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THE EFFECT OF PEPPERMINT JUICE FOR INDIGESTION AMONG OLD AGE PEOPLE- A PRELIMINARY STUDY

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ABSTRACT

Ageing is a natural process that influences the individual, family and society and more likely contribute to enormous disorders among which indigestion is the major common problem during old age. The natural products or medicinal plant extracts or herbal formulations have been administered for treating various disorders from decades. *Mentha × piperita L.* is one among them which is widely used for treating digestive disorders. Hence, we studied the effect of peppermint juice on indigestion among old age people. The efficacy of peppermint juice has been assessed in old people aged above 60 years for indigestion. 30 subjects were selected by simple random sampling technique and the study has been conducted in the rural regions of Nellore district. The data is generated by using observational checklist. Statistical analysis has been performed by descriptive and inferential statistics. The findings from the pre-test and post-test indicate that the level of indigestion among old age people has been significantly improved after the administration of peppermint juice. The experimental data clearly demonstrates significant improvement between pre and post test scores. The mean value in pretest is 65.8 with standard deviation 7.84 and the mean value in post test is 25.5 with the standard deviation 0.59. The statistical analysis depict that there is significant association between the peppermint juice and the dietary pattern among old age people. However there was no statistical significant association between the peppermint juice and other demographic variables such as age, sex, religion, education, occupation, income, diseases and consumption of drugs among old age people. The present study concludes that the dietary pattern had significant association with peppermint juice on indigestion among old age. These observations suggest that the administration of peppermint juice is effective for indigestion among old age people.

INTRODUCTION

Indigestion is a problem related to the stomach. It arises due to inefficient secretion of digestive juices which results in uneasiness¹.

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Consumption of various types of food is one of the prime reasons for indigestion. In addition to this overeating, eating hurriedly without chewing properly, lack of exercise, improperly cooked food and also food allergies from beans, onions, seafood, etc are the other factors responsible for indigestion. Moreover indigestion leads to pain in belly, nausea, bloating of stomach, uncontrolled burping, heartburn, flatulence and acid regurgitation².

Several studies have shown that contribute to severe medical complications arises due to

indigestion, with 41% of individuals reporting adverse digestive symptoms. Good health indicates proper function, absorption and relaxation of the gastrointestinal system^{1,2} Recent statistics around the globe reveal that indigestion accounts for 58% of mortality. Moreover nearly 62 million people and one in 12 people are suffering from irritable bowel syndrome and more than 36 million suffering with diseases due to improper digestion. With regard to worldwide incidence prevalence rates are 1 in 45. In India approximately 23,494,204 are suffering from indigestion³.

Ageing is a natural process which influences numerous changes in the body,⁴ for instance decrease in bone mass results in high risk for developing dehydration, indigestion and joint pains, followed by loss in the efficiency of all the five senses⁵. The digestive system is impaired by the ageing process, causing decrease in the secretion of indigestive enzymes.⁶ Further inefficiency in the production of absorbing cells in the intestinal tract and a reduction in gastric Ph.5-6 leads to improper indigestion⁵⁻⁶. Currently administered drugs for indigestion is associated with severe side effects. Hence alternative therapeutics is of paramount importance. .

At present, the use of plant extracts/herbal products for treating various disorders is rapidly evolving and is assumed to have no side effects⁷. Moreover the active ingredients present in these plant extracts/ herbal products will act on the disease in a synergistic manner. The active ingredients obtained from these plants may encompass polysaccharides, pigments, steroids, terpenoids, flavonoids and alkaloids⁸. The crude plant extracts and purified molecules from various medicinal plants have been demonstrated significant role in controlling various diseases⁹⁻¹⁰ *Mentha × piperita* L. belongs to the family Lamiaceae¹⁰. It is known to possess various oils. The major components of these oils are menthol, menthone, menthyl acetate, menthol esters and other volatile compounds. These major compounds are terpenoids, flavonoids, polyphenols, carotenes, tocopherols, betaine, and choline etc. These oils may also act as a carminative, cholagogue, antibacterial, and secretolytic, and also possess cooling action. Herbal tea made out of peppermint leaves help in combating acidity and the aroma of peppermint has been found to enhance memory and alertness. It has been widely used in Indian traditional medicine for treating nausea, vomiting, abdominal pain, and also various digestive disorders like indigestion, irritable bowel, and bloating. Peppermint calms the muscles of the stomach and improves the flow of bile, which the

