Dyspepsia in Iran: SEPAHAN Systematic Review No. 3

Ehssan Amini[1], Ammar Hassanzadeh Keshteli[2], Marsa Sadat Hashemi Jazi[1], Pegah Jahangiri[1], Peyman Adibi[2]

[1]Medical Students' Research Center, Isfahan University of Medical Sciences, Isfahan, Iran.
[2]Integrative Functional Gastroenterology Research Center, Isfahan University of Medical Sciences, Isfahan, Iran.

Correspondence to:
Dr. Ammar Hassanzadeh Keshteli
Address: Integrative Functional Gastroenterology Research Center, Isfahan University of Medical Sciences, Shariati Street, Isfahan, Iran. Postal code: 8173948763
Email: hasanzadeh@med.mui.ac.ir

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ABSTRACT

Background: Dyspepsia is an upper gastrointestinal tract syndrome presenting epigastric pain and discomfort, fullness sensation, early satiety, nausea, vomiting, and belching. The prevalence of dyspepsia has been reported to be high all over the world. In this study, we reviewed studies reporting the prevalence of dyspepsia in Iran and discussed the probable risk factors of dyspepsia to shed light on future research on this topic.

Methods: The four electronic databases of PubMed, Google Scholar, IranMedex, and Scientific Information Database were searched. The keywords for the electronic search were "dyspepsia" and "Iran". A manual search of the reference lists of the selected articles was also carried out. Two reviewers reviewed and identified articles independently and selected relevant studies based on our inclusion and exclusion criteria.

Results: Nine articles reporting the prevalence of dyspepsia in Iran were included. The reported prevalence ranged from 2.2% to 29.9%. The majority of studies have reported the prevalence of dyspepsia to be higher in women.

Conclusion: Dyspepsia seems to be highly prevalent in Iran. Considering the wide range of data reported in different studies, conducting further population-based studies is necessary to investigate the epidemiology and risk factors of dyspepsia among Iranians.

Keywords: Dyspepsia, epigastric pain, dyspepsia prevalence, Iran

Review Article

INTRODUCTION

Dyspepsia is an upper gastrointestinal tract syndrome. Its symptoms include epigastric pain and discomfort, fullness sensation, early satiety, nausea, vomiting and belching, usually aggravated by the ingestion of food. [1]

Dyspepsia can be functional (dysmotility like) or structural (ulcer like). Although clinical evaluation is required to determine whether dyspepsia in an individual is functional or structural, endoscopic studies have shown that the majority of cases are affected by the functional type.[2] Many factors affect the epidemiology of dyspepsia in populations, e.g., diet, socio-cultural factors, gastrointestinal infections, previous organic diseases (such as peptic ulcer and gastric cancer), and etcetera.[3]

The prevalence of functional dyspepsia was estimated to be about 20%-30%.[4] Camilleri et al. reported the prevalence of 44.9% for dyspepsia in a population of 121,128 US adults.[5]

The reported prevalence of dyspepsia in 13 European countries varied from 1.9% in Denmark to 24.9% in Hungary.[6] In Hong Kong, the prevalence of uninvestigated dyspepsia was reported to be about 18.4%.[7] The prevalence of dyspepsia in Japan, India, and Turkey has been estimated to be 17%, 30.4%, and 28.4%, respectively.[8-10] Various studies have been conducted in Iran to determine the prevalence of dyspepsia in different cities. In the study by Sohrabi et al. the reported prevalence ranges from 0.1% in Tehran, to 29.9% in Shiraz.[11,12]

Herein we will review the studies carried out in Iran and discuss the factors contributing to the wide range of the reported values.

