

Knowledge and Determinants of Functional Dyspepsia Diagnosis among Primary Health Care Physicians, Ministry of Health, Jeddah 2019: A Cross Sectional Study

Omar Yamani^{1*}, Rayan Alqusaier¹, Rayan Shabaan¹, Yahya Makhdoom²

¹Family Medicine Department, King Fahd General hospital, Jeddah, Kingdom of Saudi Arabia.

²Consultant Family Medicine, Joint Program of Family Medicine, Jeddah, Kingdom of Saudi Arabia.

ABSTRACT

Background: Although functional dyspepsia is a common health problem in Saudi Arabia, there was a gap and misunderstanding among primary healthcare physicians regarding it with other organic gastrointestinal disorders.

Objectives: To assess the knowledge and perception of functional dyspepsia among primary health care physicians in Ministry of Health, Jeddah.

Subjects and Methods: A cross-sectional study was adopted among a sample of primary health care physicians working at Ministry of Health in Jeddah. A self-created validated questionnaire was utilized for data collection. It composed of two main parts: personal data and questions about Rome IV criteria used for diagnosis of functional dyspepsia.

Results: The study included 165 primary healthcare physicians. Females represent 61.2% of them. Their age ranged between 25 and 55 years with a mean (\pm SD) of 34.95 (\pm 6.9) years. Overall, the percentage of the functional dyspepsia knowledge score ranged between 27.3% and 90.9% with a mean \pm SD of 60.6 \pm 15.6% and Median (IQR) of 63.6% (45.5-72.7%). It was abnormally distributed as evident by significant Shapiro-wilk test, $p < 0.001$. Board certified physicians were more knowledgeable about functional dyspepsia than MBBS holders, $p = 0.044$. Regarding Job title, consultants had the highest percentage of functional dyspepsia

knowledge (mean rank = 100.72) whereas general practitioners had the lowest percentage of knowledge score (mean rank = 71.33), $p = 0.014$.

Conclusion: Knowledge of the primary healthcare physicians, Ministry of Health in Jeddah, Saudi Arabia about functional dyspepsia is intermediate. They were knowledgeable regarding many aspects of functional dyspepsia; however deficient knowledge was observed regarding some important issues.

Keywords: Functional Dyspepsia, Diagnosis, Knowledge, Primary Care Physicians.


*Correspondence to:

Dr. Omar Yamani,
Family Medicine Department,
King Fahd General hospital,
Jeddah, Kingdom of Saudi Arabia.

Article History:

Received: 08-04-2020, Revised: 06-05-2020, Accepted: 29-05-2020

Access this article online

Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2020.6.3.022	

INTRODUCTION

Dyspepsia is a complex condition comprising a spectrum of chronic and recurrent symptoms related to the upper gastrointestinal tract. The cardinal symptoms are epigastric pain, discomfort, including postprandial fullness and early satiety, which may overlap with heartburn and regurgitation.¹

FD is defined by the presence of one or more of the following: postprandial fullness, early satiation, epigastric pain, or burning, and no evidence of structural disease to explain the symptoms.²⁻⁴

The Rome IV criteria define dyspepsia as any combination of 4 symptoms: postprandial fullness, early satiety, epigastric pain, and epigastric burning that are severe enough to interfere with the usual activities and occur at least 3 days per week over the last 3 months with an onset of at least 6 months in advance.⁵

The umbrella term FD comprises patients from the following categories: {1} postprandial distress syndrome that is characterized by meal-induced dyspeptic symptoms suggestive of a motility disturbance; {2} epigastric pain syndrome, that refers to epigastric pain or epigastric burning that do not necessarily occur after meal ingestion, may occur during fasting and can be even improved by meal ingestion, is reminiscent of the clinical features typical of a peptic ulcer and needs to be distinguished from gastro-oesophageal reflux disease; and {3} overlapping PDS and EPS, characterized by meal-induced dyspeptic symptoms and epigastric pain or burning. The pathophysiology of FD is multifactorial and not fully understood.⁵ There is a global method to diagnose this problem which called "Rome IV criteria" helping

PHCP. FD patients have a poor quality of life due to their symptoms and the cost associated with increased social and economic burden.⁶ The prevalence of FD is about 10-30% worldwide, depending on the definition used and the geographical location.⁷ There was a gap and misunderstanding among PHCP regarding FD with other organic gastrointestinal disorders.

