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Blue water use and greenhouse gas emission in Dutch diets and its association with health

Reina Vellinga, Elisabeth HM. Temme, Mirjam van de Kamp, Ido B. Toxopeus, Caroline TM. van Rossum, Elias de Valk and Anne Hollander
The National Institute for Public Health and the Environment (RIVM), Bilthoven, Netherlands

Abstract

Introduction: Food consumption is important for population as well as planetary health. Globally, fresh water is a scarce resource. For both fresh water use and greenhouse gas (GHG) emissions a risk of exceeding the planetary boundaries exists. Food production accounts for approximately 90% of the global water footprint and for 30% of global greenhouse gas emissions. In this study, the Dutch food consumption patterns are evaluated for blue water use and greenhouse gas emission and its association with dietary quality (Dutch Healthy Diet index 2015).

Materials and Methods: Food consumption was assessed, in 2012–2016, by two non-consecutive 24 h recalls, in Dutch children and adults aged 1–79 y (n = 4313) (www.wateetnederland.nl). Environmental impact of foods was quantified using life cycle assessment for e.g. indicators (blue) water use and GHG emission. For each participant aged ≥ 18 y (n = 2078), a score was calculated for the Dutch Healthy Diet 2015 index (DHD15) to quantify the quality of diet with respect to health. Statistical analyses were stratified for age and gender.

Results: Daily diets in the Netherlands were associated with 0.14 ± 0.10 m³ blue water use and 5.3 ± 2.4 kg CO₂-equivalents GHG emission. Non-alcoholic beverages, nuts and fruits were most important food groups for use of blue water, and meat, dairy and non-alcoholic beverages for GHG emission. DHD15 score was 4.2 ± 1.5 for men and 4.9 ± 1.4 for women. Diets with a higher DHD15 score had a higher blue water use ($r = 0.17$) and a lower GHG emission ($r = -0.35$).

Discussion: Different associations of environmental indicators (blue water use and GHG emission) with health aspects of diets need to be considered when aligning diets for health and sustainability.

Conflict of Interest

There is no conflict of interest