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ORIGINAL ARTICLE

White as milk: Biocentric bias in the framing of lactose intolerance and lactase persistence

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Abstract

The majority of the world population is lactose intolerant, as 65%–70% of people lose the enzymes to digest lactose after infancy. Yet, in the United States, where lactose intolerance is predicted to affect only 36% of people, this phenomenon is often framed as a deficiency as opposed to the norm. This is because the United States has a higher prevalence of people who are lactase persistent. Lactase persistence is a genetic trait most common among Europeans and some African, Middle Eastern and southern Asian groups with a history of animal domestication and milk consumption. In this study, we take the case of lactose intolerance to examine how popular media maintains biocentric biases. Analysing relevant articles published in *The New York Times* and *Scientific American* between 1971 and 2020, we document how ideas about milk, health and race evolve over time. Over this fifty-year period, writers shifted from framing lactose intolerance as racial difference to lactase persistence as evolutionary genetics. Yet, articles on the osteoporosis 'epidemic' and vitamin D deficiency worked to perpetuate lactose intolerance as a health concern and standardise the dairy-heavy American diet. Studying media portrayals of lactose intolerance and lactase persistence, we argue that popular discourses normalise biocentric biases through messages about eating behaviours and health.

KEYWORDS
biocentrism, eating, food, lactase persistence, lactose intolerance, medicalization, race

INTRODUCTION

Biocentric bias—the 'assumption that people generally are biologically the same as oneself' (Kingfisher & Millard, 1998, p. 463)—shapes popular discourses on eating and health. We take the case of lactose intolerance and examine its portrayal in popular media. *Lactose intolerance* refers to the inability to comfortably digest lactose found in dairy products (symptoms include bloating, diarrhoea and gas) (National Institute of Diabetes and Digestive and Kidney Diseases, 2022). Usually, it results from the decreased production of lactase enzyme, which typically happens during childhood, after weaning. Most of the world population is lactose intolerant (Bayless et al., 2017), but most of the US population is *lactase persistent*, which means having a genetic variant resulting in the continued production of lactase enzyme beyond infancy (Swallow, 2003). In the United States, with an over-representation of lactase persistent people, lactose intolerance—a natural occurrence—is medicalised and framed as a health problem (Malik & Panuganti, 2021). The growth of the global milk market has brought this 'health problem' to other countries—like China, where most people are lactose intolerant but milk is promoted as essential to addressing 'health deficits' (Chen, 2003; Wiley, 2007).

The medicalisation and problematisation of lactose intolerance exemplify biocentric bias. Analysing articles published in *The New York Times* and *Scientific American* between 1971 and 2020, we show that seemingly neutral discourses around digestion obfuscate the standardisation of White bodies. When milk digestion is framed as the norm and healthy, it concomitantly implies that the inability to digest milk is abnormal and unhealthy. Since lactase persistence is most prevalent among Northern Europeans, the normalisation of milk digestion is racialised. Moreover, since the American cultural diet is dairy-heavy, universal health recommendations privilege the bodies and health experiences of White people (Wiley, 2007). Lactose intolerance, which tends to impact people of colour, is described as a deficiency or disorder. Recently, White supremacist groups cited the high percentage of lactase persistence among Northern Europeans as evidence of their genetic superiority (Stănescu, 2018), illustrating how biological and genetic information has been weaponised in racial politics. Studying media portrayals of lactose intolerance and lactase persistence, we argue that popular discourses normalise biocentric biases through messages on eating behaviours and health.

THE MEDICALISATION OF EATING

Social values profoundly influence medicalisation, the process by which a condition becomes defined, understood and treated as medical (Conrad, 2007; Conrad & Schneider, 1992; Zola, 1972). This is especially true for conditions that are directly related to eating, a practice that is politically, culturally and socially encoded (Douglas, 1966; Lupton, 1994; Mintz & Bois, 2002). Ideas about the healthfulness and nutritiousness of foods reflect sociocultural attitudes and norms; in this way, the recommendations of physicians and dietitians are not purely based on objective, empirical findings (Gaspar et al., 2020). Because medicalisation is influenced by the social milieu

(Conrad & Schneider, 1992), nutritional discourses and messages about health change over time (Burt, 2021; Coveney, 2006; Díaz-Méndez & Gómez-Benito, 2010).

