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Short Communication

Adapting implementation strategies: a case study of how to support implementation of healthy canteen policies



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ARTICLE INFO

Article history:

Received 18 February 2019

Received in revised form

20 June 2019

Accepted 2 July 2019

Available online 5 September 2019

Keywords:

Health promotion

Health policy

Schools

Population health

Implementation science

Adaptation

ABSTRACT

Objectives: Although evidence-based interventions (EBIs) and effective strategies to implement them exist, they cannot be used by policy makers and practitioners if they do not align with end users' needs. As such, adaptations to EBIs and implementation approaches are likely to occur to increase 'fit' with end users' capacity. This article describes an approach undertaken by a population health service delivery unit in one Australian state to develop an adapted implementation strategy to support the implementation of the mandatory healthy canteen policy (EBI) to all schools located in the service delivery region. **Study design:** This is a case study of adapting an intervention to improve implementation of the healthy canteen policy.

Methods and results: This is a six-step pragmatic, empirically driven approach. The steps include (i) adapt, where appropriate, the EBI to facilitate implementation; (ii) identify end users' capacity for implementation; (iii) identify opportunities to adapt the implementation interventions while preserving meaningful intervention impact; (iv) undertake program adaptation; (v) develop training and resources to support delivery of implementation strategies and; (vi) evaluate the adapted intervention. This article describes the application of these steps by the authors to develop an adapted support strategy consistent with end users' needs.

Conclusions: This study provides some guidance on how to adapt implementation support approaches particularly when EBIs cannot be adapted. Future empirical research providing guidance on making practical adaptation decisions are needed.

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<https://doi.org/10.1016/j.puhe.2019.07.003>

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Introduction

To improve public health, evidenced-based policies, evidenced-based programs and evidenced-based interventions (EBIs) need to be successfully implemented into routine practice by organisations or end users in the community. While many EBIs exist,¹ the ability of end users to deliver such interventions as intended is often impeded by incongruence of the EBI or implementation approach with the target setting, a lack of skills of end users and/or inadequate resources and infrastructure. To address this, adaptations to interventions are frequently made to improve the 'fit' of an intervention within the context for which it needs to be implemented. Adaptation has been described as a "form of modification that is planned or purposefully made to the design or delivery of an intervention, often with the intention to retain fidelity to the fundamental elements or spirit of the intervention".²

While research frameworks and mechanistic evaluations of public health interventions suggest that characteristics of both the EBI and implementation approach can impact program effectiveness,³ the majority of research to date has focused on adapting the EBI.⁴ A review of frameworks for adapting EBIs found that there was little consideration about implementation approach and how that could be adapted.⁴ For situations where it is not possible to adapt EBIs (i.e. mandatory public health policies), adaptation to implementation strategies represent the only means in which end users can enhance program or policy 'fit' and, therefore, impact.

In this article, we describe the process utilized by a population health service delivery unit to adapt a support strategy to identify an optimized strategy to support the implementation of a mandatory New South Wales (NSW) healthy school canteen policy for delivery at scale. This was undertaken as part of routine service delivery, and no formal analysis and collection of new data was undertaken.

Context

In Australia, food consumed at school is provided via parent-packed lunchboxes or sold over the counter in school canteens. Food provided in canteens typically include packaged (e.g. drinks, iced blocks, chips) or premade foods (e.g. pies, sausage roles) obtained from suppliers or other grocery outlets and foods prepared on-site (e.g. sandwiches, sushi, other hot meals). Every state and territory in Australia has healthy canteen policies that broadly encourages the provision of healthier foods and restricts the sales of less healthy foods. The implementation of these policies is enforced to varying degrees depending on state. In NSW, the implementation of the healthy canteen policy is mandated by the state government for all government schools in the state. Although this policy is mandatory, implementation of this policy in schools is poor. As such, the specific service delivery unit in the Hunter New England region, NSW Australia is responsible for providing support to over 430 primary schools (catering 112,000 children aged 5–12 years) to implement the NSW Healthy Canteen Policy (referred to hereafter as the

EBI). The unit needed an implementation support approach that could be delivered within their existing constraints to all schools in the region. The adaptation and optimization process occurred following and using data from three randomized control trials (RCTs) of high (PICNIC),⁵ low (CAFÉ)⁶ and medium intensity (SNACS)⁷ to support implementation of the healthy canteen policy. The trials included implementation support strategies of varying intensity and measured impact on policy compliance. While the interventions demonstrated impact (see Table 1), none completely met the capacity constraints of the unit, and as such, a formal adaptation process outlined below was required, and a pragmatic approach informed by high quality empirical research was used where possible.

