NURSING AND MIDWIFERY RESEARCH

Methods and appraisal for evidence-based practice

AUSTRALIA AND NEW ZEALAND EDITION

7e

Dean Whitehead, Daniel Terry
Geri LoBiondo-Wood, Judith Haber

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Nursing and Midwifery RESEARCH

methods and appraisal for evidence-based practice

7th edition

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FOREWORD

The COVID-19 pandemic has been a clarion call for the importance of nurses and midwives in ensuring the health and wellbeing of our world. The pandemic has also underscored the importance of data-driven decision making and evidence-based practice. The ageing of the world's population, increasing geopolitical instability, soaring costs, widening inequities and the threats of global pandemics challenge existing models of care and generate many questions about what we can do better to address the needs of the populations we serve. A contemporary research agenda is not just about investigator-driven research but is also about considering the needs of individuals, families and communities in the context of contemporary social, political and economic dynamics. Co-design and co-production of research are critically important. The volume and speed of the introduction of new data require nurses and midwives to interpret, synthesise and apply research at an increasing rate. The burgeoning phenomenon of misinformation and disinformation increases the priority of these skills as a health professional.

In the framework of evolving and dynamic healthcare priorities, this seventh edition of *Nursing and Midwifery Research: methods and appraisal for evidence-based practice* comes at exactly the right time. In many ways, the world is at an inflection point emerging from the pandemic. Increasing digitalisation and the introduction of artificial intelligence are just two of the factors that signal a new era. To meet this challenge generations of committed, competent and credentialled nurses and midwives working across the healthcare ecosystem will be required.

Nursing and Midwifery Research: methods and appraisal for evidence-based practice builds upon the existing strengths of previous editions but is also adapted to the opportunities and challenges facing our world. The text provides a roadmap of the research journey from the conception of the big idea through planning, execution, evaluation and dissemination. Chapters tackle both methodological issues and pragmatic aspects of implementation, such as working in teams. Each chapter is structured on focused learning objectives and integrates tutorial and reflective exercises. Individually and collectively, these chapters provide an excellent resource for the nurse and midwife.

This impressive seventh edition is written by expert researchers who generously share their experience and wisdom to prepare the next generations of nurses and midwives. This text also marks another phase in the maturation of the research journey for nurses and midwives. Whether working in policy, practice, education or research, this text will remain a valuable resource beyond the classroom. The authors and editors are to be congratulated on this impressive contribution to the field and I hope it will inspire the current and next generation of researchers—the world needs you.

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PREFACE

In the years since the first Australia–New Zealand edition of this book, nurses and midwives and allied healthcare professionals have continued to champion the need for critical appraisal and evaluation of research studies and reports. The ever-increasing acknowledgement behind basing practice on research evidence continues unchallenged—as does the importance of including nurses and midwives in the research process, either through conducting primary research and/or by implementing existing findings into practice. Effective knowledge regarding research methodology, process and design is mandatory in all healthcare settings today. All nurses and midwives need to understand what research findings mean and to realise its importance in defending, challenging and changing practice in complex healthcare environments. This seventh edition is dedicated, as were our previous editions, to all health professionals, research consumers and those conducting research. We, the Australasian editors/authors, have considerably revised previous content and pedagogy for this edition. As usual, we have updated supporting citation and the research sources and examples we use to illustrate the latest developments in the field. We gratefully acknowledge the contribution of our Australasian-based students, colleagues and reviewers of this text in making this edition more inclusive and broader in scope—while promoting a detailed account of the ever-changing nature and variety of the commonest research approaches in our disciplines.

This seventh edition is divided into three sections and 19 chapters.

Section 1: What you need to know about research to appreciate it and get started: This section sets the scene for the importance of nursing and midwifery research and provides an overview of research theory and its underpinning processes. It also includes chapters on critically searching for and reviewing the research literature and identifying research ideas, questions, statements and hypotheses.

Section 2: What you need to know about research to understand how it is applied: This section provides a detailed discussion of qualitative, quantitative and mixed-methods research approaches, with many useful examples from various settings. Chapters are devoted to implementation, sampling, collecting and analysing data in qualitative and quantitative approaches, assessing measuring instruments and applying research knowledge through evidence-based practice and knowledge translation. In addition, it also examines the ethical and legal issues to consider in research, along with a dedicated chapter examining Indigenous peoples and research.

Section 3: What you need to know about research if you want to conduct research: This section is designed to enhance the previous two sections through supporting both undergraduate and postgraduate students in their 'physical' research activities. Writing research proposals may be a requirement for undergraduates in their research program (especially at Honours level) and postgraduates will find the information useful for developing an ethics proposal or for applying for university and/or external funding. Research project management is included in this section—as well as presenting research findings, especially through the process of publication and other dissemination sources. The final chapter is designed to bring the 'whole' research process together by describing the beginning-to-end processes of a recently completed 'mixed-methods' research project. It should be of interest and advantage to both those new to the research process and those who are considering initial stages of conducting research in the field—as a 'live' example of research process.

We hope that you enjoy using the seventh edition of this text and that it stimulates and encourages you to read and think about research and its place in your professional practice and your wider 'world'. We also hope it assists in the development of your skills and confidence in critically searching for and appraising the research literature. Most importantly, we hope that you will share any new-found information about research with your colleagues and use research findings to inform the quality care that you deliver to your patients and clients. The delivery of quality nursing and midwifery evidence-based care is a challenge in our dynamic and complex healthcare environments and settings. Used appropriately, this text will be a valuable tool to assist you in that rewarding challenge.