In the case of disease prevention and health promotion, the medicalisation of eating behaviours might substitute tradition with nutritional science while upholding subjective attitudes about ideal body aesthetics (Poulain, 2013). Concurrently, the medicalisation of eating disorders, obesity and food allergies/intolerances can reflect and reinforce hegemonic beliefs about eating behaviours and ideal body types. For instance, while body size is not an accurate marker of health, slender bodies are constructed as the norm while fat bodies are associated with poor health and deviance (Boero, 2007; Saguy, 2013; van Amsterdam, 2013). Moreover, because diet and taste are shaped by social and structural factors, like age, class, race, gender, religion and environment (Daniel, 2016; Slocum, 2011; Walker et al., 2010), diagnosis and treatment unequally impact different populations. In addition, barriers to healthcare contribute to disparities by race, class and gender; for example, eating disorders affect a heterogeneous population but treatment is more often accessed by White, affluent girls and women (Coffino et al., 2019; Sonneville & Lipson, 2018).

Conditions that are closely associated with lifestyle or behaviour cannot escape moral appraisal (e.g., sexually transmitted infections, type two diabetes and obesity) (Easter, 2012; Puhl & Heuer, 2010; Shepherd & Gerend, 2014). Perceptions of eating-related conditions and those affected are tinted by current social norms and values—not medical knowledge alone. This includes ideas about what kinds of foods are edible versus inedible/taboo, what is healthy versus unhealthy and how much is acceptable versus indulgent. For instance, obesity and anorexia both concern body weight and eating, but as Saguy and Gruys (2010) illustrated, media framing of these two conditions and their sufferers is very different. While individuals diagnosed with obesity and binge eating are stigmatised (accused of excess, lacking control or will-power), those diagnosed with anorexia are portrayed as blameless victims. The construction of these conditions also implicates race and class—with anorexia more commonly associated with White middle class women/girls and obesity with non-White and lower class populations (even though the relationship between obesity and race, class and education is more complicated than this (Ogden et al., 2017; Saguy & Gruys, 2010). Within medicine, the discourse on obesity has shifted over the last century, from portraying affected individuals as burdens on society to victims of external factors beyond their control (Chang & Christakis, 2002). Yet, even when the medicalisation of obesity attributes the causes to genetics and environment, interventions continue to focus on individual behaviour (Salant & Santry, 2006) and public health messages stigmatise obesity (Lewis et al., 2010; Puhl & Heuer, 2010). In clinical encounters, health professionals hold implicit biases towards patients who are overweight/obese, which negatively impacts the quality of care provided (Lawrence et al., 2021; Phelan et al., 2015).

Beyond the clinical encounter, American norms concerning healthy foods and diets privilege White, middle-class populations. The US Departments of Agriculture and Health and Human Services (2020) promote a Mediterranean diet designed around an idealised nutrition profile. Yet, the diet described in the departments' guidelines is poorly supported by scientific evidence and does not reflect the foods actually consumed in Mediterranean cultures. Rather, it includes foods 'acceptable' and 'familiar' to White (European) Americans that 'seem to fit the dietary principles of the Mediterranean region' (Burt, 2021, p. 44). These existing biases in favour of White foods are then legitimised in dietary research (Burt, 2021; Krishna, 2020). Purportedly 'healthy' and 'natural' foods are also more accessible to White populations and associated with Whiteness. For instance, Slocum (2007) argued that alternative food practices—which aim to promote 'more ecologically sound and socially just farming methods, food marketing and distribution and

healthier food options' (2007, p. 522)—create 'white food spaces' where social consciousness and progressive values obscure the exclusion of communities of colour. Studying the development of a new Whole Foods store in Jamaica Plain, Boston, Anguelovski (2015) illustrated how gentrification and alternative food movements create access barriers for lower income and minority residents when affordable grocery stores are replaced with expensive health food stores that cater to new White, middle-class residents. These alternative food practice movements' narrow the conception of 'healthy', normalise the preferences of White consumers while denigrating the food culture of non-Whites (Anguelovski, 2015). However, when non-White foods become appropriated by White consumers, these foods become more expensive and less accessible to traditional consumers—a process that Mikki Kendall, a Black feminist writer, termed 'food gentrification' (Anguelovski, 2015; Kendall, 2014).

