Assessment of knowledge of celiac disease among health care professionals

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ABSTRACT

Objectives: To assess knowledge of celiac disease among medical professionals (physicians).

Methods: We conducted a cross-sectional survey of hospital-based medical staff in primary, secondary, and tertiary care public, and private hospitals in Riyadh, Saudi Arabia (KSA). We carried out the study between January 2013 and January 2104 at King Khalid University Hospital, King Saud University, Riyadh, KSA. A pretested questionnaire was distributed to the potential participants. A scoring system was used to classify the level of knowledge of participants into 3 categories: poor, fair, and good.

Results: A total of 109 physicians completed the survey and of these participants, 86.3% were from public hospitals, and 13.7% from private hospitals; 58.7% were males. Of the physicians, 19.2% had poor knowledge. Interns and residents had fair to good knowledge, but registrars, specialists, and even the consultants were less knowledgeable of celiac disease.

Conclusion: Knowledge of celiac disease is poor among a significant number of physicians including consultants, which can potentially lead to delays in diagnosis. Educational programs need to be developed to improve awareness of celiac disease in the health care profession.

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Celiac disease (CD) is an autoimmune disorder that is triggered by ingestion of gluten in genetically susceptible individuals. This leads to small intestinal villous atrophy and its ensuing complications. Celiac disease is a common disorder, and the prevalence seems to be on the rise. The exact prevalence of CD in the Middle East and Saudi Arabia (KSA) is not known, but it affects approximately 0.5-1% of the general population in the West.[1] The classical presentation of CD is in early childhood with a mal-absorptive picture leading to diarrhea and failure to thrive. However, many cases now present in adulthood. It can also have a variety of non-intestinal presentations such as anemia, fatigue, bone disease, liver enzyme elevation, and infertility.[1,2] Highly sensitive screening tests such as immunoglobulin (Ig) A-tissue transglutaminase antibody are now available to screen for CD. The diagnosis of CD is confirmed with small intestinal biopsies, and treatment consists of a strict gluten-free diet for life.[3] Health care professionals need to be aware of both the classical and non-classical (extra-intestinal) manifestations of CD in order to make a timely diagnosis. Delays in diagnosis can lead to potentially serious complications such as osteoporosis and small intestinal lymphoma.[4] The purpose of the study was to assess the knowledge of CD among the medical professionals. The information obtained will help to design and conduct educational and training programs on CD.

Methods. We conducted a multi-center cross-sectional survey. Centers studied included both public and private primary, secondary, and tertiary care hospitals in Riyadh city and was carried out between January 2013 and January 2104 at King Khalid University Hospital, King Saud University, Riyadh, KSA. The study participants included physicians, interns, residents, registrars, and consultants from general medicine and general pediatrics. The questionnaire was pretested at King Khalid University Hospital, and the level of difficulty was assessed by distributing the questionnaire to different ranked physicians. The questionnaire consisted of 25 single-best answer or True/False answer items addressing clinical features of CD. The questionnaire was developed with input from general physicians, a gastroenterologist, and a registrar. A scoring system was developed with a maximum achievable score of 50. The questions asked were of basic nature and included clinical symptoms and signs (score 25), diagnosis and treatment (score 25). Based on the score obtained, the level of knowledge of the participant was classified into 3 categories as poor

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(<40%), fair (40-60%), and good (>60%). A total of 123 participants were contacted and received the questionnaire with the non-probability convenient sampling method. The data was analyzed using IBM SPSS Statistics for Windows, Version 19.0 (IBM Corp., Armonk, NY, USA). Data was summarized as number and percentages. Chi-square test was used to study the association between gender and knowledge of CD, and participant designation and knowledge of CD. A *p*-value <0.05 was considered significant. The study was approved by the institutional review board and ethical committee of King Khalid University Hospital, King Saud University, Riyadh, KSA.

Results. Of the 123 physicians receiving the questionnaire, 109 (88.6%) completed the survey. Of these participants, 86.3% were from public hospitals, and 13.7% from private hospitals. The characteristics of the study participants are shown in **Table 1**. The physicians were categorized into interns, residents, registrars/specialists, and consultants. Among physicians, 19.2% had poor knowledge. Scores achieved by the various physician groups in general and based on gender are shown in **Tables 2 & 3**. The *p*-value for the physicians based on designation was calculated as 0.505 and gender was 0.040, which was significant.

