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SUMMARY

Introduction

Many adolescents have an unhealthy dietary pattern, which is associated with an increased risk for many chronic non-communicable diseases, amongst others, overweight and obesity. This can cause physical and psychosocial health problems and reduced quality of life in the short-term, and also during adulthood. Creating a healthier food environment is likely to make it easier for adolescents to make healthier food choices. Due to their reach and pedagogical tasks, schools in particular can contribute to stimulating healthy choices in adolescents. Increased availability and accessibility of healthier products in school canteens, including cafeterias and vending machines, makes it easier for students to choose the healthier option. In addition, by implementing a healthy school canteen, the school is likely to set a norm with regard to healthy food and drinks. Thereby they contribute to the personal development of students, which includes learning to make responsible and healthy lifestyle choices.

In the Netherlands, schools have autonomy in terms of how they arrange their food and drinks. Since 2003, the Netherlands Nutrition Centre supports schools to create a healthier school canteen in secondary (vocational) schools with the “Healthy School Canteen Programme”. This programme is commissioned and financed by the Dutch Ministry of Health, Welfare, and Sports and is available to all Dutch secondary (vocational) schools. It has been implemented and elaborated over the years, including the development of the Guidelines for Healthier Canteens in 2014. The guidelines combine the offer of healthier products, including tap water, (availability) with the promotion and placement of these healthier products (accessibility), and anchoring policy. It aims to support stakeholders creating healthier canteens through three incremental levels: bronze, silver and gold, although only the levels silver and gold are sufficient to be designated a healthier school canteen. After the development of the guidelines, the next step was their implementation. Hence, more insight was needed into how this implementation could be supported appropriately according to different involved stakeholders with different needs and wishes; in what extent are the existing supportive tools of the Healthy School Canteen Programme suitable, and how could the programme be improved?

These considerations were the basis of this thesis. The overall research question studied in this thesis was formulated as: Is support for the implementation of the Guidelines for Healthier Canteens helpful in creating healthier school canteens in the Netherlands? This question is addressed in two parts: the development of the support, and the evaluation of that support.

Part I: Development of the support to implement healthier school canteen guidelines

First, drawing on three studies, this thesis explains how the support to facilitate the implementation of the Guidelines for Healthier Canteens was developed.

Chapter 2 describes the design of the study to develop and evaluate an implementation plan for the Guidelines for Healthier Canteens in secondary schools. This plan, consisting of a number of different tools, was developed in three steps based on the “Grol and Wensing

Implementation of Change Model". These steps combined a theory-based approach with a practice-based approach involving different stakeholders, including caterers, school management, canteen employees and school canteen advisors. The resulting plan was studied in practice on effectiveness and using a process evaluation in a quasi-experimental trial (as explained in part II).

A more detailed explanation of the development and content of the implementation plan is provided in Chapter 3. This plan was developed in three steps: 1) performing interviews with stakeholders to identify impeding and facilitating factors to create a healthier school canteen; 2) facilitating an expert meeting to discuss and prioritise these factors; 3) using behaviour change methods and implementation strategies to translate these factors into implementation tools. The interviews revealed the most important factors affecting implementation, identifying the individual factors motivation and enthusiasm, a positive attitude and applying knowledge, all towards creating a healthier canteen. Next, factors related to the multitude of involved stakeholders (inside and outside schools) were identified, including collaboration, ownership, commitment and receiving support. Finally, insights into the level of the canteen and the organisational situation, including the financial situation, and the challenge to maintain canteen-related activities were identified as related factors. Based on these factors, behavioural change methods, evidence-based implementation strategies and accompanied tools were selected. These tools are partly derived from the existing Healthy School Canteen Programme and partly newly developed. The tools included the questionnaires for schools and stakeholders, the "Canteen Scan" (an online tool to assess product availability/accessibility), a tailored advisory meeting and report, communication materials, an online community, newsletters, and a fact sheet with students' wishes and needs.

Chapter 4 reports on the development, content validity and usability of one of the novel tools, the online "Canteen Scan". This tool was developed through an iterative theory-based process, again involving multiple stakeholders from research, policy and practice, aiming to support the implementation of the guidelines. It assesses the availability and accessibility of healthier food and drinks, including the offer of water, and the presence of a healthy school canteen policy according the Guidelines for Healthier Canteens. Resulting to insight into the health level of a canteen, and a tailored advice about how to improve the canteen. This scan was favourably rated by stakeholders like the school canteen advisors, canteen managers and representatives of caterers.