The privileging of White taste is also reflected in popular beliefs about the healthfulness and safety of non-White foods. The politicisation of food and eating reinforces xenophobia and racism by distinguishing 'healthy' insiders from 'unhealthy' outsiders. In the United States, racism dismisses some Asian cuisines as being cheap, unclean and unhealthy (Yeung, 2020). While Korean, Thai and Japanese cuisines are perceived to be healthier, Chinese and Indian cuisines are seen as less healthy, digestible and clean (Jang et al., 2009). In 1969, *Science* published an article claiming that monosodium glutamate (MSG), a common seasoning in Asian cuisine (but also an ingredient in many non-Asian foods) (Mah, 2013), causes 'Chinese restaurant syndrome', characterised by 'burning sensations, facial pressure and chest pain' (Schaumburg et al., 1969). That year, a study using mice models associated MSG with obesity and neurological issues. These claims about the harms of MSG were unsubstantiated—and overtly racist. In 1970, the National Research Council found that MSG was safe and suitable for human consumption (Wahlstedt et al., 2021); yet, misinformation had already stoked Americans' fears, perpetuating the stigmas against MSG and Asian cultural foods for decades to come (Wahlstedt et al., 2021; Yeung, 2020). During the 2003 SARS outbreak and current COVID-19 pandemic, racist stereotypes blamed 'exotic' Asian diets for the outbreak of zoonotic diseases. This fuelled racism, violence and loss of business in Chinatowns (Eichelberger, 2007; Lee, 2021; Service, 2020). Similar to how racism drives the stigmatisation and racialisation of food and eating, the case of lactose intolerance illustrates how the framing of food avoidance can similarly work to other groups of people and normalise dominant beliefs about health.

In a recent scholarship, rise in food allergies and intolerances presents new sociological questions about risk and illness (Haeusermann, 2015; Nettleton et al., 2009). In the United States, even though physician-diagnosed food allergies have remained stable, self-reported cases have increased from 9.1% in 2001 to 13% in 2010 (Verrill et al., 2015). There are methodological challenges to acquiring a more accurate estimate of the prevalence of food allergies within the general population. Researchers estimated that while 19% of American adults believe they have a food allergy, only 10.9% have a 'convincing' food allergy (as based on an evaluation of respondents' reported symptoms) (Gupta et al., 2019). Unlike food allergy, food intolerance is often a catch-all for non-allergenic digestive conditions (not immunologically mediated) (Bindslev-Jensen et al., 1994). Due to the broad definition by exclusion, it is difficult to determine the prevalence of food intolerances, as some are mild and never officially diagnosed, while there are no official diagnoses for others (Nettleton et al., 2009).

In response to these upward trends, Nettleton et al. (2009) proposed a sociology of food allergy and intolerances to explore the medical, political, professional and cultural dimensions of this social phenomenon. Examining the emergence of the 'peanut allergy epidemic', Waggoner (2013) argued that multiple actors and institutions helped transform this rare condition into a public

health problem. In response to this panic, schools, airlines and other public spaces have adopted new policies in an effort to control exposure. Waggoner proposed that anxieties about peanuts—a food that is mundane and ubiquitous—may stem from broader concerns about food risk and safety. Relatedly, Haeusermann (2015) applied a health belief model to analyse how perceptions of personal risk and control may contribute to the rise in food allergy and intolerance. He noted that these perceptions have been shaped by a number of factors, including media portrayals, the wide availability and variety of foods (that makes avoiding certain foods possible), shifting norms and tastes related to eating and lay empowerment. Scholars have also considered the experiences of sufferers and how they are perceived by others, including medical professionals (Bandini, 2015; Moore, 2014). Unlike other eating-related conditions, the popular discourse around food allergy and intolerance is less focused on individual choice and blame. However, the contested status of food intolerances and sensitivities, like gluten-related disorders, casts doubt on the legitimacy of sufferers (Moore, 2014). Contributing to sociological scholarship on food intolerance, we take the case of lactose intolerance to investigate the social construction of race and biological difference.

Media representations of health and illness communicate a framework for understanding a condition, which includes ideas about its cause, treatment and urgency (Arguedas, 2020; Boero, 2007; Clarke, 2011). In this study, we examine the intersection of medicalisation, eating and race. We consider how the framing of lactose intolerance in popular media articulates ideas about race and racial difference.

BACKGROUND: THE CASE OF LACTOSE INTOLERANCE

Lactose intolerance refers to the decreased ability to digest the lactose sugar found in milk (Swagerty et al., 2002). For most people, production of the lactase enzyme begins to decline in infancy (Malik & Panuganti, 2021). Lactose intolerance is estimated to impact most of the global population, as 65%–70% of people are genetically determined to have 'lactase non-persistence and potential lactose intolerance' (Bayless et al., 2017). The terms used to refer to this genetic determination—hypolactasia, lactase non-persistence and lactase deficiency—suggest that lactose intolerance is a medical problem or deficiency even though it impacts the majority of the global population. The discourse around lactose intolerance normalises European experiences of lactase persistence, which is most prevalent among Europeans and some African, Middle Eastern and southern Asian groups whose ancestors belonged to dairying communities (Bayless et al., 2017; Itan et al., 2009; Jones et al., 2015). If only a minority of the world population maintains lactase enzymes, then why is lactase persistence not called *hyper*lactasia or lactose *tolerance*? As other scholars have argued, lactose intolerance is an example of biocentric bias (Stănescu, 2018; Wiley, 2004).