Methods

Adapt, where appropriate, components of the EBI to facilitate implementation

The ability of the EBI to be implemented with high fidelity in its target setting is an important determinant of the success of interventions. As such, modifying the EBI can improve the uptake and integration of health policies and programs into routine practice by organisations. An initial assessment of the EBI to determine whether it can be modified without compromising effectiveness should be undertaken. Processes to do so should follow existing guidance of adaptation frameworks,⁴ with a focus on improving the 'fit' to facilitate implementation. In this instance, the NSW Healthy Canteen Policy was a mandatory policy enforced by the state government requiring high levels of fidelity. As such, no adaptations were made to the criteria of the EBI.

Identify end users' capacity for implementation

Implementation strategies need to be able to be delivered within the resource constraints of the end users' organization. Strategies that are effective within research trials can be adopted in practice if the expertise, infrastructure and resources to do so permit; however, this is rarely the case. To assess whether previously trialed approaches to implement the healthy canteen policy would be suitable to implement, an initial meeting was undertaken with the health service manager and director. The health promotion unit had an allocated budget of approximately \$750/primary school to support implementation of a range of child obesity prevention policies of which the healthy canteen policy was just one. Schools located within the region are also socio-economically diverse and geographically spread. Staff within the unit come from nutrition, physical activity and education backgrounds and are primarily situated in Newcastle, NSW. As such, some schools are located over 500 km away. While the unit had the expertise to deliver the implementation support, formal cost-analyses carried out by the research team revealed that such strategies could not be replicated within the existing budget.

Table 1 – Descriptions of RCT ratings according to the APEASE criteria.

APEASE criteria	PICNIC	CAFÉ	SNACS	REACH
Affordability	High cost per school: labour intensive and highly reliant on face-to-face support.	Medium cost per school: initially low cost, however, cost increased due to difficulty contacting schools to deliver verbal feedback, as such multiple call attempts needed.	High cost per school: amended modality from the high intensity intervention	Medium cost per school: designed to meet the affordability constraints of the health promotion team
Practicability	Low practicability: need for specialist nutrition skills and high-intensity delivery model.	Low practicability: initially high practicability, however generalist staff with no specialist nutrition training had significant problems delivering the intervention.	High practicability: support strategies consistent with that already utilized within the team (i.e. delivery of training and email support). Strategies were delivered by staff with tertiary nutrition qualifications.	Strategies were delivered by nutrition trained support staff
Effectiveness: overall effect sizes (RR/OR, 95% CIs, P-values)	RR 14.41 (2.08–99.97) $P < 0.001$	RR 4.44 (0.65–30.11) $P = 0.0624$	RR 4.29 (1.04–17.68) $P = 0.02$	OR 2.8 (1.6–4.7) $P < 0.001$
Acceptability: strategies rated acceptable by canteen managers during evaluation process	Rated as very helpful-extremely helpful; Resource kit: 57% Equipment: 54% Workshop: 57% Email contact: 66% Audit & feedback: 79% Newsletters: 48% Meetings: 61% Telephone support: 61%	Rated as very helpful, extremely helpful; audit & feedback: 61% telephone support: 27% did not remember receiving verbal feedback: 27%	Strategies rated acceptable as assessed via internal records.	Strategies rated acceptable as assessed via internal records.
Equity (assessed as reach across geographical distance)	Low- to high-intensity support model.	High- to low-intensity and high-reach support delivery models.	Moderate one-off training and face-to-face components and high-reach strategies (SMS).	Moderate large geographical reach because of mode of delivery.
APEASE, Affordability, Practicability, Effectiveness, Acceptability, Safety and Equity; RCT, randomised control trial; OR, odds ratio; CI, confidence interval; SMS, short messaging service; RR, relative risk.				

Table 2 – Implementation strategies, targeted barriers and proposed modifications.

