

## Non-Ulcer dyspepsia relation with environmental factors - A study in Sub Himalayas, India

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### Abstrak

*Dispepsia nonulseratif adalah suatu masalah gastrointestinal yang sering terjadi. Etiopatogenesisnya belum diketahui pasti. Tujuan penelitian ini adalah untuk mengetahui pengaruh faktor lingkungan seperti merokok, teh, alkohol, dan konsumsi NSAID terhadap dispepsia nonulseratif. Penelitian dilakukan di Bagian Gastroenterologi, Penyakit Dalam dan Radiologi IG Medical College, Shimla, India. Tiga ratus pasien dispepsia non ulseratif diteliti. Sebagai kelompok kontrol diambil dengan usia dan jenis kelamin yang sama. Riwayat merokok, teh, alkohol, dan konsumsi NSAID diteliti pada kedua kelompok. Konsumsi teh sebagai faktor lingkungan ternyata mempunyai pengaruh bermakna pada kelompok dispepsia nonulseratif, sedangkan faktor-faktor lain seperti merokok, alkohol, dan NSAID tidak mempunyai hubungan positif dengan dispepsia nonulseratif. (Med J Indones 2005; 14: 50-4)*

### Abstract

*Non ulcer dyspepsia is a common gastrointestinal problem, the etiopathogenesis of which is not well established. This study was planned to see the effect of environmental factors like smoking, tea, alcohol, and NSAIDs consumption with non-ulcer dyspepsia. This study was conducted in the department of Gastroenterology, Medicine and Radiology of I.G. Medical College, Shimla, India. Three hundred patients of non-ulcer dyspepsia were included in the study. Each case was matched with community control of same age and sex. A detailed history of smoking, tea, alcohol, and NSAIDs consumption was taken from the patients and controls. Consumption of tea as an environmental factor was found to be statistically significant in non-ulcer dyspepsia patients as compared to controls using multivariate regression. In the present study, environmental factors like smoking, alcohol, NSAIDs consumption did not show positive co-relation with non-ulcer dyspepsia. (Med J Indones 2005; 14: 50-4)*

**Keywords:** smoking, alcohol, tea, Non-steroidal anti-inflammatory drugs (NSAIDs)

Dyspepsia has a prevalence of 19-41% in the community.<sup>1</sup> It may signal the presence of organic disease such as peptic ulcer, reflux esophagitis, gastric carcinoma which may have high medical, social, and personal costs.<sup>2</sup> Majority of dyspeptic patients have non-ulcer dyspepsia. Non-ulcer dyspepsia is one of the most frequent diagnosis made in patients who present with chronic dyspepsia, the pathogenesis of the entity remains poorly understood and little information on potential risk factors for this condition is available. It has often been recommended that patients with non-ulcer dyspepsia should avoid cigarettes, alcohol, and NSAID, there is paucity of data on the importance of these environmental factors in this disorder. We aimed in this study to determine

whether specific environmental factors (namely, smoking, alcohol, tea, and non-aspirin non-steroidal anti-inflammatory drugs (NSAIDs)) are associated with non-ulcer dyspepsia.

### METHODS

This study was conducted in the department of Gastroenterology, Medicine, and Radiology, I.G. Medical college, Shimla (India), from April 1997 to December, 1998. Three hundred consecutive patients fulfilling the criteria of non-ulcer dyspepsia attending Medicine Out Patient Department and Gastroenterology clinic were taken in this study. The patients more than 12 years of age attending Medicine Out Patient Department and Gastroenterology clinic with symptoms suggestive of dyspepsia were subjected to a complete history taking of alcohol, NSAIDs, smoking, and tea consumption and examination consisting of complete

hemogram, renal function tests, amylase, and liver function tests, USG abdomen, ECG, Chest X-ray to rule out any evidence of organic disease. Patients taking proton pump inhibitors; H2 blockers for last one month were excluded from the study.

**Type case**

Dyspepsia: - Dyspepsia is defined as presence of at least one month of pain, discomfort or nausea referable to the upper alimentary tract, which may be intermittent or continuous, precipitated by exertion and not relieved within five minutes of rest, excluding patients with Jaundice or dysphagia.<sup>3</sup>

Non-Ulcer Dyspepsia: Is one having dyspepsia when endoscopy has excluded acute or chronic peptic ulceration, esophagitis and gastric cancer.<sup>3</sup>

Past alcoholic is an individual who had left alcohol for more than 5 years.

**Data collection**

All these patients were subjected to complete inquiry about lifetime habits of smoking, alcohol, tea, and analgesic ingestion during the period before first non-ulcer symptoms. Inquiries were made about the age at which they have smoked, drunk alcohol, consumed tea, and ingested analgesics before their first non-ulcer symptoms. Upper GI endoscopy was done after overnight fast. Those with evidence of peptic ulcer, esophagitis, and malignancy were excluded.