In 1966, Bayless and Rosensweig published on the association between decreased lactase enzyme production and lactose intolerance among Black Americans, noting a Black–White racial disparity. They soon received a letter from Dr. Bekolari Ransome-Kuti, a Nigerian physician, who challenged their biocentric assumption, noting that Whites had 'lactase excess' (Bayless et al., 2017). Dr. Michael D. Levitt, a gastroenterologist, described lactose intolerance concerns as an 'American phenomenon'; the framing of lactose intolerance as a medical problem or deficiency is uniquely American (Wade, 2002). This is not surprising as 61.6% of Americans identify as White alone (Jones et al., 2021). In the United States, lactose intolerance is most prevalent among racial and ethnic minorities: 95% of Asian Americans, 80% of Black Americans, 70% of Ashkenazi Jews, 50%–80% of American Hispanics and nearly 100% of American Indigenous

Peoples—compared to 20%–30% of Americans of European descent (Bayless et al., 2017; Reiley, 2021). While lactose intolerance impacts the majority of the world, it is predicted to only impact 36% of the US population (Storhaug et al., 2017).

Since the 1980s, the US government has heavily promoted milk and dairy consumption to reduce milk surpluses from dairy subsidies (Blisard, 1998). The US Department of Agriculture (USDA) recommends three servings of dairy a day (U.S. Department of Agriculture and U.S. Department of Health and Human Services, 2020), but the health benefits are unclear and not universal (Reiley, 2021). The goodness and purity of milk is a myth that has been passed as truth in American culture; recall advertisements with popularised slogans like 'Milk. It does a body good' and 'got milk?' Advertisements tout milk as a key source of calcium and other nutrients and its consumption as important to maintaining healthy bones and decreasing risk of osteoporosis. However, a 2018 systematic review did not find decreased risk of hip fractures in those who consume more dairy (Bian et al., 2018). In another study, researchers found that rather than dairy, fruit and vegetable consumption was associated with higher bone mineral density in older Americans (Tucker et al., 1999). Despite messages about the universal healthfulness of milk—does it really benefit all Americans?

Our study reveals how beliefs about milk and its benefits are based on biocentric bias that normalises (and standardises) White bodies.

METHODOLOGY

Seale (2003) highlighted the importance of bringing together media studies and the sociology of health and illness to analyse how the media frame health and medical issues. Media representations are consequential, influencing audiences' engagement with and responses to health information (Gough, 2007; Sherlaw & Raude, 2013). In this study, we explore how news media frame lactose intolerance and lactase persistence.

This study draws from news articles and opinion pieces published in *The New York Times* (NYT) ($N = 142$) and *Scientific American* (SA) ($N = 81$). Newspapers and magazines reflect and reproduce knowledge about and attitudes towards social issues (Conrad & Markens, 2001; Phelan et al., 2013; Saguy & Gruys, 2010), thus they are valuable resources for capturing how cultural beliefs and representations change (Umamaheswar, 2015). We selected these two publications to track the framing of lactose intolerance over time. NYT and SA are widely circulated, long-running publications (NYT founded in 1851 and SA in 1845) with online archives that are publicly available (Scientific American, 2022; The New York Times 2022a, 2022b).

NYT is a daily newspaper that covers a broad range of issues from world news to the arts. SA is a monthly magazine that caters to 'amateur scientists' (Johnston, 2018), covering science and technology topics, such as advances in physics, health and environmental research. The NYT readership tends to be college-educated, middle to high socioeconomic status (38% earning $75,000+ and 25% earning $30,000–$74,999 per year) and Democratic (Pew Research Center, 2012; Puglisi, 2011). Similarly, SA's readership tends to be educated (66% having graduated from college and 31% having obtained a post-graduate degree), of higher socioeconomic status (a median household income of $147, 319) and homeowners (70%) (Scientific American, 2011, 2013). For both publications, the readership demographics have remained relatively consistent since their founding (Britannica, 2021; Diamond, 1995; Green, 1975). Our sample is limited by its non-representation of news media that target readers of lower socioeconomic

status and with conservative leanings. However, despite its targeted readership, NYT is generally recognised as 'mainstream' (Shearer & Mitchell, 2021). Because our study focuses on the framing of lactose intolerance and lactase persistence, it does not capture audiences' interpretation.

