

# Complementary and Alternative Medicine (CAM) Views and Practices for the Treatment and Prevention Of COVID-19 Symptoms. A Cross Sectional Analysis in Eastern Trinidad, 2022



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## Abstract

### Objective

To assess Complementary and Alternative Medicine (CAM) views and practices among patients with confirmed COVID-19 infection presenting to the primary and tertiary care units in East Trinidad.

### Methods

An interviewer-lead questionnaire was conducted on patients who presented to the Accident and Emergency department or primary health care centers over the past year and subsequently tested positive for COVID-19. Patients were contacted and asked about the types of CAMs used for the duration of their illness and their views on the degree of effectiveness in relation to how long it took for symptom resolution and improvement. Data collected was interpreted using SPSS (Statistical Package for the Social Sciences).

### Results

A survey of 200 persons found that the majority of patients (86.5%) used CAM. The most commonly used types of CAMs were vegetables such as ginger (66.7%), garlic (45%) and plants (52.9%) such as moringa, neem and fever grass (14%). Less commonly (<2%) used were herbs such as cloves and cinnamon or aromatherapy steams with oils such as peppermint, eucalyptus or shilling. 67.3% of persons believed that the use of CAM helps to strengthen an individual's immune system and 50.8% were of the assurance that CAM did aid in shortening the duration of time for which they were ill.

### Conclusion

Most of the study population trusted in CAMs during their COVID-19 illness. The use of CAM during the COVID-19 pandemic, as well as for other various viral infections, requires more investigations into their true efficacy and benefits.

**Keywords:** Alternative medicine; COVID-19; Supplements; Attitude; Practices; Trinidad

## Introduction

The coronavirus disease 2019 (COVID-19) was declared a pandemic by the World Health Organization (WHO) on March 11<sup>th</sup>, 2020 [1]. The WHO has since recorded over 6 million deaths worldwide due to COVID-19, with approximately 70% of the world's population having been vaccinated against the virus [2,3].

In Trinidad and Tobago, there has been an estimated 4000 plus deaths due to COVID-19, with new positive cases still occurring weekly [4]. The country has also seen some success with regards to vaccination efforts, with about half (51.3%) of the population being vaccinated as of January 2023 [4]. The generally acknowledged

symptomatology for this coronavirus has been found to be those of respiratory origin, such as shortness of breath, cough, nasal congestion, or rhinorrhea, as well as other non-specific symptoms [5]. These symptoms usually last a few days and can range from mild, moderate to severe. The extent to which persons are affected can be multifactorial. Age, gender, comorbidities, geographical location, and vaccination status can all play a role in influencing the level of severity.

There is no cure for COVID-19 to date, hence guidelines have followed management with various pre-existing medications and the generally accepted treatment for symptoms is “supportive management” [6]. Over the years of the pandemic, cultural practices for COVID-19 symptoms or prevention have materialized. Though they may vary from one location to the next, they mirror many common pre-existing practices that have typically been accepted for use when ill. These involve the traditional use of herbs, spices, vegetables, and oils for medicinal benefits. Many of these substances and practices fall under the umbrella of Complementary and Alternative Medicine (CAM). The National Center for Complementary and Integrative Health defines Complementary Medicine as a non-mainstream approach used in conjunction with conventional medicine, however if the approach is used in place of conventional medicine the practice is called Alternative Medicine [7].

The WHO 2019 global report on Traditional and Complementary medicine found that 88% of its member states acknowledged the use of some form of traditional or complementary medicine [8]. Despite the fact that in the Caribbean most herbs, in terms of efficacy and side effects, have not been well explored, there still exists a popularity and preference for them over conventional medication [9,10]. Their applications have been involved in the treatment of chronic ailments and acute conditions due to much grounded belief in these practices. Since the advent of the pandemic and the increase in ease of circulated misinformation revolving around COVID-19, many have sought comfort in the familiarity and use of their own home remedies deeming them to be safe or more reliable. However, there still exists a lack of scientific support regarding the various types or their effectiveness. This study aimed to evaluate the perceptions towards different CAM practices, to determine if there were any associated benefits with regards to preventing or improving COVID-19 symptoms.