The main purpose of the study is to assess the knowledge and perception of Functional Dyspepsia diagnosis among primary health care physicians in Ministry of Health at Jeddah, Saudi Arabia, to increase the awareness and decrease the misdiagnosis of FD among them.

SUBJECTS AND METHODS

A cross-sectional study was adopted among physicians working at primary healthcare centers Ministry of Health in Jeddah "PHCCs) (n=47 centers). The total number of eligible physicians is 290. The sample size was calculated by Raosoft website for sample size calculation. It was 164 Physicians (based on an error of 5%, confidence interval of 95% and a prevalence of 50%), by adding 10% (which equal 17) to compensate for non-responders. the total sample size was estimated to be 181 physicians.

The sample was divided on the 47 PHCCs in Jeddah to get the average the number of PHC physicians in each center which is (~6). Then divided sample size (181) of PHCP by the average of number of PHCP (6) to get the number of PHCC should be included in the sampling technique (30). After that the sample was taken by simple random using random number generator by "stattrek". A self-created questionnaire validated by statistician and 2 gastroenterologist consultants from King Abdul-Aziz University Hospital was utilized for data collection. Then, it was

approved by the members of IRB of joint program of Family Medicine in Jeddah. The questionnaire was done in English language which known among physicians. The questionnaire composed of two main parts: personal data and questions about Rome IV criteria. The hard copy of self-administered questionnaire was distributed to medical director of each chosen PHCC to be collected one day after.

Statistical Package for Social Science, version 25 (SPSS) software was utilized for data analysis. Categorical variables were described in the form of frequency and percentage whereas quantitative continuous variables were presented as mean and standard deviation (SD) for normally distributed variables and median and interquartile range (IQR) for abnormally distributed variables. The overall knowledge score was abnormally distributed as evidenced by significant Shapiro-wilk, therefore non-parametric statistical tests were utilized for comparisons; Mann-Whitney to compare two groups, Kruskal-Wallis to compare more than two groups and Spearman's correlation to test for association between two continuous variables in one group. Statistical significance was determined at p-value < 0.05.

A pilot study was conducted in Al-Safa and Al-Bawadi PHCC of MOH in Jeddah to test the questionnaire applicability and understanding before starting the actual research. As a feedback little modification were made accordingly. The researcher took 10% of sample size which equal (18 physicians) then excluded these centers from the sample.

An ethical approval from IRB at joint program of family medicine in Jeddah to conduct the research was obtained. Permissions from PHCC directors to conduct the research also were requested. Written consents from all participants were obtained.

Table 1: Demographic characteristics of the participants (n=165)

		Frequency	Percentage
Gender	Male	64	38.8
	Female	101	61.2
Nationality	Saudi	153	92.7
	Non-Saudi	12	7.3
Age (years)	25-55	109	66.1
	36-45	41	24.8
	>45	15	9.1
	Range		25-55
	Mean ± SD		34.95 ± 6.9
Marital status	Single	42	25.5
	Married	116	70.3
	Divorced / widowed	7	4.2
Qualification	MBBS	106	64.2
	Diploma/Master	12	7.3
	Board certified	47	28.5
Job title	General practitioner	72	43.6
	Resident	39	23.6
	Specialist	36	21.8
	Consultant	18	10.9
Years of experience after graduation	≤5	65	39.4
	6-10	52	31.5
	>10	48	29.1
Average number of patients seen daily	≤25	42	25.5
	26-49	81	49.0
	≥50	42	25.5

Table 2: Responses of the primary health care physicians to functional dyspepsia knowledge statements

