Reformulation across Europe

Results from strategies implemented in European countries other than Germany and identification of factors contributing to their success – part 2

Linda Dorothea Kleis, Eva Andrea Schulte, Anette E. Buyken

Abstract

A variety of measures have been implemented internationally to change the nutritional environment. These include so-called reformulation strategies to improve the nutritional composition of foods offered. Part 2 summarises the results of already implemented strategies, presents selected strategies in detail, and outlines possible factors contributing to the success of effective reformulation strategies.

Keywords: health promotion, Public Health Nutrition, reformulation, sugar, salt, fat

Introduction

In the article "Reformulation across Europe – an overview on planned and implemented strategies in European countries other than Germany"[1], reformulation strategies implemented in European countries were illustrated as the result of a systematic research. This overview is completed by the presentation of existing outcomes of these implementations. Moreover, specific examples are discussed and promising approaches are illustrated to promote successful implementation of reformulation strategies in other countries – including Germany – in the future.

Methodology

The Google search used to identify strategies was extended by a research in the database PubMed in order not to miss any scientific findings of the strategies. This research was restricted to those countries for which information on a strategy (part 1) had been identified before.

The following search terms were used:

- [name of country] in *English* AND „reformulation strategy“ (for all countries)
- [name of country] in *English* AND „reformulation“ AND („sugar“ OR „fat“ OR „salt“) (depending on the intended reformulation)

Among the documents already identified by Google in part 1, there were n = 7 that included information on the implementation of the strategies. These documents were published in journals not listed in PubMed or released online as governmental documents respectively reports (e. g. by ministries). The additional PubMed research identified n = 7 articles from scientific journals.

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[1] Part 1 of the article in Ernährungs Umschau 10/2020 [31].

Only articles and documents were included which met the requirements below:

- clear reference to a European neighbouring country or a comparison of European countries
- focus on food reformulation or reformulation strategies
- mention of sugar, salt, fat or energy content
- presentation of data on the implemented strategy or specific results.

The following articles and document types were excluded:

- exclusive descriptions of health promotion measures beyond food reformulation
- results of the implementation of reformulations on the sensory and food technology level
- popular-science articles, reports and websites or reports from industry.

Afterwards, a deduction of possible factors contributing to the success of reformulation strategies was made based on the results presented in part 1 and in this part of the article. To achieve this, the strategies identified as ambitious ("Conclusion" in part 1) and the results of the implementation of the strategies (◆ Table 1) were considered. Successful reformulation, i. e. the achievement of ambitiously formulated objectives, was used as a benchmark for evaluation. The possible factors contributing to a success therefore summarise narratively approaches that resulted in successful reformulation in (several) strategies.

Results

Results on the outcomes of reformulation strategies are currently available for eight countries (January 2019, ◆ Table 1). Reductions in salt content are best documented so far, as these measures were the first to be established, e. g. in Ireland in 2003, in the Netherlands in 2009. These data exist mainly at the level of product groups. For example, in Ireland, the salt content of bread decreased by up to 32 % between 2003 and 2015 [1]. Merely the United Kingdom has an existing salt monitoring system, which proves a reduction in salt intake of eleven percent between 2005/06 and 2014 [2].

For Italy, the Netherlands, Switzerland, and the United Kingdom some first data exist on the reduction in sugar content in certain product groups partly showing a moderate reduction (e. g. Italy). However, the reduction has not been successful in all product groups (e. g. the United Kingdom) or does not yet suggest any success (e. g. the Netherlands).

For France, there are also data available at household level [3]. These suggest that, while the reformulation has led to an overall improvement in the nutritional compositions of the product groups analysed, about 25 % of the products were renewed during this period and their composition did not always conform to the agreements. In addition, consumers frequently chose alternative, non-reformulated products, so that the nutritional composition of the food consumed in the household scarcely improved (exception: clear reduction in the percentage of saturated fats in crisps).

Discussion and Limitations

Currently, a great variety of reformulation strategies exists in Europe. These are mostly voluntary agreements between governmental institutions and industry representatives (part 1 in Ernährungs Umschau 10/2020). Particularly the more ambitious reformulation strategies provide a stepwise implementation within specific time corridors, which are often arranged for specific product groups. A time frame of three to five years with defined criteria for individual food groups seems to be decisive for a successful stepwise implementation with each step previously defined at the beginning of the implementation. The intention is to enable the food industries to gradually reformulate its products within a set time frame to specific parameters, and to ensure that consumers notice changes in food composition as little as possible.

