



Modifiable and Non-modifiable Risk Factors Association with Functional Dyspepsia

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i47A33036

Editor(s):

(1) Dr. Ana Cláudia Coelho, University of Trás-os-Montes and Alto Douro, Portugal.

Reviewers:

(1) Abhinav Vasudevan, Monash University, Australia.

(2) Khalida I. Noel, Al-Mustansiriyah University, Iraq.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/73250>

Original Research Article

Received 01 August 2021

Accepted 05 October 2021

Published 27 October 2021

ABSTRACT

Objective: To determine the frequency of modifiable and non-modifiable risk factors of functional dyspepsia in our population.

Materials and Methods: This cross-sectional study has been conducted department of gastroenterology of Isra University Hospital from February 2019 to January 2020. All the patients of all age groups presented with functional dyspepsia and either of gender were included in the study. Patients were interviewed regarding modifiable and nonmodifiable risk factors like age, gender, smoking, body mass index, alcohol consumption and stress. All the data was gathered via study proforma.

Results: Total 200 cases of functional dyspepsia were studied for modifiable and non-modifiable risk factors. Mean age of the cases was 49.45±6.33 years. Most of the cases were more than 40 years of the age. Males were 64.5% and females were 40.5%. According to the ethnicity Sindhi and Punjabi were commonest as 40.5% and 35.0% respectively. Inadequate physical activity and smoking habits were highly prevalent as 57.5% and 36.0% respectively.

Conclusion: As per study conclusion age more than thirty years, male gender, ethnicity of Sindhi and Punjabi, smoking and inadequate physical activity were observed to be highly prevalent modifiable and non-modifiable risk factor of the functional dyspepsia.

Keywords: Dyspepsia; risk factors; ethnicity; gender; smoking.

1. INTRODUCTION

Functional dyspepsia is the model useful gastrointestinal problem. It is a clinical condition including persistent indications emerging from the gastroduodenal tract [1,2]. As per the Rome criteria, in view of expert agreement, the prototypical indications are inconvenient repetitive postprandial fullness, incapability to complete a typical sized food (early satiety), pain of epigastrium or epigastrium burning in the setting of an ordinary upper endoscopy [2]. Though, several patients having functional dyspepsia additionally experience other inconvenient symptoms like bloating, nausea, belching and heartburn. 20 to 30% of the cases having found with to have sicknesses that record for their symptoms [3,4]. Functional dyspepsia symptoms happen after acid infusion into the duodenum and likely outcome from sensitized pH sensors or inadequate evacuation of the acid because of weakened motor function of proximal duodenum [4,5].

The causative factors of the functional dyspepsia are the multifactorial and the heterogeneous dyspepsia has been not properly defined; though, several mechanisms of the pathophysiology are proposed, most of which are directed at pathways of the gastroduodenal, were proposed to clarify the disorder [6]. Numerous components are as of now being researched as possible reasons for the symptoms of the functional dyspepsia. Given the quantity of possibly unidentified causes of the symptoms of dyspepsia and the relationship of the word function with an absence of a natural reason for manifestations, it is carefully utilizing the term of the functional dyspepsia to define symptoms of dyspepsia without a recognized natural etiology [6].

Many studies investigated the risk factors of the functional dyspepsia and proposed that the female's gender, old age, infection of *H. pylori*, lower BMI, uses of the nonsteroidal anti-inflammatory drugs (NSAIDs) or aspirin, lower educational level are the risk factors of functional dyspepsia [7-9]. FD is prevalent form of dyspepsia throughout the world. The revealed incidence of dyspepsia varies broadly between various populations, perhaps in light of the fact that most investigations have focused on undiagnosed dyspepsia instead of functional dyspepsia [10]. In Pakistan, there have not been

widely studied the evaluation of modifiable risk factors of dyspeptic patients even nowadays it is a big issue effecting quality of life. However, this study has been conducted to assess the knowledge reading frequency modifiable risk factors of dyspepsia.

2. MATERIALS AND METHODS

This cross-sectional study has been conducted in the department of gastroenterology of Isra University Hospital from February 2019 to January 2020. All the patients of all age groups presented with functional dyspepsia and either of gender were included in the study. All the cases having diagnosis of peptic ulcer disease, *H. pylori*, gastric carcinoma, chronic liver disease and those who were not agreeing to participate in the study were excluded from the study. Patients were interviewed regarding their life style including modifiable and non-modifiable risk factors like age, gender, ethnicity and family history, diabetes, hypertension, smoking, body mass index, alcohol consumption, physical activity and stress. All the data was gathered via study proforma. Data was analyzed by using SPSS version 20. Frequency and percentage were computed for categorical variables. Mean and standard deviation were computed for numerical variables. Chi-square test was applied and a p-value <0.05 was taken as significance level.