	Correct answer	
	No.	%
▪ One or more of the following symptoms should be present in functional dyspepsia except?: Vomiting	86	52.1
▪ The epigastric pain syndrome (EPS) has meal induced dyspeptic symptoms? False	26	15.8
▪ Helicobacter pylori infection is considered a possible cause of dyspepsia: True	146	88.5
▪ When heartburn and regurgitation are dominant symptoms, it is likely suggesting diagnosis of: Gastroesophageal reflux disease (GERD)	149	90.3
▪ Most of the cases with functional dyspepsia are associated with inherited organic disorders in the stomach: No	109	66.1
▪ Functional dyspepsia is a heterogeneous disorder characterized by relapsing and remitting symptom: True	128	77.6
▪ The reported prevalence of functional dyspepsia in Saudi Arabia is: ≈40%	29	17.6
▪ One of the following is not a subcategory of functional dyspepsia: Irritable bowel syndrome (IBS).	113	68.5
▪ To suspect functional dyspepsia, the symptoms should be present for: last 3 months with onset since at least 6 months.	118	71.5
▪ Endoscopy is one of the essential tools for differentiating the diagnosis of functional dyspepsia: True	91	55.2
▪ The commonest symptom overlapping between Functional Dyspepsia and IBS is: Bothersome postprandial fullness	105	63.6