body uses to digest fats¹¹. As a result, food passes through the stomach more quickly and relieves from indigestion.¹² It is also used in aroma therapy. In spite of numerous therapeutic properties of peppermint, studies on its usage for relieving indigestion are still under reported. Therefore, the present investigation is undertaken to study the effect of peppermint juice on indigestion among old age people in the rural region of Nellore District.¹³

MATERIALS AND METHODS

A preliminary experimental study has been carried out to assess the effect of peppermint juice on indigestion among old age people aged above 60yrs in the rural areas of Nellore district. Nearly, 30 subjects have been selected by simple random sampling technique and enrolled in the study.

Inclusion criteria: Old people, aged above 60yrs of both the sex having indigestion were selected for the study

Exclusion criteria: Old people who are below 60 years, those who are not willing to participate and those who are in treatment for indigestion.

Administration of Peppermint juice in old people

Fresh peppermint leaves were collected from the local market. Approximately 100 grams of leaves were finely made into paste. Two table spoons of this paste dissolved in 200ml of water and administered to old people 1 hour prior to lunch, for a period of two weeks. Pre-test and post-test were performed before and after administration of peppermint juice. The data has been documented and subjected to statistical analysis. An observational checklist was used for collecting data from the people who are suffering from indigestion which includes soreness of mouth and throat, nausea, anorexia, distaste of meals, belching, gastric irritation, gas formation, abdominal distention, bubbling sound in stomach pain, heaviness in abdomen, heart burn, vomiting. The level of indigestion is assessed by following score interpretation mild indigestion 1-4, moderate indigestion 5-8 and severe indigestion 9-12.

Statistical analysis

Statistical analysis has been performed by using MS-office Excel and SPSS-16 version software. The data was analyzed using descriptive and inferential statistics. Frequency and percentage distribution of demographic variables and their significance has been assessed.

RESULTS

The present investigation is undertaken to study the effect of peppermint juice among old people, aged

above 60 years in rural region of Nellore district.. Nearly 30 subjects were selected by simple random sampling technique and enrolled in the study with their informed consent.. **Socio-Demographic variables.**

Age parameter was studied and results indicate that out of 30 subjects, , 7(23.33%) subjects were found to be in the age group of 61-63years; 11(36.66%) were between 64-66years; 7(23.33%) were between 67-69years and 5(16.66) were above 70years. The next variable, **sex** has been assessed and findings reveal that 10 (33.33%) were males and 20(66.66%) were female. Assessment of the parameter religion indicated that there is a clear cut demarcation among the various religions observed. Hindus were the dominant community observed up to 18(60.00%), followed by Christians up to 6(20.00%), Muslims up to 4(13.33%), and remaining were others were up to 2(6.67%) respectively. Further we assessed the demographic variable education to evaluate the literacy rate among these old people. The results indicate that 23(76.66%) of them were completely illiterates, whereas 7(23.33%) were studied up to primary education. Next, we assessed the parameter occupation in the old people to demonstrate their working pattern. Findings suggest that 9(30.00%) were doing cultivation; 7(23.33%) were doing business; 5(16.67%) were employes and 9(30.00%) were working for daily wages. Next we studied the income generation among these people. The data reveals that subjects up to 7(23.33%) were earning Rs3000-4000 Rs, 12(40.00%) were earning Rs4000-5000 Rs; 7(23.33%) were earning Rs5000-6000 Rs and 4(13.33%) were earning Rs6000-7000 Rs. Later we also evaluated the food consumption in the old people to demonstrate dietary status. The dietary pattern data indicate that 10(33.33%) were purely vegetarians while 20(66.66%) were completely non vegetarians. Further we also assessed the incidence of various diseases among these people. The results suggest that 5(16.66%) were hypertensive; 9(30.00%) were diabetic; 10(33.33%) were suffering with ischemic heart disease and 6(20.00%) were suffering with chronic kidney disease. finally we assessed the consumption of drugs and findings suggest that 17 (56.66%) were using ranitidine, while 13 (43.33%) were using ibuprofen.

