

# Attitudes, beliefs, and self-use of Kabasura Kudineer among urban and rural population in Tamil Nadu, India: A comparative cross-sectional study

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## ABSTRACT

**Context:** During an earlier outbreak of dengue (DENV), chikungunya (CHIKV) and swine flu in Tamil Nadu, India, Kabasura Kudineer and Nilavembu Kudineer were used to control the febrile episodes. No research is conducted in the past to understand the attitude and beliefs of people towards using Kabasura Kudineer as a means to improve immunity in people, especially in Tamil Nadu, the birthplace of Siddha medicine which led the researcher to conduct the study. **Aims:** The researcher in the present paper aims to understand the attitude, belief and self-use of Kabasura Kudineer among people in Tamil Nadu, India. **Settings and Design:** A cross-sectional questionnaire survey was conducted among various people in Tamilnadu, India wherein data was collected from 200 participants. **Methods and Material:** A cross-sectional study involving explanatory/descriptive research design was considered for the study. **Statistical Analysis Used:** For the analysis of collected data statistical package for SPSS software version 25.0 was used. **Results:** The urban participants who participated in the study were 80.5% and the rural participants were 19.5%. The significant *P* value (0.002) indicated that people use kabasura kudineer because allopathic medicine is less effective medicine and the significant *P* value (0.001) shows that kabasura kudineer is taken as a self-medication among Tamil Nadu people. **Conclusions:** The findings of the study revealed the better empowerment of people in the select region towards the use of Kabasura Kudineer.

**Keywords:** Complementary and Alternative Medicines (CAMs), immunization, Kabasura Kudineer

## Introduction

The alarming increase in the disease rates and the global population that are vulnerable to diseases nowadays is attributed to pollution, unhealthy lifestyle and environmental toxins created by mankind itself. The primary concerns of research practitioners in the field of medicine and healthcare are towards addressing the adverse effects caused due to drug abuse which has necessitated assurance of quality, safety and potency of the medicine. One of the proven methods to control and eliminate

deadly diseases that cause more than 3 million deaths every year is immunization.<sup>[1]</sup> An idea to gain immunity is immunity “boost”, which is popular because of its vast knowledge and exposure in the field of medicine and healthcare. However, the usage of no proof-based approaches to improve or boost immunity in human population as a potential substitute for vaccination is a debatable topic. Immunisation is gaining momentum in the recent years owing to the increase in the number of communicable diseases. Though vaccination is considered with great importance, mental resistance towards vaccination is also becoming a big threat in the international arena as per the reports of WHO.<sup>[2]</sup>

Researches in the past have revealed the importance of improving immunity among people living in different parts of the world.<sup>[3,4]</sup>

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The utilization of alternative medicines along with vitamins, was associated with the reduction in the levels of vaccination.

The bane of Allopathic vaccination is that it has research-based records on safety downfall which neutralizes its remarkable benefits.<sup>[5]</sup> Complementary and Alternative Medicines (CAMs) have proven to boost immune reactions over diseases.<sup>[6]</sup> CAMs are conventional methods which may help enhance psychological standards of life and lessen the possibility of infection.<sup>[7]</sup> Hence, it is important to additionally evaluate the benefits of alternative medicine and other immunity-boosting supplements, particularly vitamins. Plant-based drugs are deemed safe to humans and their surroundings compared to other artificial formulations in so-called modern era in which people live today. 25% of the total herbaceous drugs are estimated to be in utilization in the US whereas in emerging countries such as India and China, its usage is nearly 80%. Ayurveda medicines predominantly practiced in India and other major systems of indigenous medicines such as Siddha, Homeopathy, Unani and Folk (tribal) alternative treatments are deemed to be alternative medicines with equal potential as that of conventional allopathic drugs.<sup>[8]</sup>

In agreement with the increasing importance of alternative medicines, WHO established an act called 'WHO Traditional Medicine Strategy 2014-2023' in 2013 which asserted to amalgamate traditional and complementary medicine to improve global healthcare.<sup>[9]</sup> As a result, the world seeks for economical, accessible, and more physiologically amicable conventional system of medicine and holistic approach to start such predicaments and administer everyone their basic healthcare needs. WHO states that 80% of global population still relies on conventional medicines for their healthcare needs. The marked utilisation of plant substances for a broad spectrum of human diseases in developing nations are associated with overpopulation, sparse supply of drugs, costly treatment options, adverse effects of counterfeit drugs, and drug resistance.<sup>[10]</sup> The need for development of novel and safer drugs are due to the limitations provided by some effective drugs such as aspirin, phenylbutazone, indomethacin, etc., though they do not produce any adverse effects. With the growth of new antibiotics, resistance towards the antibiotics also increases which induces other chronic conditions. As a result of medicine abuse, WHO has put forth herbal medicines as their primary sources of healthcare in several countries like India.

