

A study to assess the effectiveness of ginger tea on symptoms of dyspepsia among adults

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ABSTRACT

Introduction: Dyspepsia is a common gastrointestinal (GI) condition around the world. Dyspepsia is a symptom complex that includes a variety of upper GI symptoms such as epigastric pain or burning, early satiety, and post-prandial fullness. Treatment with complementary and alternative medicines, particularly herbal remedies, is one option for treating dyspepsia symptoms.

Objectives: The objectives of the study were to evaluate the effectiveness of ginger tea on symptoms of dyspepsia among adults

Methods: A one-group pre-test and post-test research design with 30 samples who met the inclusion criteria was used. Demographic and clinical data were collected using a self-structured questionnaire. During the pre-test, a questionnaire (LDQ) was used to assess the severity of dyspepsia symptoms using an interview method. Following the pre-test, 100ml of freshly prepared ginger tea was given once a day, seven days a week, in the morning before meals. The same tool was used for the post-test after seven days of ginger tea administration. Data has been subjected to descriptive and inferential statistics

Result: During the pre-test, 13(43.33 %) of the 30 samples had moderate dyspepsia, 9(30%) had severe dyspepsia, and 8 (26.67 %) had mild dyspepsia, whereas in the post-test, 14(46.67%) had moderate dyspepsia, 12(40%) had mild dyspepsia, and 4(13.33%) had severe dyspepsia. Ginger tea is effective when the pre-test and post-test values are compared. At the $p < 0.001$ level, the calculated paired 't' test value of $t = 9.104$ was found to be statistically highly significant. Demographic variables such as marital status and clinical variables such as dyspepsia duration and smoking history show a significant association with post-test dyspepsia level at $p < 0.05$.

Conclusion: According to the study findings, the overall

pre-test symptom score was mild to moderate. The post-test symptom score of dyspepsia patients who were given ginger tea showed a significant reduction in symptom severity. It was concluded that ginger had a greater impact on symptom relief in dyspepsia patients than other foods.

Keywords:

Effectiveness, Ginger tea, Dyspepsia, symptoms, Adults

Imprint

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INTRODUCTION:

Dyspepsia is a very common gastrointestinal (GI) complaint, affecting up to one in every five people worldwide. [1] Functional dyspepsia is defined by the recently revised Rome IV criteria as follows: Dyspepsia that has lasted more than 3 months in the last 6 months, Endoscopy revealed no evidence of a possible organic cause of the symptoms and there is no evidence that the dyspepsia is relieved solely by defecation or that it is associated with stool irregularities. According to the current Rome IV criteria, functional dyspepsia is divided into two subgroups based on the cardinal symptoms: Epigastric pain syndrome (EPS) is characterised by persistent epigastric pain or burning and Postprandial distress syndrome (PDS) a feeling of fullness and satiation after eating. [2] The cause of FD is unknown, but a number of theories have been proposed to provide explanations, including delayed stomach emptying, genetic factors, infection with the bacterium *Helicobacter pylori*, neurologic-hormonal disorders, autonomic disorders, stress and mental disorders, visceral hypersensitivity, and altered duodenum sensitivity to acids and lipids (3).

Functional dyspepsia is a common functional disease that affects up to 20% of the population and is thought to originate in the gastro-duodenum (1). Symptoms must have been present for at least three days per week for the last three months and be chronic, with an onset at least six months before the diagnosis. Most patients have a temporal relationship be-

tween meal ingestion and the occurrence of symptoms during postprandial distress syndrome and epigastric pain syndrome, but symptoms are not always associated with a meal, as pain can be induced or relieved by eating or may occur during fasting. Weight loss is regarded as an alarm sign in patients with functional dyspepsia, prompting additional tests (2). Patients who have dyspepsia symptoms but did not have any investigations such as upper gastrointestinal (GI) endoscopy and are not classified as functional or organic in aetiology are classified as having un-investigated dyspepsia (UD), whereas those who have investigations and have no detectable cause for their symptoms are classified as having functional dyspepsia (FD) [4]. A recent systematic review and meta-analysis found that the pooled prevalence of UD was 21 percent, but it varied by country (1.8 percent to 57.0 percent) and the criteria used to define its presence [1]. Females and underlying psychological disturbances contribute to FD, while environmental/lifestyle factors such as poor socioeconomic status, smoking, increased caffeine intake, and ingestion of nonsteroidal anti-inflammatory drugs (NSAIDs) appear to be more common. [5]