Dean Whitehead and Daniel Terry
April 2024

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A Research Project Journey: From Conception to Completion

Elizabeth Brogan and Jane Maguire

LEARNING OUTCOMES

By the end of this chapter, you should be able to:

- understand the application of mixed-methods approach (see Chapter 12) used in research projects
- identify how to plan a research project in a logically structured and sequenced manner—from start to the end
- understand how teams work together to define and achieve common project research goals
- appreciate how findings and results are used, and influence and impact health professionals in different health-related settings
- understand an entire research project from design to dissemination and be able to articulate the details of the project to appreciate the constituent parts that make up the whole process.

KEY TERMS

Behaviour Change Wheel, p. 330
COM-B model, p. 332
experienced nurse, p. 331
healthcare research, p. 330
mixed-methods research (MMR), p. 329
new graduate nurses, p. 329
qualitative research, p. 333
quantitative research, p. 333
research project, p. 329
transition to practice program (TPP), p. 330

INTRODUCTION

The purpose of this final chapter is to enhance what other authors have written about in the 18 previous chapters by detailing a recent mixed-methods **research project** from the beginning research idea through to eventual dissemination of findings. When the first draft of this chapter was written in early 2023, the project had been completed for 24 months and several publications produced. The chronological sequence of events and the details of this project are presented here. The project used both quantitative and qualitative methodologies within the mixed-methods (MM) design approach (see Chapter 12) and therefore aligns closely with most of the chapter topics in this textbook. Specifically, this chapter reports the application of a study that used a sequential exploratory **mixed-methods research (MMR)** implemented over two phases. Fig 19.1 describes the sequential exploratory design used in the Start Healthy and Stay Healthy Intervention. Fig 19.2 describes the sequence of the study as related to the chapters in this book.

The Start Healthy and Stay Healthy Workplace Health Promotion Intervention project emerged from engagement with new graduates that included formative research that explored their *diet and physical activity* behaviours and attitudes towards *health promotion interventions*.

New graduate nurses (i.e. registered nurses with less than 12 months clinical experience) are the next generation of the nursing workforce; however, they face numerous challenges in Australia, including a population with an increased demand for high-quality healthcare, an ageing nursing workforce and a global nurse shortage (Nursing and Midwifery Board of Australia 2023,World Health Organization 2019). They also face several barriers

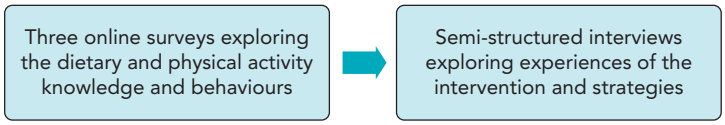

Fig. 19.1 Sequential exploratory design used in Start Healthy and Stay Healthy

Methodology		Methods	Further information
Quantitative	⇨	Data collection	Chapters 8 and 9
Qualitative	⇨	Data collection	Chapters 5 and 6
Integration	⇨	Of quantitative and qualitative findings	Chapter 12

Fig. 19.2 Sequential exploratory design (Adapted from Creswell et al 2017.)

to participation in healthy dietary and physical activity behaviours during their transitional year of practice, including shift work, the regular availability of discretionary foods at the workplace and fatigue (Brogan et al 2021, Gifkins et al 2018).

A preliminary review of the relevant literature identified that most research focused on diet and physical activity behaviour of nurses, along with workplace health promotion interventions designed to improve nurses' health behaviours (Lavoie-Tremblay et al 2014, Torquati et al 2017, Tucker et al 2011). None of the review studies focused specifically on the diet and physical activity behaviours of new graduate nurses or delivered targeted diet and physical activity workplace health promotion interventions for this cohort. Therefore, this study sought to examine the diet and physical activity behaviours of new graduate nurses and implement a workplace health promotion intervention embedded into a **transition to practice program (TPP)** to assist new graduate nurses to adopt and maintain healthy lifestyle behaviours from career commencement.

The Start Healthy and Stay Healthy intervention is informed by the **Behaviour Change Wheel**, and aimed to assist new graduate nurses working in one Australian Local Health District to establish healthy dietary and physical activity behaviours. Briefly, it included face-to-face education sessions, the use of a fitness tracker and twice-weekly messages. Participants completed three online surveys: at orientation, 6 weeks and 6 months. A subsample participated in semistructured interviews to explore their experience of the intervention.

THE STUDY PROJECT—CHAPTER-BY-CHAPTER

Chapter 1—The Significance of Nursing and Midwifery Research and Evidence-based Practice

The growth of knowledge within the nursing and midwifery discipline occurs through engagement in research projects, which then leads to translation, implementation and dissemination of findings and results.

Knowledge growth occurs via the exploration, investigation and discovery of new insights and understanding, which enables the advancement of nursing practice, promotes evidence-based practice and improves outcomes for healthcare consumers. Knowledge growth also bridges the gap between researchers and consumers of **healthcare research**, including healthcare professionals, policy makers and patients. Knowledge can be translated in many ways; for example, in this project the Start Healthy and Stay Healthy intervention was incorporated as a core element of the TPP offered by the Local Health District.

Implementation of new knowledge in nursing research is a crucial step in improving patient outcomes and changing clinical practice. Implementation involves practical application of new knowledge; this may be through pilot testing, education sessions and integration of revised clinical policies, procedures and protocols. Furthermore, the implementation of new knowledge involves a multidimensional approach, which may include education, policy

changes, technological advancements and collaboration among stakeholders to ensure an effective and sustainable integration of research findings into clinical practice.

Dissemination of research findings is a critical and final stage in the research process. The significance of disseminating research findings is in sharing outcomes and research results with the broader healthcare community and beyond healthcare to policy makers and governments. It also contributes to the overall body of knowledge and facilitates healthcare professionals to remain up to date with current evidence and best-practice guidelines. In this project the findings were disseminated via conferences and manuscripts (see Chapter 18 for details).

Another key aspect of the research process is the formation of the research team, which may include researchers from across disciplines in the healthcare workforce and outside the multidisciplinary team. Other important groups to participate in research are patients, family members and caregivers both as participants and as lived-experience researchers engaged in co-design research projects. Collectively, research, professional expertise and lived-experience experts constitute 'evidence-based practice' (see Chapter 12).

