



Canadian Digestive Health Foundation

# What is lactose intolerance?

Lactose intolerance is a digestive, malabsorption disorder where one is unable to properly digest dairy products. Lactose is a carbohydrate found in dairy products (such as milk and cheese, for example) and is referred to as the sugar substance in dairy. This digestive disorder is ultimately caused by the inability to produce lactase, an enzyme that breaks down lactose and absorbs the carbohydrate.

This can lead to lactose further processing through to the colon without enzymatic breakdown. In many instances, this inability to produce lactase can cause digestive issues such as diarrhea, nausea, vomiting, stomach cramps/pain, bloating or excessive gas.

## What happens in my body if I'm lactose intolerant?

Normally, when someone eats something that contains lactose, an enzyme that's produced in your small intestine called lactase breaks down lactose into its simpler components (which are simple sugars called glucose and galactose).

These simple sugars are then able to be absorbed in the bloodstream and give you the energy you need. If you have lactose intolerance, the body doesn't make enough lactase to break down lactose, and as a result allows undigested lactose molecules to pass to the lower parts of the intestine. At this point, the undigested lactose encounter bacteria which begin digestion through a process of fermentation. The outcome of this fermentation (hydrogen, carbon dioxide, methane gases, and short chain fatty acids) leads to many of the telltale symptoms for lactose intolerance – like gassiness and diarrhea.

## Prevalence

Lactose Intolerance is the most common food intolerance affecting roughly 44% of Canadians according to a 2016 census documented in the Journal of the Canadian Association of Gastroenterology (Fung et al, 2020). The Canadian population in 2016 was approximately 36 million people. This census revealed that roughly 16 million people in Canada had experienced some form of lactose malabsorption. Below are the average lactose intolerance rates for each region of Canada:

- The Atlantic Provinces (Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland and Labrador) - 26% of the population surveyed
- Central Canada (Ontario and Quebec) - 43% of the population surveyed
- Prairies (Saskatchewan, Manitoba and Alberta) - 46% of the population surveyed
- The West Coast (British Columbia) - 52% of the population surveyed
- The Northern Territories (Northwest Territories, Yukon and Nunavut) - 55% of the population surveyed

## Lactose Intolerance In Relation To Genetic And Cultural Aspects

In the scholarly article entitled "Country, regional, and global estimates for lactose malabsorption in adults: a systematic review and meta-analysis" written by Storhaug, Fosse and Fadnes, the authors conducted a meta-analysis of the prevalence of lactose malabsorption in adults across countries and regions. Their findings identified that lactose malabsorption is an issue which affects individuals throughout most of the world. Their comprehensive assessment revealed that around two-thirds of the world's population suffers from lactose malabsorption.

*This figure was derived from Storhaug Fosse's and Fadness' article entitled, "Country, regional, and global estimates for lactose malabsorption in adults: a systematic review and meta-analysis."*

