Awareness and Practice Patterns of Celiac Disease Among Family Physicians: A Questionnaire-Based Study in Relation to Years in Practice and Awareness of Local Guidelines

Nimet Yılmaz*

Nimet Yılmaz: Dr. Öğr. Üyesi, University of SANKO, Faculty of Medicine, Department of Internal Medicine, Division of Gastroenterology, Gaziantep
Email: drnimet23@hotmail.com
ORCID iD: https://orcid.org/0000-0002-3092-6037

Öz

Aile Hekimleri Arasında Çölyak Hastalığı Farkındalığı ve Pratik Modelleri: Meslek Yıllarına ve Yerel Kılavuzların Farkındalığına İlişkin Anket Tabanlı Bir Çalışma

Amaç: Aile hekimlerinin çölyak hastalığı (ÇH) ile ilgili farkındalık ve klinik pratikleri, mesleki yıllara ve yerel klavuzların farkındalığına göre değerlendirmek.

Yöntemler: Gaziantep'teki birinci basamak kliniklerinde çalışan toplam 147 aile hekimi bu kesitsel ankete gönüllü olarak dahil edildi. Anket formunda hekimlerin sosyodemografik özellikleri, ÇH farkındalıkları (serolojik testler, tarama endikasyonları, hastalık tipleri) ve ÇH'dan şüphelenme sıklığı, bağırsak biyopsisi, malignite riski, glutensiz diyet katılığı ve kriterleri, IgA taraması ve yerel kılavuzlar hakkında farkındalıkları sorgulandı. Anket formu yüz yüze görüşme yöntemi ile uygulanmıştır.

Bulgular: Serolojik analiz için en fazla endikasyonun kronik ishal varlığı (%33,7) ve hastalığın tipik formunun (%49,8) daha yaygın olarak tanındığı bildirilmiştir. Hekimlerin sadece %17,7'si erişkin hastalarda sıklıkla ÇH'dan şüphelendiklerini, % 38.1'i sık sık hastaları ÇH için serolojik testlere sevk ettiklerini ve % 36.1'i seroloji pozitif hastalar için her zaman bağırsak biyopsisi önerdiklerini bildirmiştir. Genel olarak, hekimlerin %63,5'i katı glutensiz diyetin ÇH'da daima uygulanması gerektiğini düşünmektedir. %51'i ÇH'na benzer semptomları olup seroloji negatif hastalarına glutensiz bir diyet önerdiklerini ve %19,7'si ÇH'da IgA taraması önerdiklerini bildirmiştir. Bir doktorun seroloji pozitif hastalar için bağırsak biyopsisini her zaman önerme olasılığı (42.7% vs. 27.7%, p=0.028) kılavuzların farkında olmasıyla önemli ölçüde artmıştır.

Sonuç: Bulgularımız, erişkin başlangıçlı ve atipik semptomlar konusunda ÇH hakkında düşük düzeyde farkındalık ve mesleki yıllara bakılmaksızın aile hekimleri arasında ÇH'da tanı ve takip hakkında yetersiz bilgi olduğunu göstermektedir. Buna göre, bulgularımız, özellikle yetişkinlerde semptomların tanınması, bağırsak biyopsisi ile kombine serolojik testlerin kullanımı ve uygun öneriler açısından, aile hekimleri arasında eğitim toplantıları ve çalıştaylar yoluyla ÇH farkındalığını artırma ve kılavuzlara daha fazla uyma ihtiyacını göstermektedir.

Anahtar Kelimeler: Çölyak Hastalığı, Aile Hekimi, Farkındalık

Abstract

Awareness and Practice Patterns of Celiac Disease Among Family Physicians: A Questionnaire-Based Study in Relation to Years in Practice and Awareness of Local Guidelines

Objective: To evaluate awareness and practice patterns of family physicians regarding celiac disease (CD), in relation to years in practice and awareness of local guidelines

Methods: A total of 147 family physicians (mean age 39.4 years, range, 24 to 64 years and 52.4% were female) working in primary care clinics across Gaziantep province were included on a voluntary basis in this cross-sectional questionnaire-survey. The questionnaire form elicited items on sociodemographic characteristics of physicians (age, gender, years in practice), their awareness of CD (serological tests, screening indications, types of the disease) and practice patterns in CD including frequency of suspected diagnosis, serological tests, intestinal biopsy, risk of malignancy, gluten-free diet strictness and criteria, IgA screening and awareness of local guidelines. The questionnaire form was applied via face-to-face interview method.

