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A Demographic and Etiological Study of Dyspepsia Patients Presenting to a Rural Hospital in South-West Rajasthan

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ABSTRACT

Introduction: Dyspepsia is one of the most common complaints of patients coming to a hospital causing great economic and social burden over a society. A proper understanding of its causes in a specific region can greatly help in reducing the cost of healthcare and in increasing productivity. **Material and methods:** A total of 128 patients were included in the study. Proper history-taking, physical examination and relevant investigations including upper gastrointestinal endoscopy (UGIE) + rapid urease test (RUT) and ultrasound abdomen were done to evaluate the causes of dyspepsia. Rome III diagnostic criteria-based questionnaire was used to find out functional dyspepsia. **Results:** Amongst the various causes of dyspepsia, gastroduodenitis was the most common cause of dyspepsia (89%), out of which 77.2% were *Helicobacter pylori* positive, and as many as 22.8% were *H. pylori* negative. On the other hand, of all the patients who were *H. pylori* positive (total 91 patients, i.e., 71.1%), 96.7% (88 out of 91) patients had gastroduodenitis and/or peptic ulcer disease. Functional dyspepsia was found only in 8.6% patients. Majority of patients (60.2%) consumed drinking water from reverse osmosis supply. UGIE could lead to a definitive diagnosis in as many as 91.5% cases. **Conclusion:** In the South-West Rajasthan region, *H. pylori* infection has a strong correlation with gastroduodenitis and peptic ulcer disease although all gastroduodenitis patients may not be *H. pylori* positive. Functional dyspepsia is not a very common entity in this region. In our study, reverse osmosis water seems to provide no protection from dyspepsia.

Keywords: Dyspepsia, *Helicobacter pylori*, South-West Rajasthan, UGIE, RUT

Dyspepsia is one of the most common complaints of patients coming to a hospital. Dyspepsia is derived from the Greek words *dys* and *pepse* and literally means "Difficult Digestion". It is broadly defined as pain or discomfort centered in the upper abdomen with symptoms such as epigastric pain, postprandial fullness, early satiety, anorexia, belching, nausea and vomiting, upper abdominal bloating and even heartburn and regurgitation. Prevalence of dyspepsia is about 20-40% worldwide. A study from India reported the prevalence of dyspepsia to be 30.4%. In another multicentric study from India, prevalence of dyspeptic symptoms was found to be as high as 49%. Dyspepsia is caused by a wide variety of etiologies, ranging from organic to functional. Functional dyspepsia is a more challenging problem and difficult to diagnose and manage. Rome diagnostic criteria are useful to identify functional dyspepsia. To reach correct diagnosis, one needs to choose appropriate diagnostic modality on the basis of symptoms and clinical examination of the patient. Ultrasound examination of the abdomen and upper gastrointestinal endoscopy (UGIE) with rapid urease test (RUT) for *Helicobacter pylori* are important diagnostic tools used to evaluate the causes of dyspepsia. It has been shown that gastric *H. pylori* infection is associated with dyspeptic symptoms. Eighty percent of Indian adults have antibodies against *H. pylori* in their sera.

No Indian study is available to show the health-related quality of life in relation to dyspepsia. Studies from other countries showed that functional dyspepsia is associated with substantial impairment of quality of life, work absenteeism, reduced productivity and use of

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healthcare resources with consequent economic burden. Considering high prevalence of dyspepsia in Indian population, socioeconomic burden of this disease in Indian population is expected to be enormous. Studies are needed on this issue in Indian population.

Dyspepsia may be costing society £1 billion each year in the UK. Thus, dyspepsia is a huge clinical and economic burden and cost-effective management strategies and treatments are urgently required. Overall, dyspepsia is costing society £21 per person per year.

MATERIAL AND METHODS

Ethics

The study was approved by the Ethical Committee of JW Global Hospital and Research Centre. Informed consent from all the participants was taken.