This project was conducted by a team of four researchers who brought a diverse range of clinical research experience and expertise to the project. Two expert researchers and a novice or early-career researcher (ECR) were trained in the discipline of nursing and worked in the academic setting. The remaining team member was a biostatistician. The diverse clinical and research experience of this team brought together an expert nursing workforce researcher, an expert obesity and nursing researcher and an **experienced nurse** (i.e. a registered nurse with greater than 12 months clinical experience) educator who has worked closely with new graduate nurses during their transitional year of practice. The combined experience and expertise of this research team created a collaborative environment for exploring the implementation of targeted workplace health promotion interventions for new graduate nurses, while also leveraging their diverse expertise to gain a more comprehensive understanding of the topic and generate innovative solutions and recommendations for promoting healthier behaviours among new graduate nurses.

The ECR was also the project lead under the supervision of the two expert nursing researchers. One strategy to ensure the ongoing contribution of new knowledge to the disciplines of nursing and midwifery is the supervision and support of ECRs. This may occur through two pathways. The first is a formalised PhD program, as was the case in this project, or more informal mentoring of ECRs through engagement on small research projects or grant applications conducted within the academic or clinical setting. Alternatively, research teams may consist of members from the multidisciplinary healthcare team, or patients and caregivers as individuals with lived experience, as this draws on their diverse knowledge, experiences and clinical expertise.

The experience levels and professional diversity of the research team was an appropriate combination to implement a workplace health promotion intervention that supported new graduate nurses to adopt and maintain healthy diet and physical activity behaviours from career commencement. Therefore, a sound understanding of the dynamic challenges faced by new graduate nurses was a pertinent element of this process and was addressed by this research team.

RESEARCH IN BRIEF 19.1

To investigate the barriers and enablers to healthy eating and participation in regular physical activity, along with participation in workplace health programs, Brogan et al (2021) conducted a qualitative study with new graduate nurses working across a variety of clinical settings during their first year of clinical practice. Semistructured interviews informed by the socioecological model were conducted with 24 new graduate nurses. Four key themes emerged as barriers to healthy eating and physical activity; these included meal times, shift work, the work environment and work culture. High interest in engaging with workplace health promotion programs was also found. A lack of time and shift work often led to increased snacking behaviours to maintain energy; fatigue also reduced motivation to be physically active before or after work. The workplace and culture influenced the consumption of foods that were quick to consume but often nutritionally poor. Positive attitudes towards engagement with health promotion programs were also reported by participants. Overall, individual, interpersonal and organisational factors may negatively influence the diet and physical activity behaviours of new graduate nurses and the development of a targeted intervention may assist new graduate nurses to navigate these barriers to healthy behaviours.

Chapter 2—An Overview of Research Theory, Process and Design

In this project, the research theory was identified and chosen prior to commencing the study proper. The researcher chose the Behaviour Change Wheel because it provides a systematic and evidence-based approach to understanding and influencing behaviour change. In the context of workplace health promotion interventions, the Behaviour Change Wheel offers a structured framework

to identify the determinants of behaviour, design appropriate interventions and evaluate their effectiveness. By using the Behaviour Change Wheel, interventions can be tailored to address the specific needs and challenges of the workplace environment, considering factors such as organisational culture, social influences and individual motivation.

At the centre of the Behaviour Change Wheel (Fig. 19.3) is the **COM-B** model, the central premise of which is that, for an individual to engage in behaviour change, they need to have the **c**apability to engage in the behaviours, the **o**pportunity to perform the behaviour and sufficient **m**otivation (Michie et al 2014 p. 59). The use of a theoretical framework is advocated by leading researchers in implementation science (Atkins et al 2017, French et al 2012, Michie & West 2013) as well as the UK's Research Council for the development and implementation of complex interventions (Campbell et al 2000, Craig et al 2008, Moore et al 2015).

In this study, the Behaviour Change Wheel was used to systematically select appropriate behaviours and strategies for implementation into Start Healthy and Stay Healthy intervention. The Behaviour Change Wheel was used to inform the selection of the target behaviours, namely diet and physical activity, along with the intervention strategies, specifically three face-to-face education sessions, twice-weekly text messages and the provision of an activity tracker (Fitbit Flex2™). The Behaviour Change Wheel also guided the selection of policy options to ensure stakeholder engagement within the Local Health District.

This theory was coupled with the process of MMR design (see Chapter 12) because it allows for a comprehensive understanding of the research topic. By incorporating the chosen theory within an MMR design, researchers can gather quantitative data to examine patterns, trends and statistical relationships, while also exploring qualitative data to capture rich, contextual information, individual experiences and in-depth perspectives (Creswell et al 2018, Halcomb & Andrews 2009).

During the planning stages of this project an MMR approach was selected, specifically a sequential exploratory design. This design was chosen as it enabled the research team to explore in depth the feasibility of embedding a workplace health promotion intervention into an existing TPP, while also examining the acceptability of the intervention and its strategies to support the participants to adopt and maintain healthy dietary and physical activity behaviours during their transition year of practice.

