

ORIGINAL PAPERS

The management of lactose intolerance among primary care physicians and its correlation with management by gastroenterologists: The SEPD-SEMG national survey

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ABSTRACT

Introduction and aims: The understanding of lactose intolerance (LI) is limited in some professional settings. *Sociedad Española de Patología Digestiva* (SEPD) and *Sociedad Española de Medicina General* (SEMG) have developed a survey in order to: a) Analyze primary care physicians (PCPs) knowledge and clinical management; and b) to compare results with those of a previous survey of Spanish gastroenterologists (GEs).

Material and methods: An online questionnaire was sent to SEMG members with 27 items on various issues: Demographics, occupational characteristics, outlook on LI, diagnostic tests, treatment, and follow-up. Results were compared to those from a survey of GEs.

Results: A total of 456 PCPs responded, versus 477 GEs. PCPs had an older mean age and longer professional experience. Level of understanding of LI was similar, albeit a higher proportion of PCPs lacked epidemiological awareness ($p < 0.01$). GEs tended to consider LI a "minor" condition (71.3 vs. 40.1%; $p > 0.001$), and LI symptoms as overlapping those of irritable bowel syndrome (93.5 vs. 88.2%; $p = 0.005$), although symptoms perceived as suspicious of LI were similar in both groups. Dietary recommendations were recognized as the primary therapeutic approach.

Conclusion: This study reveals the outlook of PCPs on LI, and allows comparison with that of GEs, as a basis for the development of strategies aimed at improving LI understanding, approach and management in our setting.

Key words: Lactose intolerance. SEPD. Family doctors. Primary care physicians. Survey. Lactose intolerance management. Hypolactasia.

INTRODUCTION

Lactase is a surface disaccharidase present at the apical brush border of enterocytes in small bowel microvilli. It is mainly found in the proximal jejunum. This enzyme's deficiency is known as hypolactasia, and may often entail

lactose malabsorption and gastrointestinal symptoms, which is known as lactose intolerance (LI).

Lactase activity may be detected as early as on the 8th week of pregnancy at the intestinal mucosal surface, and increases through week 34, with peak expression being reached at birth. In mammals it declines after weaning as a result of dysregulated gene expression (1). The rate of lactase activity loss varies according to ethnicity, and Asians lose 80-90% of lactase activity within 3-4 years after weaning whereas North Europeans exhibit trough expression at 18-20 years. Data have been recently reported on its prevalence in South America (2). In our country no recent prevalence data are available as most studies date back to the 1970s (3). In the study performed in Galicia (4) a prevalence of 32.5% was found among the pediatric population. At the opposite age end the study by Varela-Moreiras et al. (5) found a prevalence of 36%, with 51% being found in the study by Casellas et al. (6).

Despite this high prevalence, the societal demand for more information and on the health impact of LI (for instance, its potential association with osteoporosis) has been long overlooked by gastroenterologists, who consider it a benign, "easily" managed condition. However, gastroenterologists are increasingly interested in its etiopathogenesis, management, impact and treatment. Similarly, primary care physicians (PCPs) demand information on this condition, and a recent study concludes that concepts and terms require clarification among PCPs (7). Indeed, while some guidelines exist on its diagnosis and management (8,9) many aspects remain unclear, and the condition's approach by specialists and PCPs is often inadequate.

From all the above, following a survey of gastroenterologists affiliated with *Sociedad Española de Patología Digestiva* (SEPD) (10), both SEPD and *Sociedad Española*

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de Medicina General (SEMG) set up a task force to develop a new survey based on the above now intended for family doctors. Changes to the previous survey were proposed by the authors based on PCP professional characteristics.

The goals of this study include:

- Discussing the understanding, diagnosis, attitudes, and management regarding this condition by primary care physicians.
- Comparing these results with those of the survey of Spanish gastroenterologists (GEs).

MATERIAL AND METHODS

An online survey was administered to SEMG members. SEPD and SEMG members developed a 27-item survey based on the previous survey of SEPD members covering domains such as epidemiology, work post characteristics, attitude regarding the condition, diagnosis, treatment, and follow-up. Modifications were introduced according to the target specialty but keeping most items unchanged to allow comparison.