Study Design

This is a prospective, cross-sectional, observational study of dyspepsia in terms of its demographic and etiological distribution amongst the patients presenting to a rural hospital in South-West Rajasthan. The sample size for this study was calculated taking 50% prevalence from a multicentric study from India with 10% precision level and 95% confidence level; the sample size derived was 96. We included all patients coming to JW Global Hospital and Research Centre, Mount Abu, Rajasthan with complaint of dyspepsia during 18 months period between September 2016 and March 2018. A total of 128 patients were registered with their due informed consent; thorough physical examination with basic investigations (complete blood count [CBC], urine examination, stool examination, abdomen ultrasound, UGIE and RUT for *H. pylori*) were done to evaluate causes of dyspepsia.

Rome III diagnostic criteria-based questionnaire was used to make a diagnosis of functional dyspepsia in cases where no organic pathology was found.

Statistics

Data analysis was done using SPSS version 20 (IBM SPSS Statistics Inc., Chicago, Illinois, USA) Windows software program.

RESULTS

A total of 128 adults were registered in the study. The socio-demographic profile has been presented in Table 1. Dyspepsia was more common in young patients between the age group of 18-45 years (59.4%). Minor female predominance in patients presenting with dyspepsia (54.7%) was observed. In our study, most of the patients (47.7%) were in the body mass index (BMI) range of 18.5-24.9. Dyspepsia was equally distributed in primary educated (35.2%) and graduates (33.6%). No significant relation was observed between dyspepsia and the household income. Majority of patients (64.1%) in our study population gave positive family history of dyspepsia. Majority of patients (60.2%) consumed drinking water from reverse osmosis supply. In our study, epigastric burning was the commonest chief complaint of patients (82.8% patients). Majority of patients (57%) from our study population gave anxiety/depressive disorder as history of past illness.

Gastritis and duodenitis together accounted for the highest number of cases with dyspepsia (114 out of 128, i.e., 89%). Gastritis was the most common cause of dyspepsia in 88.3% patients, gastroesophageal reflux

Table 1. Socio-demographic Profile of Participants

Age	Frequency	Percent
18-30	34	26.6
31-45	42	32.8
46-60	30	23.4
>60	22	17.2
Mean ± SD	43.406 ± 16.13	
Gender		
F	70	54.7
M	58	45.3
Educational qualification		
Illiterate	15	11.7
Primary education	45	35.2
Secondary education	22	17.2
Graduation/PG	43	33.6
Professional	3	2.3
Drinking water source		
Village well	6	4.7
Government supply	27	21.1
Hand pump	4	3.1
Borewell	14	10.9
Reverse osmosis	77	60.2
Consumed/Nonconsumed	Mean ± SD	55.92 ± 72.58

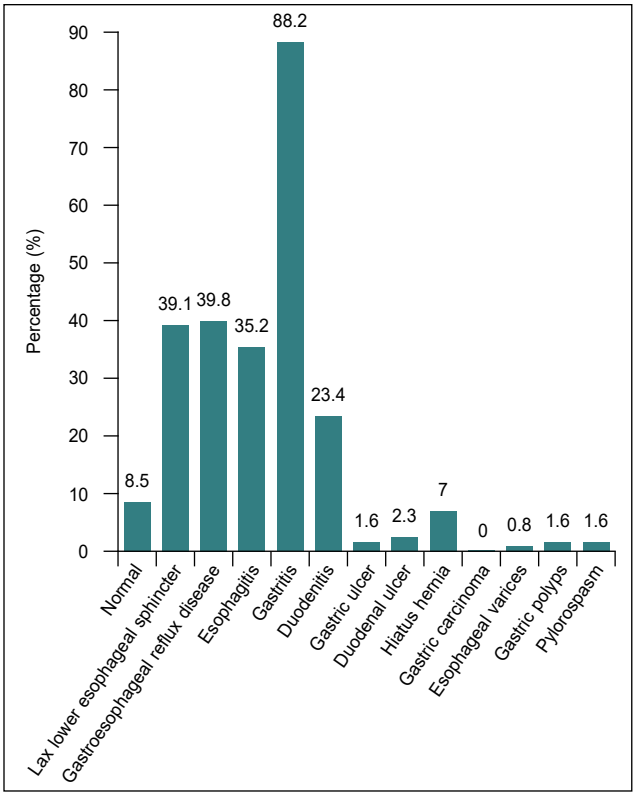


Figure 1. Upper GI Endoscopy findings in our study population.