METHODS

Search strategy and electronic databases:

Electronic search and hand searching was carried out to identify studies on the prevalence of dyspepsia in Iran. The last search of the databases was performed in January, 2012. We conducted a wide search on four databases: PubMed, Google Scholar, IranMedex (www.iranmedex.com) and Scientific Information Database (www.sid.ir). IranMedex and Scientific Information Database were searched to identify articles published in local journals. The PubMed search query used was (("dyspepsia"[MeSH Terms] OR "dyspepsia"[All Fields]) AND ("Iran"[All Fields])). "Epigastric pain syndrome", "postprandial distress syndrome", "dyspepsia" and "Iran" were used as keywords in other databases. In Google scholar to limit the results to more relevant studies, we added "prevalence" and "epidemiology" to the keywords. In searching IranMedex and Scientific Information Database, we used equivalent keywords in Persian to find relevant articles. The reference lists of relevant studies were also hand searched.

Study Selection:

Initially, all articles reporting the prevalence of dyspepsia in an Iranian population were included. The following were excluded: 1) Studies not including adult cases in a sample population; 2) Studies not performed on a healthy population; and 3) articles of which we could not retrieve the full text format. Two reviewers investigated all citations to select and include eligible articles.

Data extraction:

Data presented in the selected articles were extracted and entered into a table. Data on the first author, the city in which the study was conducted, study population, sample size, study design, the definition of dyspepsia used in the study, demographic factors studied, and reported prevalence, were recorded into the table (Table 1).

RESULTS

Search results: We found 1292 studies after searching the electronic databases. The identified articles were excluded from the study in two steps and by screening their titles and abstracts. In the third step, the full manuscripts of 12 articles were reviewed, and finally 9 remaining articles were included in our study (figure1). There were no new findings in the manual search.

Prevalence of dyspepsia: The prevalence of dyspepsia in the studies reviewed was reported to be from 2.2% to 29.9%.[11,12] In a cross sectional study conducted in Tehran, the prevalence of dyspepsia in 7985 patients visiting a gastroenterology clinic was indicated to be about 11%.[13] Majlesi et al. interviewed and examined 2700 adults in the rural areas of Hamadan and found dyspepsia prevalence to be 18%.[14] The prevalence of dyspepsia in a questionnaire-based study performed in Nahavand was 23.6%.[15] In a study in Tabriz (northwest of Iran), symptoms of dyspepsia during the two weeks prior to the study were investigated through a triad of questionnaire, examination and interview; the prevalence was reported to be about 3%.[16] Barzkar et al. conducted a population - based study in the

Table 1. Prevalence of Dyspepsia in Iranian studies

#	Author	District of Study	Study Population	Mean Age ±SD	Sample Size	Case Ascertainment Method	Diagnostic Definition	Prevalence of dyspepsia
1	Moghimi-Dehkordi et al.[11]	Tehran	General population	>18	18180 M: 9108 F: 9072	Interview and questionnaire	Rome III criteria	2.2 % M: 1.7 % F: 2.6 % (p: not mentioned)
2	Khademolhosseini et al.[12]	Shiraz	General population	44.9 ± 11.1	1978 M: 709 F: 1269	Questionnaire	Epigastric or upper abdominal pain or discomfort lasting at least 3 months	29.9% M: 23.4% F: 33.6% (p = 0.001)
3	Ganji et al.[14]	Tehran	Patients referring to an outpatient gastroenterology clinic	Not mentioned	7985	Outpatient examinations and diagnostic procedures	Not mentioned	11%
4	Majlesi et al.[14]	Hamadan/ rural areas	Rural population of Hamadan	> 15	2700 M: 1300 F: 1400	Interview and questionnaire /clinical examination	Epigastric pain, fullness sensation, heartburn, bloating, nausea, vomiting	18% M: 11.6% F: 21% (p < 0.05)
5	Aghazadeh et al.[15]	Nahavand	General population	39.45 ± 19.77	1518 M: 653 F: 865	Interview and questionnaire	Epigastric pain, bloating, nausea, vomiting, early satiety, and fullness for at least once in past 6 months	23.6 % M: 16.1% F: 29.2% (p : not mentioned)
6	Khoshbaten et al.[16]	Tabriz	General population	Not mentioned	3983 M: 2080 F: 1903	Interview and questionnaire / clinical examination	Symptoms in the last 2 weeks	2.9% M: 1.4 % F: 4.5% (p:not mentioned)
7	Barzkar et al.[17]	Tehran Damavand Firoozkouh Varamin Pakdasht	General population	M: 38.95 ± 17.4 F: 38.4±16.7	18180 M: 9108 F: 9072	Interview and questionnaire	Rome III criteria	8.5 % M: 6.4 % F: 10.9 % (p < 0.001)
8	Honarkar et al.[18]	Bam	Injured people of Bam earthquake	30 ± 14	737 M: 361 F: 376	Interview and questionnaire	Not mentioned	Early satiety: 27.1% Fullness: 20.9%
9	Hatami et al.[19]	Tehran	Blood donors	37.22 ± 0.19	3517 M: 3115 F: 402	Interview and questionnaire	Presence of symptoms more than three months in the past one year	Ulcer like: 7.3% F: 8% M: 7.3% (p < 0.001) Dysmotility like: 2.8% F: 5.8% M: 2.4% (p = 0.1)

