

Association of daily water intake with dyspepsia

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Objective: To assess the relationship of adequate water intake with dyspepsia according to SF-LEEDS questionnaire, at tertiary care hospital, Karachi, Pakistan.

Methodology: This study included 436 participants with dyspepsia. Dyspepsia diagnosed by SF-LEEDS questionnaire with 32 max score was categorizing into, mild, moderate and severe according to the score 0 – 7, 8 – 14, > 14, respectively. Water intake habits were asked along with other risk factors.

Results: Out of 436 patients, 59.6% were male and 40.4% female. Mean age was 41 years. Mean SF-

LEEDS score was 18. The mean daily water intake was 1.5 L. Most common sign was dry tongue in 40.1% patients. Only 6.2% participants had adequate water intake daily. Fisher's exact test between adequate water intake and severity of dyspepsia, showed patients having severe dyspepsia were not taking adequate water ($p = 0.015$).

Conclusion: Adequate water intake can improve dyspepsia.

Keywords: Association, daily, dyspepsia, hydration, water intake.

INTRODUCTION

Dyspepsia is among one of the frequently encountered diseases all around the world.¹ The common presentation is usually related or centered to upper abdominal region like epigastric pain, retrosternal burning, postprandial discomfort, heavy feeling in the stomach.² Most patient do not have organic diseases yet they are being thoroughly investigated by endoscopy, CT or other modalities.^{3,4} Dyspepsia is a cause a major economic burden in the country and impairing quality of life.^{5,6}

Water is the major constituent of body. Adequate water intake is very essential in the maintaining various mechanisms of body, like as a building material, as a solvent, as a carrier, thermoregulation, as lubricant and shock absorber.^{7,8} Water has an essential role in gastrointestinal tract and adequate oral hydration improves many gastrointestinal problems like dyspepsia, GERD, chronic constipations. Water can improve dyspepsia by acid suppressing effect by increasing pH in stomach.⁹

Water can improve dyspepsia in two main mechanism i) by trapping into the inner layer of stomach and forms a protective layer into the inner lining of stomach. ii) increased the pancreatic secretion of bicarbonate so that acid can be properly neutralized.¹⁰ Hence, with proper hydration symptoms can improve. The recommended daily water intake, according to the European Food Safety Authority (EFSA) is 2.5 L/day for men and 2.0 L/day for women and demand increases or decreases

according to the some specific condition like pregnancy, elderly.¹¹ The aim of this study was to assess the relationship of adequate water intake with dyspepsia at tertiary care hospital, Karachi, Pakistan.

METHODOLOGY

This cross sectional study was conducted at Department of Gastroenterology, Liaquat National Hospital, Karachi and included 436 patients of dyspepsia. An informed written consent was taken before enrolment. Dyspepsia was defined as either among or group of symptoms comprising of mainly to upper abdominal region like epigastric pain, retrosternal burning, postprandial discomfort, heavy feeling in the stomach.¹² Inclusion criteria were patient coming with age between 18 and above with either gender presenting to OPD with dyspepsia as per operational definition for > or equal to 2 months. The exclusion criteria were history of NSAIDs and other chronic illnesses like CKD, CLD, and any kind of gastric surgery.

The Short-Form Leeds Dyspepsia Questionnaire was used which is a reliable, valid and responsive self-completed outcome measure for quantifying the frequency and severity of dyspepsia symptoms.¹³ It consist of a questionnaire with total sum of score of 32 and categorizing each score in very mild, mild, moderate and severe with score of 1 – 4, 5 – 7, 8 – 14, > 14, respectively.

Age, gender, duration of the disease, water intake habits were collected along with other risk factors, like

NSAIDs, antiplatelet, smoking, alcoholism. All demography, clinical history will be recorded by a principal investigator on a predesigned Performa, Exclusion criteria will be followed strictly to avoid confounding variables.

Statistical Analysis: Data analysis was performed through SPSS 22. Pearson Chi-square test and correlation was calculated. Fisher’s exact test between adequate water intake and severity of dyspepsia $p \leq 0.05$ was considered significance.