The effect of peppermint juice on indigestion in old people

Later, we studied the effect of peppermint juice on indigestion in old people. Hence, we performed pre-test and post-test before and after administration of peppermint juice. The findings from the pre-test indicate that the level of

indigestion among old age people was represented as 4(13.33%) people were having mild (1-4) indigestion. 9 (30%) people were having Moderate (5-8) indigestion and 17(56.66%) were having severe (9-12) indigestion. After administration of peppermint juice the post test data indicate that level of indigestion among old age people was represented as 14(46.66%) people were having mild (1-4) indigestion. 12 (40%) people were having Moderate (5-8) indigestion and 4(13.33%) were having severe (9-12) indigestion. The above data clearly demonstrates significant improvement between pre and post test scores. The mean value in pretest is 65.8 with standard deviation 7.84 and the mean value in post test is 25.5 with the standard deviation 0.59.

Further we studied the level of association and significance between various parameters. The statistical analysis depict that there is significant association between the peppermint juice and the dietary pattern among old age people. However there was no statistical significant association between the peppermint juice and other demographic variables such as age, sex, religion, education, occupation, income, diseases and consumption of drugs among old age people

DISCUSSION

As mentioned above, *Mentha × piperita* L. has been widely used in Indian traditional medicine for various disorders. It is exclusively used for treating digestive disorders. The active mechanism behind that was it relaxes the muscles of the stomach and improves the flow of bile, which the body uses to digest fats. As a result, food passes through the stomach more quickly and relieves from indigestion.¹⁴ Moreover it also prevent spasms within the gastrointestinal system. In spite of numerous therapeutic properties of peppermint, studies on its usage for relieving indigestion are still under reported. Therefore, the present investigation is undertaken to study the effect of peppermint juice on indigestion among old age people in the rural region of Nellore District.¹²⁻¹⁴

Nearly 30 old age people were selected by using simple random sampling method and enrolled in the study. In order to assess the indigestion status in these people pre-test and post-test was performed before and after administration of peppermint juice according to check list as mentioned earlier. The peppermint juice has been administered 1 hour prior to lunch and provided for a period of two weeks for all the old age people having indigestion followed by the interpretation with the post test. Numerous studies have revealed

that indigestion is a common problem affecting almost 25% to 40% of the world population, although only roughly 20% seek treatment for it¹³⁻¹⁴. There are very few proven herbs or medicines to relieve the symptoms of this illness¹⁴. Scientists have been exploring the possibility of peppermint usage as a treatment modality for indigestion. Few studies also shown that there is a positive correlation between the consumption of peppermint and the alleviation of the symptoms of indigestion.¹⁵ However the evidences are still unclear.

In the present study administration of peppermint juice in the old people reported a significant change in their indigestion symptoms. The data explains that 14(46.66%) people were having mild (1-4) indigestion.12 (40%) people were having Moderate (5-8) indigestion and 4(13.33%) were having severe (9-12) indigestion. A similar study conducted by the Germans also concludes alike our study results ,where a group of 39 patients affected by indigestion who were treated with a combination of peppermint oil and caraway oil in a ratio of 90:50 mg or a placebo three times a day for four weeks. At the end of the test period, 85% of patients in the peppermint group reported reduction on digestive symptoms whereas 45% in placebo. These results lead to the conclusion that peppermint oil, in combination

with caraway oil, is a more effective treatment for functional dyspepsia than placebo.¹⁶ Similarly in another study, 57 people were examined with irritable bowel syndrome, who received either enteric coated peppermint capsules or placebo twice a day for 4 weeks. Of these people who took peppermint, 75% had a significant reduction of irritable bowel syndrome symptoms.

