapours evaluated have potent antiviral activity [32] under conditions that did not adversely affect cultured epithelial cells. Herbal products in capsules, powder or cream were used by 206% (n = 50) of respondents. In Sale Prefecture, Morocco [33] the most used plant parts for herbal preparations were leaves (28.43%) and seeds (17.5%), and most remedies were prepared through infusion. A study done on different herbal supplements showed that ginger, lemon/orange, vitamin C, honey, black seeds and costus have a significant impact on Covid-19 management [34]. In a study done in Cusco, Peru total of 1,747 respondents participated in the study, and 80.2% reported that they used medicinal plants as preventives [35].

Respondents were asked to choose as many specific measures as possible they considered useful in preventing Covid-19 infection.

The finding of the current study on wearing of face mask is like that of studies conducted in Gondar town in Ethiopia [36] and Debre-Tabor town, Ethiopia [37] that revealed a very low knowledge, attitude, and practice of face mask use as a measure for Covid-19 prevention. Less than half of respondents, 110 (26.7%) agree that wearing a face mask protects against the Pandemic, while 260 (63.11%) believe that wearing a face mask will not protect from Covid-19. More than half of the participants 195 (47.33%) agreed that people misinterpret their feelings when wearing a face mask, while 120 (29.13%) were neutral. Public behaviour and adherence to national and sub-national response strategies-notably social and physical distancing measures will continue to be key measures for controlling the virus [37].

The general health behavior variable was believed by 29.4% (n = 84) of respondents to prevent Covid-19 infection. This is agreement with findings of a study done in South Korea (Lee, M., et al (2021) which informed that efficacy belief was a strong and most influencing, significant practice factors of Covid-19 prevention. The level of knowledge varied by sociodemographic characteristics. Females ($\beta = 0.06$, p < 0.05) and individuals with higher levels of education ($\beta = 0.06$, p < 0.05) demonstrated higher levels of knowledge.

Variables \\\\\\	Yes	No	OR	CI	Z-score	<i>P</i> - value	Row Tot
Antimicrobials	55 (115.88) [31.98]	231 (170.12) [21.79]	1	1	-	I	286
Steam Inhalation	146 (75.36) [66.21]	40 (110.64) [45.10]	0.065232	(0.041, 0.103)	11.7083	0	186
Essential Oil Vapour Inhalation	170 (115.88) [25.28]	116 (170.12) [17.22]	0.162465	(0.111, 0.237)	9.4459	0	286
Herbal Products	52 (115.88) [35.21]	234 (170.12) [23.99]	5.650183	(3.771, 8.465)	8.3947	0	286
Column Totals	423	621	I	I	-	I	1044 (Grand Total)

Table 11. Independent Variables

Table 11. The chi-square statistic is 266.7742. The p-value is < 0.00001 and the result is significant at p -0.05.

Table 12. Public Health and Other Prevention Measures against Covid-19

Specific Measures	Wearing	Washing	Hand	Social Distancing	General Health <u>Measures:</u> Balanced	Inhalation of Steam	Covid-19 Vaccine
to Prevent Covid-	Face Mask	Hands	Sanitization		diets, personal hygiene and boosting	and Essential Oils	
19 Infection					immune system, hydration, adequate		
					rest, Exercise, Vitamins, Education		
F requency Total	73	69	54	74	84	140	11
sampled n = 286							
Percentage	25.5%	24.1%	18.9%	25.9%	29.4%	61.9%	3.4%

The study in Taiwan [39] found that wearing masks, hand hygiene, and social distancing may contribute not only to the prevention of Covid-19 but also to the decline of other respiratory infectious diseases. A study done across Saudi Arabia [40] found that the Hand washing average knowledge score was 5.13 (SD = 1.18, range 1-7), and the rate of correct responses ranged from 30 to 94%. Older age groups and male participants had significantly lower knowledge scores (p < 0.001 and p = 0.032,respectively). Those with higher education levels, higher family incomes, and free from chronic illnesses had significantly higher knowledge scores (p = 0.004, $p \le 0.001$, and p < 0.001, Getting vaccinated against Covid-19 did not appeal to the respondents. A mere 3.4% (n = 11) thought it was a specific measure to prevent infection.

Conclusion

The overall prevalence of use of herbal products is 71.6%, steam inhalation (51%), menthol crystal vapour inhalation (49%), all essential oils inhalation (61.9%), herbal products (20%). Age group 26 -35 was significantly associated with the use of herbal products and home-based remedies. Females have 0.96 COR over males on use of herbal products. Respondents separated from their spouses have odds ratio 2.48 over single, married, and divorced respondents. Respondents between 36 to 55 years of age were more into herbal products and home-based remedies use rest of the age groups. The most common source of information was pharmacy outlets. Products were procured pharmacies. The commonest from the complaints were body aches and pain, headaches and sore throat.

Limitations

The survey was conducted on the staff members of a Regional Corporation and members of public who went there to conduct business such as payment for food badges, pumping out of the cesspool, bulk waste removal, an inspection of buildings and premises, and so on. No research of its nature was known to have been conducted in the country with which to compare its findings locally but internationally. The population was heterogeneous compared to other countries where the population studied was mainly homogeneous.

Recommendations

Collaboration ought to be made with genuine herbalists to know more on their preparation in terms of dosing and efficacy. Large studies are recommended to be carried out nationally, regionally, and internationally and the results are shared with relevant government and nongovernmental agencies. This will necessitate the formulation of health policies to better inform the population on the trend and guide people on self-medication and educate them on the risks posed by it.

Healthcare stakeholders, especially pharmacists, need to be guided by regulation in order to reduce access of the population to herbal products.

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Conflict of Interest

The author confidently declares that there was no conflict of interest before, during and after the research study.

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