Following Altheide and Schneider's (2017) guide on qualitative media analysis, we designed a data collection protocol to broadly capture articles that discussed lactose intolerance and lactase persistence. We identified key search terms and then used the NYT's and SA's online archives to pull all articles that included 'lactose intolerance', 'milk allergy', 'lactase persistence', 'lactase impersistence', 'lactase persistent' and 'lactase impersistent'. Because we were specifically interested in the changing discourses on lactose digestion, we did not expand our search to include all articles related to milk. After identifying and removing duplicates, we collected 223 articles for analysis. The sampled articles were published between 1935 and 2020. All but five articles were published after 1971. The five articles published between 1935 and 1971 were not relevant and removed from the sample. Even though the clinical symptoms of lactose intolerance have been documented as early as 460 BC, it was not scientifically studied until the late 1960s (Bayless & Rosensweig, 1966; Fassio et al., 2018; Huang & Bayless, 1968), which largely accounts for why we did not find relevant articles much earlier than 1971.

Once the data were collected, we followed a coding strategy that is used in grounded theory analysis, which is designed to identify emerging themes (Charmaz, 2014). First, we independently conducted open-coding on a subset of articles and then collaborated to create a codebook that captures emerging themes (e.g., 'rhetoric of disorder and deficiency', 'evolution and dietary adaptation' and 'marketing of lactose free and other alternatives') (Charmaz, 2014). In this stage of open-coding, we compared our code applications, negotiated discrepancies and established consensus. We then applied the codebook to all sampled articles. We used the qualitative data analysis program, Dedoose, to facilitate the coding process. In addition, we took notes on each article. During analysis, we met regularly to compare our codes and findings. We also modified the original codebook to include new themes as they emerged.

FINDINGS

Shifting frames: From racial difference to evolutionary genetics

Between the early 1970s and 2020, we observed a gradual shift from discussing *lactose intolerance* as racial difference to *lactase persistence* as evolutionary genetics. This shift not only weakened associations between race and the ability to digest lactose but also phased out lactose intolerance as a health problem. As NYT started reducing its coverage of lactose intolerance at the beginning of the 2000s, articles on the relationship between lactose digestion and local genetic adaptation more often appeared in SA.

By the early 1970s, it was known that most of the world's population is lactose intolerant (Huang & Bayless, 1968; Simoons, 1978), but writers at that time continued to frame the condition as a sickness and deficiency, thus normalising the less common ability to comfortably digest milk. Writers highlighted racial disparities, noting that racial/ethnic minorities are more likely to be lactose intolerant compared to Whites. As illustrated in the excerpts below, writers described lactose intolerance as a health problem prevalent among non-Whites:

> A large portion of the world's population, including many American blacks and Jews, cannot digest the carbohydrate lactose in milk.
>
> (Van Gelder, 1976, *NYT*)

> For some people lactose intolerance is a temporary condition. (...) For others the condition is a rite of passage. Among certain ethnic groups—blacks, Asians, Jews, southern and central Europeans, and American Indians—70 percent are lactose-intolerant as adult.
>
> (Belkin, 1984, *NYT*)

The framing of lactose intolerance as a problem of non-Whites biologised and problematised racial differences. During this time, even the very few articles that described the genetics of lactose intolerance and lactase persistence pointed to racial connections. For instance, one writer for *SA* suggested that lactase persistence in a small percentage of Black Americans is an artefact of slavery.

Towards the end of the 1980s and into the 1990s, we noticed that there were fewer articles that explicitly linked race and lactose intolerance. Yet, there were instances in which writers framed lactose intolerance as an issue of cultural difference. In the excerpt below, a writer explained how milk, tolerance and acceptance are part of 'heritage' and 'culture', but this still gestured towards racial differences.

> The disparity is also key to milk's acceptance in this country, according to Norge Jerome, a nutritional anthropologist and a professor of preventive medicine at the University of Kansas Medical Center in Kansas City. "One can understand why Americans of European heritage feel so strongly about milk," she said. "It's part of the social history of their people." By contrast, it is not a thread through African culture.
>
> (Probber, 1987, *NYT*)

Similarly, in a 1996 *NYT* article on the marketing of cheese in China, the writer described how local preferences, shaped by biology and history, created business challenges: 'It has not been easy. Adult Chinese, because of a history of lactose intolerance and a negative association between cheese and a few odd-smelling European visitors back in the 19th century, generally deplore the stuff'. Cultural explanations gradually moved the issue away from racial differences, but by focusing on the absence of milk in a people's diet, writers continued to normalise and standardise milk consumption.