In the present study the statistical analysis clearly reveals that there is a significant improvement between pre and post test scores. The mean value in pretest was 65.8 with standard deviation of 7.84, while the mean value in post test was 25.5 with the standard deviation of 0.59 respectively. A recent similar study conducted in Taiwan found that patients who took an enteric coated peppermint oil formulation 3 - 4 times daily for one month had less abdominal distention, stool frequency, and flatulence than those who took a placebo. Nearly 80% of the patients who took peppermint had alleviation of abdominal pain and indigestion.^{12,16}

Thus the present study reveals that there is a significant association between the peppermint juice and dietary pattern among old age people. However there is no statistical significance and association between the peppermint juice with other demographic variables such as age, sex, religion, education, occupation, income, diseases and consumption of drugs among old age people.

TABLE-I. The data explains that there is no significant association between the demographic variables, except Diet pattern variable which has significant association

S no	Demographic data	Frequency	Percentage	Chi square
1.	Age in years			
	A)61-63years	7	23.33%	4.21
	B)64-66years	11	36.66%	t=7.82
	C)67-70years	7	23.33%	df=3 ns
2.	D)above 70years	5	16.66%	
	Sex			
	A)male	10	33.33%	5.2
	B)female	20	66.66%	t=3.84
3.	Religion			df=3 ns
	A)hindu	18	60.00%	0.28
	B)christian	6	20.00%	t=7.82
	C)muslim	4	13.33%	df=3 ns
	D)others	2	6.67%	
4.	Education			
	A)illiterate	23	76.66%	1.92
	B)primary education	7	23.33%	t=7.82
	C)secondary education	-	0%	df=3 ns
	D)graduation	-	0%	

5.	Occupation			
	A)cultivation	9	30.00%	41.2
	B)business	7	23.33%	t=7.82
	C)employee	5	16.67%	df=3 ns
	D)daily wage	9	30.00%	
6.	Income per month			
	A)rs3000-4000	7	23.33%	
	B)rs4001-5000	12	40.00%	8.2
	C)rs5001-6000	7	23.33%	t=7.82
	D)rs6001-7000	4	13.33%	df=3 ns
7.	Diet pattern for a day			
	A)vegetarian	10	33.33%	3.9
	B)non vegetarian	20	66.66%	T=3.84 df=1s
8.	Diseases			
	A)hypertension	5	16.66%	0.42
	B)diabetes	9	30.00%	t=7.82
	C)ischemic heart disease	10	33.33%	df=3 ns
	D)chronic kidney disease	6	20.00%	
9.	Consumption of drugs	17	56.66%	1.9
	A)rantidin	13	43.33%	t=3.84
	B)ibuprofen			df=1 ns

Tabel-2, The pre-test and post-test scores on the level of indigestion among old age people

Sl.no	test	Mild(1-4)		Moderate(5-8)		Severe(9-12)	
		F	%	F	%	F	%
I	Pre- test	4	13.33%	9	30%	17	56.66%
II	Post- test	14	46.66%	12	40%	4	13.33%

CONCLUSION

Indigestion is caused by stomach acid, coming into contact with the sensitive, protective lining of the digestive system. The stomach acid breaks down the lining, leading to irritation and inflammation. This causes the symptoms of indigestion. Peppermint helps in treating indigestion by slowing the contractions of smooth muscle in the digestive tract, so from this study it is proved that use of peppermint juice to the subjects with mild and profound degree of malnutrition had relief from indigestion and improves their digestive status.

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