In India, several problems are treated using CAMs such as, Ayurveda, Siddha, Unani, Homeopathy, Yoga and naturopathy.<sup>[11]</sup> The use of plant-based products in developed countries is increased which is due to the changes in lifestyle and decreased affordability to allopathic medicine by the present-day population. Ayurvedic medicine's ideology on health and diseases is based on the use of plant-based compounds, exceptional diets and other distinctive health rituals. The greater predilection towards conventional medicines is due to money and time. It can also be ultimately encouraged to be a part with other pharmaceutical products.<sup>[12]</sup> As a result, studies are conducted to improve the

understanding and knowledge on alternative medicines used by patients and medical practitioners.

Though COVID 19 has gained the researcher's attention throughout the world, research on treatment using organic products are limited. A review has been organized by Bchetnia M *et al.*,<sup>[13]</sup> on global SARS-COV-2 current condition and found that it was a communicable disease related to airway disorders that causes acute respiratory distress syndrome and severe pneumonia. However, there are no specific treatment proven, the study was based on meta-analysis of SARS-COV-2 and Coronavirus. They have published a report on clinical, epidemiology, pathology, phylo-genetic origin and transmission of COVID-19 with their treatment options.

Alnefaie A *et al.*,<sup>[14]</sup> reviewed on treatment of COVID-19 in immune response and molecular mechanism perspective which provides an overview on the types, targeted hosts, time of origin, receptors, role of important elements that kills the pathogens. At the same time, it focuses on the structure and pathogenesis of SARS-COV-2.

Papers on antiviral and bioactive character of organic compounds against coronaviruses have been published. Xian Y *et al.*,<sup>[15]</sup> organized a review that stated there is a urgent need on prevention and medications against coronavirus. There was evidence of several biological activities along with antiviral properties of organic compounds. Therefore, the author issues an overall review on organic compounds that alters growth of MERS and SARS and also their use for treatment of coronavirus. Shah *et al.*,<sup>[16]</sup> selected about 30 phyto-compounds from various plants which had antiviral action against coronavirus, and did in silico screening using biscoclaurine, amentoflavone, myricetin, norreticuline and licoricidin by silico approach. The result showed that the compounds have the potential to resist COVID-19.

Another study is conducted on in silico computational screening by Kiran G *et al.*<sup>[17]</sup> This study is aimed to execute the *In Silico* computational studies of phyto-constituents of Siddha official formulation Kabasura Kudineer and novel herbal preparation - JACOM which are commonly used in treating viral fever and respiratory infectious diseases and could be affective against the ongoing pandemic novel coronavirus disease SARS-CoV-2. This study proved that all the phyto-constituents were free from carcinogenic and tumorigenicity properties.

Since enough review of literature is not available to support the use of benefit of natural products like kabasura kudineer, this study was conducted to know the Attitudes, Beliefs, and Self-use of Kabasura Kudineer among Urban and Rural Population in Tamil Nadu, India.

One of the oldest conventional systems of medicine, Siddha has originated from southern part of India, Tamil Nadu. Medicines in Siddha form are classified as external and internal depending on the means of intake and are sub-classified into 32 groups depending on their form, durability, application technique, and so on. Out

of the 32 internal medicines, two medicines are recommended by the Indian Government to treat viral infections- they are Kabasura Kudineer chooranam (for swine flu) and Nilavembu Kudineer chooranam (for chikungunya and dengue).<sup>[18]</sup>