### Methods

Health care in Trinidad and Tobago can be accessed publicly via one of the five Regional Health Authorities (RHAs) Eastern, North Central, Northwest, Southwest and Tobago or privately. Health care delivery in the eastern region spans the largest geographical area of all the RHAs, however has the second smallest catchment population when compared to the other five authorities. Approximately 140 000 individuals access health care via the

ERHA. The ERHA's catchment covers approximately one third of the geographical area of Trinidad. Of the two counties, County St. Andrew/St. David and County Nariva/Mayaro, there are 16 health centers, 1 district health facility and 1 district hospital. Patients with acute respiratory illness can access care at any of the health centers and the one district hospital's emergency department. Patients who are diagnosed as having the SARS-CoV-2 infection via a nasopharyngeal swab may be admitted or discharged to home quarantine. The surveillance unit of the County Medical Offices of Health (CMOH) are responsible for conducting daily telemedicine calls for those in home quarantine. A cross sectional study was designed in which patients with confirmed COVID-19 infection who presented to the emergency department and those in home quarantine would be assessed on their use of CAM for the treatment of COVID-19.

The target population was all persons who contracted and tested positive for Covid-19 and who accessed the health care facilities of the ERHA from November 2022 to January 2023. The inclusion criteria were all persons attending the Emergency Department of the Sangre Grande Hospital (SGH) with COVID-19 and all the persons with COVID-19 under home quarantine being monitored by the surveillance units of the CMOH for Counties St. Andrew/St. David and Nariva/Mayaro. Exclusion criteria included non-English speaking persons, vulnerable persons who could not give expressed consent and persons with life threatening airway compromise. A convenient sampling method was employed in which all persons meeting the inclusion and exclusion criteria were asked to participate in the study. Demographic data such as age, sex, address, employment level, education level were included. Baseline medical data such as co-morbidities, COVID-19 vaccination status, and attitude if not vaccinated, diagnosis confirmed by Polymerase Chain Reaction (PCR) or rapid antigen testing.

The patient's perception of the COVID-19 illness, such as symptoms experienced, the use of complementary and alternative medicines, the perceived clinical effectiveness of CAM in terms of resolution of symptoms or disease progression such as hospitalizations and antibiotic/steroid use, need to be reviewed by health care professional and the perceived side effects of the use of CAM were assessed. Data was collected using a de novo questionnaire on Google Forms®. (See Appendix, section A). The questionnaire was devised by an expert panel of public health specialists and emergency physicians. It was piloted on 5 individuals with and without COVID-19 to ensure its construct validity. Telephone call interviews were conducted for persons under home quarantine. Physicians in the emergency department of the SGH administered the questionnaire to stable patients once consent was given (See Appendix, section). Variables in the questionnaire included the preference for CAM, the type/s used and the perceived effectiveness in relation to symptoms and duration of course of illness, as well as need to optimize care.

Testing the null hypothesis: Patients with COVID-19 do not use CAM.

Alternate hypothesis: Patients with COVID-19 do use CAM.

Using Sample Size:  $n =$

Where:  $\alpha = 5\%$  is the level of significance

$Z =$  Z statistic for the standard normal deviate for a two-sided  $\alpha = 1.96$

$P =$  expected prevalence or proportion of COVID-19 in Trinidad (using the estimate for the 5<sup>th</sup> -11<sup>th</sup> October 2022) = 2945/1 409 882=0.209 %

$d = 5.00\%$  is the precision or the total width of the confidence interval.

Estimated sample size:  $n = 254$  persons.

Data was entered into Statistical Package for the Social Sciences, IBM SPSS® version 25. A descriptive analysis was conducted such as the calculation of means and confidence intervals for normally distributed continuous variables, median and interquartile range of non-normally distributed variables. Frequencies or percentages

were calculated for categorical variables, with between group comparisons done using Chi-square testing.

Informed consent from the patients was obtained. Parents completed questionnaires on behalf of their children. Patients were ensured that refusal to participate was not a barrier to receiving standard health care. Privacy and confidentiality of the data collected was maintained. The data collection tool was coded with a unique identifier to ensure the anonymity of the research subject. The computer used for data entry and analysis was password protected and accessible to the researchers only. The research proposal was approved by the Research Ethics Committee of the ERHA of Trinidad and Tobago (see Appendix, section C).

Interviewer bias and recall bias were minimal as the information was collected by trained health care providers from patients who were recently diagnosed with or treated for COVID-19. Selection bias was negligible due to the convenient sampling method of all adult patients presenting with COVID-19. The missing data was also insignificant as the information was collected by an interviewer lead questionnaire and not from health records.