Statistical study

A descriptive analysis of responses was undertaken, followed by a comparative study using the chi-squared test (Fisher's exact test for values below 5 in the answers from both groups), considering

statistical significance at 0.05. An analysis adjusted for age, sex, and professional experience was also carried out to establish differences in variables and their trends according to said subgroups between both surveyed groups. The IBM SPSS Statistics 22.0 package was used for calculations.

RESULTS

A total of 456 PCPs responded and were compared to 477 gastroenterologists (GEs). The proportion of female respondents was 41.5% among GEs and 59% among PCPs, with a median age of 52 (IQR 43 to 56 years) and 45 (IQR 35 to 57 years), respectively (Table I), with differences being statistically significant for both parameters ($p < 0.001$ in both cases). As regards work post, most GEs worked at third-level, mid-sized (200-500 beds), university hospitals, had MIR training in gastroenterology, and their cumulative experience within the specialty was at least 10 years. As for PCPs, 87.3% worked at an outpatient clinic, urban in 63.9% of cases, 75% had more than 1,200 individual health cards (IHCs) assigned, with a median of 1500 IHCs, and 21.5% were resident tutors. Professional experience amounted to 10 or less years for 41.9% of GEs, whereas 52.2% of PCPs had 21 or more years (Table I), this difference being statistically significant ($p < 0.001$).

When analyzing knowledge of the prevalence of LI in Spain, results differed between these two groups, with statis-

Table I. Sociodemographic and occupational variables of survey respondents

	Gastroenterologists (n = 477)	Primary care physicians (n = 456)	p
Sex			
Men	279 (58.5%)	187 (41.0%)	< 0.001
Women	198 (41.5%)	269 (59.0%)	
Age			
≤ 30 years	66 (13.8%)	16 (3.5%)	< 0.001
31 to 40 years	145 (30.4%)	74 (16.2%)	
41 to 50 years	124 (26.0%)	132 (28.9%)	
> 50 years	142 (29.8%)	234 (51.3%)	
Professional experience*			
≤ 10 years	200 (41.9%)	89 (19.5%)	< 0.001
11 to 20 years	133 (27.9%)	129 (28.3%)	
21 to 30 years	84 (17.6%)	171 (37.5%)	
> 30 years	60 (12.6%)	67 (14.7%)	
Workplace			
Gastroenterologists (SEPD)			
Third-level hospital	297 (62.3%)		
County hospital	130 (27.3%)		
Private surgery	120 (25.2%)		
Family doctors (SEMG)			
Clinic		398 (87.3%)	
Private surgery		48 (10.5%)	
Other		45 (9.9%)	

* Gastroenterologists for SEPD survey, primary care physicians for SEMG survey.

tically significant differences ($p < 0.001$) in the numbers of unaware respondents. A similar situation was found regarding LI prevalence worldwide, only with greater ignorance ($p < 0.001$). For differences according to race, age, and country, PCPs had a greater lack of awareness ($p = 0.002$) (Table II).

Regarding outlook on LI, GEs tend to consider it more commonly (71.3 vs. 40.1%) a minor condition in a statistically significant fashion ($p < 0.001$), with symptoms overlapping those of irritable bowel syndrome or functional dyspepsia (93.5 vs. 88.2%), also in a statistically significant manner ($p = 0.005$).

The assessment of symptoms indicative of LI is similar between GEs and PCPs except for discomfort after the ingestion of dairy products, considered highly suggestive by PCPs but not by GEs (Table III).

Beliefs on the tolerance of lactose or drugs in smaller amounts were more common among GEs (49.7 vs. 24.3% for lactose; 45.1 vs. 14.9% for drugs), this difference being statistically significant (Table IV).

As regards therapeutic approach dietary recommendations predominated in both groups albeit with a higher proportion among GEs (99.09 vs. 92.3%), as was also the case for the prescription of lactase tablets (57.2 vs. 25.6%), with statistical significance being reached in both instances ($p < 0.001$ for both). When used, lactase tablets were mostly prescribed on an occasional basis (90.4 vs. 86.5%, slightly higher for GEs). Calcium/vitamin D supplements were a minority recommendation (GEs 28.9%, PCPs 29.6%) with no significant differences between groups.

