
ABSTRACT

# Saving lives and resources by preventing osteoporotic fractures with dairy products

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Calcium and vitamin D are essential to protect bone and prevent osteoporotic fractures. Fortified dairy products have been recommended as the preferred option to adequately supplement elderly patients with calcium and vitamin D (Kanis JA et al. Osteoporos Int 2013; 24(1):23–57). In addition to clinical evidence, assessing the public health and economic impact of fortified dairy products is important to help policy makers in evaluating and making decisions about preventive programs, especially in the context of limited health care resources. The aim of this presentation is therefore to provide insights about the public health and economic impact of dairy products.

The public health impact of an intervention (e.g. dairy products) could be measured in terms of clinical outcomes such as the number of fractures prevented, in the number of life years saved, or in the number of quality-adjusted life years (QALY), an outcome measure combining quality of life and quantity of life. In a recent study (*Hiligsmann et al. Osteoporos Int 2017;28(3):833-840*), the authors estimated using a simulation model the lifetime health impacts of the recommended intake of dairy products in the general French population over 60 years for 1 year (2015 in base case). The total lifetime number of fractures decreased by 64,932 for the recommended intake of dairy products in the general population over 60 years, of which 15,087 and 4413 hip fractures could be prevented in women and men respectively. This resulted in a gain of 29,169 life years and of 32,569 years in perfect health (QALYs).

To assess the economic impact of an intervention, economic evaluations are conducted with the aim to compare the costs and outcomes of two or more health interventions. The results of an economic evaluation are expressed in terms of incremental cost-effectiveness ratio (ICER) which is defined as the difference in cost between the intervention and the comparator divided by their differences in outcomes. An ICER represents the additional cost of the intervention per QALY gained. If the ICER is lower than a certain threshold (often considered to be equal at two times the Gross Domestic Product) representing the maximum decision

makers are willing to pay, the intervention is considered cost-effective. In the French study (Hiligsmann et al. Osteoporos Int 2017;28(3):833-840), the cost per QALY gained of appropriate dairy intake in the general population aged above 60 years was estimated at the border of efficiency (€58,244) and dairy products were highly cost-effective (ICER <30,000€ per QALY gained) in women over 70 years and in men over 80 years. Another study (*Ethgen et al. Osteoporos Int (2016) 27:301–308*) suggests that dairy products are highly cost-effective in patients aged over 65 years with an increased risk of fracture.

In conclusion, the use of vitamin D-fortified dairy products could substantially reduce the burden of osteoporotic fractures and seem to be an economically beneficial strategy. Decision makers should be aware of the benefits of calcium and vitamin D and could be interested to implement programs to increase the intake of dairy products. Clinicians should also take actions to improve the consumption of fortified dairy products by their patients.