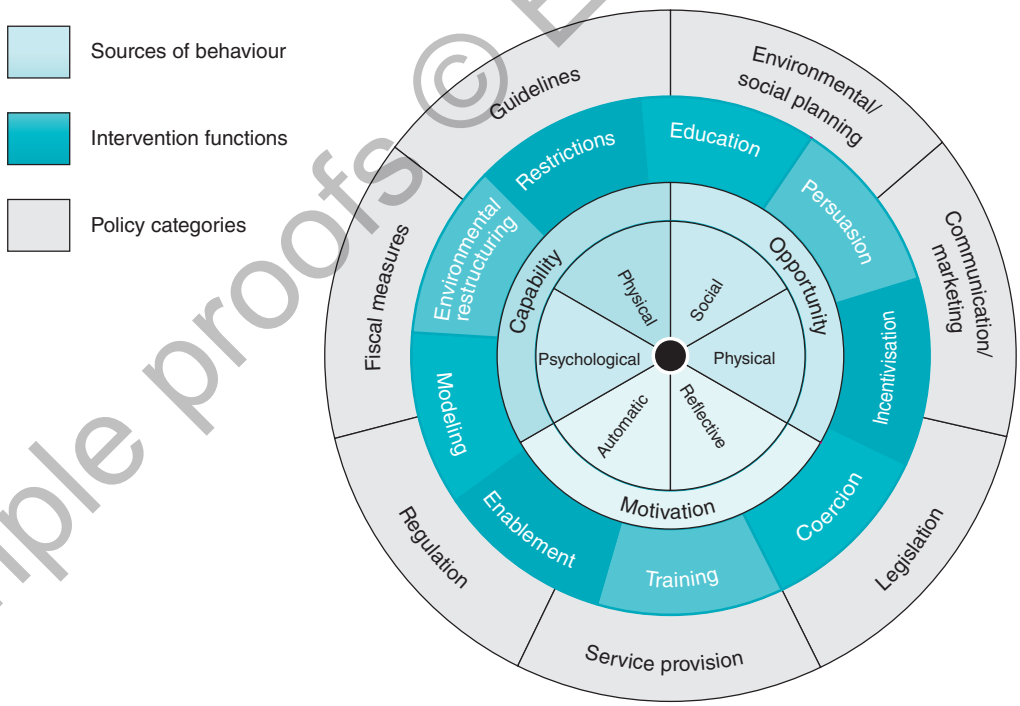

Fig. 19.3 The Behaviour Change Wheel: a system for selecting interventions and policies from an analysis of behaviour (From Michie & West 2012, with permission.)

Sequential exploratory designs are increasingly being used in healthcare research as they enable the researchers to answer complex questions, which may not be answered using quantitative or qualitative methods alone (Creswell et al 2018, Halcomb & Andrews 2009). Another important aspect of MMR is the priority assigned to the **quantitative research** and **qualitative research** components (Andrew & Halcomb 2009, Creswell & Plano Clark 2017) (see Chapter 12).

In this project, equal priority was given to the quantitative and qualitative data, as the project explored the feasibility and acceptability of the Start Healthy and Stay Healthy intervention (see Fig. 19.1). Data integration is central to MMR, as part of sequential exploratory design data integration occurs after analysis of the quantitative and qualitative data sets (Andrew & Halcomb 2009). For this study, data integration was the final stage of analysis of the findings and occurred after the completion of separate quantitative and qualitative data analysis; data integration also guided the discussion of the research findings.

TUTORIAL TRIGGER 19.1

Imagine that you wanted to conduct a similar project using a mixed-methods approach and a nursing lead team. What workplace issue would interest you the most? What type of methodologies and methods would you be most likely to adopt? Who would you be likely to include in your research team?

Chapter 3—Searching and Reviewing the Research Literature

All projects require a critical review of the literature to be conducted at various time-points along the research project process. For example, the problem being investigated requires a preliminary literature review to gain a comprehensive understanding of the existing knowledge and research related to the topic. Conducting a literature review helps researchers identify the gaps, trends and key findings in previous studies while avoiding duplicating previous research. This is typically followed by a more comprehensive, systematic approach review and may be a scoping review, narrative review or a systematic review. This is needed to clearly define the existing evidence base for the problem or phenomenon being explored or investigated. In addition, this supports the rationale for the project and its aims and choice of methodology.

In this exemplar project, an initial search of the literature was conducted to summarise what was already known regarding workplace health promotion programs that targeted nurses. Two systematic reviews were found: the first, conducted by Chan and Perry (2012), found only three interventions that targeted nurse's health behaviours and only one aimed to increase physical fitness (Yuan et al 2009); a second review, conducted by Torquati et al (2017), identified nine studies that targeted the diet and physical activity behaviours of registered nurses, assistants in nursing and student nurses. However, neither of these reviews identified any studies that specifically targeted the diet and physical activity behaviours of new graduate nurses, nor did they implement a workplace health promotion intervention to support them to develop healthy behaviours during their transition year of practice.

Despite the provision of targeted health promotion interventions for registered nurses, the literature did highlight the lack of a targeted workplace health promotion intervention for new graduate nurses during their transitional year of practice. This information helped to inform and prepare a comprehensive review of the literature, examining workplace health promotion interventions among non-nursing and nursing populations.

Three databases (CINAHL, Medline and Scopus) were searched using MeSH terms keywords and free text to identify eligible studies. Keyword searches covered common terms used in the workplace and health promotion literature (e.g. workplace health promotion program, workplace health promotion intervention, lifestyle intervention, diet, physical activity, and diet and physical activity). A second search was conducted using the list of identified key terms across all three databases, and finally a manual search of the relevant reference list and reviews was conducted. The inclusion criteria were focused on interventions conducted at workplaces, adults aged over 18, involving registered nurses and targeting diet, physical activity singularly or in combination, and published in English between 2008 and 2020. All study types were eligible for inclusion (quantitative, qualitative and mixed-methods research).

The Mixed-Methods Appraisal Tool (MMAT) (Hong et al 2018) was used to assess the various study designs including randomised, non-randomised and qualitative studies. The quality of included studies varied, with high scores associated with implementing the intervention as planned, participants being representative of the target population and appropriate data collection tools used to measure whether a change in behaviour occurred. Overall, the critical appraisal found some evidence that interventions which targeted the diet and physical activity behaviours of non-nursing and nursing populations were associated with positive behavioural change (Gilson et al 2013, Lavoie-Tremblay et al 2014, Tucker et al 201l).