During an earlier outbreak of dengue (DENV), chikungunya (CHIKV) and swine flu in Tamil Nadu, India, Kabasura Kudineer and Nilavembu Kudineer were used to control the febrile episodes 17,18. Table 1 displays the composition involved in the synthesis of the Kabasura Kudineer. The present global pandemic has increased the public attention towards the benefits of Kabasura Kudineer in Tamil Nadu.<sup>[20]</sup> Therefore, the author believes that understanding the people's attitude in the use of Kabasura Kudineer will help increasing immunity levels and controlling the spread of communicable diseases among general public. Considering the importance by the Government of Tamil Nadu and the Government of India on recommending Kabasura Kudineer as a means to fight viral infections and improve immunity, it is of great importance to research about the medicine; however, scanty researches are available. Furthermore, there is no evidence whether people who live in Tamil Nadu, which serves as the origin for Siddha medicine know about this medicine and its efficacy. Against this backdrop, the researcher aims to understand the attitude, belief and self-use of Kabasura Kudineer among people in Tamil Nadu, India.

## Subjects and Methods

A cross-sectional questionnaire survey was conducted among various people in Tamilnadu, India. Nineteen closed-ended questions were framed and validated by the research experts before conducting the study. The questionnaire was divided to assess the knowledge, belief, attitude and self-use among the participants on the kabasura kudineer. The questionnaire was validated by the experts in the field of public health and content validity was done. The study was conducted in the month of June 2020. The questionnaire was passed on to the individual through Google forms through the Internet platform. Convenience sampling was done to select the participants included in the study. The finalised questions were divided into five types which include demographic details of the participants which include gender distribution, residence, living status, occupation and religion. This study involved 200 participants.

The main framework of the questionnaire includes the knowledge related questions were framed as closed-ended questionnaire and other variable which include belief, attitude and self use were framed according to Likert scale as strongly disagree, disagree, neutral, agree and strongly agree. Kappa statistics was calculated to find the Inter and intra examiner comparison and found the value of 0.91 which is considered to be good agreement. SPSS software version 25.0 (SPSS Inc, Illinois, Chicago, USA) was used for statistical analysis. Descriptive statistics was performed to known the demographic Characteristics of the participants included in the study along with the percentage distribution of questionnaire recorded. Chi-square test was carried to find out the

association between the rural and urban population on perception of kabasura kudineer questionnaire included in the study among study population Inferential statistics was performed using Chi-square test, correlation analysis and unpaired *t* test to find out the correlation between urban and rural population. Ethical certificate approval was obtained (Approval Number: SRMU/M&HS/SRMDC/2020/UG/001, Date: 19/10/2020) from institution review board SRM Dental College, Ramapuram, Chennai- 89.).

## Results

Table 2 shows the demographic characteristic of the participants included in the study. In gender distribution, it was found that 59% of females and 41% of males were included in the study. The status of residence includes that 80.5% of urban.

Table 3 shows knowledge the participants had regarding the kabasura kudineer. The two questionnaires which were framed to record the knowledge showed that the source of knowledge they gained about kabasura kudineer is much from family, friends or

**Table 1: Components of Kabasura kudineer<sup>[19]</sup>**

Botanical Name	Major active Phytocompound	Tamil Name
<i>Zingiber officinale</i>	Zingiberene	Chukku
<i>Piper longum</i>	Piperine	Thippili
<i>Clerodendrum serratum</i>	Carvacol	Siruthekku
<i>Androg (raphis paniculata)</i>	Andrographalide	Nilavmebu
<i>Sida acuta</i>	Carvacol	Vattathiruppi
<i>Cyperus rotundus</i>	Amentoflavone	Korai kizhangu
<i>Syzygium aromaticum</i>	Eugenol	Kirambu
<i>Tragia involucrate</i>	Costunolide	Sirukanchori
<i>Anacyclus pyrethrum</i>	Pyrethrin	Akkirakaram
<i>Hygrophilla auriculata</i>	Apigenin	Mulliver
<i>Terminalia chebula</i>	Chebulic acid	Kadukkaithol
<i>Adathoda vasica</i>	Vasicine	Adathodai
<i>Coleus amboinicus</i>	Myrtenol	Karpuravalli
<i>Saussurea lappa</i>	Costunolide	Kostam
<i>Tinospora cordifolia</i>	Cordifolioside A	Seendhil

**Table 2: Demographic Characteristics of the participants**

Demographic Characteristics of the participant	Number (n)	Percentage (%)	
Gender distribution	Males	82	41.0
	Females	118	59.0
Residence	Rural	39	19.5
	Urban	161	80.5
Living status	Family home	176	88.0
	Hosteller/outside	24	12.0
Occupation	Student	126	63.0
	Employee	74	37.0
Religion	Hindu	154	77.0
	Muslim	10	5.0
	Christian	34	17.0
	Other	2	1.0

neighbours which was 62%. While recording the response of how many participants used kabasura kudineer for which particular disease condition, it was found that 70% of participants used for Cough/cold/flu and other respiratory problems.