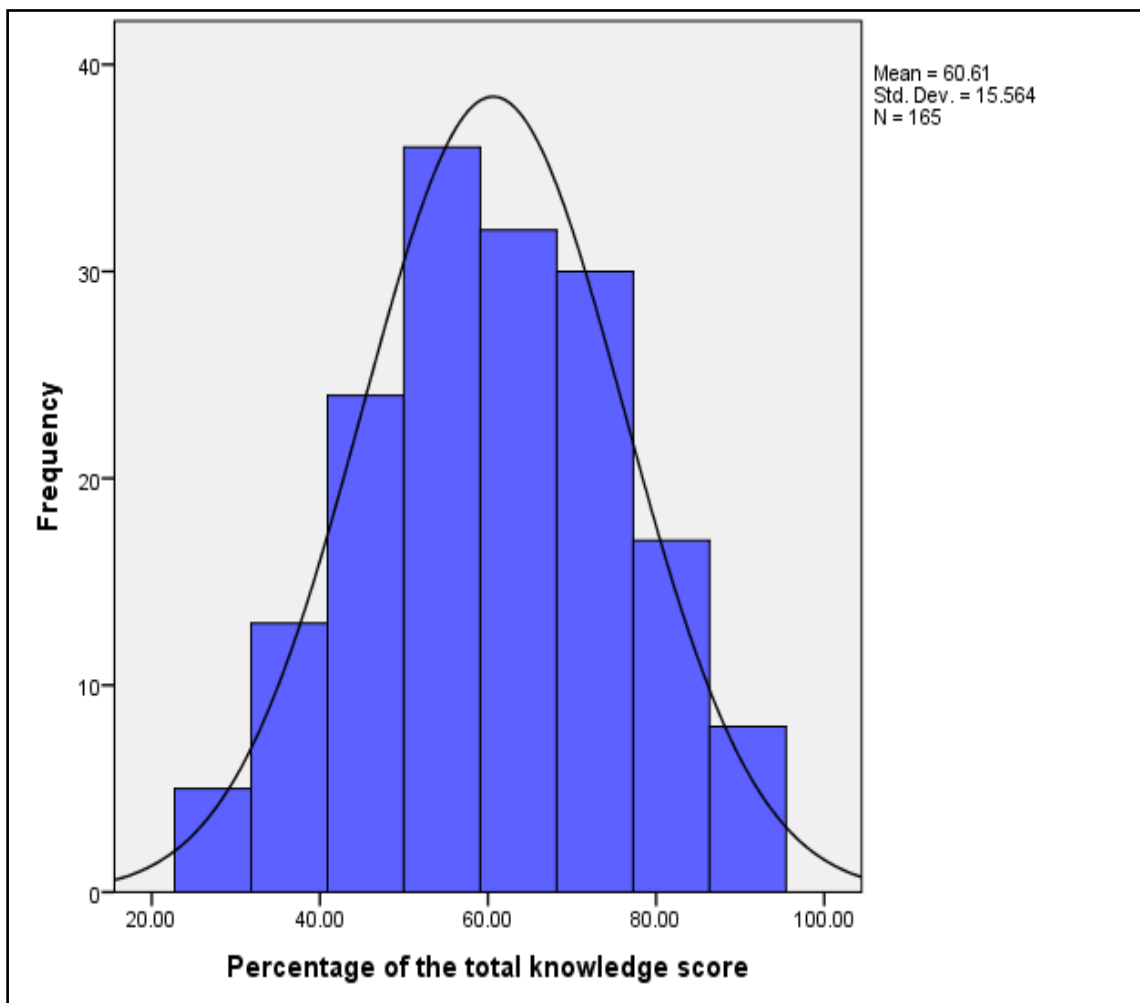


Figure 1: Distribution of percentage of functional dyspepsia knowledge score among the primary healthcare physicians

RESULTS

The study included 165 primary healthcare physicians representing 56.9% of the total primary healthcare physicians, MOH in Jeddah. Table 1 summarizes their demographic characteristics. Females represent 61.2% of them. Majority of them were Saudi nationals (92.7%). Their age ranged between 25 and 55 years with a mean (\pm SD) of 34.95 (\pm 6.9) years. Most of them (70.3%) were married. Almost two-thirds of the participants (64.2%) were MBBS holders whereas 28.5% were Board certified. General practitioners represent 43.6% of the sample whereas consultants represent 10.9% of it. More than one-third of the physicians (39.4%) had an experience of five years or less after graduation whereas 29.1% had an experience exceeded 10 years. Nearly half of the physicians (49%) reported an average of 26-49 patients seen per day.

Knowledge About Functional Dyspepsia

Majority of the primary healthcare physicians knew correctly that when heartburn and regurgitation are dominant symptoms, it is likely suggesting diagnosis of gastroesophageal reflux disease (GERD) (90.3%). *Helicobacter pylori* infection is considered a possible cause of dyspepsia (88.5%), and functional dyspepsia is a heterogeneous disorder characterized by relapsing and remitting symptoms (77.6%). More than two-thirds of the PHC physicians could recognize that the symptoms should be present for last 3 months with onset since at least 6 months to suspect functional dyspepsia (71.5%), irritable bowel syndrome (IBS), is not a subcategory of functional dyspepsia (68.5%), most of the cases with functional dyspepsia are not associated with inherited organic disorders in the stomach (66.1%) and the commonest symptom overlapping between Functional Dyspepsia and IBS is

bothersome postprandial fullness (63.6%). On the other hand, less than a fifth of the participants knew that the reported prevalence of functional dyspepsia in Saudi Arabia is \approx 40% (17.6%) and the epigastric pain syndrome (EPS) has no meal induced dyspeptic symptoms (15.8%). (Table 2)

Overall the percentage of the functional dyspepsia knowledge score ranged between 27.3% and 90.9% with a mean \pm SD of 60.6 \pm 15.6% and Median (IQR) of 63.6% (45.5-72.7%). It was abnormally distributed as evident by significant Shapiro-wilk test, $p < 0.001$. (Figure 1)

Demographic Factors Associated with Knowledge About Functional Dyspepsia

Female physicians were more knowledgeable than male physicians regarding functional dyspepsia (mean rank was 88.39 versus 74.50). However, this difference was not statistically significant, $p = 0.065$. Board certified physicians were more knowledgeable about functional dyspepsia than MBBS holders (mean ranks were 96.83 and 76.30, respectively). This difference was statistically significant, $p = 0.044$. Regarding Job title, consultants had the highest percentage of functional dyspepsia knowledge (mean rank = 100.72) whereas general practitioners had the lowest percentage of knowledge score (mean rank = 71.33), $p = 0.014$. Physicians' nationality, marital status, years of experience after graduation and average number of patients seen daily were not significantly associated with percentage of functional dyspepsia knowledge score. (Table 3)

From Figure 2, there was a non-significant positive correlation between the percentage of functional dyspepsia total knowledge score and physician's age (Spearman's correlation coefficient (r) = 0.01, $p = 0.873$)