Table II. Knowledge of prevalence of lactose intolerance

<i>What is in your opinion the prevalence of lactose intolerance in Spain?</i>			
<i>Expected prevalence</i>	<i>Gastroenterologists (n = 477)</i>	<i>Primary care physicians (n = 456)</i>	<i>p</i>
0-10%	63 (13.2%)	134 (29.4%)	< 0.001
10-40%	319 (66.9%)	224 (49.1%)	
40-70%	49 (10.3%)	21 (4.6%)	
70-100%	0	1 (0.2%)	
I don't know	46 (9.6%)	76 (16.7%)	
<i>Expected prevalence of lactose intolerance worldwide</i>			
<i>Expected prevalence</i>	<i>Gastroenterologists (n = 477)</i>	<i>Primary care physicians (n = 456)</i>	<i>p</i>
0-10%	60 (12.6%)	96 (21.1%)	< 0.001
10-40%	183 (38.4%)	156 (34.2%)	
40-70%	111 (23.3%)	57 (12.5%)	
70-100%	10 (2.1%)	5 (1.1%)	
I don't know	113 (23.7%)	142 (31.1%)	
<i>Do you think differences exist according to race, country or age?</i>			
	<i>Gastroenterologists (n = 477)</i>	<i>Primary care physicians (n = 456)</i>	<i>p</i>
No	15 (3.1%)	18 (3.9%)	0.002
Yes	405 (84.9%)	346 (75.9%)	
I don't know	57 (11.9%)	92 (20.2%)	

*Gastroenterologists for SEPD survey, primary care physicians for SEMG survey.

Table III. Symptoms suggestive of lactose intolerance

<i>Suggestive symptom</i>	<i>Gastroenterologists (n = 477)</i>	<i>Primary care physicians (n = 456)</i>	<i>p</i>
	<i>Median IQR score</i>		
Chronic/Acute diarrhea	2 (2)	2.5 (2)	< 0.001
Flatulence/Bloating	2 (1)	3 (1)	< 0.001
Abdominal pain	3 (0)	3 (2)	0.12
Constipation	5 (2)	5 (1)	0.26
Vomiting	5 (1)	5 (2)	< 0.001
Dairy products are poorly tolerated	5 (2)	2 (3)	< 0.001

Results expressed as medians (IQR: interquartile range) values from 1 to 6 in descending order of relevance. *Gastroenterologists for SEPD survey, primary care physicians for SEMG survey.

Table IV. Tolerance of lactose-containing foods or drugs

Do you think a lactose-intolerant patient may take smaller amounts of lactose with no symptoms?		
	Gastroenterologists (n = 477)	Primary care physicians (n = 456)
No	22 (4.6%)	99 (21.7%)
Yes	237 (49.7%)	111 (24.3%)
Depends on intestinal lactase level	200 (41.9%)	209 (45.8%)
I don't know	18 (3.7%)	37 (8.1%)
And lactose-containing drugs?		
	Gastroenterologists (n = 477)	Primary care physicians (n = 456)
No	44 (9.2%)	177 (38.8%)
Yes	215 (45.1%)	68 (14.9%)
Depends on intestinal lactase level	184 (38.6%)	176 (38.6%)
I don't know	34 (7.1%)	35 (7.7%)

p < 0.001

*Gastroenterologists for SEPD survey, primary care physicians for SEMG survey.

In both groups concerns regarding food intolerance are mostly based on the natural association between food and symptom onset (62.9% for GEs, 51.5% for PCPs), and most particularly on need for therapy in patients with functional impairment (73.6% for GEs, 73.0% for PCPs), as reflected in table V. Both groups consider training on these conditions a useful measure (98.7 vs. 96.4%).

When responses were assessed according to age, there was a statistically significant greater trend among older PCPs to consider LI a non-minor condition, to be unaware of etiology, to consider laboratory tests more relevant for diagnosis, to advise against smaller amounts of lactose or lactose-containing drugs, and to prescribe more calcium/vitamin D supplementation. Among gastroenterologists older age was significantly associated with diagnostic testing (p = 0.027), fewer referrals to primary care (p = 0.004), prescription of calcium/vitamin D supplementation (p = 0.005), and advice against lactose-containing drugs (p < 0.001).

