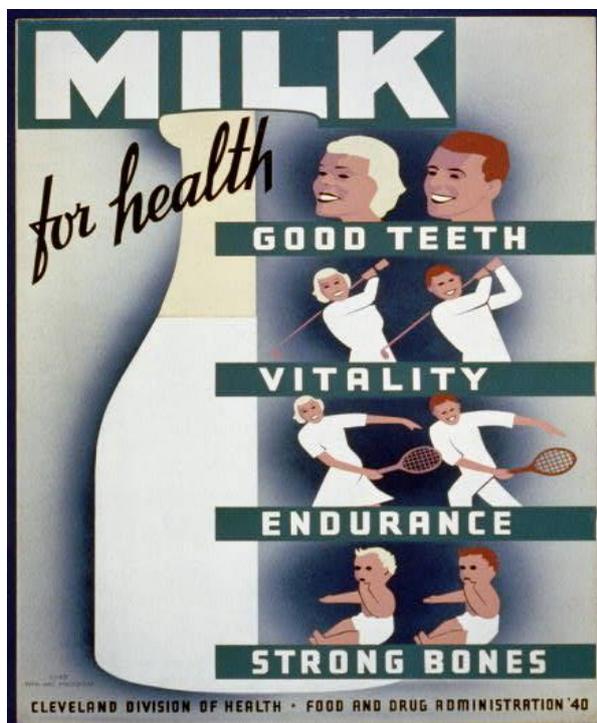


Cow Dairy: Some Things You Should Know

Contents

Cow Dairy: Some Things You Should Know	1
1. There is only one dairy product designed to be eaten by human beings... mother's milk.....	2
2. Dairy products do not build to strong bones	2
3. Dairy consumption can promote cancer.....	5
4. Dairy consumption can promote autoimmune disease	5
5. Dairy consumption can give you zits.....	7
6. The dairy industry is a major environmental concern	7
7. The dairy industry is a major animal welfare concern.....	8
8. The promotion of infant formula milk has contributed to millions of deaths worldwide.....	8
9. Dairy consumption provides a source of iodine	10
10. Dairy's demise is possible, but the industry won't go down without a fight	10
References	11
Further reading from Viva!	13



1940 poster promoting milk consumption. Source: [Wikipedia](#)

Dairy products have been promoted as nature's perfect food, providing the protein and calcium required for healthy bones, muscles, and teeth. Dairy farming conjures up idyllic images of cows grazing on natural pastures. For too long dairy has been given a free pass when it comes to issues such as human health, animal welfare, and environmental destruction. As a long-time vegetarian, I continued to consume milk, cheese and yoghurt while buying into the myth that dairy was much more benign than other forms of animal agriculture. A deep dive into the literature disabused me of this notion. Dairy consumption is not good for your health unless you are starving. This applies to dairy in any form, whether it is milk (of whatever fat content), butter, yoghurt, cheese or kefir. Dairy consumption also has adverse ethical and environmental impacts. The fact that it has such a wholesome reputation is testimony to the power vested interest and marketing. However, the tide is finally turning.

This article is my small contribution to lifting the veil that has obscured the truth about dairy; a veil that has been expertly woven by a mixture of slick PR, lobbying power, and marketing masquerading as science.

Before we dive in, here are a couple of points to bear in mind: 1) Although the focus here is dairy, specifically products from cow's milk which is the most common and well-studied commercial dairy group, the lack of attention given to milk from other (non-human) animals is not meant to imply that they are necessarily better than cow dairy from any standpoint – **we should not be consuming the milk of other animals**; 2) Health and disease develop because of dietary and lifestyle patterns, not individual nutrients/food items or behaviours independent of their context. So please bear this in mind. We cannot reduce things down to isolated heroes and villains. Dairy is certainly not a health food, but neither is it single-handedly responsible for all the dietary disasters that permeate the toxic brew known as the BAD (British Average Diet).

1. There is only one dairy product designed to be eaten by human beings... mother's milk

Every species of mammal produces milk that is designed for the unique dietary needs of their offspring until they are weaned. Logically, therefore, nutrient composition varies considerably between the milk of different species. For example, milk fat content ranges from 0.2% for the black rhino to 60% for some species of seals.¹

Cow's milk, designed to feed a calf that doubles in weight every 47 days, has 3.3 grams of protein per 100 millilitres. Contrast this with human mother's milk, which is designed to feed a baby that doubles in weight every 180 days, with 1.2 grams of protein per 100 millilitres.² To help grow large cow bones, cow's milk has over three times more calcium content than human breast milk.³ All the nutrients in cow's milk are designed to grow a cow, not a human being. This simple truth has many health implications.

Human beings are the only species that consumes the milk of other animals. This practice began in agricultural communities about 8,000 years ago. As a result, gene mutations that allowed some people to digest lactose (milk sugar) throughout their lives spread among northern Indians, Arabs, and inhabitants of Southwest Asia and Europe.⁴

Non-human milk consumption, therefore, must have had a survival advantage for some groups of people at some points in time. This does not, however, mean that dairy is a health food. More likely, dairy products were 'survival foods' that could help people bridge the hunger gap when other, more nutritious, foods were in short supply.