Results: Presence of chronic diarrhea (33.7%) was reported to be the most indication for serological analysis and typical form of the disease (49.8%) was reported to be more commonly recognized. Only 17.7% of physicians reported that they frequently suspect CD in adult patients, 38.1% reported that they frequently refer patients for serological tests for CD and 36.1% reported that they always recommend intestinal biopsy for serology positive patients. Overall, 63.5% of physicians considered strict the gluten-free diet to always be applied by patients with CD, 51% reported that they recommend a gluten-free diet to serology negative patient with symptoms similar to CD and 19.7% reported that they recommend IgA screening for patients with CD. No significant difference was noted in practice pattern variables with respect to years in practice, while the likelihood of a physician to always recommend intestinal biopsy for serology positive patients (42.7% vs. 27.7%, p=0.028) significantly increased with the awareness of guidelines.

Conclusion: In conclusion, our findings indicate low level of awareness about CD in terms of adult-onset and atypical presentations and poor knowledge regarding the diagnosis and practice patterns in CD among family physicians, regardless of the years in practice. Accordingly, our findings indicate a need to increase awareness of CD and improve adherence to guidelines via educational sessions and workshops among family physicians, particularly in terms of the recognition of adult onset of symptoms, the utility of serological tests combined with intestinal biopsy and proper recommendation of gluten-free diet in individuals with CD.

Keywords: Celiac Disease; Family Care Physicians; Awareness

INTRODUCTION

Celiac disease (CD) is a chronic multi-organ disease which develops due to autoimmune reaction to dietary gluten that occurs in subjects with underlying genetic predisposition and improves with the removal of gluten from the diet (1-4). Although, formerly considered a rare malabsorption syndrome of childhood, CD is now increasingly recognized as a multi-systemic disorder that can be diagnosed at any age (2). The prevalence of CD in general adult population has been estimated to be 1:87 (1.2%) in Turkey (5) as consistent with 1-2% prevalence reported in European countries (6).

However, CD is considered as a disease that remains largely underdiagnosed (7-9) with delays in diagnosis of symptomatic patients often exceeding 10 years (10,11), possibly due to higher prevalence of atypical presentation than typical presentation of the disease and the fact that most of individuals currently diagnosed with CD are adults (12,13).

Hence, lack of physicians' awareness regarding CD is suggested to play a critical role in under-diagnosis of CD in terms of poor recognition of the clinical manifestations and underuse of diagnostic serological tests such as anti-tissue transglutaminase (TGA) and anti-endomysium (EMA) antibodies as combined with duodenal biopsies showing typical histological features (14-17).

The awareness of family physicians regarding CD is considered very important given that CD may involve multiple organs and most of patients initially present to family physicians with symptoms before the medical specialist (15,18,19).

However, limited data are available regarding the primary care daily practice of CD management by family physicians. This questionnaire-based study was therefore designed to evaluate awareness and practice patterns of family physicians regarding CD in relation to years in practice and awareness of local guidelines.

METHOD

Study population

A total of 147 family physicians (mean age 39.4 years, range, 24 to 64 years and 52.4% were female) working in primary care clinics across Gaziantep province were included on a voluntary basis in this cross-sectional questionnaire-survey.

The Questionnaire

The questionnaire form elicited items on sociodemographic characteristics of physicians

(age, gender, years in practice), their awareness of CD (serological tests, screening indications, types of the disease) and practice patterns in CD including frequency of suspected diagnosis, serological tests, intestinal biopsy, risk of malignancy, gluten-free diet strictness and criteria, serum immunoglobulin A (IgA) screening and awareness of guidelines on the diagnosis, treatment and follow up for CD for family physicians issued by the Ministry of Health (MoH). The questionnaire form was applied via face-to-face interview method.