Figure 1 shows the source of knowledge they gained about kabasura kudineer is much from family, friends or neighbours which was 62%.

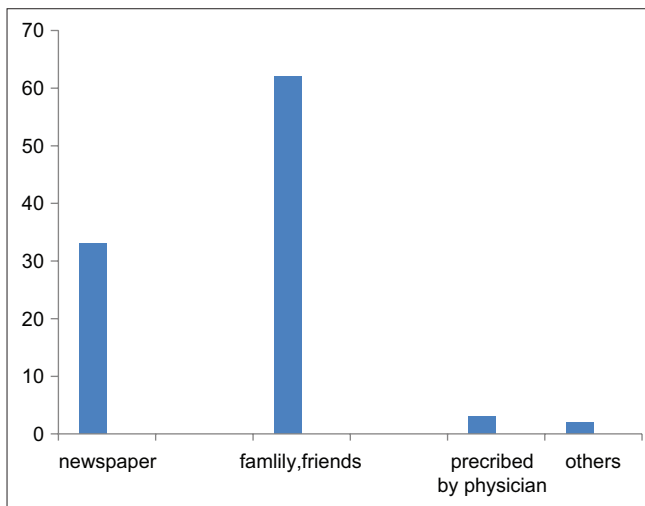
Figure 2 shows that While recording the response of how many participants used kabasura kudineer for which particular disease condition, it was found that 70% of participants used for Cough/cold/flu and other respiratory problems.

Table 4 shows the correlation analysis between the urban and rural population belief towards the kabasura kudineer and found that nearly for all the question the maximum response of urban and rural population is in neutral option.

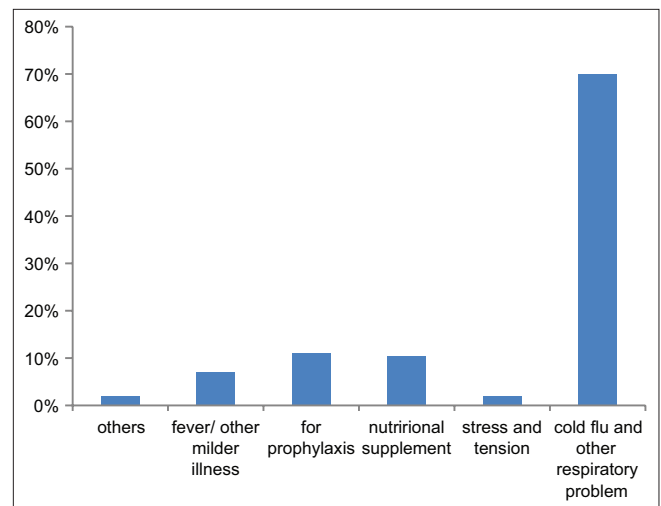
Table 5 shows the participants attitude towards the kabasura kudineer and found that almost for all the 5 questions asked the participants answered a neutral and agree option as maximum. Here correlation analysis was done to find out the correlation between the urban and rural population.  $P < 0.05$  was found to be statistically significant.

Table 6 shows the perception of self use of kabasura kudineer by asking four questionnaire and found that almost for all the question the response from the participants had a mixed answers of all the 5 Likert scale options.

Table 7 shows the association between the rural and urban population among the participants included in the study using person Chi-square test.  $P < 0.05$  was considered as statistically significant. This table interprets that one question related to attitude and one question related to self-use was found to be statistically significant association between urban and rural population by obtaining a  $P < 0.05$ .