**Control group**

Three hundred asymptomatic subjects mostly patient’s attendants of same age, between 12-80 years were taken as control. Each control subject was asked about his/her lifetime history of smoking, alcohol, tea, and analgesic consumption. They were not subjected to upper GI endoscopy.

**Statistical analysis**

Logistic regression analysis from matched sets was used to find the best fitting statistical model and hence to estimate the odds ration associated with various risk factors on SPSS software.

**RESULTS**

In the 300 consecutive cases of non-ulcer dyspepsia, 143 cases (47.7%) were males and 157 cases (52.3%)

were females. The age ranged from 12 years to 79 years. Mean age was 37.8 (+/-) 12.6 years.

NUD of less than one year was in 74 (24.66%) cases, 118 (39.33%) cases had NUD for more than one year but less than five years, 61 (20.33%) cases had NUD for more than five years but less than ten years, 47 (12.56%) cases had history of NUD for more than 10 years. The minimum duration of symptoms was 2 months and maximum was 40 years with mean duration of 4.56 years.

Risk Factor Distribution and Prevalence is shown in Table 1 and odds ratio in Table 2.

Table 1. Distribution of potential risk factors

Factors	Cases (%) n=300	Control (%) n=300
<b>Smoking</b>		
Never	201(67)	189(63)
Past	10(3.3)	31(10.3)
<5 cigarettes/day	34(11.5)	39(13)
5-15 cigarettes/day	27(9)	23(7.7)
>15 cigarettes/day	28(9.3)	18(6)
<b>Tea</b>		
Never	12(4)	49(16.3)
1-3 cups/day	149(49.7)	139(46.3)
4-6 cups/day	118(39.3)	94(31.3)
>6 cups/day	21(7)	18(6)
<b>Drugs</b>		
Aspirin Never	239(79.7)	243(81)
Novalgin(Analgin)	4(1.3)	21(7)
Ibuprofen	9(3)	8(2.7)
Aspirin	43(14.3)	25(8.3)
Others	5(1.7)	3(1)
<b>Alcohol</b>		
Never	244(81.3)	236(78.7)
Past	7(2.3)	37(12)
1-2 drinks/day	45(15)	23(7.7)
3-6 drinks/day	4(1.3)	4(1.3)
>6 drinks/day	0	1(0.3)

Table 2. Potential risk factors : estimated odds of having functional dyspepsia (NUD) vs Control

Factors	OR (CI)*
Smoking	0.8(<95%)
Alcohol	0.8(<95%)
NSAIDs	0.8(<95%)
Tea	0.0004(99%)

\*OR-Odd’s ratio

\*\* CI- Confidence Interval

### Smoking

Smoking habits were analyzed among cases and control. Among the 300 cases, 201 (67%) were non-smokers, and 10 (3.3%) were ex-smokers. Among smokers 34 (11.5%) were smoking less than or equal to 5 cigarettes per day, 27 (9%) were smoking 5-15 cigarettes per day and 28 (9.3%) were smoking more than or equal to 15 cigarettes per day. Among the controls 189 (63%) were non smokers, 31 (10.3%) were past smokers, while 39 (13%) were smoking less than or equal to 5 cigarettes per day, 23 (7.7%) were smoking 5-15 cigarettes per day and 18 (6%) were smoking more than or equal to 15 cigarettes per day.

On multivariate logistic regression of matched cases versus controls odds ratio for smoking in overall sample was 1.0141 ( $p=0.83$ ), which was no statistically significant.

### Alcohol consumption

Among 300 cases 244 (81.3%) had never consumed alcohol, whereas 7 (2.3%) had past history of alcohol consumption. Those consuming 1-2 drinks and 3-6 drinks and >6 drinks daily were 45 (15%) and 4 (1.3%) respectively. Among the controls 236 (78.7%) had never consumed alcohol and 36 (12%) had past history of alcohol consumption. Those consuming 1-2, 3-6, more than 6 drinks per day were 23 (7.7%), 4 (1.3%), 1 (0.3%) respectively.

On multivariate logistic regression for matched cases versus and controls, the odds ratio for total sample was 1.0235 ( $p=0.84$ ) which was statistically not significant.

### Tea consumption

Among 300 cases of NUD, 12 (4%) cases had no history of tea consumption, 149 (49.7%) consumed 1-3 cups daily, 118 (39.3%) consumed 4-6 and 21 (7.0%) consumed more than 6 cups daily. Among controls non-use was reported by 49 (16.3%) whereas consumption of 1-3/4-6/>6 cups daily was seen among 139 (46.3%), 94 (31.3%), and 18 (6%) respectively.