Confirmation of functional dyspepsia is based on the typical symptoms and the patient's history. Other diseases of the upper gastrointestinal tract and upper abdominal organs that may present with similar dyspeptic symptoms must be ruled out. [2] Both the ACG/CAG and NICE guidelines, as well as the ACFD statement, recommend that patients with undiagnosed dyspepsia or FD have a non-invasive *H. pylori* test and receive eradication therapy if they test positive. [6,7] After a 2-week washout period, NICE recommends using either a breath test or a stool antigen test rather than serology for those taking PPIs [8]. According to NICE guidelines, all patients with undiagnosed dyspepsia should be treated with a PPI for four weeks, followed by treatment with an H2 blocker. [7]

In recent years, there has been a surge of interest in herbal treatments in general, and herbal treatments for FD in particular. Various plants have been studied to treat FD symptoms. The majority of the medicines obtained in this manner are combinations of several plants derived from traditional medicine studies in various countries (9). The rhizome of Ginger (*Zingiber officinale* Roscoe), known as Zanjebil in TIM, is one medicinal plant used to treat FD. According to TIM, this plant is a stomach tonic that can help with digestion issues, bloating, and nausea. This plant pos-

sesses free radical scavenging, antioxidant, antiulcer, antibacterial, antispasmodic, and anti-inflammatory properties (10, 11). Ginger rhizome (*Zingiber officinale* Roscoe, family Zingiberaceae) is one of the most widely used medicinal plants in the world. It has long been used as a treatment for a variety of ailments, including GI issues such as belching, bloating, vomiting, indigestion, and constipation. [12,13] There is also some scientific evidence that it has gastro protective effects, such as improving dyspeptic symptoms. [13] Ginger has been shown in animal and human studies to promote gastric motility. [14] Hu et al. discovered that ginger increased the speed of gastric motility and gastric emptying more than the placebo in their study on the effect of ginger on gastric motility. These effects may be beneficial in symptomatic patient groups (15).

Thus, the study aimed to evaluate the effectiveness of Ginger tea among dyspepsia adults.

METHODS AND MATERIALS:

For the current study, a quantitative research approach is used, with a pre experimental one group pre-test and post-test research design. 30 samples were chosen using the non-probability purposive sampling method for the study. House to house surveys at kondancherry village were conducted to select participants who met the inclusion criteria of being between the ages of 30-55, having un-investigated dyspepsia, complaining of at least one of the following symptoms such as early satiety, postprandial fullness, bloating, and nausea existing for at least 3-6 months continuously or intermittently. Patients with extreme anorexia, esophagitis, dysphagia, and relevant gastroesophageal reflux symptoms (retrosternal pain, burning, or regurgitation), a history of peptic ulcer, major abdominal surgery, pregnant or lactating women, and those who were pregnant or lactating were excluded. The questionnaire is divided into two sections. The questionnaire's first section gathers background data like age, gender, religion, education, occupation, earnings, and marital status. The clinical variables section of the questionnaire asks about the presence of dyspepsia, its duration, any current medications or home remedies for dyspepsia, a person's history of smoking and drinking, their BMI, dietary pattern, sleep pattern, and any comorbid conditions. The severity of dyspepsia symptoms was evaluated using the Leeds Dyspepsia Questionnaire (LDQ) [16]. Eight items on the Leeds Dyspepsia Questionnaire, each with two stems,

were related to the frequency and intensity of dyspeptic symptoms over the previous six months, and one item was on the patient's most bothersome symptom.

The LDQ asked questions about epigastric pain, retrosternal pain, regurgitation, nausea, vomiting, belching, early satiety, and dysphagia and generated a score between 0 and 40. The first five questions were used to establish whether dyspepsia was present, and the final eight questions were used to determine how severe it was. Those who did not have dyspepsia according to questions 1-5 received a score of 0. LDQ scores 1-4 indicated very mild dyspepsia, 5-8 indicated mild dyspepsia, 9-15 indicated moderate dyspepsia, and > 15 indicated severe or very severe dyspepsia. After receiving ethical clearance from the Saveetha Institute of Medical and Technical Sciences' Institutional Ethical Committee (IEC), we explained the purpose of the study to the participants and obtained their written consent. Semi-structured questionnaires and interviews are used to collect data. The LDQ pre-test was administered via interview and scored accordingly. Following the pre-test, the patient was given ginger tea. Ginger is small yellow ginger that has been sliced, and the preparation is a dose of 2g of ginger and 2g of tea that has been boiled in 100ml of water for 10 minutes and cooled. Add brown sugar to ginger tea, then take 100ml ginger tea once a day, seven days a week, in the morning before meals. Patients are advised to drink ginger tea instead of tea or coffee. All patients are permitted to take the normal drugs that their doctors have advised them to take. The post-test was performed with the same tool after seven days of ginger tea administration. The data gathered in this manner is tabulated in MS Office Excel software and analysed using the SPSS trial version. Frequency and percentage are used to describe the sample's characteristics. The correlation is used to determine the relationship between the effectiveness of ginger tea and post-test values. Chi square is used to post-test dyspepsia levels with selected demographic variables.