There are, nonetheless, health issues for those who can digest lactose, some of which are outlined here and more of which are extensively documented by [Viva!](#) In their excellent fully referenced report on the impact of dairy on our health, entitled [White Lies](#).⁵ However, health issues are more severe for the approximately 75% of people who are unable to properly digest dairy products from 6-7 years of age; a problem known as lactose intolerance (lactose intolerance in the early years is, for obvious reasons, rare).⁶ Symptoms of lactose intolerance include abdominal pain, bloating, flatulence and diarrhoea. But symptoms are not restricted to gut issues and can include headache, vertigo, memory impairment, lethargy and cardiac arrhythmia.⁶

2. Dairy products do not build to strong bones

This is how many a conversation goes:

Omnivore: *I hear you're a vegan. Where do you get the calcium for your bones?*

Vegan: *Almonds, soy, oranges, figs, kale, broccoli, and many other plant foods.*

The conversation has two principal endings:

1. Curious omnivore: *I never realised.*
2. Dogmatic omnivore: *You need milk.*

The simple but flawed logic behind the 'dairy for strong bones' hypothesis goes as follows; our bones contain a lot of calcium, calcium loss is associated with osteoporosis and bone fractures, and dairy products are rich calcium. All of these statements are true, but the body is so much more complex than this simple cause-effect logic implies.

The first nail in the coffin of this nutritional nonsense is the fact that people with a low rate of calcium consumption also have a low rate of osteoporosis and bone fractures.⁷ Figure 1 is a graph of hip fracture rates for women in selected countries (standardised for age) against calcium consumption.

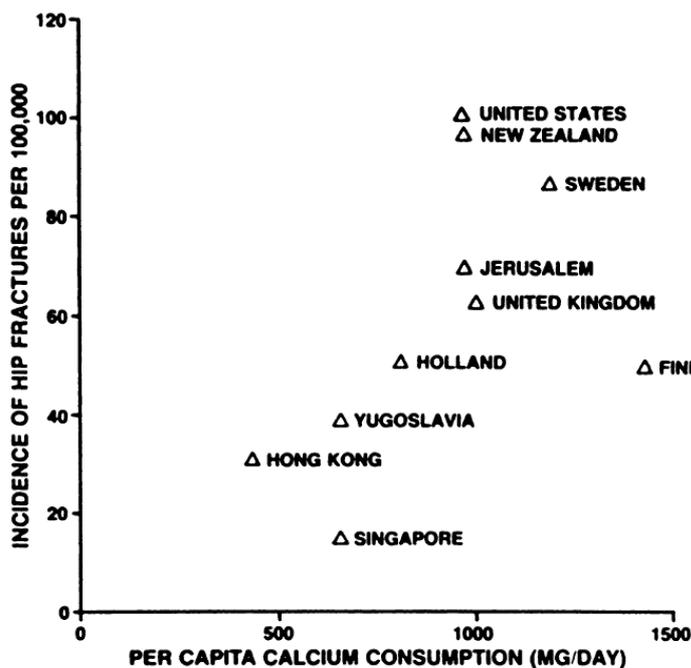


Figure 1. Available calcium in the food supply compared with the incidence of hip fractures in females of several nations (Source: Hegsted, 1986).

It should not be concluded that calcium is unimportant for bone health nor for other body functions such as blood clotting and muscle function. But if some is good, it does not mean that more is better. A study published in the British Medical Journal found that women with both the lowest and the highest rates of calcium intake were at high risk of hip fractures while those with the lowest rates of hip fractures had intakes that were 'just right'.⁸

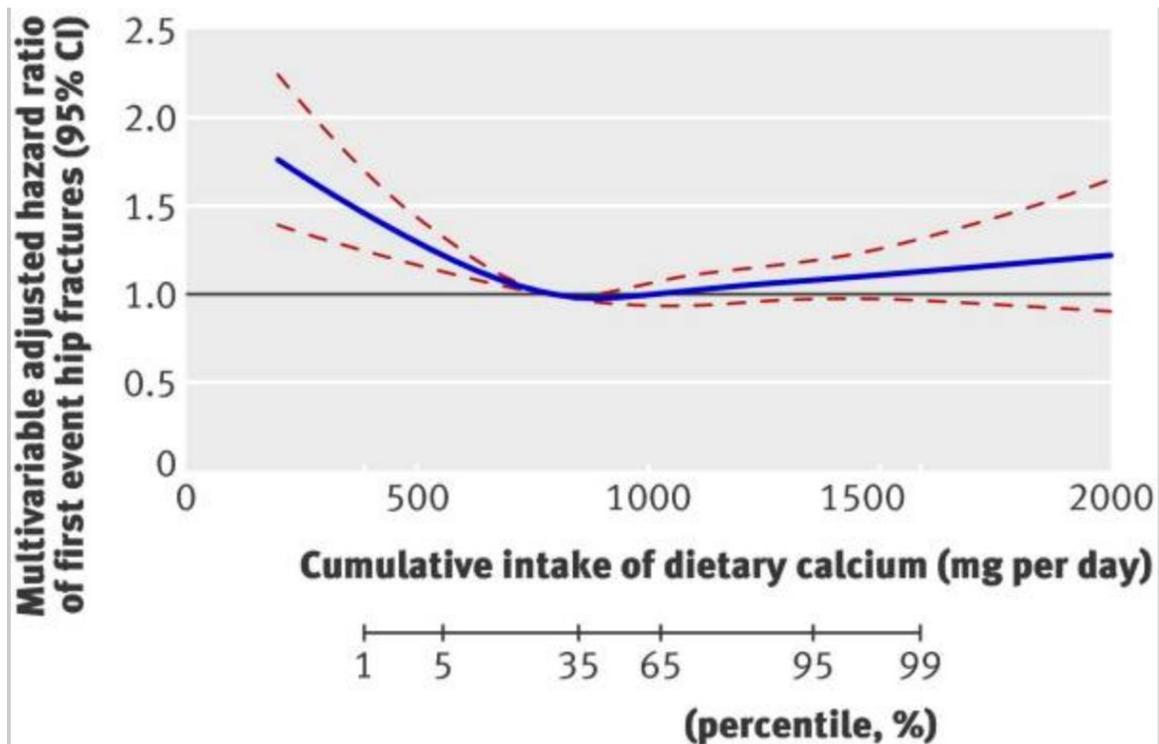


Figure 2. Relationship between cumulative average intake of dietary calcium and time to first hip fracture (Source: Warensjö et al., 1986).