In addition, explicit monitoring and reporting specifications have been defined for multiple strategies. Results are already available for plural reformulation strategies with concrete and detailed specifications (◆ Table 1). Especially the requirement to monitor the implementation of the strategy in a certain way and to publicise reports fulfils its purpose of ensuring that the strategies are implemented according to the specifications.

Results currently available on voluntary agreements generally describe the changes in the nutritional content of the different reformulated product groups (◆ Table 1). Mainly, these result in improvements in the nutritional composition of the food in targeted product groups. How far this actually leads to a reduction in the daily intake of a critical nutrient, can only be estimated based on the data available for France and the United Kingdom, at present. Therefore, the reduction in salt intake in the United Kingdom can be regarded as encouraging [2]. However, the results available for the French strategy show that an improved nutritional composition of reformulated products does not necessarily lead to an improvement in the actual intake as long as alternative, non-reformulated products from the same food group are available [3]. Consequently, a national strategy involving all industry representatives seems reasonable, particularly as only this can ensure that the considerable amount of newly available products also conforms to agreed specifications.

In the research presented in this article, only

official reports were considered in order to prevent a possible distorted presentation of the results achieved. Generally, European governmental institutions are considered as serious sources. However, it cannot be excluded that governmental institutions have a bias towards publishing results considered successful. Thus, a scientific monitoring of the measures is especially preferable, as well as precise agreements on the contents and timing of regular status reports.
This article is based on a systematic research in several databases. The sources identified are mostly so-called "grey literature" though, which have not been published in peer-reviewed journals (part 1 in Ernährungs Umschau 10/2020). Furthermore, the search required the use of search terms in different languages to ensure that the research was based on the most complete search strategy as possible. Only 10 national language documents were identified, but not included in the analysis (available from the author on request). Therefore, it is possible that not all strategies formulated and implemented were identified.

Conclusion

This narrative review of the currently available evidence on reformulation measures in European countries presented herein contributes to implementation research at macro level. It systematically analyses political measures in different countries which are characterised by a similar social and economic system as Germany, with the purpose of achieving first indications for a classification of the currently initiated reformulation measures in Germany. Mainly the political measures (here: reformulation) as well as the implementation processes were analysed in detail but no systematic analysis of the base of reformulation was included.
The present review illustrates that voluntary agreements plan very different reduction targets for the various product groups and that these objectives should be implemented by different approaches. This means, among other things, that in the individual countries the participating industrial representatives could be persuaded to accept very different concessions regarding the reduction targets. Upper limits prescribed by law, which were also introduced in some countries (part 1 in Ernährungs Umschau 10/2020, ◆ Table 1), are an alternative that cannot be ignored by companies and will necessarily result in product reformulations.
Generally, all reformulation strategies should be as specific as possible, e. g. estimating in advance, based on available evidence, by which alternative the targeted ingredient should be replaced. In the accompanying monitoring this can be examined both at the product and consumption level so that suitable readjustments can be made to the strategy. In Denmark, for example, the objective to reduce trans fatty acids resulted in an unintended increase of the physiologically unfavourable saturated fats in the targeted products [4]. No comparable information is available on any other strategy so far.
The differences in the wording of strategies in different countries, therefore the consequently different public availability of results and the unequal identification of the implemented strategies due to different languages, leads to difficulties in the comparability of methodical tools. This also applies to the interpretation of the identified results of some strategies and makes it difficult to deduce possible characteristics of a successful reformulation. Furthermore, it cannot be precluded that the strategies presented in this paper are incomplete despite a detailed systematic literature research. This is due to language barriers and inconsistent publications.
Despite these methodical limitations, examples for countries can be described where reformulation strategies have led to positive results by defining and considering several precise objectives and approaches. For instance, the strategies already identified as ambitious (part 1) in Belgium, Italy, the Netherlands and the United Kingdom achieved moderate reductions, mainly in the salt content of food, but also partly in the sugar content (United Kingdom, Italy).
The following possible factors contributing to the success of a reformulation strategy can be deduced from these country examples and from the strategies described previously (part 1 in Ernährungs Umschau 10/2020, ◆ Table 1):

- formulation of defined product group specific objectives
- specifications for a stepwise implementation over a period of three to five years
- commitment of the companies to regularly report their progress
- ideally a complementing scientific accompaniment