**Figure 1:** The characteristic distribution between the source of knowledge the participants obtained about kabasura kudineer expressed in percentage



**Figure 2:** The characteristic distribution between Disease conditions for which Kabasura Kudineer was consumed is expressed in percentage

**Table 3: Questionnaire based on knowledge of kabasura kudineer among the participants**

Questionnaire based on knowledge	Options	Number (n)	Percentage (%)
Source of knowledge on Kabasura Kudineer.	Medical newsletters and others	66	33.0
	Family, friends or neighbours	124	62.0
	Prescribed by physician	6	3.0
	Pharmacist	0	0.0
	Textbook	0	0.0
	Others	4	2.0
Disease conditions for which Kabasura Kudineer is used.	Cough/cold/flu and other respiratory problems	140	70.0
	Fever and other milder illness	14	7.0
	For prophylaxis	22	11.0
	Nutritional supplements	21	10.5
	Diarrhoea and other GIT related problems	0	0.0
	Stress and tension	1	0.5
	Acne and pimples	0	0.0
	Others	2	1.0

**Table 4: Questionnaire based on participants belief towards kabasura kudineer**

Questionnaire based on belief	Options	Urban population		Rural population		Correlation analysis-P
		Number (n)	Percentage (%)	Number (n)	Percentage (%)	
I believe Kabasura Kudineer is effective than any drug in Allopathic medicine.	Strongly Disagree	9	5.6	1	2.6	0.242
	Disagree	12	7.5	1	2.6	
	Neutral	84	51.9	19	48.7	
	Agree	45	28.1	16	41.0	
	Strongly agree	11	6.9	2	5.1	
11. I believe Kabasura Kudineer is safer than Allopathic Medicine.	Strongly Disagree	5	3.1	0	0	0.230
	Disagree	11	6.9	0	0	
	Neutral	80	49.4	21	53.8	
	Agree	54	33.8	13	33.3	
	Strongly agree	11	6.9	5	12.8	
I believe that Kabasura Kudineer is less expensive than Allopathic Medicine.	Strongly Disagree	1	0.6	0	0	0.825
	Disagree	3	1.9	2	5.1	
	Neutral	43	26.3	8	20.5	
	Agree	78	48.8	19	48.7	
	Strongly agree	36	22.5	10	25.6	
I believe that Kabasura Kudineer is a natural product.	Strongly Disagree	1	0.6	0	0	0.322
	Disagree	4	2.5	0	0	
	Neutral	18	11.3	7	17.9	
	Agree	91	56.3	15	38.5	
	Strongly agree	47	29.4	17	43.6	
I believe that Kabasura Kudineer has fewer side effects compared to Allopathic Medicine.	Strongly Disagree	7	4.4	0	0	0.264
	Disagree	19	11.9	4	10.3	
	Neutral	53	33.1	18	46.2	
	Agree	58	35.6	12	30.8	
	Strongly agree	24	15.0	5	12.8	
I believe that Kabasura Kudineer is good to maintain my overall Health and well being.	Strongly Disagree	2	1.3	0	0	0.252
	Disagree	11	6.9	1	2.6	
	Neutral	45	27.5	15	38.5	
	Agree	75	46.9	19	48.7	
	Strongly agree	28	17.5	4	10.3	
I believe that Kabasura Kudineer is better than Allopathic Medicine to maintain overall Health.	Strongly Disagree	3	1.9	1	2.6	0.129
	Disagree	14	8.8	5	12.8	
	Neutral	69	43.1	12	30.8	
	Agree	55	33.8	17	43.6	
	Strongly agree	20	12.5	4	10.3	
I believe that Kabasura Kudineer provides permanent cure for some disease.	Strongly Disagree	11	6.9	4	10.3	0.422
	Disagree	33	20.6	5	12.8	
	Neutral	65	40.6	21	53.8	
	Agree	39	23.8	6	15.4	
	Strongly agree	13	8.1	3	7.7	

Table 8 shows the results of unpaired *t* test using the mean and standard deviation analysis among the rural and urban population and found a significant result for one of the questions related to the attitude towards kabasura kudineer. Statistically significant values are  $P < 0.05$ .

## Discussion

Prevention is better than cure and kabasura kudineer acts as a preventive remedy to avoid the serious illness of covid-19. Kabasura kudineer is available in chooranam or powder form and was used at the time of swine-flu which is also considered as pandemic disease. Kabasura kudineer as such is used to treat all

the respiratory problems which include cold, fever, severe phlegm and flu.<sup>[21]</sup> Kabasura kudineer not only cures viral infection but also plays important role in treating the bacterial infection. It also helps to cure inflammation in lungs and digestive problems. The present study shows that while recording the demographic details the number of females were more in number went compared to males, which went expressed in percentage was 59% of female and 41% of males respectively. The urban participants participated in the study was 80.5% and the rural participants were 19.5%. Almost 63% of the participants were students and other were employed and more number of religion includes Hindu participants included in the study which accounts 77%.