Table 3: Physicians' demographic factors associated with percentage of functional dyspepsia knowledge

		Percentage of the total knowledge score			p-value
		Median	IQR	Mean rank	
Gender	Male	63.6	45.5-70.5	74.50	0.065
	Female	63.6	54.5-72.7	88.39	
Nationality	Saudi	63.6	45.5-72.7	82.22	0.447
	Non-Saudi	54.5	54.5-79.5	92.96	
Marital status	Single	54.5	45.5-72.7	76.99	0.385
	Married	63.6	54.5-72.7	86.09	
	Divorced / widowed	54.5	45.5-72.7	67.86	
Qualification	MBBS	54.5	45.5-72.7	76.30	0.042
	Diploma/Master	63.6	47.7-84.1	88.04	
	Board certified	63.6	54.5-72.7	96.83	
Job title	General practitioner	54.5	45.5-63.6	71.33	0.014
	Resident	63.6	45.5-72.7	82.50	
	Specialist	63.6	54.5-81.8	98.03	
	Consultant	63.6	54.6-75	100.72	
Years of experience after graduation	≤ 5	63.6	45.5-72.7	82.58	0.994
	6-10	63.6	54.5-72.7	82.96	
	> 10	54.5	54.5-72.7	83.60	
Average number of patients seen daily	≤ 25	63.6	45.5-72.7	82.75	0.914
	26-49	63.6	45.5-72.7	84.38	
	≥ 50	54.5	54.5-72.7	80.60	

