



Effect of peppermint inhalation of salivary cortisol and anxiety among patients undergoing endoscopy

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Abstract

In India, 60% - 70 % of people were suffering from digestive disorders and cause significant mortality. Narrated 50% of the rural populations are unaware of the diagnostic procedure and not willing to come forward because of anxiety. Education of the patient prior to the procedure about the things they will see, feel and hear during the procedure has a significant role in reducing anxiety and fear. Objectives to assess the pretest and posttest level of salivary cortisol and anxiety among patients undergoing endoscopy. Assess the effectiveness of peppermint inhalation on salivary cortisol and anxiety among patients undergoing endoscopy. to establish the relationship between salivary cortisol level and anxiety among patients undergoing endoscopy. And to associate the posttest level of salivary cortisol and anxiety among patients with their selected demographic variables.

Methodology: A True experimental study design using targeted sampling techniques was used to conduct a 30 patients undergoing endoscopy. The data was collected with the help of structured questionnaires. Confidentiality was maintained throughout the process. The data collected was analyzed using descriptive and inference statistics.

Results: The demographic characteristics of the patients are presented in according to which no significant difference was observed between the intervention group in terms of the evaluated variables. Regarding the results of beck anxiety inventory scale, the level of anxiety was significantly decreased in group at the post-intervention phase Show ever, there was a more significant reduction in the level of anxiety in the patient in the intervention group. Furthermore, a significant difference was observed between the group after salivary cortisol in terms of the level of anxiety.

Conclusion: According to the result of the current study, salivary cortisol with peppermint reduced the level of anxiety in patients before endoscopy. In addition to the medicinal effect of peppermint, the process adds a mental impact and distracted the attention of patients resulting in reduced level of anxiety in the subjects before and invasive procedure. Therefore, it is suggested to use this method as a non-pharmacological, low risk, and pleasant technique in patients before invasive procedures such as endoscopy.

Keywords: Peppermint inhalation, endoscopy, anxiety

Introduction

Endoscopy examination, like colonoscopy and Esophagogastroduodenoscopy (EGDS), can have adverse psychological effects like anxiety. It is known that any examination can cause anxiety and worry, sometimes so much as to avoid the exam itself, and it is known that anxiety for one's own health can lead to continual recourse to the doctor and diagnostic examinations.

Anxiety is a very common phenomenon which takes place in the patients before undergoing any medical/surgical procedure. Endoscopy procedures are usually done for the purpose of diagnosis and usually create anxiety in patients. Anxiety in patient results due to lack of awareness about the procedure and fear of discomfort or pain in procedure throughout and is totally a subjective feeling, presenting out various signs and symptoms, by which one can predict that an individual is facing anxiety. Anxiety levels in all the individuals are always variable, varying under various circumstances and factors. Prevention of anxiety during the examination is very much important, because of discomfort feeling, and due to which anxiety may increase the time of the procedure and cause more side effects in patients. Anxiety in patient before endoscopy procedure may have more adverse consequences and can increase the need for sedation and analgesics.

Endoscopy of outpatients is associated with an increase in patient's anxiety. However, investigations have shown no connection between anxiety and age, gender and type of procedure. Although some studies have indicated a remarkable average increase in the overt anxiety before endoscopy. An Endoscopes usually pays little attention to the patients' pain and anxiety.

Patients who consent for endoscopy are usually anxious and concerned. Such anxiety can be caused by lack of information about the diagnostic procedure or worry about pain during endoscopy. In fact, endoscopy can cause anxiety which can eventually result in patients avoiding endoscopy. Unfortunately, presence of wrong beliefs such as incidence of pain, the possibility of suffocation, or intensification of real concerns like the probability of infection transfer through endoscopy causes fear among patients and intensify anxiety.

The possibility of preventing or alleviating anxiety during the endoscopic examination is important, not only for the discomfort in itself, but also because the anxiety may prolong the time of examination and increase the likelihood of side effects (Campo R, *et al.*, 1999) [2]. In addition, high levels of anxiety in patients with gastrointestinal disorders may cause a refusal to accept medical care and result in a real phobia of examinations (Koloski NA, Talley NJ, Boyce PM., 2002, Locke GR, Weaver AL, Melton LJ, Talley NJ., 2004) [11, 14].

Materials and methods

A quantitative approach with experimental one group pretest and posttest design was used to conduct the study in SMCH, 30 samples were selected by purposive sampling techniques. The setting of the study was endoscopy OPD at SMCH. Data was collected by using demographic variables and structured questionnaire. Confidentiality was maintained throughout the study. Collected data were analyzed by using descriptive and inferential statistics. The project has been approved by the ethics committee of the institution.