**Table 5: Questionnaire based on participants attitude towards kabasura kudineer**

Questionnaire based on attitude	Options	Urban population		Rural population		P
		Number (n)	Percentage (%)	Number (n)	Percentage (%)	
I use kabasura kudineer because Allopathic medicine is less effective Medicine.	Strongly Disagree	13	8.1	2	5.1	0.844
	Disagree	37	22.5	10	25.6	
	Neutral	63	39.4	16	41.0	
	Agree	40	25.0	8	20.5	
	Strongly agree	8	5.0	3	7.7	
I use Kabasura Kudineer as it is more natural compared to Allopathic medicine.	Strongly Disagree	4	2.5	2	5.1	0.327
	Disagree	6	3.8	5	12.8	
	Neutral	52	31.9	9	23.1	
	Agree	81	50.6	19	48.7	
	Strongly agree	18	11.3	4	10.3	
I use Kabasura Kudineer because of the faith in product.	Strongly Disagree	7	4.4	1	2.6	0.319
	Disagree	12	7.5	3	7.7	
	Neutral	69	42.5	14	35.9	
	Agree	53	33.1	16	41.0	
	Strongly agree	20	12.5	5	12.8	
I use only Kabasura Kudineer to maintain my health and well being	Strongly Disagree	8	5.0	2	5.1	1.000
	Disagree	46	28.8	14	35.9	
	Neutral	66	40.6	11	28.2	
	Agree	36	22.5	10	25.6	
	Strongly agree	5	3.1	2	5.1	
I use only kabasura kudineer along with allopathic medicine.	Strongly Disagree	9	5.6	2	5.1	0.711
	Disagree	19	11.9	5	12.8	
	Neutral	56	34.4	10	25.6	
	Agree	66	41.3	19	48.7	
	Strongly agree	11	6.9	3	7.7	

**Table 6: Questionnaire based on participants self use of kabasura kudineer**

Questionnaire based on self use	Options	Urban population		Rural population		P
		Number (n)	Percentage (%)	Number (n)	Percentage (%)	
I often take Kabasura Kudineer as a self-medication.	Strongly Disagree	15	9.4	4	10.3	0.806
	Disagree	20	12.5	9	23.1	
	Neutral	43	26.3	11	28.2	
	Agree	68	42.5	11	28.2	
	Strongly agree	15	9.4	4	10.3	
I take Kabasura Kudineer as the Disease is simple.	Strongly Disagree	16	10.0	1	2.6	0.319
	Disagree	37	23.1	7	17.9	
	Neutral	56	34.4	19	48.7	
	Agree	47	29.4	10	25.6	
	Strongly agree	5	3.1	2	5.1	
I take Kabasura Kudineer as there is no hospital nearby.	Strongly Disagree	22	13.8	5	12.8	0.308
	Disagree	74	46.3	19	48.7	
	Neutral	38	23.1	12	30.8	
	Agree	16	10.0	2	5.1	
	Strongly agree	11	6.9	1	2.6	
I take Kabasura Kudineer as I lack trust in Allopathic medical service.	Strongly Disagree	29	18.1	7	17.9	0.797
	Disagree	49	30.6	8	20.5	
	Neutral	56	34.4	19	48.7	
	Agree	21	13.1	3	7.7	
	Strongly agree	6	3.8	2	5.1	

Questionnaire related to knowledge of kabasura kudineer includes the source of knowledge, information and for what disease condition they consume kabasura kudineer in which maximum percentage, i.e 62% of the participants gathered

information about kabasura kudineer from their friends, family or neighbours. Cough/cold/flu and other respiratory problems were answered by 70% of the participants went asked about the disease condition they consume kabasura kudineer. Gangarapu

*et al.*<sup>[17]</sup> has proved that nearly 9 compounds showed a positive response against the SARS-CoV-2 spike protein which will