3. RESULTS

Total 200 cases of functional dyspepsia were studied for modifiable and non-modifiable risk factors. Mean age of the cases was 49.45 ± 6.33 years. Most of the cases were more than 40 years of the age and only 23.5% cases were under 40 years. Males were 64.5% and females were 35.5%. family history of functional dyspepsia was 11.0% and remaining had no family history and mostly were unknown regarding it. According to the ethnicity Sindhi and Punjabi were commonest as 40.5% and 35.0% respectively, followed by Urdu speaking were 15.0% and Pathan were 9.0% Table.1.

Out of all 36.0% cases were smokers and 16.0% had diabetes, dyslipidemia was among 5.0% cases, obesity was 16.5%, history of alcoholic consumption was among 7.5% cases, while inadequate physical activity was highly prevalent among 57.5% of the cases Table 1.

Table 1. Modifiable and non-modifiable risk factors for dyspepsia n=200

Modifiable and non-modifiable risk factors	Frequency	%	
Age groups	>15 years	20	10.0%
	15-30 years	27	13.5%
	31-45 years	73	36.5%
	46-60 years	65	32.5%
	>60 years	15	07.5%
Gender	Male	129	64.5%
	Females	71	35.5%
Family history	Yes	22	11.0%
	No	178	89.0%
Ethnicity	Sindhi	81	40.5%
	Punjabi	70	35.0%
	Pathan	19	09.5%
	Urdu speaking	30	15.0%
Smoking	Yes	78	36.0%
	No	122	64.0%
Diabetes	Yes	32	16.0%
	No	168	84.0%
Inadequate physical activity	Yes	115	57.5%
	No	85	42.5%
Dyslipidemia	Yes	10	05.0%
	No	190	95.0%
Obesity	Yes	33	16.5%
	No	177	83.5%
Alcohol consumption	Yes	15	07.5%
	No	185	92.5%
History of NSAIDS	Yes	22	11.0%
	No	178	89.0%

4. DISCUSSION

Functional dyspepsia (FD) is one of the most common gastrointestinal disorders, and FD imposes social and economic burden worldwide. The older age and male gender are more likely to develop functional dyspepsia event as in this study most of the cases were males 64.5% and older than 40 years, overall mean age was 49.45±6.33 years. Similarly, Kim SE et al. [7] reported that the mean age of cases was 51.5±12.7 years, while they found females slight high (53.5%) as compared to males. Consistently Ramírez-Vásquez J et al. [11] reported that out of all study participants 63.3% were males. On other hand Tardiolo G et al. [12] reported that the mean age of the patients having functional dyspepsia was 35.81 ±14.81 years and male to female ratio was 1.41:1. Above difference of age and gender with other studies may because of selection criteria and study sample size. However, a study conducted in Balochistan showed males (77.9%) and females (22.1%) were suffering from functional dyspepsia [13].

In this study age, gender, smoking and inadequate physical activities found to be commonest risk factors of functional dyspepsia. On other hand in a south Iranian study of Masoumi SJ et al. [14] observed that there was a significant association occurred between the symptoms of dyspepsia and dairy products consumptions, tea before and after food, smoking, uses of non-steroid anti-inflammatory drugs and drinking water, reflux, dysphagia, heartburn, and uses of acetaminophen. Recently Koloski NA et al. [15] reported that the correlation keeps on significant for the moderate exercise, gender, independent of age, BMI and the smoking, though role of the exercise in pathophysiology of the symptoms of functional dyspepsia is generally not known [15]. In another study it is demonstrated that there was a valuable correlation of dyspepsia with smoking ($p<0.05$), along with a significant link between dyspepsia and inadequate sleep [16]. Smoking might affect all gastrointestinal functions including those of the esophagus, stomach, and colon, resulting in susceptibility to several kinds of Functional gastrointestinal disorders including

gastrointestinal reflex disease, functional dyspepsia and irritable bowel syndrome [17].

In this study according to the ethnicity Sindhi and Punjabi were commonest as 40.5% and 35.0% respectively, followed by Urdu speaking were 15.0% and Pathan were 9.0%. On other hand it is stated that there was no single country or ethnic group observed to have greater incidence of functional dyspepsia [18]. Although future studies are expected to discover the distinctions in functional dyspepsia between different populations will improve the worldwide comprehension of the condition and better surmising will be drawn. [18,19]. There is a wide range has been reported of different risk factors in different studies. However, there is a quate need of large-scale complete lifestyle dependent studies for this unsolved health event.