An additional study, summarised in Chapter 7 and reported in Dutch in Appendix I, investigated the quality of this scan by measuring the inter-rater reliability and criterium validity for two assessors: an expert (school canteen advisor) and a canteen employee. This study showed a substantial to good reliability and validity for measuring the food availability in the cafeteria for school canteen advisors and canteen employees, and for measuring food availability in vending machines and accessibility when measured by a school canteen advisor.

Part II: Evaluation of the support to implement healthier school canteen guidelines

The second part of this thesis covers the effect and process evaluation based on a 6-month quasi-experimental controlled study in 10 intervention and 10 matched control schools which included their involved stakeholders and 100 students per school. The schools were matched on different characteristics, including how the catering was provided (by the school itself, or by a catering company), school size (<1000 or ≥1000 students) and educational level (vocational, senior general, or pre-university). Intervention schools received support in implementation with the developed tools, while control schools only received general information about the guidelines.

Chapter 5 reports on the effect of the implementation plan on both the health level of the canteen and self-reported purchase behaviour of 13 to 15 years old students. The intervention schools made more changes in their canteen compared to control schools. More specifically, the availability of healthier food and drinks in the cafeteria and the number of fulfilled accessibility of healthier food and drinks criteria increased more often in the intervention schools, but the effect on vending machines was limited. The large majority of the students reported that they usually bring food or drinks from home and buy food or drinks in school only once a week or less. With regard to the students' self-reported purchase behaviour, no changes resulting from the support in implementation or a healthier availability or accessibility in the canteen were detected.

Chapter 6 reports on the process of the supportive implementation of healthier canteen guidelines in schools. The results show that, compared to the control condition, stakeholders (like canteen employees, caterers, school management) who received the support perceived an increase in their knowledge ("I have all information I need") and their motivation, and a decrease in their need for support. These small effects agreed with the qualitative results. For example, stakeholders mentioned that the different tools complemented each other, and that the tools together supported them in creating a healthier canteen. In addition, the quality of the implementation tools was evaluated by the stakeholders on dose delivered, dose received and satisfaction. They particularly liked the advisory meeting and report, the students' fact sheet, the communication materials and the Canteen Scan.

Conclusion

The final chapter of this thesis (Chapter 7) summarises the main findings and reflects on them. It also discusses methodological considerations and implications for future studies, practice and policy.

This thesis describes how a plan to support implementation of the Guidelines for Healthier Canteens in schools was developed and thereafter evaluated on effect and process level. It shows how stakeholders with a diverse background in research, policy and practice engaged in all studies, throughout the whole process from the research design, to intervention development, and evaluation. Their practical experience, combined with theoretical frameworks and methods were used to guide the development and evaluation of the implementation tools. The aim of the implementation plan was to facilitate the process to create a healthier school canteen, thus stimulating Dutch adolescents to purchase healthier food and beverages in school.

This study concludes that the tools supported stakeholders adequately in the implementation of the Guidelines for Healthier Canteens, and resulted into healthier school canteens. In particular, the advisory meeting and report, the communication materials, the students' fact sheet and the Canteen Scan were evaluated positively. However, the support in implementation and changes in the canteen did not result to measurable changes in students' purchase behaviour. This might be due to the relatively short time between changes made in the canteen and the assessment of students' purchases. The fact that not all students buy food and drinks, and that they reported a small number of purchases, in the school canteen might also have influenced the results.

The combination of, and collaboration with, research, policy and practice from the start and throughout this study resulted in useful results applicable for all three fields. The insights on refining the tools have since been implemented by the Netherlands Nutrition Centre. For the future, evaluating and reviewing the tools and the guidelines regularly to ensure that they still adhere to recent scientific insights and the (changing) needs of practice, to remain supportive for stakeholders, is recommended.

Since a healthy school canteen is an essential but not the only setting that influences the dietary behaviour of youth, stimulating healthy eating habits among youth requires a combination of actions that intervene on individual factors, and on the social, physical and macro-level environment. Meaningful collaborations between scientists, practitioners and policymakers strengthen such a system-based approach. In addition, more insight is needed into the sustainable effects of the school food environment on students' food choices in- and outside schools throughout the day.

To be able to create an effective supportive climate where youth are encouraged and can learn how to eat healthily, schools should 1) develop consistent nutritional policy, including an aspiration with regard to a healthy school canteen and nutritional education, 2) invest in collaborations to create ownership and support for a healthy school environment among all involved stakeholders (students, parents, teachers, external parties like a caterer), and 3) convey their nutritional policy in their school environment, so throughout the school and during all lessons and activities.

At the same time, the government should facilitate and support independent, non-profit organisations, like the Netherlands Nutrition Centre, so all schools remain to have the opportunity to receive support with personal, tailored advice on how to create a healthier school food environment.