RESULTS

Out of 436 patients, 59.6% were male and 40.4% female. Mean age was 41 years. Mean SF-LEEDS score was 18. We found that 93.8% patients did not have adequate water intake (Table 1).

Table 1: Habits of water intake daily.

Water intake in liters	Mean ± SD	Minimum	Maximum
Overall Water intake.	1.53	0.75	3.0
Male			
Over all	1.64	1.0	3.0
Adequate	2.58	2.50	3.0
Inadequate	1.6	1.0	2.25
Female			
Over all	1.36	0.75	2.25
Adequate	2.01	2.0	2.25
Inadequate	1.29	0.75	1.75
Daily water intake with dyspepsia severity			
Mild	2	1	3.0
Moderate	1.6	1	2.5
Severe	1.5	0.75	2.5

Using age groups, it was found that age <35 years having 57.1 % moderate Age 35 to 50 and > 50 years both have severe form of dyspepsia (Table 2). The relationship of adequate water intake with severity of dyspepsia using Fisher’s Exact Test showing most of the patients having inadequate water intake with $p = 0.015$ (Table 3).

DISCUSSION

Dyspepsia is a constellation of upper abdominal pain, heart burn, early satiation, bloating, early gastric fullness along with regurgitation and nausea.

Table 2: Severity of dyspepsia with gender.

Gender		Mild	Moderate	Severe	Total
Male	Count	16	35	209	260
	% within Severity of Dyspepsia	84.2%	83.3%	55.7%	59.6%
Female	Count	3	7	166	176
	% within Severity of Dyspepsia	15.8%	16.7%	44.3%	40.4%
Count		19	42	375	436
% within Severity of Dyspepsia		100%	100%	100%	100%

Table 3: Severity of dyspepsia with adequate water intake.

		Mild	Severe	Total
Yes	Count	4	19	27
	% within Severity of Dyspepsia	21.1%	5.1%	6.2%
No	Count	15	356	409
	% within Severity of Dyspepsia	78.9%	94.9%	93.8%
Count		19	375	436
% within Severity of Dyspepsia		100%	100%	100%

Etiologically there are two types; organic and functional. Organic causes included gastric diseases like PUD, metabolic syndromes and systemic disease and drug induced. Multiple dietary factors are associated with functional dyspepsia. A recent study from Chinashowed that there are multiple risk dietary risk factors associated with dyspepsia and there was a strong relationship with dietary supplements.¹⁴

A study from France by Henri Duboc et al¹⁵ showed that food had significant impact in the occurrence of dyspepsia. There are also similar studies like Chirila et al¹⁶ and Duncanson et al.¹⁷ This study demonstrates the relationship of dyspepsia with daily water intake and supports our hypothesis. A recent pilot study from Germany showed efficacy and safety of a natural mineral

water rich in hydrogen carbonate on functional dyspepsia and heartburn.¹⁸

Dyspepsia can result from chronic kidney disease, chronic liver disease and congested cardiac disease; all these disease require restriction of water intake due to volume overload.¹⁹⁻²¹ The results which we have got in this study demonstrate, male predominance i.e. 59%. The major findings of this study are that most the patient do not taking adequate water intake according to the recommendations i.e. 93.8%.

Overall water intake among all patients was 1.53 L which is less than the recommended for both genders. Correlating the severity of dyspepsia with daily water intake denotes that patient with mild dyspepsia had overall water intake better than moderate and severe dyspepsia. This showed that patients who had adequate water had only mild dyspeptic symptoms. On the other hand, patients who had inadequate water intake has severe dyspeptic symptoms. Using Age groups, it was found that increasing age causing increase in the severity of dyspepsia.

This is the first study of its kind. Previously no such studies have been done which show the relationship of adequate water intake with dyspepsia. This study demonstrates the role of water to neutralize the acid in our stomach and relieving the patients symptoms. The favoring points in this study is that, it supports our hypothesis that water intake can improve dyspepsia. The study was done in the large tertiary care hospital of Pakistan, there were no any financial burden to the study participants. The limitation of this study, the sample size was not adequate and there is need of larger sample size to denotes the any population, only done in single center, doesn't show water relations in increasing pancreatic secretion.

CONCLUSION

Our study demonstrates the adequate water intake can improves dyspepsia.

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