## Results

**Table 1:** Characteristics of the Sample Population.

Variable	Distribution
Age	Range 5-74 years, mean 35.4 years +/- std dev 12.3 years
Sex	Female 60.8% Male 38.2 %
Marital status	Single 46.5% Married 47.5% Divorced 3.4% Separated 1.5% Widowed 0.5%
Highest level of Education	Never attended school 1.0% Primary School 11.6 % Secondary School 19.1% Trade School 3.9% University/College 64.3%
Location	Sangre Grande Hospital, Accident & Emergency Department 41.3% County NAMA 28.1% County STAD 30.6%
Medications used	Complementary/Alternative Medicine 86.5 % Antibiotics 25.5% Prednisolone 11.2% Ivermectin 2%
COVID-19 Vaccination	No 27.9% Yes 72.1%
Comorbidities	No 64.8% Yes 32.2%

Of the 253 people interviewed, there was a response rate of 79% (200 persons). The demographic profile of the sample population is demonstrated in Table 1, as seen below. The average

age of the study population was 35.4 years with a minimum age of 5 years and maximum age of 74 years. The majority of the population was female (60.8%), married (47.5%) or single

(46.5%), and the highest level of education attained was tertiary level education (64.3%). Of the study population, 41.3% was sampled from the SGH's Emergency department, 30.6% from the health centers of County St. Andrews/St. David and 28.1 % from County Nariva/Mayaro. As shown in Table 1 above, 86.5% of the sample population utilized Complementary/Alternative Medicine. Although the majority, 72.1% of the study population were vaccinated and 64.8% were without any known medical conditions.

As shown in Figure 1, the most used types of CAM in descending order are vitamin supplements (68.3%), ginger (66.7%), garlic (45%), honey (39.7%), tea (38.6%), aromatherapy (32.8%), menthol (27%) herbal (52.9%) such as fever grass (14%), bayleaf, black sage leaves, papaya leaves, spanish thyme, moringa, neem and zebepeque. Other CAM used include onion skin (5.3%), turmeric (3.5%), and less commonly (<2%) remedies such as cinnamon,

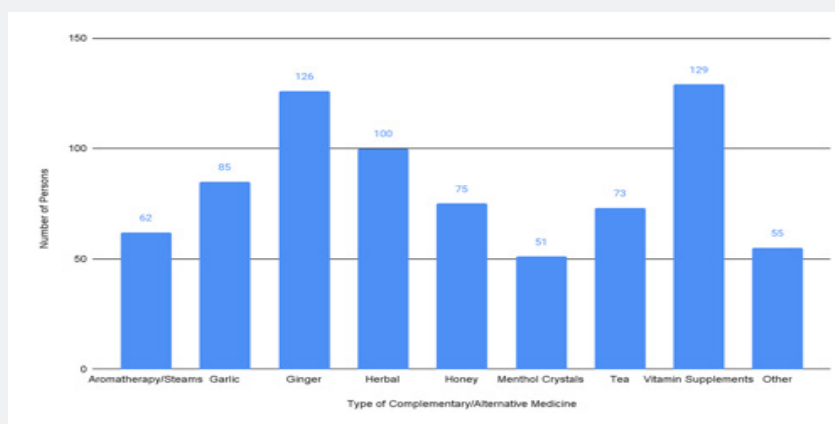
clove, lemon, and pineapple. Most of the study population (78.9%) reported an uneventful course of the COVID-19 illness as shown in Table 2 above. There was also popularity in the belief that there was improvement in severity of the COVID-19 symptoms due to CAM (56.9%), shortened duration of COVID-19 symptoms due to CAM (50.8%), and that CAM use boosted immunity (67.3%). However, when compared to the use of vaccination against SARS-CoV-2, 35% of the population were either unsure or did not believe that CAM was better, and the majority (47.4%) preferred to use both CAM and vaccination against SARS-CoV-2. Whereas 25.8% of the study population believed that the use of CAM alone was better than vaccination against SARS-Cov-2 and 29.6% of the population preferred CAM alone compared to vaccination against SARS-CoV-2. Table 3 as seen above showed that the sex, marital status, and level of education of the study population were significantly associated with the use of Complementary/Alternative medicine.