DISCUSSION

The present paper discusses the comparative results of two surveys on LI among gastroenterologists and primary care

physicians. We consider it a novel approach as no similar studies are found among the literature, and it sheds light on the beliefs and outlooks held by PCPs, allows comparison of specialized *versus* primary care management, and obtains highly interesting data that will empower both societies to develop joint strategies to promote improved awareness, diagnosis, outlook, and management regarding this intolerance.

Interestingly, these two groups of practitioners are heterogeneous, which represents a study limitation and a potential selection bias; as surveys were emailed to all members in both societies only practitioners interested in this condition may be represented among respondents. Differences were found between both groups that may influence the results obtained – over 50% of responding GEs were 30-50 year-olds and over 50% of PCPs were above 50 years of age. This results in differences in professional experience, longer among PCPs.

Interestingly, over 9% and 23% of GEs and over 16% and 31% of PCPs are unaware of the prevalence of LI in Spain and worldwide, respectively. This is obviously no reflection of the perceived relevance of the condition; however, we do believe that such results should prompt training committees in both societies to develop awareness programs on this subject.

Table V. Why do you think is the general population nowadays concerned with food intolerance?

	Gastroenterologists (n = 477)	Primary care physicians (n = 456)
Scientific paper availability	107 (22.4%)	111 (24.3%)
Promoted by drug industry	219 (45.9%)	183 (40.1%)
Natural food-GI issues relationship	300 (62.9%)	235 (51.5%)
Treatment needs in patients with functional disorders	351 (73.6%)	333 (73.0%)

*Gastroenterologists for SEPD survey, primary care physicians for SEMG survey.

Likewise, most respondents suspect a patient may have LI in the presence of diarrhea and bloating, albeit PCPs pay more attention to the association between dairy product ingestion and symptom onset. While such correlation has been questioned by some studies (11,12), eliciting this aspect during history taking may be helpful for diagnosis both in the primary care and the outpatient gastroenterology setting.

The fact that GEs more commonly tend to consider LI a minor condition in a statistically significant manner is outstanding, and again highlights the traditional low relevance of this disease among GEs, not so among PCPs. The scarce specificity of LI symptoms has been demonstrated in multiple studies (13-16), and the fact that symptoms overlap those of irritable bowel syndrome (17) or functional dyspepsia (93.5 vs. 88.2%) is well known by both groups of practitioners, especially by GEs.

A common question posed by patients with LI is how much lactose they may take and whether their usual drugs may contain lactose and induce symptoms. The results of our survey reveal societal demand that a greater proportion of GEs *versus* PCPs consider that small amounts of lactose, including lactose-containing drugs, may be tolerated by most patients. This has been presumably demonstrated by some studies (18) but evidence is inadequate, as some variables should be considered – e.g., the number of lactose-containing drugs actually taken. From our viewpoint this aspect deserves careful assessment as information is sparse on the drugs that contain this sugar, and many of those prescribed by GEs actually have lactose among excipients (19).

The last part of the survey focuses on treatment and dietary recommendations for intolerant patients. Differences are seen between both groups on this aspect, with a greater proportion of GEs recommending lactase supplementation and dietary measures. Notably, the number of practitioners who prescribe calcium and vitamin D supplements is low in both groups, but such recommendation may be obviated given the availability of lactose-free milk containing calcium and vitamin D. However, studies have been reported that associate LI with low vitamin D levels (9,20), albeit with no direct impact on child growth (21).

Also outstanding is the fact that older GEs and PCPs consider LI to be more “severe” when compared to younger physicians. Thus, they advise against low lactose ingestion, including in drugs, and consider diagnostic testing mandatory; as for GEs, most won't refer patients to primary care.

Finally, respondents clearly request more information on this topic and on food intolerance, as patients increasingly demand such information. SEPD and SEMG training committees should take notice thereof and develop joint training programs or specific protocols to improve awareness and patient management. Many aspects remain

obscure but improved management will no doubt improve quality of life.

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