**Table 7: Inferential Characteristics of the questionnaire recorded among the rural and urban population**

Questionnaire recorded among the urban and rural population	P
Source of knowledge on Kabasura Kudineer.	0.973
Disease conditions for which Kabasura Kudineer is used.	0.929
I believe Kabasura Kudineer is effective than any drug in Allopathic medicine.	0.978
I believe Kabasura Kudineer is safer than Allopathic medicine.	0.971
I believe that Kabasura Kudineer is less expensive than Allopathic Medicine.	0.792
I believe that Kabasura Kudineer is a natural product.	0.831
I believe that Kabasura Kudineer has fewer side effects compared to Allopathic Medicine.	0.442
I believe that Kabasura Kudineer is good to maintain my overall Health and well being.	0.261
I believe that Kabasura Kudineer is better than Allopathic Medicine to maintain overall Health.	0.578
I believe that Kabasura Kudineer provides permanent cure for some disease.	0.388
I use kabasura kudineer because Allopathic medicine is less effective Medicine.	0.002*
I use Kabasura Kudineer as it is more natural compared to Allopathic medicine.	0.446
I use Kabasura Kudineer because of the faith in product.	0.640
I use only Kabasura Kudineer to maintain my health and well being	0.705
I use only kabasura kudineer along with allopathic medicine.	0.640
I often take Kabasura Kudineer as a self-medication.	0.001*
I take Kabasura Kudineer as the Disease is simple.	0.481
I take Kabasura Kudineer as there is no hospital nearby.	0.588
I take Kabasura Kudineer as I lack trust in Allopathic medical service.	0.932

help the people to resist from the infection. Questionnaire related to the belief towards kabasura kudineer includes 8 questions in which 51.9% of the participants in urban and 48.7% of rural population believe that kabasura kudineer was effective and 49.4% in urban and 53.8% of rural population had neutral response among the participants believed that it was safer than any other drug in allopathic medicine. In the cost criteria, it was found that 48.8% of urban and 48.7% answered the kabasura kudineer was less expensive than allopathic medicine and 56.3% of urban population agree and 43.6% of rural population strongly agree that it was a natural product. Neutral answer was found went answered about side effects of allopathic medicine than kabasura kudineer which recorded as 33.1% in urban population and 46.2% in rural population respectively.

Among the urban population 46.9% and 48.7% rural population agreed that it will maintain the overall health of the individual and 43.1% or urban had a neutral opinion and 43.6% had an agreed opinion that it was better than allopathic medicine. The participants had a neutral response went asked about the permanent cure of the disease while consuming kabasura kudineer and found 40.6% in urban and 53.8% among rural population. Questionnaire related to the attitude towards kabasura kudineer includes 5 questions in which 39.4% in urban population and 41% among rural had a neutral opinion about the use of kabasura kudineer is less effective than allopathic medicine and is more natural which was agreed with 50.6% among the urban and 48.7% among the rural population. Almost 40.6% in urban agreed and 35.9% of rural population disagreed that they used it due to trust in the product and 43% agreed to maintain their health and well being and 41.3% among the urban and 48.7% among the rural agreed that they consume both kabasura kudineer and allopathic medicine. Correlation analysis was done

**Table 8: Unpaired t-test was computed for the questionnaire recorded among the rural and urban population included in the study**

Questionnaire recorded among the urban and rural population	Urban population		Rural population		P
	mean	SD	mean	SD	
I believe Kabasura Kudineer is effective than any drug in Allopathic medicine.	3.23	0.742	3.43	0.753	0.242
I believe Kabasura Kudineer is safer than Allopathic medicine.	3.20	0.800	3.58	0.715	0.230
I believe that Kabasura Kudineer is less expensive than Allopathic Medicine.	3.92	0.739	3.94	0.825	0.825
I believe that Kabasura Kudineer is a natural product.	4.17	0.601	4.25	0.751	0.322
I believe that Kabasura Kudineer has fewer side effects compared to Allopathic Medicine.	3.48	0.968	3.46	0.853	0.264
I believe that Kabasura Kudineer is good to maintain my overall Health and well being.	3.79	0.731	3.66	0.700	0.252
I believe that Kabasura Kudineer is better than Allopathic Medicine to maintain overall Health.	3.46	0.755	3.46	0.941	0.129
I believe that Kabasura Kudineer provides permanent cure for some disease.	3.05	0.971	2.97	1.01	0.422
I use kabasura kudineer because Allopathic medicine is less effective Medicine.	2.97	1.01	3.00	0.852	0.844
I use Kabasura Kudineer as it is more natural compared to Allopathic medicine.	3.46	1.02	3.53	0.913	0.042*
I use Kabasura Kudineer because of the faith in product.	3.43	0.852	3.53	0.913	0.319
I use only Kabasura Kudineer to maintain my health and well being	3.00	0.888	2.88	1.02	1.000
I use only kabasura kudineer along with allopathic medicine.	3.25	0.909	3.43	0.992	0.711
I often take Kabasura Kudineer as a self-medication.	3.25	1.04	3.05	1.16	0.846
I take Kabasura Kudineer as the Disease is simple.	2.89	1.02	3.12	0.866	0.319
I take Kabasura Kudineer as there is no hospital nearby.	2.48	1.04	2.35	0.873	0.308
I take Kabasura Kudineer as I lack trust in Allopathic medical service.	2.64	0.951	2.61	1.04	0.797