In biology there are a lot of U-shaped curves like this. These ‘too little, too much, just right’ relationships are the basis for the “Goldilocks theory of life”.

So we have a pattern. How do we explain it? Well, the body’s organ systems are not passive sponges that absorb everything we consume. If this were not the case, the enormous quantities of calcium in dairy products would calcify our organs with fatal consequences. So most of the calcium in dairy comes in at one end and goes out the other. The missing piece of the puzzle is the impact of animal protein. Milk and other animal protein sources are highly acidic. However, the blood needs to be kept slightly alkaline at all times for the body’s chemical reactions to work. The body buffers this acidity by removing calcium from its main reservoir – the bones. This process is reflected in the fact that those with higher protein consumption tend to have higher bone fracture rates as shown in the chart below.⁷

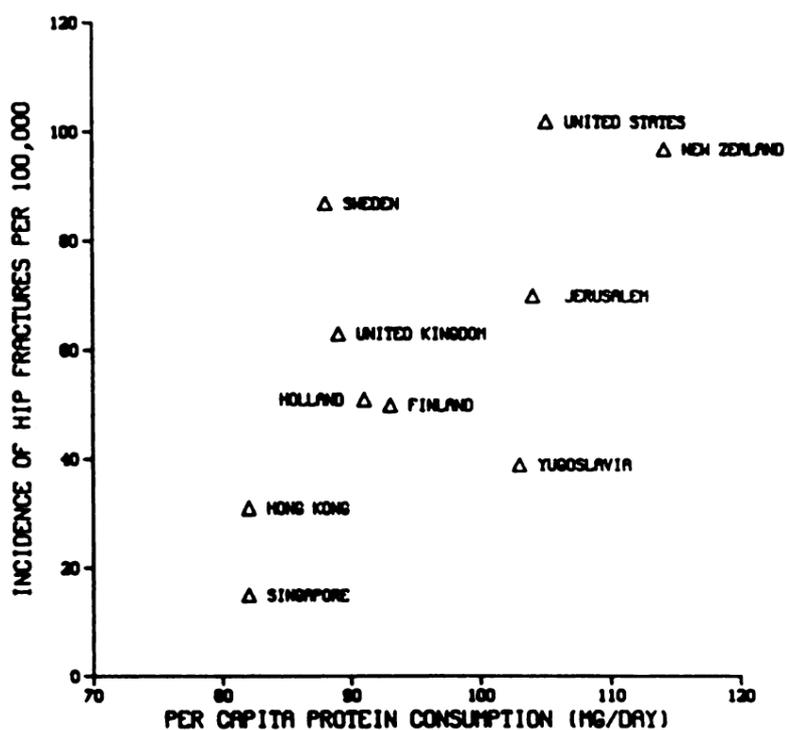


Figure 3. Available protein in the food supply compared with the incidence of hip fractures in females of several nations (Source: Hegsted, 1986).

3. Dairy consumption can promote cancer

Dairy is thought to promote cancer by a variety of potential mechanisms. Dairy products are high in oestrogens which have been linked to breast, prostate and ovarian cancers.^{9,10} Dairy consumption also significantly increases levels of insulin-like growth factor 1 (IGF-1). IGF-1, which is produced in the liver, is vital for normal growth and development, but in excess it can promote the growth of cancerous cells.¹¹ Several studies have demonstrated a link between increased IGF-1 serum levels and risk of breast, prostate, colorectal, and lung cancer.¹¹ Dairy products increase IGF-1 levels more than any other dietary sources of protein.¹² Dairy appears to supply IGF-1 directly and stimulates further IGF-1 production via the casein fraction of soluble milk protein (the major protein fractions of cow's milk are casein (80%), and whey proteins (20%)).

4. Dairy consumption can promote autoimmune disease

The immune system attacks and destroys cells in our body every day as part of its normal ongoing maintenance activities. However, when these attacks get out of hand the result is autoimmune disease. Common autoimmune diseases include rheumatoid arthritis, type 1 diabetes, Crohn's disease, lupus, and multiple sclerosis. The 80+ named autoimmune diseases are all different manifestations of the same process, a failure of the immune system to distinguish self (bodily tissues) from non-self (bacteria, viruses, food fragments, mold, and other toxins).¹³

Genetic susceptibility, imbalances in the digestive system and environmental factors interact to trigger autoimmune disease.¹⁴ Given that we cannot change our genes, the most logical response to an autoimmune diagnosis is to uncover the environmental triggers and remove them / minimise their impact, and heal the digestive tract.