RCT	Targeted barriers	Method of strategy delivery	Suggested modification
Implementation strategy: implementation support			
PICNIC	1. Limited nutrition knowledge 2. Lack of knowledge of compliance and food classification skills	Bimonthly face-to-face visits, telephone, email	Change modality to SMS/email.
CAFÉ	N/A	N/A	N/A
SNACS	1. Lack of knowledge of compliance and food classification skills	Quarterly SMS or email	No modifications made
REACH	1. Lack of knowledge of compliance and food classification skills	Quarterly SMS or email	
Implementation strategy: executive support			
PICNIC	1. Insufficient school leadership support	Face-to-face visit with the principal, school canteen manager and parent committee	Change modality from face-to-face to telephone meeting
CAFÉ	1. Insufficient school leadership support	Face-to-face visit with the principal/canteen manager	Change modality from face-to-face to phone meeting
SNACS	1. Insufficient school leadership support	Telephone call with the principal	Change from telephone to mail out of invitation letter
REACH	1. Insufficient school leadership support	Information letter and training workshop information mailed.	
Implementation strategy: consensus processes			
PICNIC	1. Lack of specific goals and plans to make changes.	Meetings with canteen staff to develop action plans	Integration of the process within training workshop
CAFÉ	N/A	N/A	N/A
SNACS	N/A	N/A	N/A
REACH	1. Lack of specific goals and plans to make changes.	Development of action plan at the training workshop	
Implementation strategy: training workshop			
PICNIC	1. Limited nutrition knowledge. 2. Lack of knowledge of compliance and food classification skills	One-off training with canteen managers including the provision of education and skill development in policy and canteen management	No modifications made
CAFÉ	N/A	N/A	
SNACS	1. Limited nutrition knowledge. 2. Lack of knowledge of compliance and food classification skills	One-off training with canteen managers including the provision of education and skill development in policy and canteen management	Modify content and reduce length to cater for larger attendance and potentially greater distance travelled by attendees
REACH	1. Limited nutrition knowledge. 2. Lack of knowledge of compliance and food classification skills	One-off group training adapted in length and content to cater for larger numbers and travel required to venue	
Implementation strategy: tools and resources			
PICNIC	1. Limited nutrition knowledge. 2. Lack of knowledge of compliance and food classification skills	Printed and electronic instructional materials, templates and checklists	No modifications made
CAFÉ	1. Limited nutrition knowledge. 2. Lack of knowledge of compliance and food classification skills	Printed and electronic instructional materials, templates and checklists	No modifications made
SNACS	1. Limited nutrition knowledge. 2. Lack of knowledge of compliance and food classification skills	Printed and electronic instructional materials, templates and checklists	Include an online canteen product database resource.
REACH	1. Limited nutrition knowledge. 2. Lack of knowledge of compliance and food classification skills	Printed instructional materials, templates and checklists. Online Canteen Product Database	
Implementation strategy: academic detailing			
PICNIC	1. Lack of confidence to make changes.	On-site visits 1 and 3 months after workshop	Remove academic detailing as considered non-core
CAFÉ	N/A	N/A	N/A
SNACS	N/A	N/A	N/A
REACH	Not included in adapted intervention	Not included in adapted intervention	

Implementation strategy: audit and feedback			
PICNIC	1. Lack of knowledge of compliance and food classification skills	Up to four menu audits and feedback provided via face-to-face, phone or email.	Reduce to maximum of two to reduce labour intensiveness
CAFÉ	1. Lack of knowledge of compliance and food classification skills	Up to four menu audits and feedback provided via telephone and/or email	Reduce to maximum of two Removed verbal feedback.
SNACS	1. Lack of knowledge of compliance and food classification skills	Up to four menu audits and feedback provided via SMS, phone and/or email.	No modifications made
REACH	1. Lack of knowledge of compliance and food classification skills	Up to four menu audits and feedback provided via SMS and/or	
Implementation strategy: recognition of schools adhering to the policy			
PICNIC	1. Perceived lack of support by the school community	Congratulatory letter and public acknowledgement in newsletter	No modifications made
CAFÉ	N/A	N/A	N/A
SNACS	1. Perceived lack of support by the school community	Congratulatory letter and public acknowledgement	No modifications made
REACH	1. Perceived lack of support by the school community	Congratulatory letter and public acknowledgement	
SMS, short messaging service.			

Identify opportunities to adapt the implementation interventions while preserving meaningful impact

3a) Rate according to the Affordability, Practicability, Effectiveness, Acceptability, Safety and Equity criteria⁸

A range of factors need to be considered when identifying opportunities to adapt implementation strategies. The Affordability, Practicability, Effectiveness, Acceptability, Safety and Equity (APEASE) provides a comprehensive criterion to ensure assessment of important factors and has been extensively used to support selection of implementation strategies. An expert advisory group consisting of key stakeholders including implementation and behavioural scientists, dietitians, teachers, canteen managers and health promotion staff was formed to determine appropriate adaptation decisions. All members of the advisory group were asked to rate implementation strategies used in three RCTs according to the APEASE criteria in the context of available population health service expertise and infrastructure (see Table 1). To be shortlisted for retention, the strategy had to meet all APEASE criteria as judged by the advisory group. Data from RCTs and the team's Cochrane review on implementation interventions in schools⁹ were used to support assessment. Where there was disagreement that could not be resolved via consensus, the service director made the final decisions as the individual responsible for the service.