disease (GERD) in 39.8% patients, esophagitis in 35.2%, duodenitis in 23.4%, urolithiasis in 13.3%, functional dyspepsia in 8.6%, hiatus hernia in 7%, duodenal ulcer in 2.3%, anemia in 2.3%, gastric ulcer in 1.6%, intestinal parasites in 1.6%, cholelithiasis in 1.6%, gastric polyps in 1.6%, irritable bowel syndrome in 0.8%, cholelithiasis with cholecystitis in 0.8%. Functional dyspepsia was found in 8.6% patients only (Figs. 1 and 2).

About 71.1% of total dyspepsia patients were *H. pylori* positive; while 28.9% patients were *H. pylori* negative (Fig. 3). Amongst gastroduodenitis and peptic ulcer patients 77.2% were *H. pylori* positive and 22.8% were *H. pylori* negative (Table 2). About 77.2% (88 out of 114) of total dyspepsia patients with a positive UGIE findings for gastroduodenitis and peptic ulcer were also positive for *H. pylori* ($p < 0.001$), stressing upon a positive correlation between the two; but, at the same time, indicating towards the varied etiology of the disease. Amongst *H. pylori* positive dyspepsia patients, 96.7% developed gastroduodenitis and peptic ulcer, and 3.3% did not develop gastroduodenitis and peptic ulcer (Table 3). There is statistically significant correlation between the *H. pylori* infection and development of gastroduodenitis and peptic ulcer as 96.7% (88 out of 91) of *H. pylori* positive patients developed gastroduodenitis and peptic