Discussion. Celiac disease was considered to be a rare mal-absorptive disorder of infancy and early childhood; however, recent data reveals that it is a very common disorder that affects 0.5-1% of the population. The clinical spectrum of CD is wide. It can be symptomatic (classical, non-classical), sub-clinical (asymptomatic), or occur in a potential (latent) form.[5]

Table 1 - Characteristics of the study participants from public and private hospitals (N=109).

Participants	n	(%)
Public hospital	94	(86.2)
Private hospital	15	(13.7)
Male	64	(58.7)
Females	45	(41.2)

Table 2 - Score assessment based on gender of 109 participants.

Score	Male n (%)	Female n (%)
Good	30 (46.8)	22 (48.8)
Fair	26 (40.6)	10 (22.2)
Poor	8 (12.5)	13 (28.8)
Total	**64 (58.7)**	**45 (41.3)**

Classical symptoms of CD include abdominal pain, diarrhea, and weight loss. However, many individuals present with non-classical symptoms including anemia, extreme weakness, osteoporosis, oral ulcers, increased liver enzymes, rash, migraine, menstrual irregularities, and infertility. Vomiting, dental enamel defects, and short stature are additional presentations in the pediatric population. Delays in diagnosis may further lead to growth failure and delayed puberty in children. There is a lack of data on the health care professional's knowledge of CD. It is likely that poor knowledge may translate into delays in diagnosis as the condition goes unrecognized. Regarding knowledge of CD among health care professionals, 19.2% had poor (score <40%) which is alarming considering CD being a common disorder. It is also concerning to see that besides the registrars and residents, a significant number of senior physicians (33.3%) have poor knowledge of CD. Interns and residents (junior and senior) along with registrars showed fair to good knowledge, but senior physicians fared poorly. The cause of this discrepancy in knowledge remains unclear. We hypothesize that knowledge of CD among the young physicians could be better because these individuals received medical education more recently. They may have remembered CD from the recent medical curriculum and/or may be aware of the variety of presentations of CD. The more senior physicians were likely taught about CD as a mal-absorptive disorder, a presentation that has become less common.

Delays in diagnosis of CD are common. Several studies from the United States, Canada, and the United Kingdom reveal that the mean time from symptoms to diagnosis can be as long as a decade.[6-10] A large recent study reported that despite more widespread availability of serological test, delays in diagnosis have not improved.[9] The exact reasons for the long delays in diagnosis are not clear. It is now known that CD can present with very mild or extra-intestinal symptoms,

Table 3 - Knowledge of celiac disease by physician's category (N=109).

Designation	n (%)	Score n (%)		
		Good (>60)	Fair (41-59)	Poor (<40)
Interns	12 (11.0)	7 (58.3)	4 (33.3)	1 (8.3)
Residents Registrars/	45 (41.2)	25 (55.5)	13 (28.8)	7 (15.5)
Specialists	34 (31.1)	20 (58.8)	7 (20.5)	7 (20.5)
Consultants	18 (16.5)	10 (55.5)	2 (11.1)	6 (33.3)
Total	**109 (100.0)**	**62 (56.8)**	**27 (24.7)**	**21 (19.2)**

and the primary care physicians may not recognize it, since the disease is often taught in the medical curriculum as an intestinal mal-absorptive disorder. Also, most of the patients currently being diagnosed with CD are adults, whereas the disorder is perceived to be a pediatric problem. Patients, both children, and adults, may see several physicians including specialists before the final diagnosis is made.[7,8] Delays in diagnosis can lead to a variety of complications, including nutritional deficiencies, such as anemia and osteoporosis, reproductive disorders, increased risk of developing other autoimmune disorders, and small intestinal lymphoma.[1,2] The quality of life may also be negatively impacted. An early diagnosis can have significant financial impact by reducing costs of medical care as undiagnosed patients utilize several health care services.[11]

There is a need to improve awareness of CD both in the health care profession and the public. Education needs to be provided on the myriad of ways CD can present. The serological testing, though available, may not be utilized to its maximum potential. It has been demonstrated that increased utilization of serological screening by primary care physicians can lead to significantly improved rates of diagnosis of CD.[12] Educating the family physicians is critical as patients first present to them with symptoms.

In conclusion, a significant proportion of physicians have poor knowledge of CD. This can potentially lead to delays in diagnosis and treatment. A campaign of increased awareness of CD is needed, which should include educational sessions and workshops for health care professionals and use of media for public information.

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