Study parameters

Sociodemographic characteristics of physicians, their awareness of CD and practice patterns in CD were recorded for each physician. Physician characteristics and practice patterns were also evaluated with respect to years in practice and awareness about MoH guidelines on CD.

Statistical Analysis

Statistical analysis was made using IBM SPSS Statistics for Windows, version 25.0 (IBM Corp., Armonk, NY). Pearson Chi-Square test (Exact, Monte Carlo) with post Hoc Benjamini-Hochberg correction and Fisher Freeman Halton test (Monte Carlo) were used for the comparison of categorical data. Mann Whitney U test (Monte Carlo) was used to analyze parametric variables. Data were expressed as mean (standard deviation, SD), median (minimum-maximum) and percent (%) where appropriate. $p < 0.05$ was considered statistically significant.

Ethical Declaration

Permission letter dated 03.05.2019 and number 07 was obtained from Sanko University clinical research ethics committee and Helsinki Declaration rules were followed to conduct this study. Written informed consent was obtained from each subject following a detailed explanation of the objectives and protocol of the study.

Table 1. Physician characteristics and awareness about celiac disease		
Physician characteristics		
Age (year)	mean(SD)	39.4(9.8)
	median (min/max)	36 (24/64)
Gender, n(%)		
Female		77 (52.4)
Male		70 (47.6)
Years in practice	mean(SD)	14.2(8.3)
	median (min/max)	11 (3 /36)
	≤11 years, n(%)	74(50.3)
	>11 years, n(%)	73(49.7)
Awareness of celiac disease, n(%)		
What are the most commonly used serological tests in screening for celiac disease?		
Anti- tissue transglutaminase antibodies		100 (39.2)
Anti-endomysial antibodies		74 (29.0)
Anti-gliadin antibodies		81 (31.8)
Which of the following conditions indicates serological screening study for celiac disease?		
Chronic diarrhea		128 (33.7)
Abdominal pain without a known etiology		68 (17.9)
Weight loss		45 (11.8)
Constipation		10 (2.6)
Treatment resistant iron deficiency anemia		49 (12.9)
Infertility		3 (0.8)
Unexplained elevation in liver enzymes		8 (2.1)
Type I diabetes mellitus		43 (11.3)
Autoimmune thyroiditis		6 (1.6)
Osteoporosis		1 (0.3)
Dermatitis herpetiformis		13 (3.4)
Autoimmune hepatitis		6 (1.6)
Are you familiar with any of the following celiac disease types?		
Typical		118 (49.8)
Atypical		56 (23.6)
Silent		45 (19.0)
Latent		18 (7.6)

RESULTS

Physician characteristics and awareness of CD

Overall, mean age of participants was 39.4 years (range, 24 to 64 years) and 52.4% were female physicians. Mean years in practice was 14.2 years (range, 3 to 36 years) being ≤11 years in 50.3% and >11 years in 49.7% of physicians (Table 1).

Physicians reported TGA (39.2%) EMA (29.0%) and anti-gliadin antibodies (31.8%) to be commonly used serological tests in the diagnosis of CD with similar rates (Table 1).

Presence of chronic diarrhea (33.7%) was reported to be the most indication for serological analysis, while abdominal pain without a known etiology (17.9%), treatment resistant iron deficiency anemia (12.9%), weight loss (11.8%), and type I diabetes mellitus (11.3%) were less indications for serological analysis (Table 1).

Typical form of the disease (49.8%) was reported to be more commonly recognized among physicians than atypical (23.6%), silent (19.0%) and latent (7.6%) forms of the disease (Table 1).

Practice patterns

Only 17.7% of physicians reported that they frequently suspect CD in adult patients, 38.1% reported that they frequently refer patients for serological tests for CD, 36.1% reported that they always recommend intestinal biopsy for serology positive patients, 36.1% reported that they don't know whether or not CD is associated with a malignancy risk and 49.7% reported its association with moderate-to-high malignancy risk (Table 2).