SD: Standard deviation, F: Female, M: Male

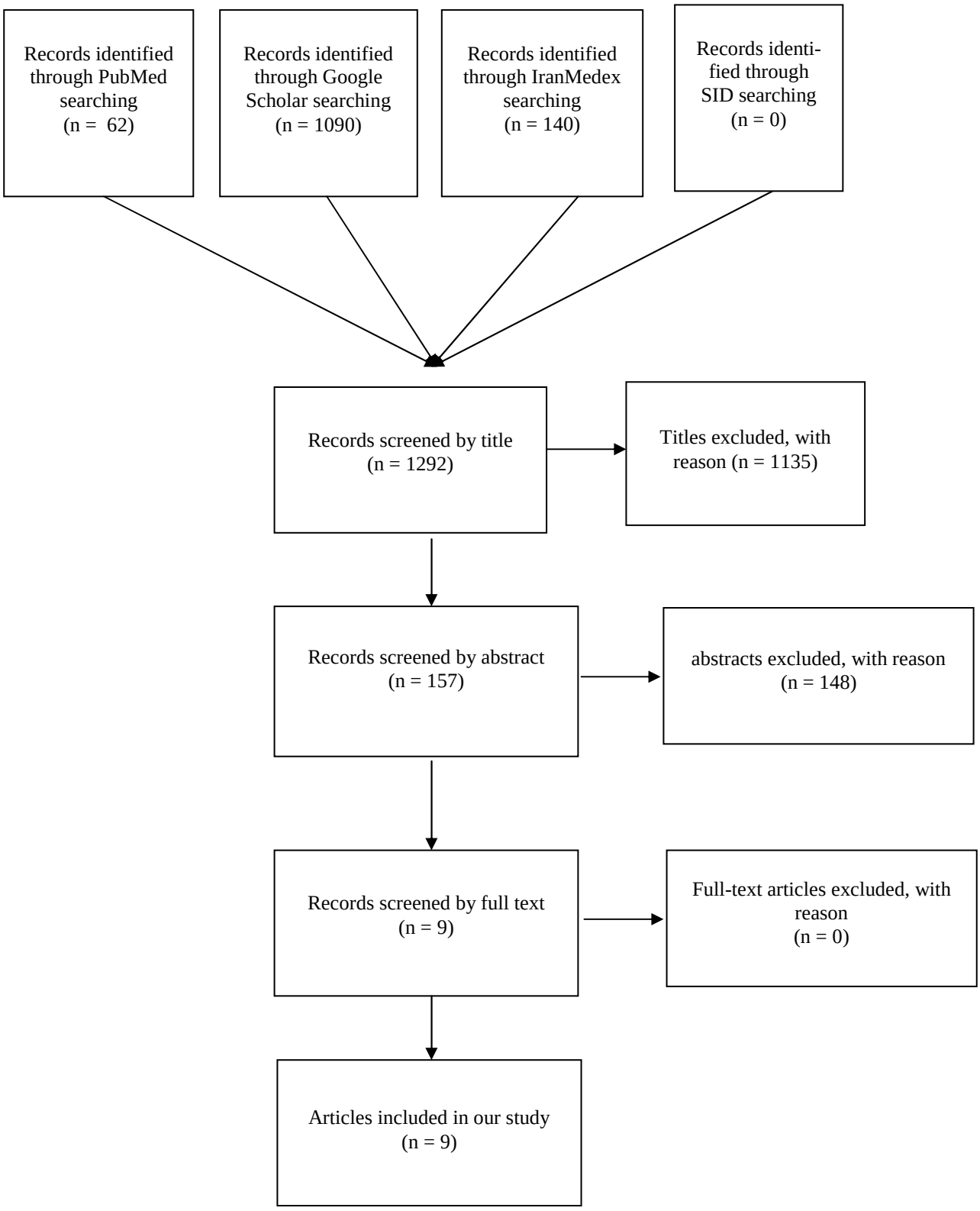

Figure 1. Diagram of the searches for articles to be included in the systematic review of dyspepsia in Iran

Tehran province using the Rome III criteria to determine the prevalence of dyspepsia. They found that 8.5% of subjects had dyspepsia.[17] In another community-based study in Tehran, the prevalence of dyspepsia was as low as 2.2%.[11] The prevalence of some dyspepsia related symptoms including early satiety and fullness was reported to be 20.9% among adults living

in Bam.[18]

Gender and dyspepsia prevalence: In most Iranian studies, the prevalence of dyspepsia was higher in women than in men (Table 1).[11, 12-14, 16-17, 19]

Age and dyspepsia prevalence: There were controversial results on the relationship between age and dyspepsia.[12, 14, 15, 17]

Dyspepsia subtypes: There are two main subtypes for dyspepsia; functional and structural. Clinical examination and evaluation is required to distinguish between the two subtypes.[20] However, the majority of studies conducted in Iranian populations have reported uninvestigated dyspepsia. Therefore, it cannot be determined whether the patients had functional or structural dyspepsia. Of all the articles reviewed in this study, two of them reported the prevalence of functional (dysmotility like) dyspepsia and structural (ulcer like) dyspepsia separately.[12-19] In a study conducted in Tehran, 3517 blood donors were asked to complete a questionnaire designed to distinguish between the prevalence of dysmotility like and ulcer like dyspepsia.