**Table 2:** The beliefs/attitudes and practices of the use of Complementary Medicine in the treatment of COVID-19.

COVID-19 infection and related CAM beliefs/attitudes	Responses	Proportion (%)
Severity of COVID-19 symptoms	Uneventful course	78.90%
	Accessed health care for worsened symptoms.	12.60%
	Hospitalized	
	Required home visit from health care professional	5.80%
	Contacted ambulance	4.70%
	Required home oxygen use	1.60%
Improvement in severity of COVID-19 symptoms due to CAM	Yes	56.9%
	No	12.2%
	Unsure	21.3%
	Not applicable	9.6%
Shortened duration of COVID-19 symptoms due to CAM	Yes	50.80%
	No	11.20%
	Unsure	25.40%
CAM boosting immunity.	Not applicable	12.70%
	Yes	67.30%
	No	10.70%
	Unsure	14.80%
CAM is better than COVID-19 vaccination.	Not applicable	7.10%
	Yes	25.80%
	No	35.40%
	Unsure	35.40%
Preference of CAM than COVID-19 vaccination	Not applicable	3.40%
	Yes	29.60%
	No	15.80%
	Both	47.40%
	Unsure	7.20%

**Table 3:** The Characteristics of persons associated with the use of Complementary/Alternative Medicine.

Variable	Use Complementary/ Alternative Medicine n%	Do not use Complementary/ Alternative Medicine n%	P-Value (chi-squared test)
Sex Female Male	101 (52.6%) 64 (33.3%)	17 (8.85%) 7 (3.64%)	<0.001
Marital Status Married Divorced Separate Single Widowed	77 (41.8%) 5 (2.7%) 1 (0.54%) 75 (40.7%) 1 (0.54%)	11 (5.9%) 1 (0.54%) 2 (1.08%) 11 (5.9%) 0	<0.001
Highest level of Education Unknown Never attended school Primary School Secondary School Trade School University/College	1 (0.52%) 2 (1.04%) 17 (8.85%) 38 (19.8%) 7 (3.64%) 102 (53.1%)	0 0 3 (1.56%) 0 0 22 (11.4%)	<0.001
Location Sangre Grande Hospital Nariva/Mayaro St. Andrews/St. David	60 (32.9%) 51 (26.5%) 46 (23.9%)	15 (7.81%) 3 (7.81%) 7 (3.64%)	0.062
COVID-19 Vaccination Yes No	108 (59.6%) 48 (26.5%)	20 (11.0%) 5 (2.76%)	0.272



**Figure 1:** Commonly used types of Complementary or Alternative Medicine Therapy.

**Discussion**

From this study it was found that vegetables such as ginger (66.7%) and garlic (45 %) were of preferred use among the persons questioned. These substances, used commonly as home remedies in the treatment of various ailments, have been known to have medicinal effects even before the COVID-19 pandemic. Hence it is somewhat expected that they would also be made use of during this time and within the population of study. According to Nutritional implications of ginger: chemistry, biology activities

and signaling pathways by Kiyama 2020, ginger biochemically exhibits properties that allows it to work in conjunction with the immune system in fighting viruses, bacteria and free radicals that may lead to cancer [11]. In relation to it's use during the pandemic, Aldwihi et al., 2021 found that patients who used ginger for their COVID-19 infection, along with other supplements, were less likely to require hospitalization [12]. Similarly, garlic, which has a high mineral content and sulfur properties, is also well known for its consumption aiding in conditions such as heart disease, hypertension, and cancers [13,14]. A review by Kuber et al,

2020 found that small extracts of garlic can aid in improvement of respiratory symptoms, such as those experienced due to the Coronavirus [15].

Some herbs notably used in this study were Zebapique, sage and basil (<10%). With regards to spices a predilection was seen for saffron, cloves and cinnamon. A study by Silveria et al., 2020 found CAM medicines, such as herbs, to have many reliable uses when compared to many other OTC drugs [16]. Similarly, to persons from this study, a telephonic survey done in India by Charan et al., 2020 also found certain herbs and spices to be of preference for COVID-19 respiratory symptoms [17]. Oils, such as essential oils, were also commonly mentioned for treatment of ailments such as nasal congestion and chest tightness in the form of steams (32.8 %). The ones referenced in this study were peppermint, shilling, or eucalyptus oil. Essential oils are oils obtained from plants through the process of extraction and distillation [18]. Like the other mentioned CAMs, essential oils are also known for their health benefits in terms of their antiviral and anti-microbial properties and can be used via direct application to skin, inhaled, or infused [19, 20].