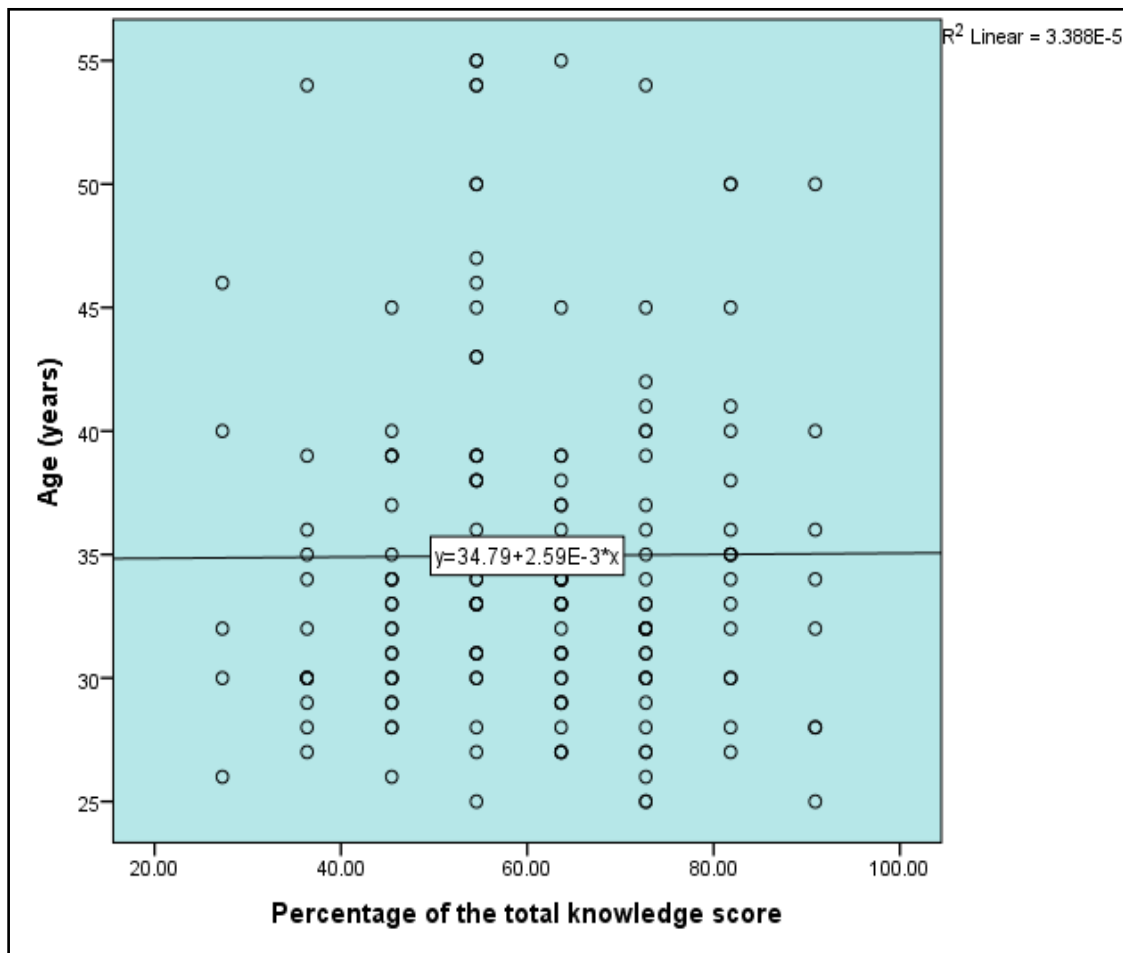


Figure 2: Correlation between percentage of the functional dyspepsia total knowledge score and physicians` age

DISCUSSION

Functional dyspepsia is not uncommon clinical problem encountered by primary healthcare physicians.^{8,9} It's prevalence in Saudi Arabia according to an old hospital-based survey with 40 patients was 40%.^{10, 11}

Worldwide and Saudi Arabia is not an exception, little is known about the knowledge of the primary care physician regarding the magnitude, symptomatology and diagnosis of functional dyspepsia. Therefore, the present study was carried out to assess the level of knowledge about functional dyspepsia and define factors associated with it among primary health care physicians working at Ministry of Health, Jeddah, Saudi Arabia.

MacFarlane reported that the cardinal symptoms of gastroesophageal reflux disease are heartburn and regurgitation.¹² Fortunately, in the current study, majority of the primary healthcare physicians could recognize that. Also, it has been reported that predominance of either heartburn or regurgitation is sufficient for diagnosis of gastroesophageal reflux disease.¹³

As documented by Tack et al.¹⁴ that functional dyspepsia is a heterogeneous disorder characterized by relapsing and remitting symptoms, majority of the physicians in the current study knew this fact. In a similar study carried out in Japan¹⁵, the terms related to functional dyspepsia were known by 62-68.9% of internists.

There is no consensus regarding the role of *Helicobacter pylori* infection in functional dyspepsia as some meta-analyses suggested that the eradication of *Helicobacter pylori* infection lead to a significant therapeutic advantage as compared to placebo.

However, some others did not confirm that.¹⁶ Therefore, further investigations are required. In the present survey, most of the primary care physicians documented that helicobacter pylori infection is considered a possible cause of dyspepsia.

In accordance with Brun and Kuo (2010)¹⁷, in the present study, most of the PHC physicians could recognize that the symptoms should be present for last 3 months with onset since at least 6 months to suspect functional dyspepsia.

Majority of physicians in this study agreed that most of the cases with functional dyspepsia are not associated with inherited organic disorders in the stomach as documented by Bharucha et al.¹⁸

It has been documented that endoscopic examination of the upper gastrointestinal tract with macroscopic and histopathological evaluation is an essential tool to discriminate between the organic and functional reasons of dyspepsia.^{19,20} In the present study, almost half of the primary care physicians could recognize that endoscopy is one of the essential tools for differentiating the diagnosis of functional dyspepsia.

In a study carried out in Japan¹⁵, about 40% of internists were aware of the Rome criteria for diagnosis of functional dyspepsia. In another study carried out by Gladman and Gorard, only 12% of general practitioners compared to 83% of consultants were aware of Rome criteria. However, despite the higher awareness among consultants, only 40% reported applying Rome criteria in their practice compared to only 3% of general practitioners.²¹ In the present study, knowledge regarding Rome IV criteria was variable between physicians.