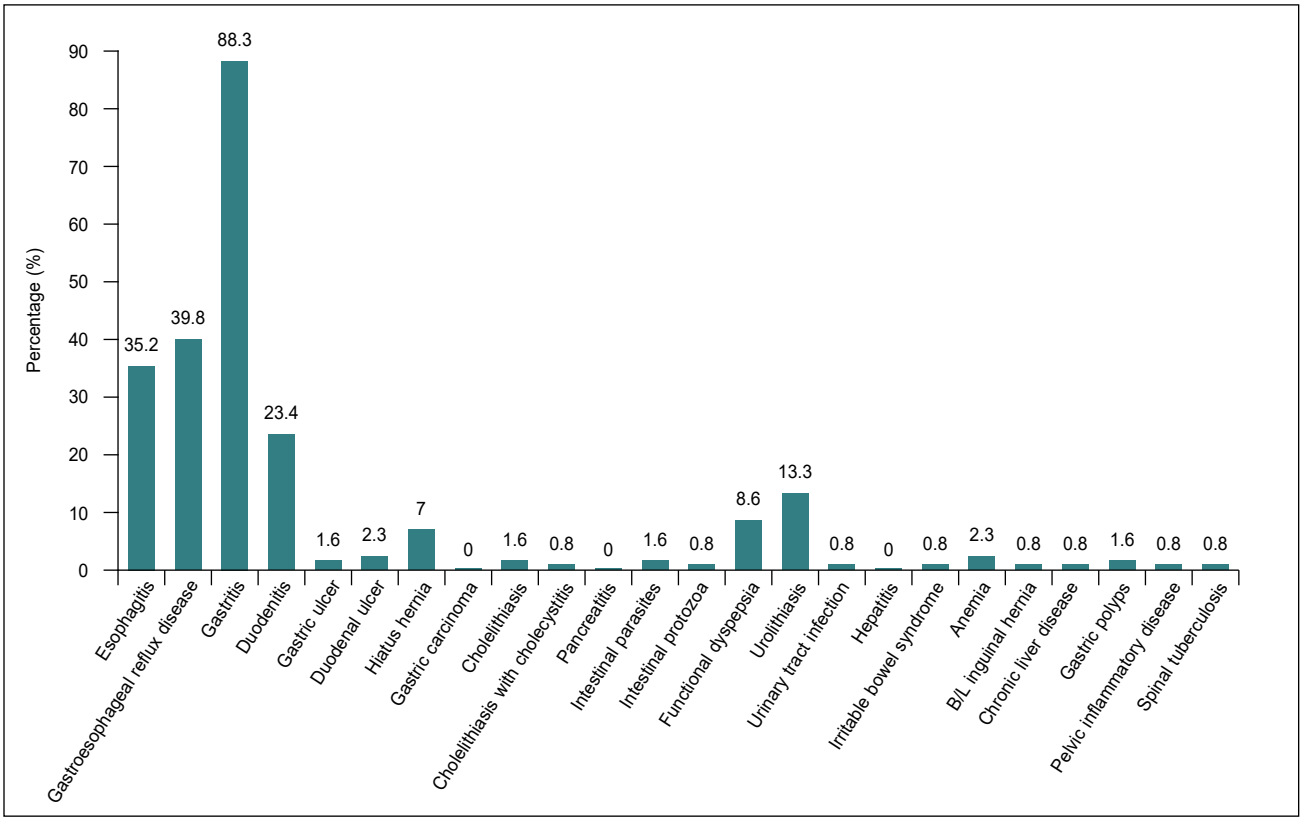


Figure 2. Various causes of dyspepsia in our study population.

IJCP SUTRA: "Sleep well - Many elderly people face problems with maintaining a healthy sleep cycle. Insomnia and daytime sleepiness in excess are common complaints, talk to your healthcare provider about such issues."

ulcer ($p < 0.001$). The remaining 3.3%, although did not have frank gastroduodenitis and peptic ulcer, but had esophagitis and GERD. In other words, 100% *H. pylori* positive patients had some positive UGIE findings.

DISCUSSION

In our study, we observed that in all dyspepsia patients, the most common UGIE finding was gastritis in 88.2% patients. Ayana and colleagues also found gastritis as the most common endoscopic finding in 61.10% patients.

Amongst the various causes of dyspepsia, in our study, gastroduodenitis was found to be the most common cause of dyspepsia, i.e., 89%; out of which, 77.2% of our patients were *H. pylori* positive, and as many as 22.8% were *H. pylori* negative. On the other hand, of all the patients who were *H. pylori* positive (total 91 patients, i.e., 71.1%), 96.7% (88 out of 91) patients had gastrodudenitis and/or peptic ulcer disease. This illustrates that although majority of *H. pylori*-infected patients would have gastroduodenitis, but all patients with gastroduodenitis may not be *H. pylori* positive.

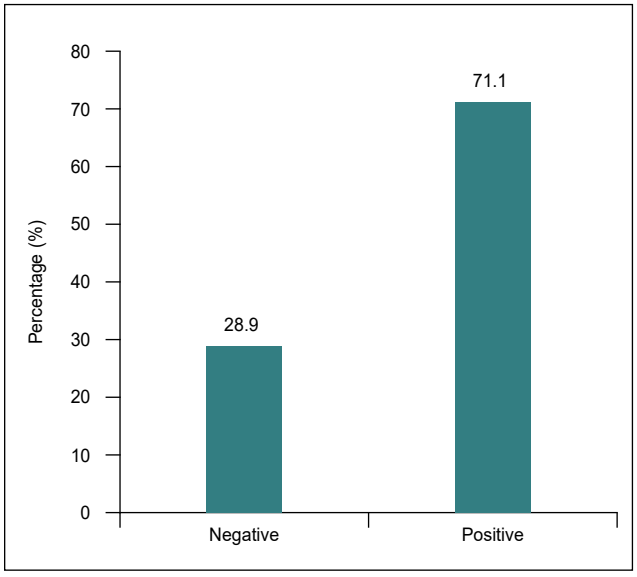


Figure 3. RUT for *H. pylori* results in our study population.