[19] The results of this study showed a 2.8% prevalence for dysmotility like dyspepsia and a 7.3% prevalence for ulcer like dyspepsia. Khademolhosseini et al. in a cross sectional questionnaire study with a definition of "epigastric or upper abdominal pain or discomfort lasting at least 3 months" for dyspepsia, reported the prevalence to be 29.9% in Shiraz.[12] In this study, the prevalence of ulcer-like and dysmotility like dyspepsia was 27.9% and 26.2%, respectively. The remaining 45.9% were reported to be affected by unspecified dyspepsia.

DISCUSSION

Previous epidemiological studies, have reported a wide range of prevalence of dyspepsia in Iran. The wide range of results can be due to several reasons. One of the most important factors, which should be taken into consideration, is the differences in the diagnostic definition of dyspepsia used in each study. A few studies used the Rome criteria, while others studied cases based on dyspepsia symptoms. Duration of symptoms' manifestations also varies in different studies which can be one reason of such diversity in the reported prevalence of dyspepsia.

Iranian studies have been conducted in different cities and this could be considered another reason for the inconsistency in the reported prevalence of dyspepsia. This difference is due to the difference in lifestyles, cultural backgrounds, dietary habits, and etcetera of people of different cities.[21] The highest prevalence of dyspepsia in Iran (29.9%) was reported in a study conducted in Shiraz.[12] However this high prevalence might be due to the definition used in this study: "epigastric or upper abdominal pain or discomfort lasting at least 3 months". This study did not consider the overlapping symptoms of dyspepsia, gastroesophageal reflux disease and irritable bowel syndrome.