RESULTS AND DISCUSSION

SECTION A: Description of the demographic variables of the adults with dyspepsia.

The majority of them were between the ages of 35 and 45, 83.3% were Males, 56.7% had primary education, 33.3% earned less than \$5,000 per month, 46.7%

were Hindus, and 66.7% were married. In terms of clinical variables, 62% had frequent dyspepsia, 56.5% had a history of smoking, 40% had history of drinking alcohol, 75% drank tea, 20% only exercised, and 70% had comorbidities such as diabetes and hypertension. 65% have history of Recent Medication use such as NSAIDS/Aspirin.

Table 1
Frequency and distribution of self-reported functional gastrointestinal symptoms in study population (n=30)

Symptoms	N	%
Postprandial Fullness	20	66.6%
Abdominal Discomfort	13	43.3%
Early satiety	17	56.6%
Epigastric pain	26	87%
Bloating	15	50%
Belching	17	57%
Nausea & vomiting	12	40%
Heartburn	24	80%

In this study, most frequently encountered symptoms were Postprandial Fullness (66.6%) 43.3% had Abdominal Discomfort, 56.6% had Early satiety, Epigastric pain (87%), Bloating (50%), Belching (57%), Nausea & vomiting (40%) and Heartburn (80%).

Similarly, Seid et al. (2018) found that the most common symptoms associated with UD were epigastric pain/burning (42.1 %), PPF (26.1 %), ES (22.6 %), and belching (25.2%) [17]. Similarly, the most common presenting complaint among Ugandan patients with upper GI symptoms was epigastric pain (51.6%) [18].

SECTION B: Assessment of Effectiveness of ginger tea on dyspepsia among adults.

The findings show that in the pre-test, 13(43.33%) had moderate dyspepsia, 9(30%) had severe dyspepsia and 8(26.67%) had mild dyspepsia whereas in the post-test 14(46.67%) had moderate dyspepsia, 12(40%) had mild dyspepsia and 4(13.33%) had severe dyspepsia as shown in Table 1 and figure 1.

Table 1
Frequency and percentage distribution of pre-test and post-test level of dyspepsia among adults. n=30

Level of dyspepsia	Mild		Moderate		Severe	
	No.	%	No.	%	No.	%
Pretest	8	26.67	13	43.33	9	30.0
Post Test	12	40.0	14	46.67	4	13.33

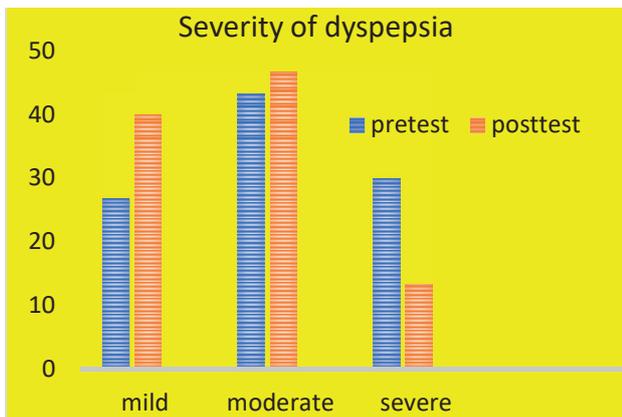


Figure 1: Comparison of Pre and Post Test Level of Dyspepsia before and after intervention Among Adults.

Table 2
Comparison of pre-test and post-test level of dyspepsia among patients n = 30

Level of dyspepsia	Mean	S.D	Paired 't' test Value
Pretest	1.83	0.83	t = 9.104 p = 0.0001 S***
Post Test	0.73	0.69	

***p<0.001, S – Significant

The pre-test mean score was 1.83, with a standard deviation of 0.83, and the post-test mean score was 0.73, with a standard deviation of 0.69, as shown in table 2. At the p,0.001 level, the calculated paired 't' test value of t = 9.104 was found to be statistically highly significant. This clearly indicates that there was a significant improvement in patients' post-test dyspepsia levels.

