“Improving the Implementation of Menu Dietary Guidelines in Childcare Services”

Kirsty Louise Seward BHSc (Nut & Diet)
(University of Newcastle)

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Behavioural Science

March 2019

This research was supported by an Australian Government Research Training Program (RTP) Scholarship
STATEMENT OF ORIGINALITY

I hereby certify that the work embodied in the thesis is my own work, conducted under normal supervision. The thesis contains no material which has been accepted, or is being examined, for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made. I give consent to the final version of my thesis being made available worldwide when deposited in the University's Digital Repository, subject to the provisions of the Copyright Act 1968 and any approved embargo.

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CONFLICT OF INTEREST STATEMENT

Kirsty Seward reports no conflict of interest.
This thesis is presented as a series of five papers. At the time of submission, all five of these papers were either published or under editorial review in peer reviewed journals.

Table 1.1: Outline of Thesis Chapters and associated publications.

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CO-AUTHOR STATEMENTS FOR CHAPTER 2

I attest that Research Higher Degree candidate Kirsty Seward contributed to the paper/publication entitled:

Factors that influence the implementation of dietary guidelines regarding food provision in centre based childcare services: A systematic review

By:

- Developing the research question
- Determining the research design
- Developing the search strategy
- Undertaking screening, data extraction and quality assessment
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- Leading the writing of the manuscript

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I attest that Research Higher Degree candidate Kirsty Seward contributed to the paper/publication entitled:

Measuring implementation behaviour of menu guidelines in the childcare setting: Confirmatory Factor Analysis of a Theoretical Domains Framework Questionnaire (TDFQ).

By:
• Developing the research question
• Determining the research design
• Development of measures to be used
• Overseeing data collection
• Assisting in the analysis and interpretation of the data
• Leading the writing of the manuscript

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CO-AUTHOR STATEMENTS FOR CHAPTER 4

I attest that Research Higher Degree candidate Kirsty Seward contributed to the paper/publication entitled:

Multistrategy childcare-based intervention to improve compliance with nutrition guidelines versus usual care in long day care services: a study protocol for a randomised controlled trial

By:
- Developing the research question
- Determining the research design
- Development of measures to be used
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CO-AUTHOR STATEMENTS FOR CHAPTER 5

I attest that Research Higher Degree candidate Kirsty Seward contributed to the paper/publication entitled:

Improving the implementation of nutrition guidelines in childcare centres improves child dietary intake: findings of a randomised trial of an implementation intervention

By:

- Developing the research question
- Determining the research design
- Development of measures to be used
- Developing, delivering and overseeing intervention delivery
- Overseeing data collection
- Analysis and interpretation of the data
- Leading the writing of the manuscript

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CO-AUTHOR STATEMENTS FOR CHAPTER 6

I attest that Research Higher Degree candidate Kirsty Seward contributed to the paper/publication entitled:

The impact of a childcare food service intervention on child dietary intake in care: an exploratory cluster randomised controlled trial

By:
- Developing the research question
- Determining the research design
- Development of measures to be used
- Developing, delivering and overseeing intervention delivery
- Overseeing data collection
- Analysis and interpretation of the data
- Co-authoring the manuscript

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ADDITIONAL PUBLICATIONS, PRESENTATIONS AND AWARDS ASSOCIATED WITH THE THESIS

PUBLICATIONS


PRESENTATIONS

*International Society of Behavioral Nutrition and Physical Activity 2018 Annual Meeting June 2019 Prague*

**Accepted Oral Presentation:** A randomised 3 arm trial of high and low intensity interventions to support implementation of nutrition guidelines in childcare centres: menu compliance at 12 months

*International Society of Behavioral Nutrition and Physical Activity 2018 Annual Meeting June 2018 Hong Kong.*

**Symposium Oral Presentation:** The psychometric properties of a theoretical domain framework questionnaire (TDFQ) assessing the implementation of nutrition guidelines in centre based childcare services.