Animal food consumption including dairy, has been correlated with the incidence of autoimmune diseases as have other factors such as the persistent use of pharmaceutical drugs including antibiotics, antacids, antibiotics, and nonsteroidal anti-inflammatory drugs (such as ibuprofen), bacterial and viral infections, smoking; and alcohol consumption.¹⁴

Dairy consumption has been linked with a range of autoimmune diseases, notably MS and type 2 diabetes.^{15,16} In Canada, a high milk-consuming population, MS was 139 times more prevalent than in China, a low milk consuming country.¹⁵ Finland, a high milk-consuming population, had 36 times more type 1 diabetes than Japan, a low milk consuming country.¹⁷

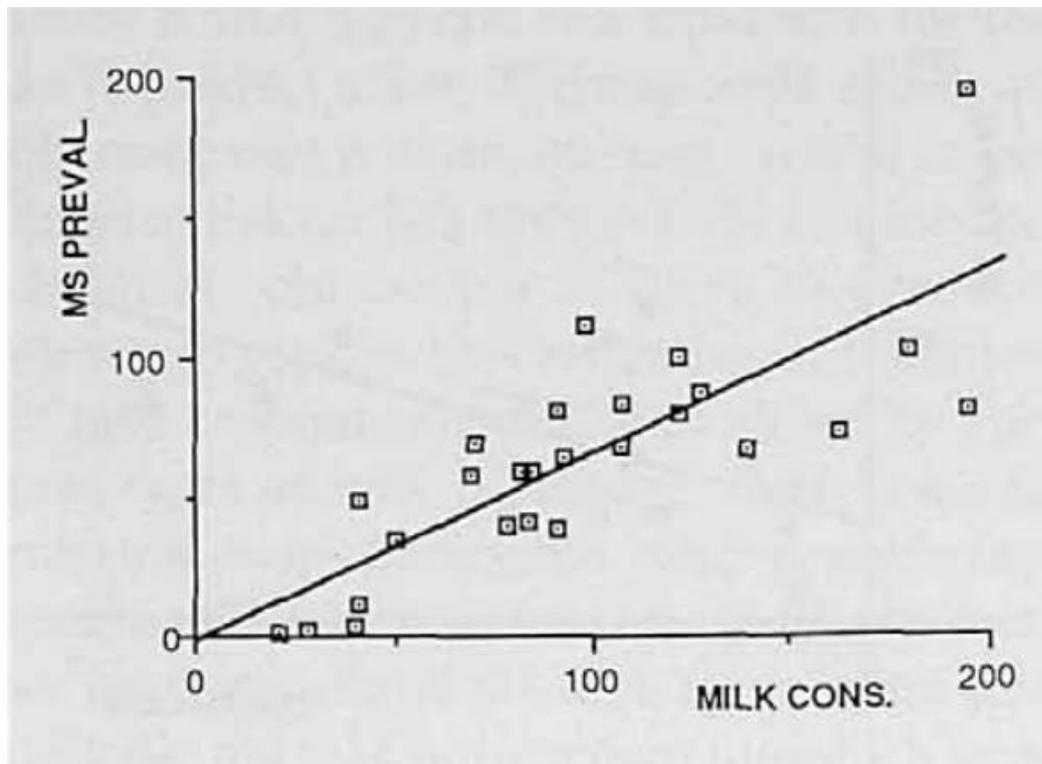


Figure 4. Milk consumption (kg per inhabitant per year) and MS prevalence per 100,000 people (Source: Malosse et al., 1992).

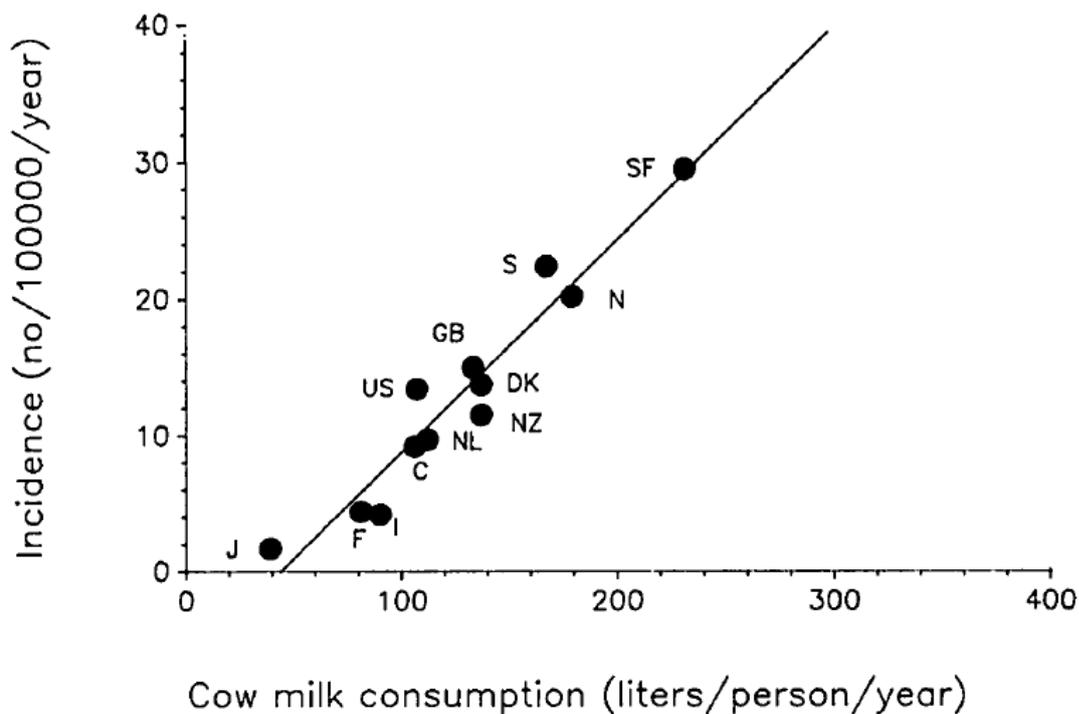


Figure 5. Milk consumption incidence of type 1 diabetes in children from 0-14 (Source: Malosse et al., 1992).