3b) Identify core and non-core strategies

Potential strategies were further refined following consideration of the extent to which they were considered 'core' and 'non-core'. Core strategies were those deemed critical to successful implementation of the EBI and directly related to the effectiveness of the intervention. Such strategies were not to be discarded in the adaption process. Non-core strategies were those considered not fundamental to the effects of the intervention. To make such assessments, the expert advisory group considered the following: (i) the extent to which each implementation strategy executes a behaviour change technique that targets an important barrier (see Table 2) and (ii) the perspectives of the implementers regarding potential impact.

Undertake program adaptations

Following step 3, seven strategies were retained: (i) gaining executive support, (ii) undertaking consensus processes, (iii) training workshop, (iv) tools and resources, (v) implementation support, (vi) reinforcement and (vii) audit and feedback. The advisory group agreed that it was important to further refine the intensity and modality of each strategy to increase reach and reduce cost. A list of potential modifications were generated, and only refinements that were deemed as unlikely to adversely impact on the strategy were considered. The team undertook an assessment on how each the proposed modifications may impact on ability to target barriers. For example, lower intensity contact modalities (short messaging service [SMS] and emails) were used to provide feedback instead of face to face or telephone calls. The primary barrier targeted by this strategy was the lack of

awareness of compliance and limited food classification skills of canteen managers. The advisory group agreed that the use of emails and/or targeted SMS to deliver feedback and suggestions on modifications to the menu could overcome such barriers. Such decisions were reported challenges by program implementers with reaching canteen managers via telephone and school's preference for receiving SMS rather than other forms of support.

Develop training and resources to support delivery of implementation strategies

A final intervention, healthy food @schools (REACH),¹⁰ was developed (Table 2). A canteen product database was developed as an interactive resource to support canteen managers with undertaking classification of foods. A protocol for delivery was developed, and training manuals were adapted to support delivery.

Evaluate the adapted strategy

The evaluation of an adapted intervention is critical to allow assessment of whether a meaningful effect was maintained. We applied pragmatic approaches consistent with health service delivery unit capacity, consisting of validated brief menu audits and questionnaires based on the Reach, Effectiveness- Adoption, Implementation and Maintenance (RE-AIM) framework. Evaluation of the strategy with 157 schools in a non-controlled before-and-after trial found that 35% of schools at follow-up were compliant with the state healthy canteen policy compared with 17% at baseline ($P < 0.001$)¹⁰. There were significant increases in adoption by principals ($P = 0.005$) and canteen managers ($P < 0.001$).

Discussion

This process resulted in the development of an optimized intervention that could be delivered within the constraints of the end user. While there was some reduction in effect size, the final intervention remained effective and had higher reach. A number of limitations with our adaptation process should be noted including the lack of conduct of formal assessment of intervention mechanisms. Future empirical research on how to undertake this process while maintaining meaningful effect is needed. In addition, this process highlights the need to effectively engage practitioners in the design and evaluation of interventions so that they align more closely to end users' needs.

Author statements

Acknowledgements

The authors would like to acknowledge the health promotion staff and stake holders who were part of the advisory groups and delivered the original interventions.

Ethical approval

Ethical approval was not required as this study was not considered 'human research' as defined by the National Statement on Ethical Conduct in Human Research. This study was carried out as part of routine service delivery to improve the implementation of the healthy canteen policy in the region.

Funding

The trials described in this study were funded by an ARC Linkage Grant (PICNIC) (LP130101008) and in-kind funding by Hunter New England Population Health (CAFÉ, SNACS and REACH). Sze Lin Yoong is funded by an Australian Research Council Discovery Early Career Researcher Award (DE170100382). Nicole Nathan is funded by a NHMRC TRIP Fellowship (APP1132450) and a Hunter New England Clinical Research Fellowship. Luke Wolfenden is supported by a NHMRC Career Development Fellowship (APP1128348), Heart Foundation Future Leader Fellowship (101175) and a Hunter New England Clinical Research Fellowship; Rachel Sutherland is supported by a NHMRC TRIP Fellowship (APP1150661). Sharon Straus is funded by a Tier 1 Canada Research Chairs in Knowledge Translation. The funding sources had no involvement in the study design, collection, analysis and interpretation of data, writing of the report and decision to submit the article for publication.

Competing interests

The authors have no competing interests to declare.

Data statement

This article does not present any new data and describes the process of adapting a public health intervention for implementation.

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