*International Society of Behavioral Nutrition and Physical Activity 2018 Annual Meeting June 2018 Hong Kong.*

**Oral Presentation:** Application of the theoretical domains framework to identify barriers to the implementation of food service nutrition guidelines by centre based childcare services: Systematic Review.

*2017 Annual Hunter Cancer Research Symposium Nov 2017, Newcastle, NSW.*

**Oral Presentation:** An intervention to improve nutrition guideline compliance in childcare services.


**Poster Presentation:** An intervention to improve nutrition guideline compliance in childcare services.


**Poster presentation:** Measuring implementation behaviour of menu guidelines in the childcare setting: Confirmatory Factor Analysis of a Theoretical Domains Framework Questionnaire (TDFQ)
Global Implementation Conference June 2017 Toronto, Canada.

Poster presentation: A theory-based implementation intervention to improve compliance with nutrition guidelines in centre based childcare services: practice implications from a three-arm randomized controlled trial.

Global Implementation Conference June 2017 Toronto, Canada.

Poster presentation: Application of a theoretical domains framework to identify barriers to the implementation of food service nutrition guidelines by centre based childcare services: Systematic review.

Global Implementation Conference June 2017 Toronto, Canada.

Oral presentation: The psychometric properties of a theoretical domain framework questionnaire assessing the implementation of nutrition guidelines in center based childcare services.

Australian Health Promotion Association Conference 2016 Perth, Australia.

Oral Presentation: Child care service cooks barriers to implementing nutrition guidelines – applying a theoretical framework.

3rd Biennial Australasian Implementation Conference 2016 Melbourne, Australia.

Oral Presentation: An intervention to improve the implementation of nutrition guidelines in childcare services – Preliminary results.

3rd Biennial Australasian Implementation Conference 2016 Melbourne, Australia.

Poster Presentation: The psychometric properties of a theoretical domain framework questionnaire for the non-health care setting.

Population Health Congress 2015 Hobart, Australia.

Oral Presentation: An intervention to improve the implementation of nutrition guidelines in childcare services- Application of the theoretical domains framework.
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2. Office of Preventive Health. 2017 Tender $30806.00

3. Hunter Cancer Research Alliance 2017 Implementation Science HDR Student Award $5000.00

4. Priority Research Centre for Health Behaviour. 2018 Project Grant $5000.00
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ABSTRACT

BACKGROUND AND AIMS

Dietary risk factors are a leading contributor to the global disease burden of non-communicable diseases (NCDs). To reduce the health burden of dietary risk factors, the World Health Organisation recommends that countries develop national dietary guidelines providing guidance on food, food groups and dietary patterns known to protect against the development of NCDs, and that such guidelines are implemented in various community settings such as schools and childcare services. As dietary risk factors are prevalent from an early age in young children and have been shown to track into adulthood, implementing dietary guidelines within the childcare setting represents a promising strategy to improve the health of the population. In order to realise the potential benefits of doing so, strategies that are effective in improving implementation within this setting are needed. However, evidence regarding the barriers and/or facilitators of guideline implementation and of the effectiveness of strategies to support such implementation in the childcare setting is limited. This thesis sought to address these evidence gaps to better guide efforts to improve the implementation of menu dietary guidelines in childcare. Specifically, it aimed to:

- Comprehensively and systematically review and synthesise the literature that reports factors (barriers and/or facilitators) which influence the implementation of menu dietary guidelines within the childcare setting (Chapter 2).

- Describe the psychometric properties of a measure, based on the Theoretical Domains Framework, to assess factors that influence the implementation of menu dietary guidelines in the childcare setting (Chapter 3).

- Assess the effectiveness of an intervention to improve the implementation of menu dietary guidelines in the childcare setting and the impact on food provision and child food intake while in care; as measured: i) at the service level, ii) at the individual level (Chapters 5 & 6).

- Provide recommendations for future research and practice to improve the implementation of menu dietary guidelines in childcare services (Chapter 7).
RESULTS

Through the systematic review (Chapter 2), this thesis demonstrated that the most commonly identified factors related to the implementation of childcare sector menu dietary guidelines were the ‘environmental context and resources’ such as insufficient menu planning tools and resources and insufficient time.