5. CONCLUSION

As per study conclusion age more than thirty years, male gender, ethnicity of Sindhi and Punjabi, smoking and inadequate physical activity were observed to be highly prevalent modifiable and non-modifiable risk factor of the functional dyspepsia. Further large scale studies are recommended on this subject.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline Patient's consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Talley NJ. Functional dyspepsia: advances in diagnosis and therapy. *Gut and liver*. 2017;11(3):349.
2. Talley NJ, Ford AC. Functional dyspepsia. *N Engl J Med*. 2015;373:1853-1863.
3. Stanghellini V, Talley NJ, Chan F, et al. Rome IV - Gastroduodenal Disorders. *Gastroenterology*. 2016 pii: S0016-5085(16)00177-3.
4. Madisch A, Andresen V, Enck P, Labenz J, Frieeling T, Schemann M. The diagnosis and treatment of functional dyspepsia. *Deutsches Ärzteblatt International*. 2018;115(13):222.
5. Lee KJ, Demarchi B, Demedts I, Sifrim D, Raeymaekers P, Tack J. A pilot study on duodenal acid exposure and its relationship to symptoms in functional dyspepsia with prominent nausea. *Official journal of the American College of Gastroenterology* | ACG. 2004;99(9):1765-73.
6. Harer KN, Hasler WL. Functional dyspepsia: A review of the symptoms, evaluation, and treatment options. *Gastroenterology & Hepatology*. 2020;16(2):66.
7. Kim SE, Kim N, Lee JY, Park KS, Shin JE, Nam K, Kim HJ, Song HJ, Joo YE, Myung DS, Seo JH. Prevalence and risk factors of functional dyspepsia in health check-up population: A nationwide multicenter prospective study. *Journal of Neurogastroenterology and Motility*. 2018; 24(4):603.
8. Kim SE, Park YS, Kim N. Effect of Helicobacter pylori eradication on functional dyspepsia. *J Neurogastroenterol Motil*. 2013;19:233-243.
9. Mahadeva S, Goh KL. Epidemiology of functional dyspepsia: A global perspective. *World J Gastroenterol*. 2006;12:2661-2666.
10. Nwokediuko SC, Ijoma U, Obieniu O. Functional dyspepsia: subtypes, risk factors, and overlap with irritable bowel syndrome in a population of african patients. *Gastroenterology Research and Practice*. 2012;2012.
11. Ramírez-Vásquez J, Mejia CR. Factors associated with functional dyspepsia among fast food workers at a shopping center in Huancayo, Peru. *Revista Colombiana de Gastroenterologia*. 2018;33(4):404-10.
12. Tardiolo G, Bramanti P, Mazzon E. Overview on the effects of N-acetylcysteine in neurodegenerative diseases. *Molecules*. 2018;23(12):3305.
13. Hussain SI, Mehboob M, Khan JA, Naz R. Functional dyspepsia; A common problem in Balochistan. *The Professional*. 2003;10:294-7.
14. Masoumi SJ, Mehrabani D, Moradi F, Zare N, Saberi-Firouzi M, Mazloom Z. The prevalence of dyspepsia symptoms and its correlation with the quality of life among Qashqai Turkish migrating nomads in Fars

- Province, Southern Iran. Pakistan Journal of Medical Sciences. 2015;31(2):325.
15. Koloski NA, Jones M, Walker MM, Holtmann G, Talley NJ. Functional dyspepsia is associated with lower exercise levels: A population-based study. United European Gastroenterology Journal. 2020;8(5):577-83.
 16. Jaber N, Oudah M, Kowatli A, Jibril J, Baig I, Mathew E, Gopakumar A, Muttappallymyalil J. Dietary and lifestyle factors associated with dyspepsia among pre-clinical medical students in Ajman, United Arab Emirates. Central Asian Journal of Global Health. 2016;5(1).
 17. Nwokediuko SC, Ijoma U, Obieniu O. Functional dyspepsia: subtypes, risk factors, and overlap with irritable bowel syndrome in a population of african patients. Gastroenterology Research and Practice. 2012;2012.
 18. Mukhtar M, Zubair M, Naz R, Tabassum S, Achackzai M. Functional dyspepsia: an unresolved issue. Intern Med. 2016;5(3):192.
 19. Mahadeva S, Raman MC, Ford AC, Follows M, Axon AT, Goh KL, Moayyedi P. Gastro-oesophageal reflux is more prevalent in Western dyspeptics: a prospective comparison of British and South-East Asian patients with dyspepsia. Alimentary Pharmacology & Therapeutics. 2005;21(12):1483-90.

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Peer-review history:

The peer review history for this paper can be accessed here:
<https://www.sdiarticle4.com/review-history/73250>