Overall, 63.5% of physicians considered strict the gluten-free diet to always be applied by patients with CD, 51% reported that they recommend a gluten-free diet to serology negative patient with symptoms similar to CD, 19.7% reported that they recommend IgA screening for patients with CD (Table 2).

Overall, 44.9% of physicians were aware of monthly payment given to CD patients by Social Security Institution (SSI) and 55.8% were aware of the guidelines on the diagnosis, treatment and follow up for CD for family physicians issued by the MoH (Table 2)

Practice patterns with respect to years in practice and awareness of CD guidelines

No significant gender influence was noted on years in practice or awareness of MoH CD guidelines (Table 2).

No significant difference was noted in practice pattern variables with respect to years in practice (Table 2).

The likelihood of a physician to always recommend intestinal biopsy for serology positive patients (42.7% vs. 27.7%, p=0.028) and to know that CD patients receive a monthly payment from SSI (78.0% vs. 3.1%, p<0.001) significantly increased with the awareness of guidelines. No significant difference was noted in other practice pattern variables with respect to awareness of guidelines (Table 2).

DISCUSSION

Our findings revealed low levels of awareness and clinical suspicion among family physicians regarding the CD in adults, unless presented with chronic diarrhea and/or typical form of the disease. No significant difference was noted in practice patterns with respect to years in practice or awareness of local guidelines (apart from utility of diagnostic biopsy).

Table 2. Physician characteristics and practice patterns according to years in practice and awareness of local guidelines