Chapter 4—Identifying Research Ideas, Questions, Statements and Hypotheses

In addition to the extant literature in the case of nursing and midwifery disciplines, there may be other clinical concerns that are driving the need for research inquiry. In this project, the preliminary idea for this research study evolved from the researcher's perspective and experience. This was a clinical career working with new graduate nurses and delivering TPPs. During this time a deterioration in the health behaviours of some new graduates was noted. The researcher was driven to find a solution to support new graduate nurses during their transitional year. It was considered possible to implement a workplace health promotion program that would assist new graduate nurses to start their careers in a healthy state and remain healthy.

However, before a workplace health promotion intervention could be considered, the researcher understood that it was important to conduct exploratory research with new graduate nurses to identify what, if any, barriers and enablers to participation in healthy dietary and physical activity behaviours were being experienced. This was considered the best starting point as well as exploring what graduate nurses' attitudes were towards workplace health promotion programs. Therefore, in 2016, an exploratory qualitative research was conducted (Brogan et al 2020) to answer the following research question: '*What are the barriers and enablers that influence the diet and physical activity behaviours of new graduate nurses and what are their attitudes towards engagement in workplace health promotion programs?*'

The key findings from this 2016 study indicated that shift work, a lack of time, the work environment and culture impacted on their diet and physical activity behaviours. Generally, the participants indicated they would be interested in participating in a targeted workplace health promotion program.

Informed by this research, a pilot intervention was developed and delivered during the 2017 TPP offered by a teaching hospital in Sydney NSW (Brogan et al, under review). The pilot aimed to answer the following research question: '*Would a workplace health promotion intervention that targets their diet and physical activity behaviours be acceptable to new graduate nurses?*'

Eighteen new graduate nurses agreed to participate in the study; they received a face-to-face education session delivered during their transition to practice orientation day, twice-weekly text messages, access to a private Facebook group and an activity tracker (Brogan et al, under review). The findings suggested that it was feasible to deliver the intervention, with participants reporting they found the program to be acceptable with improvements to diet and physical activity engagement reported by some participants (Brogan et al, under review).

Informed by the findings from the 2016 and 2023 studies, the larger Start Healthy and Stay Healthy Intervention was designed with the aim of answering the following question: '*What are the diet and physical activity behaviours of new graduate nurses?*' and to explore the acceptability of embedding the Start Healthy and Stay Healthy intervention into a TPP.

Frequently, within MMR designs, the overarching question is broken down into manageable components specific to the different methodologies and/or stages. In the case of this example project, the research questions for now included:

1. What is the health knowledge of new graduate nurses?
2. What are the diet and physical activity behaviours of new graduate nurses?
3. Is the delivery of a targeted workplace health promotion intervention embedded into a TPP feasible?
4. Are the intervention strategies acceptable to new graduate nurses?

Chapter 5—Common Qualitative Methods

There are numerous qualitative methods available to collect qualitative data, including observation, field notes, interviews, focus groups and descriptive non-analytical surveys. In this study, semistructured interviews and descriptive surveys were employed.

Analysis of this data is predominantly *descriptive exploratory*, with the qualitative findings used to answer the study's questions related to the acceptability of the Start Healthy and Stay Healthy intervention, and its strategies, along with any barriers experienced by participants to engagement in healthy dietary and physical activity behaviours. Descriptive exploratory methodology seeks to adopt general qualitative principles and does not require a specialised or an in-depth knowledge or the addition of further theories, frameworks or philosophies (Whitehead et al 2016). This methodology enables researchers to gather rich data that are narrative, driven from the sample population, and analysis of that data using thematic or content analysis to explore the meaning within the findings (Whitehead 2016). It can be used to assess needs, for questionnaire development, in MMR and to understand first-hand experiences, the outcomes of which might lead to further exploration (Vaismoradi et al 2013, 2016, Whitehead et al 2016).

Chapter 6— Data Collection and Sampling in Qualitative Research

The data collection phase for this research project was typical for a qualitative study, as it involved semistructured

interviews with nurse participants. The text derived from these interviews forms the primary source of data for this study.

Data Collection

In the qualitative stage of the project, telephone interviews were conducted with the new graduate nurses at a prearranged time using the mobile phone numbers provided by participants and audio recorded with the consent of the participants. Data collection was guided by a set of in-depth, semistructured, open-ended questions informed by previous research conducted with new graduate nurses (Brogan et al 2021) and the review of the literature. The participants were encouraged to share their experiences of the intervention and any barriers to participation.

The audio-recorded interviews lasted between 20 and 35 minutes. Each transcript was transcribed verbatim. Verbatim transcription aims to preserve participants' experiences by using their own words without interpretation (Braun et al 2015, DePoy & Gitlin 2015). Checking, using the following questions, was undertaken by the first author to verify accuracy and to enable familiarisation with the data.

1. Was it a good approach to interview participants using their mobile phone?
2. What may have occurred to make the outcomes of the interviews different if the authors had conducted focus groups instead of semistructured interviews?

Sample

Participants from the intervention group (those who received the start healthy and stay healthy program) were purposely recruited to participate in the semistructured interviews. Congruent with a qualitative design, purposive sampling was identified as the most appropriate strategy to recruit participants who possessed the required knowledge and experience of the phenomenon under investigation (Doyle et al 2020). The recruitment strategy involved a free text invitation at the end of the 6-month survey. This method was chosen because it was a convenient and accessible way for participants to express their interest in participating in the semistructured interviews, ensuring a smooth recruitment process. Interested participants provided their mobile number, and a text message with a link to the participant information sheet and consent form was then distributed to participants. Twelve new graduates agreed to be interviewed, the majority of whom were female, and their ages ranged from 21 to 36 years, which is a representative sample of new graduate nurses.