Some commonly mentioned plants used were Cymbopogon (fever lemon grass), Moringa leaves, Chandelier bush, Bay leaves, Azadirachta Indica (Neem) and Turmeric. Many of these have been cited as having therapeutic benefits and enhancing the immune system either from the incorporation into meals or as teas [21,22]. The majority of the study population related having an uneventful course of illness (78.9%), with small percentages requiring some form of escalation of care or treatment. There exists some association between CAM use and decreased severity of disease [23,24] however it remains an area in need of further investigation. Interestingly, despite the perceptions and associations of CAMs in promoting good health and wellness, of the patients surveyed (35.4%) did not believe that these substances provided better protection from the COVID-19 virus when compared to being vaccinated. With only 25.8% of people believing that it did and an equal 35.4% not being sure. With regards to which CAMs provide superior or definitive protection against the virus also continues to be an area of ambiguity.

The National Center for Complementary and Integrative Health (NIH) (June 2022) emphasized that though the use of alternative medicines is commonly practiced, there exists no scientific proof for their roles in specifically preventing or curing diseases like COVID-19 [25]. Marcus (2020) further highlights that many of these practices and substances used do not scientifically meet the health benefits that people often perceive them to [26]. A review conducted by Silveria et al., 2020 did not find any association between CAM and prevention of COVID-19 symptoms, however their investigation did highlight its use in improvement of general wellbeing of patients [16]. The study by Aldwihi et al., 2021 found patients who used certain herbal supplements during their COVID-19 illness were less likely to be hospitalized [12].

Similarly, a database search by Jeon et al., 2022 found that there was a significant decrease in COVID-19 disease progression (RR 0.30), with the use of traditional Chinese medications such as herbs and vitamins [27].

Better outcomes may come from a belief that these substances are providing some form of 'strengthening' of the immune system, preparing it for warding off harmful and offending agents. A 2008 National Health Interview Survey (NHIS) conducted in the United States found that 67.3% of American adults that used some form of CAM believed that it helped to strengthen their immune system and 50.3% thought it aided in the prevention or improvement of symptoms [28]. This perceived prophylactic effect may be what propels most people to engage in the use and practices of these substances. However, what makes CAMs not commonly advocated for on a scientific platform, is the variation in their efficacy from person to person. With a lack of consistency in studies proving their beneficial use, it is hard to say if these medicines/practices are truly having the believed effects. Another database search by Saxena 2021, concluded that despite consumer's beliefs in CAM, there needs to be adequate investigations before generalized conclusions are drawn [29]. Regardless, despite the true medicinal fortitude of CAMs being an area of uncertainty, the conviction in their use during illness seems to be a belief that will continue to remain ingrained in many.

### Limitations

The sampling frame was limited to persons accessing care at public health centers and one public hospital in East Trinidad during the COVID-19 pandemic. However, the study can be generalized to persons accessing private care as the national public health policy mandated that all persons diagnosed with COVID-19 must be referred to the CMOH for surveillance and home monitoring. Persons with COVID-19 who were in acute respiratory distress or deceased were not included in this study. Therefore, the findings of this study would be more representative of persons with mild to moderate severity of COVID-19. Interviewer lead questionnaires were conducted via telephone for those who were under home quarantine. In person consultations for those in home quarantine was not feasible. There may be a measurement bias as the use of complementary and alternative medicine was assessed, however the quantity and frequency of use was not measured.

### Conclusion

The association between CAM use and improved patient outcomes is an area worthy of further analysis. Access to natural forms of medication can be a feasibly practical approach and the likelihood of patient compliance and satisfaction more probable. What remains certain, in the interim, is that many people with COVID-19 or other illnesses have a pervading belief and preference for its use. Hence development of an herbal or naturopathic medicine registry in Trinidad or within the Caribbean would be

constructive. Having an archive detailing the pharmacology of CAMs, disease specific indications and expected side effects would aid in guiding CAM use and recommendations. Such databases can be established by respective health ministries and formulated with a list of scientifically proven vegetables, spices and herbs

that are useful. This data should be accessible to the public, or in healthcare settings so providers can adequately counsel patients on their usage and the true medicinal benefits of these substances and practices can be further studied.

## Supplementary

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### **Complementary/Alternative Medicine (CAM) for the Prevention or Treatment of COVID-19 Symptoms Questionnaire**

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Description: Complementary or Alternative forms of Medicine (CAM) are used by many, as opposed to Modern (Science-based) Medicine. Other names include Holistic Medicine or Natural Medicine. This survey looks to evaluate beliefs in the use of CAM for the prevention or treatment of COVID-19 symptoms.

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#### **Survey**

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Please answer the following questions to the best of your ability. All responses are confidential, and information gathered would be used for research purposes and not for dissemination of any personal information. Thank you.