	Total (n=147)	Years in practice		p value	Awareness about local guidelines		p value
	(n=147)	≤11 (n=74)	>11 (n=73)		No (n=65)	Yes (n=82)	
Physician characteristics							
Age (year), median (min-max)	36 (24 /64)	32 (24 /41)	45 (34 / 64)	**<0.001** [u]	40 (25 / 60)	35 (24 / 64)	0.100 [u]
Gender, n(%)							
Female	77 (52.4)	43 (58.1)	34 (46.6)	0.188 [pe]	36 (55.4)	41 (50.0)	0.618 [pm]
Male	70 (47.6)	31 (41.9)	39 (53.4)		29 (44.6)	41 (50.0)	
Practice patterns							
How often you suspect celiac disease in your adult patients?							
Frequently	26 (17.7)	14 (18.9)	12 (16.4)	0.489 [pm]	9 (13.8)	17 (20.7)	0.111 [pm]
Average	56 (38.1)	31 (41.9)	25 (34.2)		21 (32.3)	35 (42.7)	
Rarely	65 (44.2)	29 (39.2)	36 (49.3)		35 (53.8)	30 (36.6)	
How often you refer your patients for serological tests for celiac disease?							
Frequently	56 (38.1)	28 (37.8)	28 (38.4)	0.651 [pm]	21 (32.3)	35 (42.7)	0.412 [pm]
Average	40 (27.2)	18 (24.3)	22 (30.1)		20 (30.8)	20 (24.4)	
Rarely	51 (34.7)	28 (37.8)	23 (31.5)		24 (36.9)	27 (32.9)	
Dou you recommend intestinal biopsy for serology positive patients?							
Never	12 (8.2)	6 (8.1)	6 (8.2)	0.932 [pm]	3 (4.6)	9 (11.0)	**0.028 [pm]**
Sometimes	82 (55.8)	40 (54.1)	42 (57.5)		44 (67.7)	38 (46.3)	
Always	53 (36.1)	28 (37.8)	25 (34.2)		18 (27.7)	35 (42.7)	
What is the risk of malignancy in patients with celiac disease?							
Low	21 (14.3)	14 (18.9)	7 (9.6)	0.090 [pm]	10 (15.4)	11 (13.4)	0.979 [pm]
Moderate	53 (36.1)	28 (37.8)	25 (34.2)		24 (36.9)	29 (35.4)	
High	20 (13.6)	12 (16.2)	8 (11.0)		8 (12.3)	12 (14.6)	
Don't know	53 (36.1)	20 (27.0)	33 (45.2)		23 (35.4)	30 (36.6)	
In your opinion, how strict the gluten-free diet should be applied by patients with celiac disease							
Always a strict diet should be applied	96 (65.3)	47 (63.5)	49 (67.1)	0.906 [ff]	38 (58.5)	58 (70.7)	0.368 [pm]
Sometimes non-adherence with diet is possible	41 (27.9)	21 (28.4)	20 (27.4)		23 (35.4)	18 (22.0)	
Diet should be applied if symptoms appear	8 (5.4)	5 (6.8)	3 (4.1)		3 (4.6)	5 (6.1)	
No need for a diet	2 (1.4)	1 (1.4)	1 (1.4)		1 (1.5)	1 (1.2)	
Dou you recommend a gluten-free diet to serology negative patient with symptoms similar to celiac disease?							
Never	72 (49.0)	37 (50.0)	35 (47.9)	0.704 [ff]	29 (44.6)	43 (52.4)	0.433 [ff]
Sometimes	71 (48.3)	36 (48.6)	35 (47.9)		35 (53.8)	36 (43.9)	
Often	4 (2.7)	1 (1.4)	3 (4.1)		1 (1.5)	3 (3.7)	
Dou you recommend IgA screening for patients with celiac disease							
Always	29 (19.7)	11 (14.9)	18 (24.7)	0.306 [pm]	12 (18.5)	17 (20.7)	0.620 [pm]
Sometimes	106 (72.1)	57 (77.0)	49 (67.1)		46 (70.8)	60 (73.2)	
Never	12 (8.2)	6 (8.1)	6 (8.2)		7 (10.8)	5 (6.1)	
Do celiac disease patients receive monthly payment from Social Security Institute?							
Yes	66 (44.9)	35 (47.3)	31 (42.5)	0.686 [pm]	2 (3.1)	64 (78.0)	**<0.001 [pm]**
No	24 (16.3)	13 (17.6)	11 (15.1)		20 (30.8)	4 (4.9)	
Don't know	57 (38.8)	26 (35.1)	31 (42.5)		43 (66.2)	14 (17.1)	
Are you aware of the guidelines on celiac disease issued by the Ministry of Health?							
No	65 (44.2)	28 (37.8)	37 (50.7)	0.136 [pm]			
Yes	82 (55.8)	46 (62.2)	36 (49.3)				

SD:Standard deviation; min: minimum; max: maximum; [u] Mann Whitney U test (Monte carlo), [p] Pearson Chi-Square Test([e] Exact, [m] Monte Carlo); Post Hoc Test: Benjamini-Hochberg correction, [ff] Fisher Fremman Halton test (Monte Carlo)

Our finding supports the consideration of physicians to generally know the typical symptoms of chronic diarrhea, whereas to be less aware of the delayed/atypical and subclinical presentations or adult-onset of symptoms of CD (16,19,20). This seems to be an important handicap in correct and timely diagnosis of CD given that many individuals first present with non-classical (i.e. only mild gastrointestinal or extra-intestinal) symptoms as adults (10,11,16,19,21).

In a past study concerning CD awareness among physicians, authors noted CD was considered a rare pathology by the majority of the physicians and emphasized a need to increase awareness of rare clinical symptoms among physicians, particularly for physicians of specialties other than gastroenterology (21). In another questionnaire-based study on physicians' awareness about CD, authors indicated a need to increase awareness of CD among family physicians and internists, given that CD was diagnosed by 11% of family physicians and internists and 65% by gastroenterologists (16).

