

LACTOSE INTOLERANCE: A GUIDE TO PROPER DIETARY MANAGEMENT, FOLLOW-UP, AND LACTASE ENZYME SUPPLEMENTATION

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INTRODUCTION

Lactose intolerance (LI) is defined as the manifestation of symptoms, typically gastrointestinal, following ingestion of lactose in individuals with lactose malabsorption due to a deficiency of lactase, the enzyme capable of cleaving the disaccharide into its components, glucose and galactose.

LI is recognized as the **primary food intolerance** by the World Health Organization, is estimated to affect over 70% of the world's population and around 50% of the Italian population (Figure 1).

When surfing the web and consulting social channels, it is easy to come across incorrect and unreliable information on LI. This could lead to a worsening of quality of life, as well as increasing the risk of serious nutritional deficiencies due to the erroneous exclusion of entire food categories (eg. milk and its derivatives).

An inter-societal working group was set up between the Italian Society of Human Nutrition (SINU), the Italian Association of Lactose Intolerant Patients (AILI) and the working group of the Food Composition Database for Epidemiological Studies in Italy (BDA) project.

The aim of this work is to develop a document that will assist individuals with LI to better manage their condition. In particular, the guide will focus on diet therapy and the use of the lactase enzyme supplement. Additionally, it will provide guidance for those presenting symptoms to an effective diagnosis.

The compilation will take about 15 minutes, and will be generated using Google Forms, which will guarantee anonymity. AILI and SINU will disseminate the survey online using their mailing lists or sharing it through their websites and social media to reach as many people as possible. The required **sample size** has been set at **385 subjects**.

A **pilot study** will be conducted to test whether the survey is appropriate. As soon as the pre-test is finished and approval is obtained from the ethics committee, the survey will be sent and will remain open for at least three months, to reach a large number of participants.

RESULTS

The document produced will be a guidance on the correct management of LI, focusing on the correct diagnosis, dietary therapy and the use of lactase enzyme supplements.

The guide will include a reference table showing the **average lactose content** of the main and most consumed foods of the Mediterranean diet. An example of this table is presented below (Table 1). The table shows the average lactose content (g/100g) of selected foods, the source of the data, and a description of the food to allow its clear identification.



Furthermore, the presence or absence of lactose will help to classify foods as "not recommended", "at-risk" and "permitted". Consequently, this work would facilitate the use of lactase enzyme supplements, which represent a valuable aid for individuals with lactose intolerance basing their choice on the quantity of lactase units required to digest the lactose present in a specific food or meal.