One mechanism through which dairy may contribute to autoimmune disease is a process known as molecular mimicry.¹⁸ Milk contains more than 25 proteins which have a similar structure to proteins in the human body. On exposure to these foreign proteins, if they are only partially digested, the immune system perceives them as foreign substances to be attacked, like a virus or a bacteria, and develops antibodies to them. In susceptible individuals, because of the similarities between these proteins and proteins in the body, the immune cells become confused and 'go rogue' attacking body tissues that resemble these 'invaders'.¹⁹ Another trigger through which dairy may contribute to autoimmune disease is through high oestrogen levels. The oestrogens in dairy may act in combination with other oestrogenic substances like pesticides, plastics, and detergents, and medications such as the contraceptive pill and HRT.²⁰

5. Dairy consumption can give you zits

This issue has recently been highlighted when an anonymous poster took to Reddit to detail an 'experiment' he conducted on his unsuspecting vegan girlfriend.²¹ She believed that going vegan cleared up her acne but he was not so sure, stating that "... teenagers get acne and it goes away yeah, hers just went away a bit late. And now that we're living together, I've been getting tired of all the vegan food... So I thought I would prove to her that the whole "dairy gives me acne" thing is in her head. For the past two months, I've been emptying the same soy creamer container and filling it with dairy creamer. I was gonna do a big reveal, like, 'Surprise! You can eat whatever you want!'"

Don't you wish your boyfriend was sweet like him?

But things did not go the way he planned, and the acne returned – in the words of the (hopefully soon to be ex-) boyfriend - "But she's been wearing makeup both in and out the house lately... and last night, I saw her barefaced for the first time in a while and it is bad. Like insects about to hatch out of her face bad. So I figure I'll just quietly throw out the dairy and her skin will go back to normal."

Does he feel guilty... not much!

"I feel bad but on the other hand, I was doing it for her own good."

Righteous indignation aside, we have to bear in mind that this is just an anecdote. All such stories warrant the "so what response" which goes something like: "I know lots of people who consume dairy and don't have acne" or "I know vegans who do have acne". So does the science support the milk-acne connection? Seems like it does.

A 2018 review and meta-analysis of the link between dairy intake and acne in 78,529 children, adolescents, and young adults reported that those consuming dairy were more likely to be affected by acne than those who did not. The more milk consumed the greater were the odds of developing acne.²²

There are various mechanisms that could explain the association. One possible mechanism is insulin-like growth factor 1 (IGF-1) which increases inflammation and the secretion of oil onto the skin.²³ Other possible triggers include the hormones in dairy²⁴, and whey protein which has been linked with acne in body builders.²⁵

6. The dairy industry is a major environmental concern

Livestock's Long Shadow, a 2006, report supported by many international agencies including the World Bank, EU, and the UK Department for International Development, concluded that animal agriculture contributed *very significantly* to climate change, air pollution, land, soil and water degradation and to the reduction of biodiversity.²⁶ A 2018 study estimated that meat and dairy uses 83% of farmland and produces 60% of agriculture's greenhouse gas emissions.²⁷ Joseph Poore, of Oxford University, who led the study, concluded that "a vegan diet is probably the single biggest

way to reduce your impact on planet Earth, not just greenhouse gases, but global acidification, eutrophication, land use and water use.”

7. The dairy industry is a major animal welfare concern

To maximise milk production for human consumption, a mother cow must be separated from its baby shortly after birth. The calf is typically removed within 48 hours. This breaks the mother-infant bond which is fundamental for all mammals. Evidence for the strength of this bond is the wailing that is heard from mother cow’s for days after their calf is forcibly taken away.²⁸ Female calves are moved to the equivalent of a dog kennel where they spend up to eight weeks until they are housed with other young dairy cattle to ready themselves for their (short) lifetime as milk producing machines. The ‘surplus’ male calves are sold for beef or veal or killed and disposed of.



Images courtesy of [Viva!](#)

A dairy cow spends at least seven months a year both pregnant and lactating from a previous pregnancy, and is milked twice a day yielding about 25 litres of milk, though 40-50 litres is possible at peak lactation. Yield has been increased by selective breeding with cows now producing up to ten times more milk than that needed for a calf. There are many health consequences for these animals that are bred to be milking machines. A cow’s natural lifespan is about twenty years, but a modern dairy cow is exhausted by age five to six, and fit only for slaughter for cheap beef when the bell finally tolls on her miserable life.

For more details on the welfare consequences of dairy farming go to the [Viva!](#) page – [Scary Dairy](#).²⁹

8. The promotion of infant formula milk has contributed to millions of deaths worldwide

Formula is not an acceptable substitute for breast milk because formula, at its best, only replaces most of the nutritional components of breast milk: it is just a food, whereas breast milk is a complex living nutritional fluid containing anti-bodies, enzymes, long chain fatty acids and hormones, many of which simply cannot be included in formula. Furthermore, in the first few months, it is hard for the baby’s gut to absorb anything other than breast milk. Even one feeding of formula or other foods can cause injuries to the gut, taking weeks for the baby to recover.