Chapter 7—Analysing Data in Qualitative Research

There are several steps required before analysis of qualitative data should proceed. The researchers' perspective needs to be articulated and raised as a source of bias in the analysis and interpretation phase. It is impossible to completely take the researcher's own set of values and perspective away from the qualitative research process, so it is vital that the researcher's perspective is clarified and considered in terms of how it may influence that interpretation of the data.

Prior to the commencement of data analysis, the researchers in this study had to acknowledge and examine their preconceived ideas and biases towards the data, as each researcher was an experienced registered nurse and the first author had extensive experience working with and educating new graduate nurses in a previous role. To increase the researcher's objectivity, three strategies were utilised: research reflexivity, recording of field notes prior to, during and post interview, and cross-checking interpretation of results with other researchers. Reflectivity views the researchers as both an insider and an outsider occurring on a continuum and requires the researcher to monitor for the impact their personal views, bias and experiences may have on the research so as to minimise its impact on the findings (Berger 2015, Fienfter-Rosenbluh 2017).

Traditionally, recording of the notes has been recognised as an integral part of qualitative data collection, with nurse researchers using the notes as a supplementary source of data and to enhance the context for analysis (Creswell 2007, Phillippi & Lauderdale 2018). Field notes often include research impression and prompt the researcher to closely observe responses and the environment, and they facilitate the preliminary ideas for the identification of codes and themes (Phillippi & Lauderdale 2018). However, field notes and researcher reflexivity do not replace the formal transcribing, and checking of transcripts increases the depth and breadth of the researcher's understanding of the participant's experiences (Braun et al 2015). Interview recordings were transcribed by a professional company, with the first author checking each transcript against the audio recording for completeness.

The six-step model described by Braun and Clarke (2013) was used to understand the transcripts. Based on thematic analysis, this model helps to preserve the meaning of participants' words and is particularly beneficial when using the pragmatic approach of MMR. After rereading transcripts and sorting data, eight open codes were identified within the transcripts, which were further refined to three themes. The codes fell under the themes of *Influence from colleagues and peers, The work environment* and *Engagement in Start Healthy and Stay Healthy* (the intervention), and these themes represented the experiences and challenges faced by participants.

Chapter 8—Common Quantitative Methods

Common quantitative methods used in research include surveys, experiments, observational studies and secondary

data analysis. For example, surveys involve collection of data through questionnaires to gather information from a sample of participants. The use of quantitative methods offers a systematic and objective approach to research, allowing for generalisability and statistical inference.

For Start Healthy and Stay Healthy, the first stage of this project comprised three online surveys distributed at baseline (orientation), 6 weeks and 6 months. The aim of the surveys was twofold: first, to assess the level of health knowledge and physical behaviours among new graduate nurses and, second, to examine whether participation in the intervention supported participants in adopting and maintaining healthy behaviours during their transitional year of practice.

The online surveys comprised five sections:

1. introduction and demographics
2. health knowledge
3. dietary intake
4. physical activity and sedentary behaviour
5. the impact of shift work on diet and physical activity.

An additional section was included in the 6-month survey: Activities during Start Health and Stay Healthy. To determine whether shift work affected the participants' diet and physical activity behaviours, they were asked at 6 weeks and 6 months, firstly, whether shift work influenced their diet or physical activity, using a yes or no response. If yes was selected, the participants were asked to select from a drop-down list of 13 options (e.g. Lack of time, No meal break, Overtime, No tearoom, Cost). Two open-ended questions were also included in the 6-week and 6-month questionnaires. These questions were informed by the formative research with new graduates described in Brogan et al (2021).

Open-ended questions, particularly those located at the end of specific sections and before further closed questions, can motivate respondents to share their thoughts freely and in their own words (Züll 2016 p. 2). Participants were asked 'Do you feel shift work has impacted on your diet or physical activity behaviours?' If they responded yes, they were then asked, 'Could you briefly describe in what ways?' using a free text box. If the participants selected 'no', they proceeded to the next section of the survey.

Chapter 9—Data Collection and Sampling in Quantitative Research

The goal of sampling is to obtain a representative sample that accurately reflects the characteristics of the population, allowing for generalisation of findings. It is important to ensure that the selected sample is representative of the population so as to enhance the external validity and generalisability of the research findings. As part of Start Healthy and Stay Healthy, convenience sampling was used to recruit participants for the quantitative phase of the study. The study was originally designed to include an intervention and a comparison group; however, when this strategy failed (see 'An unexpected hurdle' for an explanation of what went wrong during sampling and how it was overcome), it was decided to analyse the findings from the intervention group only.

As the aim of this study was to determine the feasibility of embedding the Start Healthy and Stay Healthy intervention into a TTP program in an attempt to support new graduates to participate in healthy diet and physical activity behaviours during their transitional year, a total of 99 new graduates participated in the study and 68 participants completed all three surveys. The mean age of the participants was 25.6 years; the sample was predominantly female (82%) and was born in Australia (77%).

AN UNEXPECTED HURDLE

New graduates are commencing a role that involves assimilation into a new work environment, with new responsibilities, and is often associated with changes to previous established routines and behaviours. Moreover, it is often the first time many of these nurses will work a 24/7 rotating roster including night duty. This research project intended to use an intervention/comparison group research design to measure the efficacy of the intervention. However, an unexpected hurdle with the control group presented itself, as participation with the intervention and completion of the online surveys was not a compulsory component of the TTP program.

Participants from the comparison group received the same 20-minute face-to-face education session and were then invited to complete the baseline survey. However, the response rate for the comparison group was particularly low at baseline, and remained consistently low at 6 weeks and 6 months. The investigators agreed that conducting a between-group statistical analysis was not feasible given the low numbers. Instead, group comparisons were made only among intervention group participants who had completed all three surveys. The intention was to determine the feasibility of embedding the intervention into an existing program and its effectiveness to support participants in healthy behaviours.