The voluntary agreement concluded by the Federal Ministry of Food and Agriculture in Germany with different food industry associations currently intends to reduce the sugar content in breakfast cereals for children by at least 20 % by 2025, in soft drinks by at least 15 % and in children's yoghurts by 10 % [5].
To be able to draw reliable conclusions on the negotiability and general applicability of the factors described above to Germany, additional analyses of the implementing organisations, the social frame conditions as well as the individuals and households involved would be necessary [6]. It would also be of particular interest to systematically compare the reference parameters (average consumption, weighting according to market mindshare)

Table 1: **Results of implemented strategies to reduce salt, sugar and fat**
[a] These strategy were identified as ambitious in part 1 of this article

Country	Nutrient	Results	References
Belgium	salt[a]	reduction in salt content between 2004 and 2012: → bread: 22 % → meat: 8–28 % → sauce: 10–29 % → liquid soup: 4–27 % → soup powder: 17 % → cheese: 7,5–20 %	[19]
France	salt, sugar and fat	survey at household level (data of purchasing) between 2008 and 2013: → reformulation improved the composition of the offering in some product groups → new products partially have more positive compositions → new products in some product groups have a more unfavourable composition than before → 25 % of the analysed products in the categories breakfast cereals, biscuits & cakes, potato crisps and soft drinks were renewed → breakfast cereals: ~ 10 % ↑ fat and saturated fats from breakfast cereals ~ 1 % ↑ sugar from breakfast cereals, given that consumers chose different products ~ 11 % ↓ salt from breakfast cereals by reformulation → biscuits & cakes: very little change → potato crisps: ~ 13 % ↓ salt from potato crisps ~ 58 % ↓ saturated fats from potato crisps by reformulation however: change of costumers to non-reformulated products → soft drinks: 2 % ↓ sugar from soft drinks by reformulation → frequent change of costumers to non-reformulated products (e. g. breakfast cereals)	[3]
Ireland	salt	data from different years between 2003 and 2015: → **Salt content** decreased in all analysed bread categories → In some type of bread salt content decreased by up to 32 %	[1]
Italy	salt[a], sugar[a] and fat[a]	reduction in different product groups from 2008 to 2014: → breakfast cereals: sugar content by 6 %, and sodium content by 33 % → biscuits: percentage of saturated fats by 4,5 % and percentage of sugar by 6 % → soft drinks: percentage of sugar until 2012 by 6 %	[20]
Nether-lands	salt[a], sugar and fat	surveys of the years 2011 and 2016: → reduction in salt content in some soups, sauces und crisps by 12–26 % → reduction of saturated fats in some products groups → sugar content remained constant in all analysed product groups reductions from 2014 to 2018: → salt content in meat products by 10 % → added sugar in milk drinks and milk desserts by 5 % reduction in salt content from 2011 to 2016: → in bread on average by 19 %	[21] [22] [23]
Switzerland	sugar	surveys in autumn 2016 and summer 2017: → newly introduced yoghurts and breakfast cereals have a lower sugar content → yoghurts: 3 % ↓, to 9 g per 100 g 4,5 % ↓ or first signatories → breakfast cereals: 5 % ↓, to 16,3 g per 100 g 8 % ↓ for first signatories	[24]
Slovenia	salt[a]	reduction in salt content between 2011 and 2015: → reduced sodium content in biscuits, cheese and cold meat → no changes in processed meat and bread → increase in sauces and ready to eat meals	[25]
United Kingdom	salt[a] and sugar[a]	period 2005/06 to 2014: → reduction in salt intake by 11 % → salt content in some food reduced by up 54 % reduction in salt content from 1992 to 2015: → reduction in breakfast cereals by 47 % → continuous reduction since the program was introduced in 2004 reduction in salt intake from 2003 to 2007: → in all groups of persons → on average by 0,175 g per day and person reduction in sodium content from 2006 to 2011: → in analysed processed food on average by 6 % reduction in sugar content between 2015 and 2017: → in 5 out of 8 food categories successful → 2 % per 100 g → reduction of calorie content in 4 out of 6 categories → follow-up report was published in September 2019 [29, 30]	[2] [26] [27] [28] [10]

for evaluating reformulation progress in the individual countries. Nevertheless, it can be said that long-term objectives have been agreed on specifically for products whose sugar content is clearly higher than the sugar content of the food group overall. Within their respective food groups, breakfast cereals and yoghurts for children are among the subgroups with the highest sugar content [7]. In addition, the German strategy was formulated for a very long period (over five years) and a stepwise implementation of the target values is not intended. Reporting by the companies is based on voluntary information, but surveys in terms of product monitoring are conducted by the Max Rubner Institute (MRI) [8]. Therefore, based on the possible factors for a successful reformulation, it seems necessary to revise the strategy planned so far and to consider the characteristics of successfully implemented strategies of other countries. Up to now, the strategy has been criticised as not far-reaching enough by medical associations, members of the opposing parties and various associations (DANK, DDG, DGKJ) [5, 9].