In a study by Adlekha et al, RUT for *H. pylori* was positive in 57.7% cases, the commonest identifiable lesion at endoscopy was gastritis (69%). The correlation of endoscopic abnormality with *H. pylori* infection was statistically highly significant ($p < 0.01$). In a study by Srinivasan and colleagues also, there was a high prevalence of *H. pylori* infection (51.7%). Studies from India show that the prevalence of *H. pylori* is as high as 80%. In the study by Ayana et al, *H. pylori* infection was detected in 65% of patients. Gastritis and duodenal ulcer were statistically significantly associated with *H. pylori* ($p < 0.001$).

In our study, majority of patients (60.2%) consumed drinking water from reverse osmosis supply. This seems confusing as, on one hand, several studies relate *H. pylori* infection to be directly related to the quality of drinking water, while some others prove a correlation of gastroduodenitis and peptic ulcer with reverse osmosis water. Klein and coworkers first suggested water as a source of *H. pylori* infection, who observed that Peruvian children with an external source of drinking water were more likely to be infected with *H. pylori* than children

Table 2. Relation of Gastroduodenitis and Peptic Ulcer with RUT for *H. pylori* in Our Study Population

		RUT for *H. pylori*		Total	P value
		Negative	Positive		
Gastritis/Duodenitis/Gastric ulcer/ Duodenal ulcer	Absent	11 (78.6)	3 (21.4)	14 (100)	<0.001 (S)
	Present	26 (22.8)	88 (77.2)	114 (100)	
Total		**37 (28.9)**	**91 (71.1)**	**128 (100)**	

Table 3. Relation of RUT for *H. pylori* with Gastroduodenitis and Peptic Ulcer in Our Study Population

		Gastritis/Duodenitis/Gastric ulcer/Duodenal ulcer		Total	P value
		Absent	Present		
RUT for *H. pylori*	Negative	11 (29.7)	26 (70.3)	37 (100)	<0.001 (S)
	Positive	3 (3.3)	88 (96.7)	91 (100)	
Total		**14 (10.9)**	**114 (89.1)**	**128 (100)**	

with an internal source. A study conducted in India indicated that sewage and sanitary workers experience a high risk of *H. pylori* infection. A study conducted by Lutai in Russian population found the area supplied with water lower in minerals, like RO water, was associated with gastric and duodenal ulcers, chronic gastritis and cholecystitis.

May be clean drinking water is preferable to RO water as far as protection against dyspepsia is concerned. So we recommend using clean drinking water (boiled/filtered/obtained from reliable clean source) instead of reverse osmosis water. For a proper diagnosis of the cause of dyspepsia, UGIE with RUT seems to be the most efficient tool to rule out organic causes, and Rome III criteria for functional dyspepsia.

The limitation of this study is that it is confined to only one hospital of the South-West Rajasthan region. For a more accurate sampling, a multicenter study would be required which can cover a larger area and population sample. This study was restricted only to the profiling of the various causes of dyspepsia. Treatment and outcome were not followed. The study could be extended in future to encompass larger samples from other districts of Rajasthan.

CONCLUSION

In the South-West Rajasthan region, *H. pylori* infection has a strong correlation with gastroduodenitis and peptic ulcer disease, although all gastroduodenitis patients may not be *H. pylori* positive. Functional dyspepsia is not a very common entity in this region. UGIE could lead to a definitive diagnosis in as many as 91.5% cases, proving its utility as an excellent reliable diagnostic tool in cases of dyspepsia. Clean drinking water is preferable to RO water as far as protection against dyspepsia is concerned.

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