UNICEF, 2005

Pretty much everybody in UK knows that “breast is best”, though it is not possible for all mother’s to breast feed. It is well established that breast feeding builds the baby’s immune system, enhances their neurological development, reduces their obesity risk and protects them against a wide range of diseases in later life.³⁰ Breast feeding also improves the bond between mother and child.³¹ The maternal benefits of breast feeding are less well studied but there is evidence that long-term benefits include reduced risk for obesity, type 2 diabetes, cardiovascular disease, and breast and ovarian cancer.³⁰

Perhaps this information has not made its way to the powers that be in the UK. In 2011, infant feeding coordinators were done away with and funding for National Breastfeeding Awareness Week was scrapped, and according to the Royal College of Midwives the NHS in England was short of the equivalent of around 3,500 full-time midwives in 2017.³²

Formula milk is needed in some circumstances. In such cases, soya-based formula can be used to meet the child's nutritional requirements without the detrimental effects of cow dairy. It is critical that formula is used and not 'off the shelf' cow's, goat's, soya or any other milk.

In the developed world, lack of breast feeding and use of formula milk has been directly linked to increased infant deaths but the numbers are tiny (though nonetheless tragic for all those affected).³³



Billboard in Laos. (Translation: Bear Brand Formula Milk; Advanced; New development; For everyone).
Photo: Bryan Watt, Health Frontiers, Laos.

The impact in the developing world are much more dramatic, with numerous studies demonstrating increased infant illness and death as a consequence of substitution of breast milk for formula.³⁴ The main reason is poor access to clean water. According to a meta-analysis of 18 studies, the risk of dying from diarrhoea during the first 5 months of life was 10.5 times greater in those who were fed formula compared to those who were breast fed. The equivalent difference for babies from 6 to 12 months old was 2.2 times.³⁵ In summary, The scaling up of breastfeeding can prevent an estimated 823 000 child deaths and 20 000 breast cancer deaths every year.³⁵

'Can a product which requires clean water, good sanitation, adequate family income and a literate parent to follow printed instructions be properly and safely used in areas where water is contaminated, sewage runs in the streets, poverty is severe and illiteracy high?' ~ Edward M Kennedy, chairman of the USA Senate Subcommittee on Health and Scientific Research (1974).

The seriousness of the situation has been recognised for some time. In 1939, Dr Cicely Williams, a medical officer in the British Colonial Service³⁶ was invited to address the Singapore Rotary Club where she stated that, 'anyone who, ignorantly or lightly, causes a baby to be fed unsuitable milk, may be guilty of that child's death'.

The chairman of the Singapore Rotary Club was also the president of Nestlé, who were exporting milk to the region and advertising it as "ideal for delicate infants". Despite campaigns, international agreements and codes of conduct, Nestlé and other manufacturers are still promoting infant formula in the developing world.³⁴

9. Dairy consumption provides a source of iodine

At last, a positive note.

Not really.

It is true that iodine is an essential for many processes including thyroid function, a healthy immune system, and optimal neurological function.³⁷ It is also true that many people are not getting enough iodine.³⁸ Furthermore, milk and dairy products are major iodine sources in industrialised countries.³⁹

So why don't I recommend dairy as a source of iodine? First and foremost, dairy has so many negative consequences that recommending it for its iodine would be a bit like recommending chips as a source of vitamin C, or Coca Cola as a source of phosphorus... or milk as a source of calcium!

Secondly, iodine levels in milk are too variable to provide a consistent intake. van der Reijden et al. estimate milk and dairy contribute between 13 and 64% of the recommended daily iodine intake in industrialised countries.³⁹ As per the 'Goldilocks Theory of Life', excessive iodine intake can impair thyroid function.

Why so variable? Three important reasons are: people's dairy intakes vary widely, soil iodine levels influence levels in milk for cattle that graze on pastures, and the degree to which teats are dipped with iodine-containing disinfectants is a major determinant of iodine content in non-organically raised animals.³⁹ Teat dipping is used in industrialised dairy for management of mastitis, a painful inflammatory reaction of the udders to physical, chemical or thermal trauma or microorganism infection. Mastitis is endemic in dairy cattle throughout the world. Depending on its severity, mastitis may cause milk to be watery, and contain flakes, clots and pus. So higher iodine in your milk is related to injured or diseased cows. Not a pleasant thought. There are healthier ways to ensure you get your iodine.

10. Dairy's demise is possible, but the industry won't go down without a fight

The sacred dairy cow has stood on its pedestal for far too long, but it seems that the tide is finally turning. The truth about dairy is becoming more widely known and plant-based diets are gaining in popularity, especially among younger age groups.⁴⁰ Healthy, dairy substitutes are now commonly available with the global dairy alternatives market "projected to grow from USD 17.3 billion in 2018 to USD 29.6 billion by 2023, at a compound annual growth rate of 11.4%."⁴¹ Following the science, dairy is featuring less prominently in national dietary guidelines with the 2016 English Eatwell Guide replacing the 2007 *milk and dairy foods* group with *dairy and alternatives*.^{42,43} The guidelines state that *unsweetened calcium-fortified dairy alternatives like soya milks, soya yoghurts and soya cheeses also count as part of this food group and can make good alternatives to dairy products*.