In conclusion, other analyses have repeatedly concluded that upper limits prescribed by law or indirect reformulation as a result of introduced taxes are superior to voluntary reformulation strategies [10–12]. This is consistent with observations from other spheres of activity on voluntary approaches. For example, the success of the voluntary commitment to responsible marketing to children under the age of 12, which is in force since December 2007, is assessed very differently in the EU. The position paper of the European Public Health Alliance (EPHA) [18] even concludes that there is no reason to recommend voluntary commitments to implement public health objectives, based on the available evidence from various spheres of activity. In long-term, it therefore seems reasonable to expand reformulation strategies with continuative obligatory health policy measures to achieve measurable positive changes in the population's nutritional intake.

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Conflict of Interest
The authors declare no conflict of interest.

References

1. *Feehan O, McElroy K, Clements M et al.: Slicing the salt content of bread in Ireland. A review of reformulation since 2003. Proceedings of the Nutrition Society 2016; 75.*
2. *Public Health England: Salt reduction targets for 2017. www.gov.uk/government/publications/salt-reduction-targets-for-2017 (last accessed on 17 April 2020).*
3. *Spiteri M, Soler L: Food reformulation and nutritional quality of food consumption: an analysis based on households panel data in France. Eur J Clin Nutr 2018; 72: 228–35.*
4. *WHO Europe: Eliminating trans fats in Europe. A policy brief. www.euro.who.int/__data/assets/pdf_file/0010/288442/Eliminating-trans-fats-in-Europe-A-policy-brief.pdf (last accessed on 29 January 2019).*
5. *Gießelmann K: Reduktionsstrategie für Zucker, Fette und Salz erstmals mit Zielwerten. www.aerzteblatt.de/nachrichten/99943/Reduktionsstrategie-fuer-Zucker-Fette-und-Salz-erstmals-mit-Zielwerten?rt=c9816aad8d7814c5276e993b1328a83d (last accessed on 03 February 2019).*
6. *Kraemer K, van Zutphen KG: Translational and implementation research to bridge evidence and implementation. Ann Nutr Metab 2019; 75: 144–8.*
7. *Ehnle-Lossos M, Demuth I, Goos-Balling E, Roser S: Fett-, Zucker- und Salzgehalte von ausgewählten vorgefertigten Produkten: Differenzierung von Produktuntergruppen und Berechnung von Quartilen. Ergänzende Auswertungen. www.mri.bund.de/fileadmin/MRI/Veroeffentlichungen/S2021.pdf (last accessed on 18 April 2020).*
8. *BMEL: Nationale Reduktions- und Innovationsstrategie für Zucker, Fette und Salz in Fertigprodukten. www.bmel.de/SharedDocs/Downloads/Ernaehrung/Nationale*

ReduktionsInnovationsstrategie-Kabinett.pdf;jsessionid=3BB68433E110092729D08F099FBB4C95.1_cid367?__blob=publicationFile (last accessed on 03 February 2019).