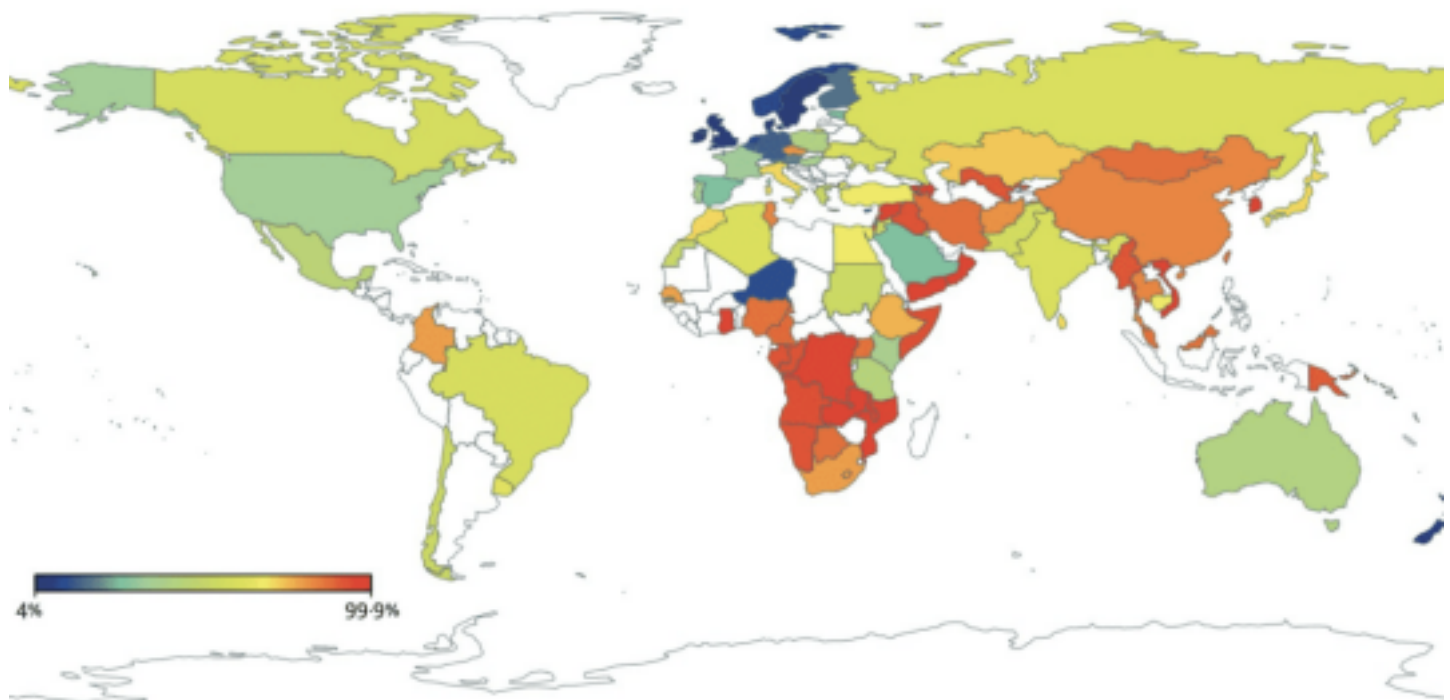


Figure 1: Prevalence of lactose malabsorption in different countries assessed with all methods (Storhaug et al, Figure 1: Prevalence of lactose malabsorption in different countries assessed with all methods (Storhaug et al, 2017)

For clarity, countries shaded in cooler colours in Figure 1 above reflect populations with lower frequencies of lactose malabsorption. Those countries shaded in green to yellow reflect populations with medium frequencies of lactose malabsorption. Lastly, countries shaded in warmer orange and colours reflect the highest frequencies of lactose malabsorption.

Storhuag et al also discussed the issue of lactose malabsorption in Canada. They found large variations of rates of lactose malabsorption across different regions and provinces in the country (Storhaug et al, 2017). Based upon these findings, there does appear to be a link between Storhaug et al's findings and the 2016 census conducted by Fung et al. The data taken as a whole appears to suggest that provinces in Canada which have populations that are made up of largely European descendants reflect lower rates of lactose malabsorption. For example, Fung et al's 2016 census revealed that only 23% of Newfoundland and Labrador's population suffers from lactose malabsorption - while its descendants are made up primarily of British and Irish descendants (Canadian Immigration Specialists, para. 4, n.d.). As we can see from Figure 2 noted above, populations in Britain and Ireland experience some of the lowest rates of lactose malabsorption, rearming the link between lactose malabsorption rates and descendant migration patterns.

With over 65% of the adult population experiencing lactose intolerance the treatment sometimes does not get the clinical attention that is necessary, because the symptoms and the development of the condition are driven by a variety of biological aspects that are unique to each individual.

Finding patterns in lactose malabsorption throughout diverse cultural groups and regions can lead to further treatment for populations who have high frequencies of the digestive disorder.

#### References:

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