By the 2000s, the rhetoric of racial difference was rare in articles that mentioned or discussed lactose digestion. Instead, writers discussed evolutionary genetics and the spread of lactase persistence. Focusing on lactase persistence, writers shifted attention away from lactose intolerance as a problem or deficit. As an outcome of evolutionary biology, writers pointed to how the same phenomenon is responsible for both lactase persistence and lactose intolerance:

> Humans are also unique among mammals in continuing to use the milk of other animals as a significant source of nutrition well beyond childhood. This cultural innovation has occurred independently in groups in Europe, Africa and the Middle East, using milk derived from cattle, goats and camels. (...) In humans from populations with a long history of dairy herding, however, a mutant form of the lactase gene continues to be active in adulthood.
>
> (Kingsley, 2009, *SA*)

In one article on genetic mutation, the writer equated the genetics of milk digestion to the genetics of black spots on the wings of flies: 'Again, having spots, or not, is not determined by a mutation to a protein that makes the pigment, but to one of its switches' [Judson, 2008, *NYT*]. Unlike earlier rhetoric of sickness, such juxtaposition emphasised the mundanity of how some develop lactose intolerance and others lactase persistence.

By centring evolutionary biology, lactase persistence and lactose intolerance are not tied to race but geographical region. Writers described lactose digestion as an outcome of a region's environmental and agricultural constraints:

> Pioneer farmers made their way north with domesticated crops from the Near East, he explains, but these crops were not necessarily well suited for the new environment. So, as the pioneers found themselves insolated with only feeble crops and cattle as well as parasitic-ridden water sources, cow's milk may have become an increasingly important stable for survival.
>
> (Peeples, 2009, *SA*)

As descriptions of milk digestion focused on evolutionary adaptation, which is a universal process, lactose intolerance was less often presented as a health problem. An evolutionary genetics perspective weakened the racial significance of lactose intolerance. However, as we discuss in the next section, early concerns about lactose intolerance contributed to the supremacy of the 'American diet' and the medicalisation of dietary deviations.

Milk: 'As American as apple pie'

The American food culture mythologises and celebrates the nutritional value of milk, setting dairy above other foods of similar nutritional value (Dupuis, 2002). The medicalisation of lactose intolerance—or rather, the process of framing lactose intolerance as a health and medical issue (Conrad, 2007)—contributes to the defence and legitimisation of the 'American diet'. Published concerns about calcium and vitamin D deficiency scrutinise lactose intolerance and reflect American cultural ideas about what constitutes a healthy diet. Sampled articles in *NYT* raised dairy above other sources of calcium and vitamin D. These articles constructed milk and dairy as healthy, popular and culturally significant, brushing aside criticism by claiming that it was essential to a nutritious American diet—especially for children:

> Every vitamin that man is known to require is to be found in milk (though a few—particularly C—are in amounts too small to be useful, and D, which is destroyed in pasteurizing, must be put back into milk before it is marketed). It contains significant amounts of seven minerals thought to be useful to health (milk and milk products are this nation's main source of calcium), and minor of eight others.
>
> (Blum, 1975, *NYT*)

Not limited to articles exalting milk, writers critical of dairy also acknowledged its prominence—'Drinking milk is as American as apple pie'. [Bittman, 2012, *NYT*]—while shying away from advising changes to the American diet and cultural norms:

> MILK the good, the nourishing, the pure. Milk, the hard-to-digest, the high in fat. Countries and cultures have viewed milk both ways, but it is a fact that milk has left a large white mustache glistening over America's collective upper lip. Perhaps nowhere else is milk so glorified.
>
> (Probber, 1987, *NYT*)

Some writers pointed to the hold that milk and the dairy industry have on the American diet and nutritional advice. Questioning the virtue of milk, writers compared the American diet to those of other countries. They noted how in countries (or even racial groups in America) where milk consumption is limited or completely absent, people still have strong bones. This corrects the American myth that milk is critical to a healthy diet and reveals how faith in its health benefits are cultural and not universal:

> Nations without dairy products and a calcium intake onequarter [sic] (even one-tenth) of ours have bones and teeth quite as strong. African nations and blacks in the United States, groups that consume far less calcium than most Caucasians, tend to have less osteoporosis and to have bones of greater density than whites.
>
> (Blum, 1975, *NYT*)

> It is true that in most Asian countries, where little or no dairy products are consumed, there is a much lower incidence of osteoporosis than in the United States. But it is also true that Asians eat a lot more calcium-rich vegetables and a lot less protein than Americans do.
>
> (Brody, 2000, *NYT*)

Yet, even when writers mentioned calcium-rich vegetables as alternatives in the terms of acquiring certain vitamins, they indicated that these alternatives were either nutritionally insufficient or incompatible with American taste:

> Dairy products are not the only good source of calcium. Others include dark, leafy green vegetables, like kale and collard greens. But nutrition experts say that Americans are unlikely to embrace them. That is one reason why the guidelines have not emphasized them, said Shirley Watkins, the Agriculture Department's Under Secretary for Food, Nutrition and Consumer Services.
>
> (France, 1999, *NYT*)