But the myth of dairy as a health food is being maintained by the multi-million pound dairy industry in the face of all the evidence to the contrary. Aping the five-a-day campaign to get people to eat more fruit and vegetables, the Global Dairy Platform launched a three-a-day campaign to get people to consume more dairy. In support of its efforts, a Dairy UK spokesman stated, "When it comes to promoting the benefits and strength of food products, all food sectors should have a robust evidence base, not just trendy claims or health gurus."⁴⁰

Finally, we agree on something.

References

1. Skibieli AL, Downing LM, Orr TJ, Hood WR. The evolution of the nutrient composition of mammalian milks. *J Anim Ecol.* 2013 Nov;82(6):1254–1264.
2. McDougall J. The Perils of Dairy - YouTube [Internet]. 2009 [cited 2019 Aug 3]. Available from: <https://www.youtube.com/watch?v=TJvrlwnEqbs&t=145s>
3. Roig M. Calcium bioavailability in human milk, cow milk and infant formulas—comparison between dialysis and solubility methods. *Food Chem.* 1999 May;65(3):353–357.
4. Lieberman D. *The story of the human body: evolution, health and disease.* London: Penguin Books Ltd; 2013.
5. Butler J. White Lies [Internet]. Viva! - The Vegan Charity. 2014 [cited 2019 Aug 5]. Available from: <https://www.viva.org.uk/whitelies>
6. Di Rienzo T, D'Angelo G, D'Aversa F, Campanale MC, Cesario V, Montalto M, Gasbarrini A, Ojetti V. Lactose intolerance: from diagnosis to correct management. *Eur Rev Med Pharmacol Sci.* 2013;17 Suppl 2:18–25. PMID: 24443063
7. Hegsted DM. Calcium and osteoporosis. *J Nutr.* 1986 Nov;116(11):2316–2319. PMID: 3794834
8. Warensjö E, Byberg L, Melhus H, Gedeborg R, Mallmin H, Wolk A, Michaëlsson K. Dietary calcium intake and risk of fracture and osteoporosis: prospective longitudinal cohort study. *BMJ.* 2011 May 24;342:d1473. PMID: 21610048
9. Carroll KK. Experimental evidence of dietary factors and hormone-dependent cancers. *Cancer Res.* 1975 Nov;35(11 Pt. 2):3374–3383. PMID: 1104150
10. Larsson SC, Bergkvist L, Wolk A. Milk and lactose intakes and ovarian cancer risk in the Swedish Mammography Cohort. *Am J Clin Nutr.* 2004 Nov;80(5):1353–1357. PMID: 15531686
11. Kasprzak A, Kwasniewski W, Adamek A, Gozdzicka-Jozefiak A. Insulin-like growth factor (IGF) axis in cancerogenesis. *Mutat Res Rev Mutat Res.* 2017 Jun;772:78–104. PMID: 28528692
12. Holmes MD, Pollak MN, Willett WC, Hankinson SE. Dietary correlates of plasma insulin-like growth factor I and insulin-like growth factor binding protein 3 concentrations. *Cancer Epidemiol Biomark Prev Publ Am Assoc Cancer Res Cosponsored Am Soc Prev Oncol.* 2002 Sep;11(9):852–861. PMID: 12223429
13. Campbell TC, Campbell TM. *The China study: the most comprehensive study of nutrition ever conducted and the startling implications for diet, weight loss and long-term health.* Revised and expanded edition. Dallas, TX: BenBella Books, Inc; 2016.
14. Campbell AW. Autoimmunity and the Gut. *Autoimmune Dis.* 2014;2014:1–12.
15. Malosse D, Perron H, Sasco A, Seigneurin JM. Correlation between milk and dairy product consumption and multiple sclerosis prevalence: a worldwide study. *Neuroepidemiology.* 1992;11(4–6):304–312. PMID: 1291895
16. Dahl-Jørgensen K, Joner G, Hanssen KF. Relationship between cows' milk consumption and incidence of IDDM in childhood. *Diabetes Care.* 1991 Nov;14(11):1081–1083. PMID: 1797491
17. LaPorte RE, Tajima N, Akerblom HK, Berlin N, Brosseau J, Christy M, Drash AL, Fishbein H, Green A, Hamman R. Geographic differences in the risk of insulin-dependent diabetes mellitus: the importance of registries. *Diabetes Care.* 1985 Oct;8 Suppl 1:101–107. PMID: 4053948