Likewise, our findings support the low level of awareness on adult-onset CD as well as poor knowledge on appropriate practice patterns among family physicians, increasing the decreased likelihood of CD with adult-onset non-classical clinical presentation to be correctly or timely diagnosed and properly managed (13,16,21,22)

In the current study, while physicians were equally aware of the three serological tests used in diagnosis of CD, utility of serological tests (381%) was not frequent as was the intestinal biopsy (36.1%) and IgA screening (19.7%) for serology positive patients. Similarly, lower likelihood of prescribing tests for CD serology by physicians of specialties other than gastroenterology (15.2 vs. 27.8%) was also reported in a past questionnaire-based study (21). The authors also noted that serum IgA screening was performed by only one-third of physicians, regardless of their medical specialty (21). This seems notable given that serological tests, EMA testing in particular, has good sensitivity and specificity (16,23), while screening for IgA serotype antibodies is considered likely to determine false negative CD serology (24).

Utility of diagnostic biopsy for seropositive cases was confirmed to be always performed only by one third of our physicians, while that at least half of physicians reported to use diagnostic biopsy sometimes and to be aware of local guidelines. This seems notable given that utility of diagnostic biopsy was the only variable that differed significantly among physicians with respect to awareness about local CD guidelines in the current study.

A gluten-free diet is mandatory in patients diagnosed with CD and is often recommended based on a positive CD serology, while start of a gluten-free diet based on positive serology per se without performing intestinal biopsy is known to be a relatively frequent error in daily clinical practice (18,21,24,25).

In the current study, at least half of physicians considered strict gluten-free diet a prerequisite for CD patients, while half of physicians considered gluten-free diet to be recommended also for serology negative patients with symptoms similar to CD. This seems to support the data from a previous study indicated much higher rates (97%) for recommending a gluten-free diet (always or frequently) than for starting a gluten-free diet only after a positive intestinal biopsy (20.4%) by physicians in the management of CD (21).

Hence, our findings emphasize a need to increase awareness of CD among primary care physicians, and particularly in terms of the recognition of adult onset of symptoms, the utility of serological tests combined with intestinal biopsy and proper recommendation of gluten-free diet (13,16,21).

Consideration of presence of moderate-to-high malignancy risk in CD by half of the physicians participated in the current study seems notable given the consideration of chronic inflammation in CD despite a gluten-free diet to be associated with increased susceptibility for gastrointestinal neoplasia (21,26,27). Indeed, no increase in colorectal cancer risk in CD has also been reported, especially when the initial diagnosis was made late in life, suggesting the likelihood of untreated CD to protect from colon cancer due to poor absorption and rapid excretion of putative co-carcinogens or immunological changes such as increased intraepithelial lymphocytosis (28).

In the current study, nearly half of physicians were not aware of guidelines on diagnosis, management and follow up of CD issued by MoH specifically for family physicians. Nonetheless, awareness of guidelines had no significant impact on practice patterns other than improved utility of diagnostic intestinal biopsy for serology positive patients.

Hence, our findings emphasize a need for increased awareness about atypical manifestations of CD among family physicians and measures to improve not only awareness of but also adherence to local guidelines, particularly in terms of proper utilization of diagnostic biopsy and serological tests as well as provision of gluten-free diet. In this regard our findings support that educating the family physicians is critical as patients first present to them with symptoms (15,18,19).

Certain limitations to this study should be considered. First, the cross-sectional nature of the study and the relatively small sample size precluded the possibility of drawing extensive causal conclusions. Second, the use of a non-validated questionnaire, although it is a comprehensive questionnaire prepared based on detailed literature search and clinical experience and for the purpose of the current study, seems to be another limitation. Third, our findings refer only to family physicians from the same province and not generalizable in this regard to all family physicians and not necessarily superimposable to all physicians.

In conclusion, our findings indicate low level of awareness about CD in terms of adult-onset and atypical presentations and poor knowledge regarding the diagnosis and practice patterns recommended by local guidelines on CD among family physicians, regardless of the years in practice. Accordingly, our findings indicate a need to increase awareness of CD and improved adherence to guidelines via educational sessions and workshops among family physicians, particularly in terms of the recognition of adult onset of symptoms, the utility of serological tests combined with intestinal biopsy and proper recommendation of gluten-free diet in individuals with CD.

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