A tool to assess factors which influence the implementation of menu dietary guidelines was shown to have good discriminant validity and internally consistency. Using a parallel group randomised controlled trial with 45 New South Wales childcare services a multi-strategy intervention designed to address service level barriers was effective in improving implementation of sector menu dietary guidelines (Chapters 4, 5 & 6). Specifically, relative to control services, intervention services were more likely to be compliant with guidelines related to the provision of fruit; meat and meat alternatives; dairy; and discretionary foods. Furthermore, the intervention resulted in a significant increase in service-level child serve consumption for fruit and vegetable food groups, and individual level serve consumption for vegetable; wholegrain cereals; and meat/meat alternatives food groups, compared to the control group. This thesis recommends investigating the use of technology such as web-based programs and leveraging the existing infrastructure and expertise of external catering services to scale up the implementation of menu dietary guidelines in the childcare setting. Furthermore it recommends that research targeting the implementation of menu dietary guidelines in childcare services should include cost-effectiveness measures, to assist policy makers and practitioners to choose future support strategies.

CONCLUSION

The findings of this thesis provide new evidence for enhancing the implementation of dietary guidelines by child care services. Further the evidence demonstrates that by enhancing such implementation, the quality of child diet is significantly enhanced.
CONTRIBUTION STATEMENT

I was the sole PhD student on this study and was intricately involved in all aspects of the study conceptualization, design, development, implementation, and evaluation. I was the contact person for schools, principals and canteen managers throughout the study and was responsible for managing all enquiries. A summary of the various contributions I made to the studies reported in this thesis is provided below.

PROGRAM DESIGN AND DEVELOPMENT

I took a lead role in program design and development and was responsible for a team of staff involved in the implementation of the multi-strategy intervention described in chapters 4, 5 & 6. With guidance from my supervisors, I led the development of the randomised controlled trial. This required the creation of a range of program components and resources. The trial included: the development and delivery of childcare menu planning workshops, development of tools and resources for childcare service directors and service cooks, development of a menu feedback report, and a suite of resources designed to monitor the implementation of the trial.

ETHICS APPROVAL AND CLINICAL TRIAL REGISTRY

I was responsible for correspondence with the Hunter New England Local Health District Human Research Ethics Committee (06/07/26/4.04), including drafting applications and addressing feedback from committees. I was responsible for completing all ethics forms, designing the program recruitment material and developing the information statements for childcares service directors and service cooks. I was responsible for the initial registration of the trial with ANZCTR and any required updates.

STUDY MEASURES

In consultation with my supervisors, I developed and validated the theoretical domain framework questionnaire. I collaborated with my supervisors and the ‘Good for Kids Good for Life’ childcare dietitian team for the development of the comprehensive menu review protocol, the child food intake questionnaire and the aggregate plate waste measure protocol. I developed the nominated supervisor and service cook pen and paper survey items.
DATA COLLECTION, ENTRY, AND MANAGEMENT

I was responsible for planning and coordinating the data collection procedure for childcare service menu assessments and child food intake measures. This involved developing the training protocols and training a team of research assistants to collect child food intake data via aggregate plate waste measures and child food intake questionnaires. Throughout the execution of the intervention, I managed three dietitians and two project officers delivering the intervention and assisting with aspects of the data management. Data collection was undertaken over a 12-month period on three separate occasions. I also trained Computer Assisted Telephone Interviews (CATI) staff and I was responsible for overseeing the completion of the service cook CATI to validate the theoretical domain framework questionnaire.

PROGRAM IMPLEMENTATION

With support from my supervisors and the project team, I oversaw the implementation of the multi-strategy intervention. I was responsible for managing the intervention delivery.

DATA CLEANING AND ANALYSIS

In correspondence with my supervisors, the methods of statistical analysis were decided upon and I led the data analysis process. I was also responsible for interpreting the results and presenting the data in either text, table or figure formats.

PRESENTATION OF STUDY RESULTS

During my candidature, the results of the research have been presented at five international and three national conferences.