18. Tsuchiya N, Williams RC. Molecular mimicry--hypothesis or reality? *West J Med.* 1992 Aug;157(2):133–138. PMID: 1279899
19. O’Bryan T. *The autoimmune fix: how to stop the hidden autoimmune damage that keeps you sick, fat, and tired before it turns into disease.* New York: Rodale; 2016.
20. Chighizola C, Meroni PL. The role of environmental estrogens and autoimmunity. *Autoimmun Rev.* 2012 May;11(6–7):A493-501. PMID: 22172713
21. Admin. Man Proves Dairy Leads to Acne by “Spiking” Vegan Girlfriend’s Creamer [Internet]. *Health.* 2019 [cited 2019 Aug 6]. Available from: <https://the-organic-way.com/index.php/2019/05/10/man-proves-dairy-leads-to-acne-by-spiking-vegan-girlfriends-creamers/>
22. Juhl CR, Bergholdt HKM, Miller IM, Jemec GBE, Kanters JK, Ellervik C. Dairy Intake and Acne Vulgaris: A Systematic Review and Meta-Analysis of 78,529 Children, Adolescents, and Young Adults. *Nutrients.* 2018 Aug 9;10(8). PMID: 30096883
23. Kim H, Moon SY, Sohn MY, Lee WJ. Insulin-Like Growth Factor-1 Increases the Expression of Inflammatory Biomarkers and Sebum Production in Cultured Sebocytes. *Ann Dermatol.* 2017 Feb;29(1):20–25. PMID: 28223742
24. Arora MK, Yadav A, Saini V. Role of hormones in acne vulgaris. *Clin Biochem.* 2011 Sep;44(13):1035–1040. PMID: 21763298
25. Silverberg NB. Whey protein precipitating moderate to severe acne flares in 5 teenaged athletes. *Cutis.* 2012 Aug;90(2):70–72. PMID: 22988649
26. Steinfeld H, Gerber P, Wassenaar TD, Castel V, Rosales M. M, Haan C de. *Livestock’s long shadow: environmental issues and options.* Rome: Food and Agriculture Organization of the United Nations; 2006.
27. Poore J, Nemecek T. Reducing food’s environmental impacts through producers and consumers. *Science.* 2018 Jun 1;360(6392):987–992.
28. Barnard N. What the Dairy Industry Doesn’t Want You to Know [Internet]. 2017 [cited 2019 Aug 3]. Available from: https://www.youtube.com/watch?v=h3c_D0s391Q
29. Viva! Scary Dairy - Cows [Internet]. Scary Dairy. 2018 [cited 2019 Aug 6]. Available from: <https://scarydairy.org.uk/animals/cows>
30. Dieterich CM, Felice JP, O’Sullivan E, Rasmussen KM. Breastfeeding and Health Outcomes for the Mother-Infant Dyad. *Pediatr Clin North Am.* 2013 Feb;60(1):31–48. PMID: 23178059
31. Kim P, Feldman R, Mayes LC, Eicher V, Thompson N, Leckman JF, Swain JE. Breastfeeding, Brain Activation to Own Infant Cry, and Maternal Sensitivity. *J Child Psychol Psychiatry.* 2011 Aug;52(8):907–915. PMID: 21501165
32. Full Fact. A shortage of midwives? [Internet]. Full Fact. 2017 [cited 2019 Aug 6]. Available from: <https://fullfact.org/health/shortage-midwives/>
33. Bartick M, Reinhold A. The burden of suboptimal breastfeeding in the United States: a pediatric cost analysis. *Pediatrics.* 2010 May;125(5):e1048-1056. PMID: 20368314
34. Brady JP. Marketing breast milk substitutes: problems and perils throughout the world. *Arch Dis Child.* 2012 Jun;97(6):529–532. PMID: 22419779

35. Lamberti LM, Fischer Walker CL, Noiman A, Victora C, Black RE. Breastfeeding and the risk for diarrhea morbidity and mortality. BMC Public Health. 2011 Apr 13;11 Suppl 3:S15. PMID: 21501432
36. Cicely Williams [Internet]. Wikipedia. 2019 [cited 2019 Aug 6]. Available from: https://en.wikipedia.org/w/index.php?title=Cicely_Williams&oldid=906284906
37. Brownstein D. Iodine: why you need it, why you can't live without it. 3rd ed. West Bloomfield, Mich: Medical Alternatives Press; 2008.
38. Pearce EN, Andersson M, Zimmermann MB. Global iodine nutrition: Where do we stand in 2013? Thyroid Off J Am Thyroid Assoc. 2013 May;23(5):523–528. PMID: 23472655
39. van der Reijden OL, Zimmermann MB, Galetti V. Iodine in dairy milk: Sources, concentrations and importance to human health. Best Pract Res Clin Endocrinol Metab. 2017;31(4):385–395. PMID: 29221567
40. Sayid R. Sales of milk could plummet - and it's all teenagers' fault [Internet]. mirror. 2016 [cited 2019 Aug 8]. Available from: <http://www.mirror.co.uk/money/sales-milk-could-plummet-its-8786992>
41. Research and Markets Ltd. Dairy Alternatives Market by Source (Soy, Almond, Coconut, Rice, Oats, Hemp), Application (Milk, Cheese, Yogurt, Ice Creams, Creamers), Distribution Channel (Supermarkets, Health Stores, Pharmacies), Formulation and Region – Global Forecast to 2023 [Internet]. 2019 [cited 2019 Aug 8]. Available from: <https://www.researchandmarkets.com/reports/4745520/dairy-alternatives-market-by-source-soy-almond>
42. Public Health England. The Eatwell Plate [Internet]. 2007. Available from: https://www.srnutrition.co.uk/wp-content/uploads/Eatwell_plate.gif
43. Public Health England. The Eatwell Guide. Helping you eat a healthy, balanced diet. Public Health England in association with the Welsh Government, Food Standards Scotland and the Food Standards Agency in Northern Ireland; 2018 p. 12.

Further reading from Viva!

Why you don't need dairy by Juliet Gellatley, Viva! An easy to read guide on the impacts of dairy on our health and animal welfare. Also gives plant sources of calcium and useful nutrition charts.

<https://scarydairy.org.uk/resources/guides-and-reports/why-you-dont-need-dairy-guide>.

White Lies by Dr Justine Butler, Viva! A fully referenced report on the impact of dairy on our health. <https://scarydairy.org.uk/resources/guides-and-reports/white-lies-report>.

Everything you need to know about the impact of dairy and all the help you need to choose dairy-free: [ScaryDairy.org.uk](https://scarydairy.org.uk) & [Veganrecipeclub.org.uk](https://veganrecipeclub.org.uk).