Quantitative data collection and study validity are crucial in nursing research, ensuring accurate and reliable findings. Careful planning of data collection methods

and maintaining study validity are essential to accurately measure and represent the phenomenon under investigation. Data collection for Start Healthy and Stay Healthy occurred during the orientation session; participants were provided with a study flyer, and on the back of the flyer and the last slide of the presentation was a QR code that the participants could scan, and it would take them to the online survey. The first page of the survey included a copy of the participant information sheet, and participants were required to click 'I CONSENT' prior to commencing the survey at each of the three time-points. To encourage participants to provide honest responses regarding their dietary and physical activity behaviours, the surveys were anonymous, with participants identified by a unique ID number developed in RedCap.

The 6-week and 6-month surveys included additional sections of questions regarding shift work and the intervention strategies. The questionnaires have some limitations, including untested criterion validity, and the measures were self-reported, so were subject to recall and social desirability bias. However, the survey was pilot tested on a purposive sample of new graduates to address these limitations. Additionally, self-reported measures have been used in previous interventions targeting nurses' diet and physical activity behaviours (Happell et al 2014, Torquati et al 2018). (© 2014 Commonwealth of Australia as represented by the Department of Health and Aged Care).

Chapter 10—Assessing Measuring Instruments

The selection of instruments for the quantitative phase was informed by previous work conducted with new graduate nurses (Brogan et al 2022) and the workplace health promotion literature. The online survey consisted of questions from two tools: the *NSW Population Health Survey* (NSW Government 2018) and *Short Form of the International Physical Activity Questionnaire (IPAQ-SF)* (Craig et al 2003).

The surveys were distributed using the REDCap, an online electronic software program (Version 8.11). This software enables researchers to easily develop and disseminate data collection survey tools and directly import results into statistical packages for analyses. It is user friendly, as it requires no additional software for participants to access the survey (Harris et al 2009, Obeid et al 2013, Wright 2016).

The survey consisted of five sections: introduction and demographics, health knowledge, dietary intake, physical activity and sedentary behaviour, and the impact of shift work on diet and physical activity. An additional section was included in the 6-month survey: activities during Start Health and Stay Healthy. Each section contained a variety of questions from a 5-point Likert scale to free text options, to enable participants to record food consumption and levels of physical activity, with specific instructions provided at each question and the start of each section.

The baseline questionnaire consisted of 40 questions, and the 6-week questionnaire had 42, as it included additional questions regarding the impact of shift work on diet and physical activity. The 6-month questionnaire had 51 questions: the basic 40 questions, plus the 2 additional questions about shift work and 9 more about the activities delivered during the intervention. Questions from the 2018 NSW Health Population Survey were used to collect data on health status ($n = 2$), nutritional knowledge ($n = 5$) and dietary consumption ($n = 10$) (NSW Government 2018).

The instructions, question wording, number order and response options remain unaltered to maintain reliability. They target changes in participants' knowledge about the components of a healthy diet, any change in the participant's consumption of fruit, vegetables and breakfast, and any change to the consumption of takeaway and discretionary foods including sugar-sweetened beverages. The IPAQ-SF has been used extensively in research on physical activity (Deng et al 2008, Kurtze et al 2008, Moghaddam et al 2012). The IPAQ is freely available at https://plos.figshare.com/articles/journal_contribution/International_physical_activity_questionnaire_short_form_/21566338 and researchers do not require permission before use. For these reasons, the IPAQ-SF was used to measure the participants' engagement in physical and sedentary behaviours.

The IPAQ was used to measure the participants' engagement in walking continuously for at least 10 minutes per day and their levels of moderate and vigorous physical activity (MVPA), along with time spent sitting at each of the three time-points. Participation in MVPA was reclassified as per Australia's Physical Activity and Sedentary Behaviour Guidelines for Adults (18–65 years). Low-level physical activity is defined as 'activities that do not require any effort and [during which] conversation is possible and classified as less than 150 minutes of physical activity per week'.

Moderate intensity activities require some effort, but conversation is possible. Examples include brisk walking, swimming, social tennis, dancing etc. Vigorous activities make you breathe harder or puff and pant (depending on fitness). Examples include aerobics, jogging and many competitive sports. Accumulate 150 to 300 minutes (2½ to 5 hours) of moderate intensity physical activity or 75 to 150 minutes (1¼ to 2½ hours) of vigorous intensity physical activity, or an equivalent combination of both moderate and vigorous activities, each week. (© 2014 Commonwealth of Australia as represented by the Department of Health and Aged Care).

Chapter 11—Analysing Data in Quantitative Research

The analysis of data in quantitative research is a critical phase that enables nurses to derive meaningful insights and draw valid conclusions from their research studies. IBM SPSS Statistics 27.0, a data analysis software package, was utilised to perform quantitative data analysis for the Start Healthy and Stay Healthy project. This software provided the necessary tools and functionalities to effectively analyse the collected data, allowing for appropriate statistical analysis. Initially, for each survey, files were created to make data handling easier, and three individual data files were then merged into one database, which was used for the analysis of quantitative data, and a master codebook was developed.

Descriptive statistics were used to present demographic and outcome data for the study population. All dietary and physical activity variables were presented as categorical data, as frequency and percentages, and were analysed using Cochran's *Q*-test to determine whether there was a change over time. In the event of a statistically significant Cochran's *Q*-test, a McNemar's test was carried out between each pair of time-points: baseline versus 6 weeks, baseline versus 6 months and 6 weeks versus 6 months. McNemar's tests can be considered similar to paired *t*-tests, but are for dichotomous rather than continuous dependent variables (Pallant 2020); *p*-values of <0.05 were considered statistically significant. There was no adjustment for multiple testing, because this was an exploratory study.