9. *Deutsche Diabetes Gesellschaft: Deutsche Diabetes Gesellschaft lehnt Teilnahme am Begleitgremium zur Nationalen Reduktionsstrategie ab. www.deutsche-diabetes-gesellschaft.de/presse/ddg-pressemeldungen/meldungen-detailansicht/article/deutsche-diabetes-gesellschaft-lehnt-teilnahme-am-begleitgremium-zur-nationalen-reduktionsstrategie.html (last acessed on 05 June 2019).*
10. *Tedstone A, Coulton V, Targett V, et al.: Sugar reduction and wider reformulation programme. Report on progress towards the first 5% reduction and next steps. URL: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/709008/Sugar_reduction_progress_report.pdf (last accessed on 17 April 2020).*
11. *WHO Europe: Impact of salt reduction in Finland and the United Kingdom. www.euro.who.int/en/health-topics/disease-prevention/nutrition/news/news/2014/12/reducing-salt-consumption/impact-of-salt-reduction-in-finland-and-the-united-kingdom (last accessed on 06 June 2019).*
12. *WHO Europe: Good practice brief - public health product tax in Hungary. An example of successful intersectoral action using a fiscal tool to promote healthier food choices and raise revenues for public health. www.euro.who.int/__data/assets/pdf_file/0004/287095/Good-practice-brief-public-health-product-tax-in-hungary.pdf (last accessed on 02 February 2019).*
13. *EU Pledge: Annual reports. https://eu-pledge.eu/annual-reports/ (last accessed on 29 March 2020).*
14. *Galbraith-Emami S, Lobstein T: The impact of initiatives to limit the advertising of food and beverage products to children. A systematic review. Obesity Reviews 2013; 960–74.*
15. *Jensen J, Ronit K: The EU pledge for responsible marketing of food and beverages to children. Implementation in food companies. Eur J Clin Nutr 2015; 69: 896–901.*
16. *Kelly B: Global benchmarking of children's exposure to television advertising of unhealthy foods and beverages across 22 countries. Obesity Reviews 2019; 116–28.*
17. *Landwehr SC, Hartmann M: Industry self-regulation of food advertisement to children. Compliance versus effectiveness of the EU Pledge. Food Policy 2020.*
18. *European Public Health Alliance (ed.): Self regulation: a false promise for public health? Briefing paper. URL: https://epha.org/wp-content/uploads/2016/12/Self-Regulation-a-False-Promise-for-Public-Health_EPHA_12.2016.pdf (last accessed on 18 April 2020).*
19. *van de Casseye F: Reducing salt in foods produced in Belgium. Belgian Heart League report on the national conference of 23/09/2013. www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=21&ved=2ahUKEwjY95DBjereAhVFx4UKHVCNDlY4ChAWMAp6BAgCEAI&url=http%3A%2F%2Fwww.ehnheart.org%2Fcomponent%2Fattachments%2Fattachments.html%3Ftask%3Ddownload%26folder%3Dpublications%26id%3D1750&usg=AOvVaw1rBjdT5x00oG_X6DjUvbrK (last accessed on 31 January 2019).*
20. *Ministry of Health: Shared objectives for improving the nutritional characteristics of food products, with a particular focus on children (3-12 years). www.salute.gov.it/imgs/C_17_pubblicazioni_2426_ulteriorieallegati_ulteriorealegato_0_alleg.pdf (last accessed on 02 February 2019).*
21. *Milder IEJ, Brants HAM, Toxopeus IB, et al.: Vergelijking van zout-, verzadigd vet- en suikergehalten in voedingsmiddelen tussen 2011 en 2016. RIVM Herformuleringsmonitor 2016. www.rivm.nl/bibliotheek/rapporten/2017-0011.pdf (last accessed on 31 January 2019).*
22. *National Institute for Public Health and the Environment: National Agreement leads to small improvement in intake of salt and sugar. www.rivm.nl/en/news/national-agreement-leads-to-small-improvement-in-intake-of-salt-and-sugar (last accessed on 31 January 2019).*
23. *Temme E, Hendriksen M, Milder I et al.: Salt reductions in some foods in The Netherlands: monitoring of food composition and salt intake. Nutrients 2017; 9.*
24. *Bundesamt für Lebensmittelsicherheit und Veterinärwesen: Genießen und Gesund bleiben. Schweizer Ernährungsstrategien 2017-2024.*
25. *Pravst I, Lavriša Ž, Kušar A et al.: Changes in average sodium content of prepacked foods in Slovenia during 2011-2015. Nutrients 2017; 9.*
26. *Pombo-Rodrigues S, Hashem KM, He FJ et al.: Salt and sugars content of breakfast cereals in the UK from 1992 to 2015. Public Health Nutr 2017; 20: 1500–2.*
27. *Millett C, Laverty AA, Stylianou N et al.: Impacts of a national strategy to reduce population salt intake in England. Serial cross sectional study. PLoS ONE 2012; 7: e29836.*
28. *Eyles H, Webster J, Jebb S et al.: Impact of the UK voluntary sodium reduction targets on the sodium content of processed foods from 2006 to 2011. Analysis of household consumer panel data. Prev Med 2013; 57: 555–60.*
29. *Public Health England: Guidance. Reduction and reformulation programme: Spring 2019 update. 10 May 2019. www.gov.uk/government/publications/reduction-and-reformulation-programme-spring-2019-update/reduction-and-reformulation-programme-spring-2019-update (last accessed on 30 September 2020).*
30. *Public Health England: Sugar reduction. Report on progress between 2015 and 2018. London: 2019. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839756/Sugar_reduction_yr2_progress_report.pdf (last accessed on 30 September 2020).*
31. *Kleis LD, Schulte EA, Buyken AE: Reformulation across Europe. An overview on planned and implemented strategies in European countries other than Germany – part 1. Ernahrungs Umschau 2020; 66(10): 190–9.*

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