In the current survey, the overall percentage of the functional dyspepsia knowledge score ranged between 27.3% and 90.9% with a mean±SD of 60.6±15.6% and Median (IQR) of 63.6% (45.5-72.7%). Primary care physicians were knowledgeable regarding most aspects of functional dyspepsia, however deficient knowledge was observed regarding the prevalence of functional dyspepsia in Saudi Arabia which is approximately 40%.^{10,11} Also, there was a deficient knowledge regarding epigastric pain syndrome (EPS).

In the current study, although not statistically significant, female physicians were more knowledgeable than male physicians regarding functional dyspepsia. Similarly in Japan¹⁵, physicians' gender was not significantly associated with knowledge about functional dyspepsia.

As expected, the present study revealed that Board certified physicians were more knowledgeable about functional dyspepsia than MBBS holders. Quite similar to that, in Japan, the Japanese Society of Gastroenterology (JSGE) certified physicians were more knowledgeable regarding functional dyspepsia.¹⁵ Regarding Job title, also, it is quite accepted to observe that consultants had the highest percentage of functional dyspepsia knowledge compared to lower ranked physicians. The same had been observed in a study carried out in UK.²¹

Physicians' nationality, marital status, years of experience after graduation and average number of patients seen daily were not significantly associated with percentage of functional dyspepsia knowledge score in the current study. However, in Japan, physicians caring many patients were more knowledgeable about functional dyspepsia.¹⁵

Physicians' age was not associated with functional dyspepsia knowledge. The same has been observed in a similar study carried out recently in Japan.¹⁵

STRENGTHS AND LIMITATIONS

Up to our knowledge, this study is the first of its kind in Saudi Arabia to assess the knowledge of primary care physicians about the diagnosis of functional dyspepsia which is a common disorder encountered in primary care settings. Also, the study included more than half of the total target population which allows generalizability of results over the entire population of PHC physicians in MOH. However, the cross-sectional design applied in the study doesn't allow the time relation of the cause-effect inference. Also, limitation of the study to PHC physicians working in MOH is considered a limitation to generalize the results over the total PHC physicians in Jeddah working in MOH or other disciplines.

In conclusion, knowledge of the primary healthcare physicians, Ministry of Health in Jeddah, Saudi Arabia about functional dyspepsia is intermediate. They were knowledgeable regarding many aspects of functional dyspepsia; however deficient knowledge was observed regarding some important issues. Board certified physicians and consultants were more knowledgeable about functional dyspepsia than lower qualified physicians.

According to findings of this study, the following are recommended:

1. Organizing continuous medical education activities with hours to primary healthcare physicians regarding different aspects of functional dyspepsia including diagnosis, particularly for lower qualified physicians.

2. Further study is needed to assess practice and utilization of Rome IV criteria in diagnosis of FD among primary healthcare physicians.
3. Inclusion of primary healthcare physician from other disciplines to have a complete picture of the situation in Jeddah.