---

Patient falls under:

---

Accident & Emergency Department

---

STAD

---

NAMA

---

Please state your age:

---

Address:

---

Sex

---

Male

---

Female

---

Prefer not to say

---

Status

---

Single

---

Married

---

Separated

---

Divorced

---

Widowed

---

#### **What is your highest level of Education?**

---

Primary School

---

Secondary School

---

University/College

---

Trade School

---

Never attended school.

---

#### **Do you have any medical conditions?**

---

Yes

---

No

---

Unsure

---

If yes, please state what medical condition/s you have:

---

#### **Do you use Complementary or Alternative forms of Medicine?**

---

Yes

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No

---

#### **What type of Complementary/Alternative Medicine do you routinely use?**

---

Ginger

---

Garlic

---

Tea

---

Honey

---

Herbal (leaves or 'bush')

---

Supplements (Eg Vitamin C, D, Zinc etc)

---

Aromatherapy/Steams

---

Menthol Crystals

---

Other

None

If 'Other' please list what type below

**Did you use CAM during the period of time when you were ill with Covid-19?**

Yes

No

I used no form of medications.

I used medication prescribed by the hospital.

I used a combination of CAM & prescription medication.

Please select from the list what symptoms you experienced when you had Covid-19:

Fever

Cough

Shortness of breath

Chest pain

Sore throat

Nasal congestion

Rhinorrhea (runny nose)

Myalgia (Body pain)

Dizziness

Nausea

Vomiting

Diarrhea

Rash

Fatigue

Headache

Loss of taste or smell

Other symptom not listed

**Do you believe that CAM helped to prevent or improve your Covid-19 symptoms selected above?**

Yes

No

Unsure

Not applicable

If yes, what type of CAM did you find most effective and for which symptom/s?

**How long did it take for your Covid-19 symptoms to resolve?**

A few days

Weeks

Months

I experienced no symptoms during my infection.

**Do you think the CAM that you used helped to shorten duration of symptoms during your Covid-19 quarantine period?**

Yes

No

Unsure

Not applicable

**Do you believe that the use of CAM helped to "boost" your immunity?**

Yes

No

Maybe

Not applicable

**Do you experience side effects from taking CAM?**

Yes

No

Unsure

Not applicable



If yes, what kind of side effects did you experience from taking CAM? Eg. vomiting, dizziness, rash etc

**With regards to the course of your Covid-19 illness, please select any which apply:**

The course of my illness was uneventful

I had to contact the Ambulance (811) services.

I had to present to a medical facility due to worsening of symptoms.

I needed to be hospitalized.

I needed to use Oxygen at home.

I required a home visit from a nurse/doctor.

**During the time that you were ill with Covid-19, did you use/take any of the following medication?**

Antibiotics

Ivermectin

Prednisolone

None of the above

Have you been vaccinated against Covid-19?

Yes

No

**If you have not been vaccinated, can you state your reasons why?**

**If you have been vaccinated, which Vaccine did you receive?**

Sinopharm (One dose only)

Sinopharm (Two doses)

Pfizer/BioNTech (One dose only)

Pfizer/BioNTech (Two doses)

Oxford/AstraZeneca (One dose only)

Oxford/AstraZeneca (Two doses)

Janssen (Johnson & Johnson)

Combination of vaccines (eg Sinopharm & Pfizer, Janssen & Pfizer etc)

Other

Unsure

**Do you believe the use of CAM provides better protection from Covid-19 than being vaccinated?**

Yes

No

Unsure

Not applicable

**Would you prefer to use CAM as opposed to getting vaccinated against Covid-19?**

Yes, I would prefer to use CAM alone.

No, I would prefer to be vaccinated.

I would prefer a combination of both CAM and being Vaccinated.

Unsure

**B: Consent form for Questionnaire**

You are invited to participate in this brief questionnaire on Complementary and Alternative Medicine (CAM) uses for the treatment and prevention of COVID-19 symptoms. This is a research project being conducted on behalf of the Eastern Regional Health Authority (ERHA). It should take approximately 15 minutes to complete.

**Participation**

Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time without penalty. You are free to decline to answer any question you do not wish to answer for any reason.

**Benefits**

You will receive no direct benefits from participating in this research study. However, your responses may help us learn more about alternative medicines that can be beneficial for Covid-19 symptoms.

**Risks**

There are no foreseeable risks involved in participating in this study.

**Confidentiality**

Your survey answers will be stored on google survey where the data will be secured in a password protected electronic format. A Patient ID number will be used; hence your responses will remain anonymous. No one will be able to identify you or your answers, and no one will know whether you participated in the study.

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