While recommending vegetables to Americans was described as 'radical' [Webb, 1993, *NYT*], the USDA stated they do not believe that Americans are going to be moving away from dairy anytime soon [France, 1999, *NYT*]. These narratives undermined alternative calcium sources and minimised how other cultures are able to thrive without consuming as much dairy as Americans. Such reporting upheld the American diet and dismissed alternatives as less healthy and less tasty. Simultaneously, reporting on the problem of lactose intolerance employed the language of disorder and deficiency. During the 1970s and 1980s, non-White populations with lactose intolerance were regularly described as nutritionally deficient or as suffering from the condition:

> A Baltimore research team has found that more than half of black schoolchildren may be unable to digest milk properly, raising serious questions about the usefulness of school milk programs to help raise the nutritional status of blacks.
>
> (Brody, 1971, *NYT*)

While racial minority groups were 'deficient' in the lactase enzyme and unable to digest milk 'properly', writers described Northern Europeans and their descendants who digest lactose into adulthood as 'advantaged', or otherwise unaffected:

> In fact, only people of Northern European descent are relatively unscathed by the condition; the incidence in that population is about 15 to 20 percent.
>
> (Webb, 1993a, *NYT*)

> The genetic mutation conferring this advantage – shared by most lactose tolerant Europeans was commonly thought to have occurred first in the northern part of the continent, where the sun shines less and people may be in greater need of the vitamin D found in cow's milk.
>
> (Peeples, 2009, *SA*)

Through the medical language of deficiency, lactose intolerance was medicalised and problematised. Like other medicalised conditions (Conrad, 2007), lactose intolerance was matched with a pill in 1985 with the advent of lactase enzyme tablets (Holsinger, 1992), maintaining the idea that lactose intolerance is a deficiency and needs treatment. In news reporting, the problematisation of lactose intolerance helped legitimise the supremacy of the dairy-heavy American diet.

Medicalising lactose intolerance: The 'osteoporosis epidemic' and vitamin D deficiency

The medicalisation of lactose intolerance is tied to conditions associated with calcium and vitamin D deficiency, like osteoporosis, diabetes and heart disease. Due to the American diet's reliance on dairy for calcium and vitamin D, conditions that interfere with milk digestion become larger issues of medical concern:

> Many children drink rice, almond or soy milk instead of cow's milk for various reasons — lactose intolerance, allergies, taste preference. But now Canadian researchers have found that children who do not drink cow's milk may have insufficient levels of vitamin D.
>
> (Bakalar, 2014, *NYT*)

In our data set, osteoporosis was first mentioned in 1975. In the years following, writers referenced a high prevalence of osteoporosis among older Americans, raising concerns about calcium deficiency. The first reference to a 'national epidemic of osteoporosis' was in 1982: 'A chronic calcium shortage can result in a disease called osteoporosis, a weakening of the bones that is epidemic among older Americans and is responsible for the fractures that commonly afflict

older people' [Brody, 1982, *NYT*]. The use of 'epidemic' conveyed a sense of urgency and crisis (Boero, 2007). The public dialogue surrounding osteoporosis sharpened its focus on calcium and dairy consumption, reframing the problem of lactose intolerance and renewing concern:

> Lactose intolerance, hardly a new condition, is receiving new attention. The reason, according to physicians, industry officials and patients, is the recent emphasis on the importance of calcium in the diet. A chronic calcium shortage can result in osteoporosis, a weakening of the bones that is common among older Americans, particularly women. (...) "Calcium," said Dr. Barbara S. Kirschner of the department of pediatric gastroenterology at the University of Chicago, where she works with lactose-intolerance children, "has become a more publicized concern recently. Milk is the best source of calcium we have, and people with lactose intolerance can't benefit from that."
>
> (Belkin, 1984, *NYT*)

> Getting enough calcium is a problem for many Americans in all age groups. (...) Lactose intolerance, however, is very prevalent, making the use of many milk products impossible.
>
> (Lupoli, 1989, *NYT*)

These articles described lactose intolerance as a barrier to sufficient calcium levels, and thus, a factor that could increase the risk of osteoporosis. They also associated lactose intolerance with increased risk of other severe diseases, like rickets, heart disease and diabetes. Specifically, writers mentioned that Black Americans were 'doubly vulnerable' [Schiff, 1991, *NYT*] because of lactose intolerance and high concentrations of melanin, which reduced vitamin D uptake from sun exposure:

> Too much television and too little milk means that black children are not getting enough of vitamin D, a new study says. Known as the "sunshine vitamin" because it can also be obtained through sun exposure, Vitamin D can stave off rickets, improve bone health, and possibly prevent colds, heart disease and diabetes. ... Fair-skinned children can get their daily dose of Vitamin D with just 10 to 20 minutes in the sun prior to applying sunscreen. But sun-protective skin pigments in black children means that they need to be outdoors up to an hour per day. Blacks are more likely to have lactose intolerance, restricting their intake of dairy.
>
> (Borrell, 2009, *NYT*)

By connecting lactose intolerance to the development of other chronic illnesses, writers affirmed the medicalisation of lactose intolerance.