On multivariate logistic regression of matched sets of total sample odds ratio of 1.4906 ( $p=0.0004$ ) was statistically significant.

### NSAID use

Among 300 cases 239 (79.7%) were not taking any drugs, aspirin consumption was the commonest in 43 (14.3%), ibuprofen in 9 (3.0%) and followed by novalgin (analgin) 4(1.3%). Other drugs were used by 5 (1.7%). In the controls 243 (81%) did not use any drug, 25 (8.3%) gave history of aspirin consumption, 21 (7%) gave history of novalgin (analgin) consumption and 8 (2.7%) gave history of ibuprofen consumption, 3 controls (1%) gave history of other drug consumption.

On multivariate logistic regression for total sample odds ratio was 0.9864 ( $p=0.88$ ). The differences of drug consumption between cases and controls were not statistically significant.

### DISCUSSION

NUD / non-organic dyspepsias / idiopathic dyspepsia / essential dyspepsia / or functional dyspepsia is one of the most important cause of frequent hospital visits and loss of productive hours of one's life. The pathogenesis of his common disorder is poorly understood. On searching in the Pubmed and Google by feeding the search NUD no study was found from sub Himalayas on relation between environmental factors and NUD.

### Smoking

Smoking is related to peptic ulcer and gastro-esophageal diseases as it relaxes the LES, but not with NUD. In the present study conducted in sub Himalayas no correlation was found between smoking and NUD by using logistic regression analysis.

Talley<sup>4</sup> et al studied 113 cases and randomly compared with equal number of controls in Australia and the investigators did not find any significant difference in cases and controls. In another study, by Telley et al<sup>5</sup> he studied 73 patients and opined that dyspepsia is same in smokers and non-smokers. Telley et al in 1994 in a community based study found lack of association between smoking and dyspepsia. Elta et al<sup>6</sup> also did not find smoking as risk factor in dyspeptic patients. One Indian study from Mumbai has incriminated tobacco abuse as a risk factor for dyspepsia.<sup>7</sup> However, this study has limitations in the form that it was a questionnaire-

based study and investigations like oral gastro-duodenoscopy was done in few patients. In one study Nandurkar et al<sup>8</sup> found smoking as more common in dyspeptic patients and labeled it as independent risk factor. In our study also we found that smoking is not a risk factor in NUD, which endorses the other studies. The study also shows that Blacks and whites do not have much difference in risk factors.

### Alcohol

Alcohol has been found to be a cause of chronic gastritis and the severity of mucosal lesion is directly related to duration of excess drinking but there is no evidence of chronic alcoholism with NUD.<sup>9</sup>

Patient of functional dyspepsia used to avoid alcohol but there is no direct study, which implicates alcohol as the causative factor of dyspepsia. In a study by Archimandritis et al<sup>10</sup> the author did not find any association between alcohol and dyspepsia but significant correlation with peptic ulcer disease. In a study from India on environmental factors Shah et al<sup>7</sup> found that dyspepsia was more prevalent in alcoholics, but inference was on the basis of questionnaire and only few patients were subjected to Oral gastro-duodenoscopy. So these patients may not fall truly in functional dyspepsia. In the present study we found that alcohol is not significantly associated with functional dyspepsia, which is consistent with the observation of other studies on dyspepsia.

### Tea

Tea contains alkaloids of methyl xanthine group caffeine, theobromine, and theophylline out of which, caffeine is the most active.<sup>11</sup> One group of investigators found caffeine causing relaxation of lower esophageal sphincter.<sup>12,13</sup> Elta et al<sup>6</sup> found that dyspeptic symptoms were more in patients who consume more coffee.

Since caffeine is the major constituent of tea, it may be responsible for dyspeptic symptoms and in our part of India people boil tea leaves, which may release more caffeine as compared to western world where tea is prepared by pouring the boiling water on the tea leaves kept in a strainer which releases less caffeine. In a study by Talley et al<sup>4</sup> he found no relation of coffee or tea with NUD. Most of the studies of relation of NUD are with coffee and did not find it as a risk factor.

### NSAIDS

It is commonly stated that NSAID causes dyspepsia but no case control study has been performed. In the present study we found no correlation of ingestion of drugs (aspirin and NSAIDS) with NUD as multivariate logistic regression analysis. Talley et al found no increase in the NUD with use of drugs. Richter JE<sup>14</sup> also observed that despite common belief, NSAIDS are not important contributors in patients of NUD for these symptoms. In another study by Talley and Weaver<sup>5</sup> 1994 found no relation of NUD with NSAIDS.

So our study is consistent with other western studies and of the opinion that drugs, smoking, or alcohol are not culprits in patients with dyspepsia, while tea has got a linear correlation with dyspepsia.

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