Similar to this, Sanjib Kumar Panda's et.al (2022) conducted a randomised, double-blind, placebo-controlled clinical trial in subjects with functional dyspepsia (FD). In the study group, 41% of participants reported a statistically significant favourable reaction at two weeks into the experiment, and this response persisted for the duration of the trial. In comparison to the placebo, which was found to be just 21% effective, zingiber officinale supplementation was found to be successful in 79% of the individuals. (19)

Section C: Association of level of dyspepsia with selected demographic and clinical variables.

n = 30

Demographic and clinical variables such as marital status, smoking history, and NSAID use, as well as tea consumption, were found to have a significant associ-

ation with post-test dyspepsia levels in this study. Similarly, Talley et al. (2021) found that individuals who smoke cigarettes have a significantly higher risk of postprandial distress syndrome (FD-PDS) [17]. Likewise, Tobacco use was found to be an independent predictor of PDS+EPS, but not of PDS or EPS alone. The explanation could be related to how smoking interacts with various constitutional and environmental factors to produce distinct symptomatology. Cigarette smoking raises gastric acid secretion and pepsinogen release, relaxes colonic smooth muscles, and increases intestinal permeability [18]. Smoking may impair all gastrointestinal functions, including those of the oesophagus, stomach, and colon, increasing susceptibility to disease such as GERD, FD & IBS.

Several studies [20,21] have found similar links between smoking and FD. According to Seid et al. (2018), NSAID use is statistically associated with UD (AOR = 5.29, 95 percent CI 2.82-9.93, p <0.001) [22], which is consistent with findings from British and American population-based studies in which NSAID use has been identified as an important independent risk factor for UD [21]. In Nigeria, Solomon et al. discovered a link between excessive tea consumption and UD [23].

Conclusion:

The study's findings demonstrate the usefulness of ginger tea in treating dyspepsia symptoms. These symptoms resolved after one week and the patient was even instructed to continue treatment at home after the trial. Empiric antisecretory treatment, the "test-and-treat" approach for Helicobacter pylori, or a quick upper endoscopy are some first care options for uninvestigated dyspepsia. Differentiating between uninvestigated and investigated dyspepsia is crucial. Since ginger is a common herbal remedy, it is efficient in speeding up stomach emptying in indigestion sufferers, cheap, and accessible. Because there is little chance of negative side effects, herbal medication is a good alternative. It is obvious that these herbs enhance gastrointestinal tract motility and stomach emptying. According to the study, ginger tea is one of the best ways to lessen the intensity of dyspepsia symptoms. We can consider the ginger supplement we used as a valid tool for an empirical method to treat dyspepsia sufferers. Dietary counselling that makes sense can be beneficial for patients who experience symptoms after meals.

References:

1. Ford, A. C., Marwaha, A., Sood, R., & Moayyedi, P. (2015). Global prevalence of, and risk factors for, uninvestigated dyspepsia: a meta-analysis. *Gut*, 64(7), 1049-1057.
2. Stanghellini, V., Chan, F. K., Hasler, W. L., Malagelada, J. R., Suzuki, H., Tack, J., & Talley, N. J. (2016). Gastrointestinal disorders. *Gastroenterology*, 150(6), 1380-1392.
3. Brun, R., & Kuo, B. (2010). Functional dyspepsia. *Therapeutic advances in gastroenterology*, 3(3), 145-164.
4. Carbone, F., & Tack, J. (2014). Gastrointestinal mechanisms underlying functional gastric disorders. *Digestive diseases*, 32(3), 222-229.
5. Mahadeva, S., & Goh, K. L. (2006). Epidemiology of functional dyspepsia: a global perspective. *World journal of gastroenterology: WJG*, 12(17), 2661.
6. Moayyedi, P. M., Lacy, B. E., Andrews, C. N., Enns, R. A., Howden, C. W., & Vakil, N. (2017). ACG and CAG clinical guideline: management of dyspepsia. *Official journal of the American College of Gastroenterology | ACG*, 112(7), 988-1013.
7. Ratcliffe, E. G., & Jankowski, J. A. (2019). Gastroesophageal reflux disease and Barrett esophagus: an overview of evidence-based guidelines. *Pol Arch Intern Med*, 129(7-8), 516-525.
8. Black, C. J., Houghton, L. A., & Ford, A. C. (2018). Insights into the evaluation and management of dyspepsia: recent developments and new guidelines. *Therapeutic Advances in Gastroenterology*, 11, 1756284818805597.
9. Ivashkin, V. T., Mayev, I. V., Sheptulin, A. A., Lapina, T. L., Trukhmanov, A. S., Kartavenko, I. M., ... & Okhlobystina, O. Z. (2017). Diagnosis and treatment of the functional dyspepsia: clinical guidelines of the Russian Gastroenterological Association. *Russian journal of gastroenterology, hepatology, coloproctology*, 27(1), 50-61.
10. Haniadka, R., Saldanha, E., Sunita, V., Palatty, P. L., Fayad, R., & Baliga, M. S. (2013). A review of the gastroprotective effects of ginger (*Zingiberofficinale Roscoe*). *Food & function*, 4(6), 845-855.
11. Riyazi, A., Hensel, A., Bauer, K., Geissler, N., Schaaf, S., & Verspohl, E. J. (2007). The effect of the volatile oil from ginger rhizomes (*Zingiberofficinale*), its fractions and isolated compounds on the 5-HT₃ receptor complex and the serotonergic system of the rat ileum. *Planta medica*, 73(04), 355-362.
12. Attari, V. E., Mahluji, S., Jafarabadi, M. A., & Ostadrahimi, A. (2015). Effects of supplementation with ginger (*Zingiberofficinale roscoe*) on serum glucose, lipid profile and oxidative stress in obese women: a randomized, placebo-controlled clinical trial. *Pharmaceutical Sciences*, 21(4), 184-191.
13. Haniadka, R., Saldanha, E., Sunita, V., Palatty, P. L., Fayad, R., & Baliga, M. S. (2013). A review of the gastroprotective effects of ginger (*Zingiberofficinale Roscoe*). *Food & function*, 4(6), 845-855.
14. Giacosa, A., Guido, D., Grassi, M., Riva, A., Morazzoni, P., Bombardelli, E., ... & Rondanelli, M. (2015). The effect of ginger (*Zingiberofficinalis*) and artichoke (*Cynaracardunculus*) extract supplementation on functional dyspepsia: a randomised, double-blind, and placebo-controlled clinical trial. *Evidence-Based Complementary and Alternative Medicine*, 2015.
15. Hu, M. L., Rayner, C. K., Wu, K. L., Chuah, S. K., Tai, W. C., Chou, Y. P., ... & Hu, T. H. (2011). Effect of ginger on gastric motility and symptoms of functional dyspepsia. *World journal of gastroenterology: WJG*, 17(1), 105.
16. Moayyedi, P., Duffett, S., Brauholtz, D., Mason, S., Richards, I. D. G., Dowell, A. C., & Axon, A. T. R. (1998). The Leeds Dyspepsia Questionnaire: a valid tool for measuring the presence and severity of dyspepsia. *Alimentary Pharmacology and Therapeutics*, 12(12), 1257-1262.
17. Talley, N. J., Powell, N., Walker, M. M., Jones, M. P., Ronkainen, J., Forsberg, A., ... & Andresson, A. (2021). Role of smoking in functional dyspepsia and irritable bowel syndrome: three random population-based studies. *Alimentary Pharmacology & Therapeutics*, 54(1), 32-42.
18. G. A. O. Thomas, J. Rhodes, and J. R. Ingram, "Mechanisms of disease: nicotine—a review of its actions in the context of gastrointestinal disease," *Nature Clinical Practice Gastroenterology and Hepatology*, vol. 2, no. 11, pp. 536–544, 2005.
19. Panda, MPharm, S. K., Nirvanashetty, PhD, S., Parachur, BTech, V. A., Krishnamoorthy, MPharm, C., & Dey, MSc, S. (2022). A Randomized, Double-Blind, Placebo Controlled, Parallel-Group, Comparative Clinical Study to Evaluate the Efficacy and Safety of OLN-06 versus Placebo in Subjects with Functional Dyspepsia. *Journal of Dietary Supplements*, 19(2), 226-237.
20. Mahadeva, S., Yadav, H., Rampal, S., Everett, S. M., & GOH, K. L. (2010). Ethnic variation, epidemiolog-

ical factors and quality of life impairment associated with dyspepsia in urban Malaysia. *Alimentary pharmacology & therapeutics*, 31(10), 1141-1151.

21. Mahadeva, S., Yadav, H., Rampal, S., & Goh, K. L. (2010). Risk factors associated with dyspepsia in a rural Asian population and its impact on quality of life. *Official journal of the American College of Gastroenterology | ACG*, 105(4), 904-912.

22. Seid, A., Tamir, Z., & Demsiss, W. (2018). Uninvestigated dyspepsia and associated factors of patients

with gastrointestinal disorders in Dessie Referral Hospital, Northeast Ethiopia. *BMC gastroenterology*, 18(1), 1-10.

23. Solomon, O. A., & Ajayi, A. O. (2013). Risk factors for un-investigated dyspepsia among primary care patients in northern Nigeria. *African Health Sciences*, 13(4), 1007-1011.