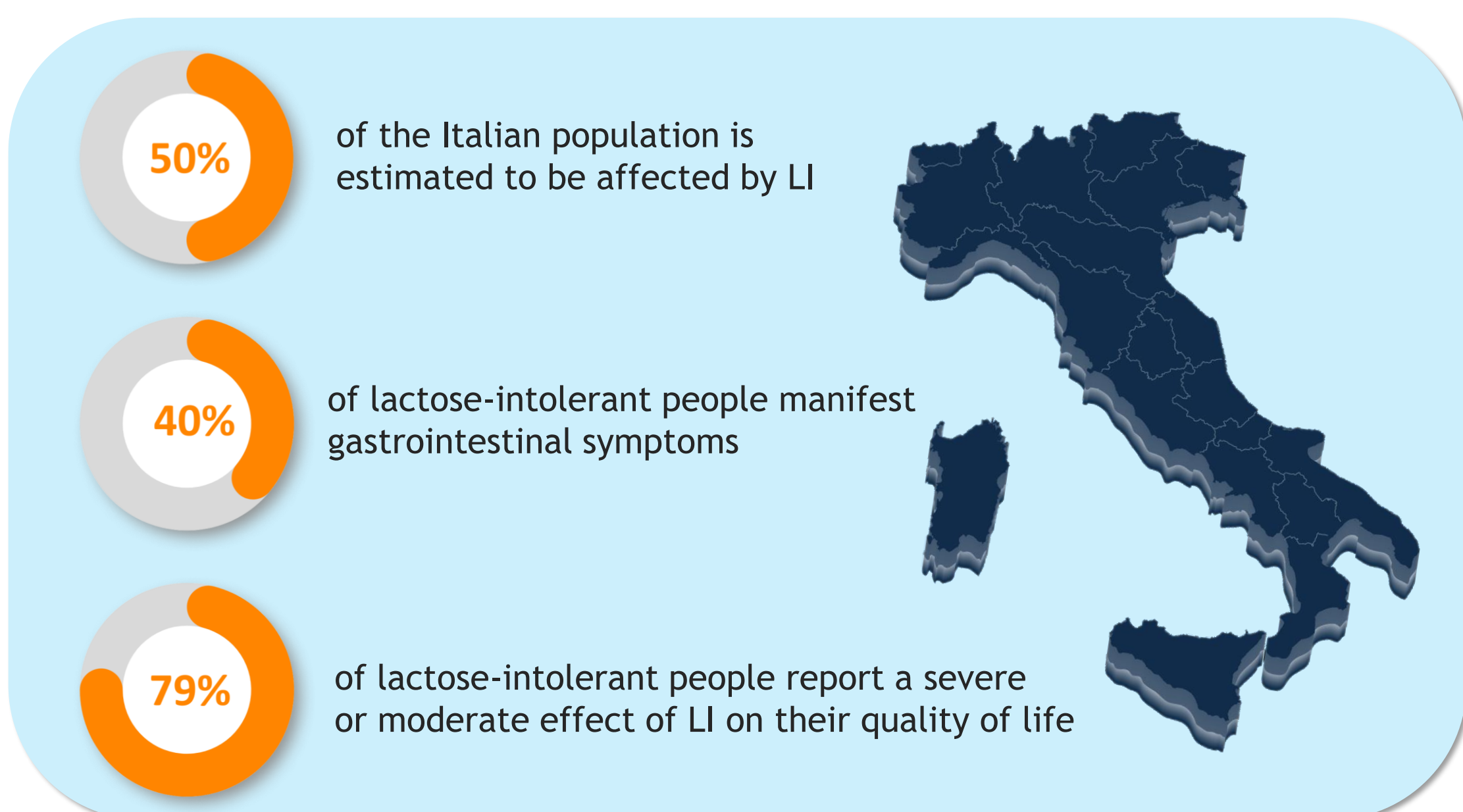


Figure 1. Lactose Intolerance in Italy: prevalence, symptoms, and quality of life impact.

MATERIALS AND METHODS

The working group has been identified including experts in nutrition, food composition, food technology and medicine. A literature review of nutrition knowledge on LI, dietary recommendations, and lactose knowledge questionnaires was performed to define the scope and structure of the survey.

To obtain useful information for the development of the guide, the working group developed an **on-line survey** to evaluate the knowledge of IL and its management among the Italian population. The list of questions was developed by referring to surveys previously found in the literature.

The survey consists of **32 one-best-answer questions** or **true/false questions**, divided into four main sections that assess knowledge on: (i) what lactose is and its content in food; (ii) the cause of LI, common symptoms and diagnosis; (iii) management of LI, possible medications or supplements; (iv) personal information.



Food name	Description	Lactose g/100g	Source of data
Mozzarella "Gioia del Colle" PDO cheese	Produced from cow's milk	<0,6	PDO Product Regulation
Parmigiano Reggiano PDO cheese	Produced from cow's milk Aging time min. 12 months	<0,001	Facioni et al (2021)
Raschera PDO cheese	Produced from cow's milk Aging time 60 days	0,0135	Zeppa et al (2008)
Sqaquerone cheese	Produced from cow's milk	0,99	Lante et al (2006)
Ricotta cheese	Produced from cow's milk	3,354	Mucchetti et al (2002)
Yogurt, partially skimmed milk	Produced from cow's milk 1,5% fat	2,897	Gille et al (2018)
Cooked Ham Ferrarini	High Quality Cooked Ham	0	www.ferrarini.com/en/cooked-ham-ferrarini/

Table 1. Example of foods and their lactose content.

FUTURE PERSPECTIVES

Given the growing public interest, there is a need to provide an evidence-based guide to help lactose-intolerant people, as well as an up-to-date tool for nutrition professionals. The working group will produce an innovative guide that will provide information on diagnosis, therapy, and general management of the condition, improving quality of life of lactose-intolerant people. Furthermore, a summary of gaps for future research in the LI area will be proposed.

References

- EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) 2010 Scientific opinion on lactose thresholds in lactose intolerance and galactosaemia. EFSA Journal.
- Misselwitz B *et al.* 2018 Update on lactose malabsorption and intolerance: Pathogenesis, diagnosis and clinical management. Gut 68, 2080-2091
- Facioni MS *et al.* 2022 A Survey on Consumers with Lactose Intolerance in Italy: Their Perception, Habits and Needs When Shopping for Groceries. EC Nutrition 17.9, 28-42.

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