Results and discussion

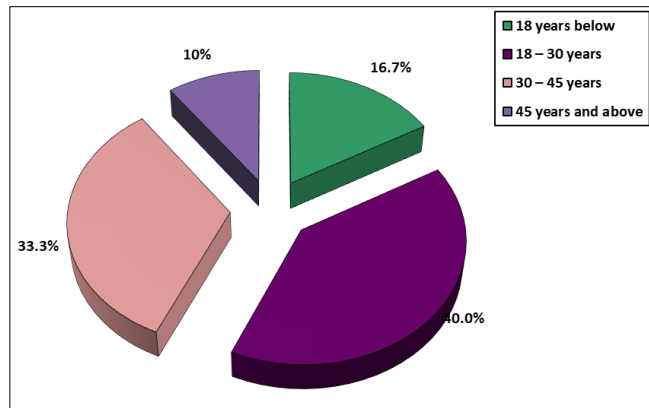


Fig 1: Percentage distribution of age of the patients undergoing endoscopy

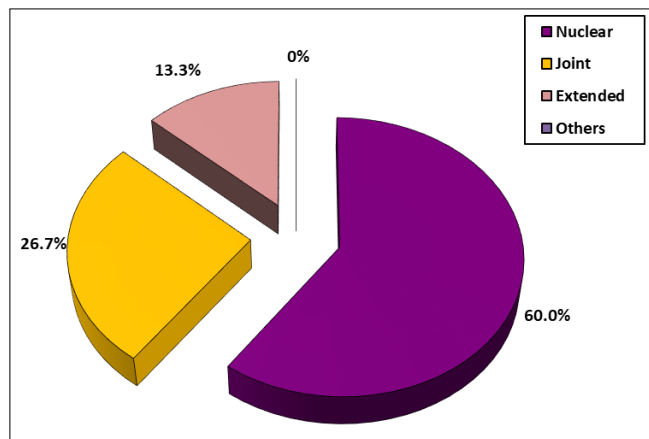


Fig 2: Percentage distribution of type of family of the patients undergoing endoscopy

Section B: Assessment of level of salivary cortisol and anxiety among patients undergoing endoscopy.

Table 1: Assessment of salivary cortisol among patients undergoing endoscopy. n = 30

Salivary Cortisol	Pretest	Post Test
Minimum score	12.0	0.80
Maximum score	22.03	13.05
Mean	15.97	5.91
S.D	3.09	3.44

The table 2 shows that the pretest mean score salivary cortisol among patients undergoing endoscopy was 15.97±3.09 with minimum score of 12.0 and maximum score of 22.03. The posttest mean score of salivary cortisol

was 5.91±3.44 with minimum score of 0.80 and maximum score of 13.05.

Table 2: Frequency and percentage distribution of pretest and posttest level of anxiety among patients undergoing endoscopy. n = 30

Level of Anxiety	Pretest		Post Test	
	Frequency	Percentage	Frequency	Percentage
Low Anxiety (0 – 21)	2	6.7	25	83.33
Moderate Anxiety (21 – 35)	25	83.33	5	16.67
Severe Anxiety (>35)	3	10.0	0	0

The above table 3 shows that among patients undergoing endoscopy 25(83.33%) had moderate anxiety, 3(10%) had severe anxiety and 2(6.7%) had low anxiety in the pretest. Whereas in the post test, 25(83.33%) had low anxiety and 5(16.67%) had moderate anxiety.

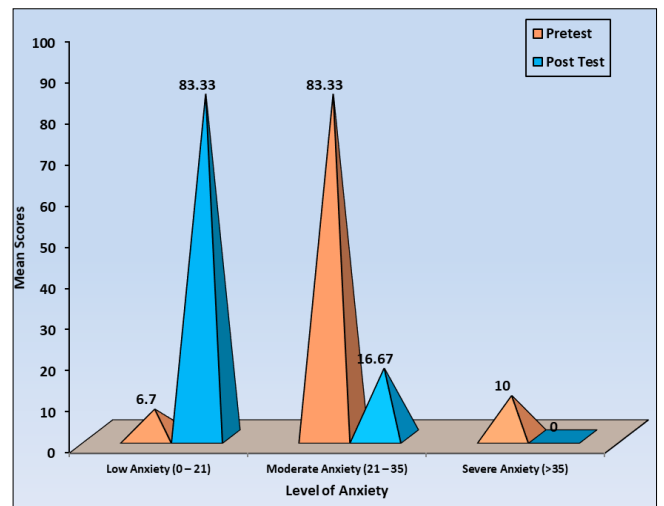


Fig 3: Percentage distribution of pretest and post test level of anxiety among patients undergoing endoscopy

Section C: Effectiveness of peppermint inhalation on salivary cortisol and anxiety among patients undergoing endoscopy.

Table 3: Comparison of pretest and posttest salivary cortisol and anxiety scores among patients undergoing endoscopy. n = 30

Variables	Test	Mean	S.D	Mean Difference Score	Paired ‘t’ test Value
Salivary Cortisol	Pretest	15.97	3.09	10.06	t = 11.705 p=0.0001, S***
	Post Test	5.91	3.44		
Anxiety	Pretest	29.90	7.42	13.83	t = 8.731 p=0.0001, S***
	Post Test	16.07	4.31		

***p<0.001, S – Significant

The table 5 depicts that the pretest mean score of salivary cortisol was 15.97±3.09 and the posttest mean score of salivary cortisol was 5.91±3.44. The mean difference score was 10.06. The calculated Paired ‘t’ test value of t = 11.705 was found to be statistically significant at p<0.001 level.