to find out the correlation between the questions asked to record the belief and attitude none of them obtained a  $P$  value of  $< 0.05$ , so it was found that the urban and rural population had different opinions on kabasura kudineer.

Questionnaire related to the self use towards kabasura kudineer includes 4 a question in which 42.5% among urban and 28.2% in rural agreed to use kabasura kudineer as self medication and 34.4% of urban and 48.7% of rural population gave a neutral response is consuming kabasura kudineer when the disease is simple. While assessing the reason for consuming kabasura kudineer because no hospital was nearby 46.3% of urban and 48.7% of rural population disagree to this reason and 34.4% of urban and 48.7% of rural gave a neutral opinion on consuming kabasura kudineer due to lack of trust in allopathic medicine. While assessing the association between the rural and urban population using Chi-square test, the value of  $P$  was obtained to be  $< 0.05$  which is statistically significant for using kabasura kudineer as self medication and they consume since they found allopathic medicine less effective than kabasura kudineer.

While assessing the mean and standard deviation using unpaired  $t$  test for the question asked to assess the belief, attitude and self use of kabasura kudineer it was found that  $P$  value was considered as statistically significant while recording that kabasura kudineer was found to be natural than allopathic medicine and  $P$  value obtained as  $< 0.05$ .

In spite of government initiated to find various vaccines and other treatment kabasura kudineer might be suggested as a home remedy to avoid serious illness.<sup>[22,23]</sup> The government initiated the use of nilavembu kudineer to prevent dengue and chikungunya virus as such to prevent the covid-19 infection kabasura kudineer can be used as effective method.<sup>[24,25]</sup> The limitation of the study includes, since the review of literature on kabasura kudineer was less appreciable to calculate the sample size we choose convenience sampling technique.

In conclusion, the urban and rural population have a different opinion on kabasura kudineer. The urban population have strong beliefs and attitudes towards the use of kabasura kudineer than the rural population. However, both types of the population have a neutral opinion on consuming kabasura kudineer due to lack of trust in allopathic medicine and when the disease is simple. Tamil Nadu people gathered information about kabasura kudineer from their friends, family or neighbours and they take kabasura kudineer as a self-medication. This result could help the government and primary care physicians to encourage the use of kabasura kudineer to enhance the immunity of the general public.

Kabasura kudineer can always be used as a home remedy to boost up immunity and prevent from viral and fungal infection. In the present study it has proved than the person's opinion in consuming kabasura kudineer among the urban and rural population was they believe that kabasura kudineer is found to be cost effective than allopathic medicine and used as a self

medication to provoke our body from resisting all types of fungal and viral infection. People find that kabasura kudineer has less side effects when compared to allopathic medicine since it is found to contain natural product. However, the researcher finds that there is a need to improve the attitude of people towards using Kabasura kudineer on safe ways through the prescription of acclaimed Siddha doctors and practitioners. The researcher further recommends the need to increase research in a direction where the efficacy, safety and potential of Siddha medicines are to be tested using clinical trials. The researcher also recommends future researches to be conducted to understand the attitude of people in other regions of the nation to acquire more insights and the ways to promote CAMs to improve immunity, especially to the vulnerable population of the nation. Such studies will act as benchmark for other developing nations to improve their stance in the health care sector.

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### Conflicts of interest

There are no conflicts of interest.

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