REFERENCES

1. Talley NJ, Ford AC. Functional dyspepsia. *N Engl J Med*. 2015;373:1853–63. doi: 10.1056/NEJMra1501505.
2. Enck P, Azpiroz F, Boeckxstaens G, Elsenbruch S, Feinle-Bisset C, Holtmann G et al. Functional dyspepsia. *Nat Rev Dis Primers*. 2017 Nov 03;3:17081.
3. Park JK, Huh KC, Shin CM, Lee H, Yoon YH, Song KH et al. Korean Society of Neurogastroenterology and Motility. [Current issues in functional dyspepsia]. *Korean J Gastroenterol*. 2014 Sep 25;64(3):133-41.
4. Madisch A, Andresen V, Enck P, Labenz J, Frieling T, Schemann M. The Diagnosis and Treatment of Functional Dyspepsia. *Dtsch Arztebl Int*. 2018 Mar 30;115(13):222-32.
5. Stanghellini V, Chan FK, Hasler WL, Malagelada JR, Suzuki H, Tack J, Talley NJ: Gastrointestinal disorders. *Gastroenterology* 2016; 150: 1380–92.
6. Lacy BE, Weiser KT, Kennedy AT, Crowell MD, Talley NJ. Functional dyspepsia: the economic impact to patients. *Aliment Pharmacol Ther*. 2013; 38: 170-7.
7. Mahadeva S, Goh KL. Epidemiology of functional dyspepsia: a global perspective. *World J Gastroenterol*. 2006;12:2661–6.
8. Musana AK, Yale SH, Lang KA. Managing dyspepsia in a primary care setting. *Clin Med Res*. 2006 Dec; 4(4): 337–42.
9. Okumura T, Tanno S, Ohhira M, Tanno S. Prevalence of functional dyspepsia in an outpatient clinic with primary care physicians in Japan. *Journal of Gastroenterology* 2010;45:187-94.
10. Al-Karawi MA, Ahmed AM, Shariq S, Mohamed AE. Evaluation of gastroesophageal reflux disease results in 40 patients. *Saudi Med J* 1992;13:407-11.
11. Zacharakis G, Alharbi MS, Alsalmi MM, Alotibi SB, Algaradi YA, Alsadiq FN, et al. Prevalence of functional dyspepsia symptoms in Saudi Arabia: the role of Rome IV criteria. 16th SGA International Saudi digestive disease forum 2018 At: 1-3 February, Riyadh 2018.
12. MacFarlane B. Management of gastroesophageal reflux disease in adults: a pharmacist's perspective. *Integr Pharm Res Pract*. 2018 Jun 5;7:41-52. doi: 10.2147/IPRP.S142932.
13. Vakil N, van Zanten SV, Kahrilas P, Dent J, Jones R. Global Consensus Group. The Montreal definition and classification of gastroesophageal reflux disease: a global evidence-based consensus. *Am J Gastroenterol*. 2006;101(8):1900–20.
14. Tack J, Bisschops R, Sarnelli G. Pathophysiology and treatment of functional dyspepsia. *Gastroenterology*. 2004 Oct;127(4):1239-55.
15. Kaneko H, Tsuboi H. Analysis on awareness of functional dyspepsia and Rome criteria among Japanese internists by the self-administered questionnaires. *J Neurogastroenterol Motil* 2014; 20:94-103. <http://dx.doi.org/10.5056/jnm.2014.20.1.94>
16. Zullo A, Hassan C, De Francesco V, Repici A, Manta R, Tomao S et al. Helicobacter pylori and functional dyspepsia: an unsolved issue?. *World J Gastroenterol*. 2014;20(27):8957–63. doi:10.3748/wjg.v20.i27.8957

17. Brun R, Kuo B. Functional dyspepsia. *Therap Adv Gastroenterol.* 2010;3(3):145–64. doi:10.1177/1756283X10362639
18. Bharucha AE, Chakraborty S, Sletten CD. Common Functional Gastroenterological Disorders Associated With Abdominal Pain. *Mayo Clin Proc.* 2016;91(8):1118–32. doi:10.1016/j.mayocp.2016.06.003
19. Piatek-Guziewicz A, Przybylska-Feluś M, Dynowski W, Zwolińska-Wcisło M, Lickiewicz J, Mach T. Endoscopic and histopathological findings of the upper gastrointestinal tract in patients with functional and organic dyspepsia. *Przegl Lek.* 2014;71(4):204-9.
20. Biswas K, Hazra R, Chakraborty S, Bose R, Garain S. Diagnosis of Functional Dyspepsia on the basis of Rome III clinical diagnostic criteria in a tertiary care hospital: A cross-sectional observational study. *Asian Journal of Medical Sciences* 2018 Jan-Feb 2018;9(1): 55.
21. Gladman LM, Gorard DA. General practitioner and hospital specialist attitudes to functional gastrointestinal disorders. *Aliment Pharmacol Ther* 2003;17:651-4.

Source of Support: Nil.

Conflict of Interest: None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.

This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Omar Yamani, Rayan Alqusaier, Rayan Shabaan, Yahya Makhdoom. Knowledge and Determinants of Functional Dyspepsia Diagnosis among Primary Health Care Physicians, Ministry of Health, Jeddah 2019: A Cross Sectional Study. *Int J Med Res Prof.* 2020 May; 6(3):100-06. DOI:10.21276/ijmrp.2020.6.3.022