The table also shows that the pretest mean score of anxiety was 29.90±7.42 and the posttest mean score of anxiety was

16.07±4.31. The mean difference score was 13.83. The calculated Paired ‘t’ test value of t = 8.731 was found to be statistically significant at p<0.001 level.

The above finding clearly infers that peppermint inhalation administered to patients undergoing endoscopy was found to

be effective in reducing the level of salivary cortisol and anxiety among the patients undergoing endoscopy.

Section D: Relationship between salivary cortisol and anxiety among patients undergoing endoscopy.

Table 5: Correlation between posttest salivary cortisol and anxiety scores among patients undergoing endoscopy. n = 30

Variables	Mean	S.D	Karl Pearson’s Correlation ‘r’ Value
Salivary cortisol	5.91	3.44	r = 0.425 p=0.019, S*
Anxiety	16.07	4.31	

*p<0.05, S – Significant

The table 5 depicts that the posttest mean score of salivary cortisol among patients undergoing endoscopy was 5.91±3.44 and the posttest mean score of anxiety was 16.07±4.31. The calculated Karl Pearson’s Correlation value of r = 0.425 shows a moderate positive correlation which

was found to be statistically significant at p<0.05 level. This clearly infers that when the salivary cortisol among patients undergoing endoscopy increases their anxiety level also increases.

Table 6: Association of posttest salivary cortisol level and anxiety scores and among patients undergoing endoscopy with their selected demographic variables. n = 30

Demographic Variables	Salivary Cortisol	Anxiety
	Oneway ANOVA/ Unpaired ‘t’ test value	Chi-Square Test & p-value
Age (in years)	F = 3.752 p=0.023 S*	$\chi^2 = 5.031$ d.f=3 p=0.170 N.S
18 years below		
18 – 30 years		
30 – 45 years		
45 years and above	t = 0.154 p=0.879 N.S	$\chi^2 = 0.151$ d.f=1 p=0.698 N.S
Sex		
Female		
Male		
Others	F = 0.282 p=0.838 N.S	$\chi^2 = 3.106$ d.f=3 p=0.376 N.S
Educational status		
Illiterate		
Primary school		
Higher secondary	F = 0.631 p=0.601 N.S	$\chi^2 = 2.671$ d.f=2 p=0.445 N.S
Diploma / Graduate		
Marital status		
Married		
Unmarried	F = 0.400 p=0.674 N.S	$\chi^2 = 3.325$ d.f=2 p=0.190 N.S
Widow		
Others		
Religion		
Hindu	F = 0.770 p=0.521 N.S	$\chi^2 = 2.219$ d.f=3 p=0.528 N.S
Christian		
Islam		
Others		
Occupational status	F = 2.096 p=0.142 N.S	$\chi^2 = 3.447$ d.f=2 p=0.178 N.S
Government employee		
Private employee		
Self-employee		
Unemployed	F = 0.903 p=0.453 N.S	$\chi^2 = 2.026$ d.f=3 p=0.567 N.S
Income		
15,000		
20,000 – 30,000		
30,000 above	F = 0.117 p=0.890 N.S	$\chi^2 = 6.193$ d.f=2 p=0.045 S*
No. of children		
No		
One		
Two	t = 1.019	$\chi^2 = 0.017$
Above three		
Type of family		
Nuclear		
Joint	t = 1.019	$\chi^2 = 0.017$
Extended		
Others		
Dietary habits		

Vegetarian	p=0.330 N.S	d.f=1 p=0.896 N.S
Non-vegetarian		
Lifestyle	F = 0.027 p=0.974 N.S	$\chi^2 = 0.852$ d.f=2 p=0.653 N.S
Active		
Limited activity		
Sedentary		
Economical status	F = 1.961 p=0.160 N.S	$\chi^2 = 3.766$ d.f=2 p=0.152 N.S
Rich		
Middle class		
Poor		

*p<0.05, S – Significant, N.S – Not Significant

The table 6 shows that the demographic variable age (F=3.752, p=0.023) had statistically significant association with posttest salivary cortisol level among patients undergoing endoscopy at p<0.05 level and the other demographic variables had not shown statistically significant association with posttest salivary cortisol level among patients undergoing endoscopy.

The table 6 shows that the demographic variable type of family ($\chi^2=6.193$, p=0.045) had statistically significant association with posttest level of anxiety among patients undergoing endoscopy at p<0.05 level and the other demographic variables had not shown statistically significant association with posttest level of anxiety among patients undergoing endoscopy.

Conclusion

The present study assessed the effect of peppermint inhalation on salivary cortisol and anxiety among patients undergoing endoscopy. Based on statistical findings, it is evident that peppermint inhalation administration among patients undergoing endoscopy was found to be more effective in bringing down the cortisol level thereby reducing the level of anxiety among the patients undergoing endoscopy. So, In order to reduce the problems faced by the patients undergoing endoscopy the peppermint inhalation can be administered at hospital setting to promote early recovery by the patients.

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Authors contribution

All the authors actively participate in the work of study. All the authors read and approved the final manuscript.

Conflict of interest

The authors declare no conflict of interest.

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