Epidemiological studies performed in Iran, demonstrated a higher prevalence of dyspepsia in women. However, in Asian population-based studies the prevalence of uninvestigated dyspepsia was not related to gender.[3]

The correlation between age and dyspepsia in Iran appears to be a controversial issue. Whilst some studies reported a direct correlation between age and dyspepsia,[15] others showed that the prevalence of dyspepsia decreases with age.[14] Previous studies in Asia could not show a correlation between dyspepsia and age.[3] Nonetheless, dyspepsia was reported to be more prevalent in younger age groups in European countries.[6]

Two studies have reported a correlation between marital status and prevalence of dyspepsia in Iran.[15,17] Both studies confirmed that dyspepsia was more prevalent in married subjects compared to single individuals. Barzkar et al. reported the prevalence of dyspepsia in single individuals, married individuals and widows/widowers to be 3.5%, 10.3% and 17.3%, respectively.[17]

There was a reverse relationship between educational level and dyspepsia prevalence in Iran.[12,15,17] Khademolhosseini et al. studied the prevalence of dyspepsia based on four educational levels and reported it to be 33.2% in illiterate individuals, 29.9% in individuals with primary school education, 29.2% in individuals with high school education, and 25% in individuals with university degrees.[17]

Two studies have investigated the economic burden of dyspepsia in Iran. Moghimi-Dehkordi et al. reported the direct cost imposed on each dyspeptic patient to be PPP$108 (purchasing power parity dollars), and the indirect cost to be PPP$12.1, annually.[11] In another study, Rezailashkajani et al. reported the economic burden caused by dyspepsia to be PPP$215 for each patient per year.[22] This consisted of the cost of possible drug purchase (especially proton pump inhibitors and antibiotics) and physician visits, as well as indirect costs such as inability to be present at work or to manage daily activities.

There are several structural and non structural reasons leading to dyspepsia. One of the risk factors that could be of great significance in Iranian populations is Helicobacter pylori (H.pylori) infection. However, although many studies have been conducted to demonstrate a correlation between H.pylori and dyspepsia, there is no definitive evidence on the subject.[1] Another risk factor for this syndrome is psychological problems.[4] It has been shown that psychological disorders such as anxiety and depression play an important role in the incidence and prevalence of all functional gastrointestinal disorders (FGIDs). In general, "abnormalities of several psychosocial dimensions were found to be associated with epigastric and hypersensitivity to gastric distention in functional dyspepsia".[4] Other risk factors playing a role in the prevalence of dyspepsia are genetic predisposition, early family environment, abnormal gastrointestinal motility, visceral hypersensitivity, gastrointestinal inflammation and bacterial flora of the gastrointestinal tract.[23] Few studies have been undertaken in Iranian populations, to investigate these potential risk factors.

There were serious limitations in the reviewed studies. Most studies were not population-based and had limitations in sampling, hence could not be a good representative of the general population. Moreover, the diagnostic definitions for dyspepsia used in these studies are very diverse, resulting in the considerable difference in the reported prevalence of dyspepsia among Iranian populations. Additionally, there is an overlap between symptoms of dyspepsia, gastroesophageal reflux disease and irritable bowel syndrome that should be taken into account in future studies. No study has been conducted to explore the natural history of dyspepsia in Iran, and this subject is highly recommended for future research.

Although a wide range of prevalence of dyspepsia in Iran has been reported, there are several studies that show a prevalence of over 15% which is considered to be high. It is recommended that epidemiologic community-based studies be carried out to determine the prevalence of dyspepsia in Iran and explore its risk factors.

It is worthy to note that, this review provides background knowledge for the "Study on the Epidemiology of Psychological, Alimentary Health and Nutrition" (SEPAHAN).[24] The data of SEPAHAN will explore the epidemiology of FGIDs in the Isfahan province and will be published later by the same study group.

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