CONCLUSION

In 2017, White supremacists adopted milk as a symbol for racial purity, drinking it in large quantities to flaunt their lactase persistence (Harmon, 2018; Stănescu, 2018). The symbolic act was intended to demonstrate White biological superiority, but lactase persistence is not limited to

White people and is not determined by race or skin pigmentation. White supremacists have appropriated this genetic variation as a symbol of racial fitness. This strategy is not particularly innovative or new. For instance, in the 19th century, the British politicised food and diet to justify colonisation, believing that the meat and dairy-heavy diet of Europeans made them more intelligent than rice and vegetable-eating people of India and China (Stănescu, 2018). While the milk theatre of contemporary White supremacists is poorly grounded in fact, a piece of their argument—that milk digestion is healthy and 'normal'—had been subtly embedded in mainstream beliefs about lactose intolerance, health and diet for decades.

Analysing articles published in *NYT* and *SA*, we argue that popular discourses normalise biocentric biases through messages about eating behaviours and health. The media framing of lactose intolerance and lactase persistence contributed to the standardisation of White bodies—specifically, White digestion—as normal and healthy. We observed this process in three patterns. First, in the shift from discussing lactose intolerance as racial difference to lactase persistence as evolutionary genetics. Articles published between 1971 and early 2000s noted the racial disparities in milk consumption and lactose intolerance, which perpetuated the idea that the condition is a health problem limited to people of colour. From the early 2000s and onwards, articles focused more so on evolutionary genetics and ancestral diet, loosening the connections between lactose intolerance and race. Second, we find that the framing of lactose intolerance as a health problem affirmed the dominance of an American dairy-heavy diet. Articles implied that without milk, diets (and those who consumed them) were nutritionally deficient and incomplete. Yet, milk is not the only source of key nutrients. Third, and finally, articles connected lactose intolerance to increased risk of disease—namely, osteoporosis—which further medicalised the phenomenon.

Contributing to literature on the medicalisation of eating- and food-related conditions, the case of lactose intolerance and lactase persistence highlights how biocentric biases are reified through medical and health discourse and communicated to the public. Sociological studies have demonstrated how colour-blindness of medical discourse can obfuscate racism (Netherland & Hansen, 2017; Pryma, 2017; Whetstone, 2021). In particular, research that investigates eating and food-related conditions often focus on the reproduction of race and class inequalities through diagnosis and treatment, finding that marginalised populations with the fewest choices are disproportionately impacted (Daniel, 2016; Papas et al., 2016; Walker et al., 2010) and blamed for their health outcomes (Firth, 2012; Saguy & Gruys, 2010). We highlight how racial bias is embedded in popular discourses on health, healthy bodies and healthy behaviours—not just illness. In this way, the concerns we raise are related to issues of race representation and the reification of race as biological differences in research (Epstein, 2008; Nelson, 2011), illustrating how biocentric bias can hide in the 'neutral' language of science and medicine.

Dominant ideas about 'healthy' and 'unhealthy' foods are shaped by structural inequalities (Anguelovski, 2015; Daniel, 2016; Krishna, 2020), cultural values and trends (Coveney, 2006; Elliott, 2014; Walsh & Baker, 2020), social change (Haydu, 2021) and new research (Davis & Saltos, 1999). The case of lactose intolerance draws attention to the larger problem of health concerns subtly reinforcing the standardisation of White bodies and experiences through messages that are colour-blind and purportedly universal. As we show, popular media reflects and contributes to this process in its framing of health conditions. Future research should consider how audiences interpret media representations of race, food and health. Moreover, sociological studies on the medicalisation of eating should continue to investigate how racial and cultural dominance are inscribed in healthcare services, nutritional recommendations and public school lunches.

AUTHOR CONTRIBUTIONS

Eli J. Kaufman and Catherine Tan: Conceptualisation (Lead); Data curation (Equal); Formal analysis (Equal); Investigation (Equal); Methodology (Equal); Project administration (Equal); Resources (Equal); Writing—original draft (Equal).

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DATA AVAILABILITY STATEMENT

We selected these two publications to track the framing of lactose intolerance over time. NYT and SA are widely circulated, long-running publications with online archives that are publicly available (Scientific American, 2022; The New York Times 2022a, 2022b).

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