Chapter 12—Mixed-Methods Research

As highlighted in Chapter 12, MMR can involve a variety of techniques and has many strengths, such as the multiple methods of triangulation and data integration that can be utilised. This project led with a quantitative phase to capture and measure the health knowledge, health behaviours and the effectiveness of the Start Healthy and Stay Healthy intervention strategies (see Fig. 19.2). A qualitative phase followed to explore in depth the participants' experience of the intervention along with barriers experienced. In accordance with a sequential mixed-methods study, quantitative data collection and analysis was completed prior to commencement of the qualitative phase and integration of the findings. Equal priority and independence were given to each data collection method and the findings from the quantitative data did not inform the collection of qualitative data.

Chapter 13—Ethical and Legal Issues in Research

Researchers have a responsibility to consider the risks and benefits for potential participants in a research project, and these must be clearly articulated as part of an ethics application prior to conducting the research project (see Chapter 13). For this study, ethical approval was sought from the Clinical Research Ethics Committee at Sydney Local Health District. The ethics application included the provision of a participant information sheet, which outlined the study's requirements, risks and benefits, a signed consent form, the data collection tools for the quantitative and qualitative phases, and participant inclusion and exclusion criteria (Box 19.1).

Participation in the study was voluntary and was not a condition of their employment as a new graduate nurse. Participants were informed they could withdraw from the study at any time without fear of consequences or negative impact on their employment. Participants were also informed that all data collected as part of the study would remain confidential and would be de-identified for the purpose of reporting the results, with quotes from the open-ended questions and interviews represented by participant ID and age only. An additional site-specific application (SSA) was submitted as part of the ethics application to seek permission for the research team to visit the four sites within the local health district.

The aim was to deliver the orientation and recruitments session, distribute the activity trackers and run the three face-to-face education sessions. It was also to contact participants via their personal mobile phones via text message twice weekly for a period of 6 months, along with contacting them to organise and conduct the semistructured interviews. Prior to the completion of each online survey (baseline, 6 weeks and 6 months), participants were provided with a brief reminder synopsis of the risks and benefits associated with survey completion; consent was then sought by asking participants to click 'I AGREE' prior to completing each survey.

For the semistructured interviews, participants were provided with a written participant information sheet and consent form prior to the interview being conducted. At the time of the interview, participants received a brief verbal synopsis of the risks and benefits, and verbal consent was obtained to perform the interview and audio record the interview. Participants were identifiable only by their participant number (the order in which the interviews were conducted) and their age. The risk of harm was

BOX 19.1 Inclusion and Exclusion Criteria

Inclusion Criteria

New graduate nurses who are employed by the Local Health District and are on the 2019 transition to practice program

Exclusion Criteria

New graduate nurses who were not employed by the Local Health District or not participating on the 2019 transition to practice program

considered minimal for both the online surveys and the interviews, with the greatest risk/inconvenience being the time spent completing the survey (6–10 minutes) and the interviews (15–30 minutes).

Chapter 14—Indigenous Peoples and Research

This study did not actively aim to recruit Indigenous participants in either phase. However, it is acknowledged that within the target population of new graduate nurses there could have been Indigenous new graduate nurses, and this was also highlighted in the ethics applications. To our knowledge, no one who volunteered to participate in this study identified as being Indigenous.

Chapter 15—Applying Research Knowledge: Implementing Evidence into Practice and Policy

Over the past 10–15 years there has been an increased interest in developing workplace health promotion programs that target health behaviours. There are several reasons for increased popularity and delivery of health promotion intervention at the workplace, including its convenience as the target population is easily accessible and minimal changes to infrastructure are required, including established methods of communication for participant recruitment and follow-up (Hubley & Copeman 2018). Furthermore, the evidence suggests that a workplace health promotion program is an effective strategy to improve employees' health behaviours, including diet and physical activity (Dodson et al 2018, Hubley & Copeman 2018, Paskett et al 2016).

Interventions have also reported positive changes to experienced nurses' health behaviours (Lavoie-Tremblay et al 2014, Torquati et al 2017, Tucker et al 2011) and more recently those of new graduate nurses (Brogan et al 2022), thus highlighting the importance of not only exploring the current health behaviours of experienced and new graduate nurses but also continuing to develop and deliver workplace health promotion programs for nurses into the future to ensure they start healthy and stay healthy for the entirety of their careers.

This study implemented the Start Healthy and Stay Healthy intervention to assist new graduate nurses to establish healthy dietary and physical activity behaviours from career commencement. The findings presented here are an integration of the quantitative and the qualitative findings in line with a sequential mixed-methods study. The findings were integrated using a socioecological model and published literature. Briefly, the socioecological model developed by McLeroy et al (1998) consists of four levels: individual, interpersonal, organisational and policy, and is frequently used to develop and evaluate health promotion interventions across diverse settings and population groups, including interventions focused on diet and physical activity behaviours (Glanz & Bishop 2010, Golden & Earp 2012, Richard et al 2011).

The findings of this study revealed that, in general, new graduate nurses possessed a satisfactory level of knowledge regarding the recommended servings of fruits, vegetables and daily kilojoule intake. However, there was a notable increase in knowledge regarding physical activity guidelines observed between the baseline and 6-month assessments (Brogan et al 2022). Similarly, mixed results were found for engagement in healthy diet and physical activity behaviours, with some of the new graduates adopting and maintaining healthy behaviours, including regular consumption of fruits and low consumption of discretionary foods (Brogan et al 2022).

However, similar findings were not found for vegetable intake, with low consumption reported from baseline to 6 months; this is consistent with previous research among experienced nurses, who also did not consume the recommended serves of vegetables (Brogan et al 2022, Happell et al 2014, Malik et al 2011). Similar findings were reported for physical activity among participants with low levels of engagement in low-to-moderate physical activity; however, encouragingly some participants increased time spent walking (in leisure time) (Brogan et al 2022). This finding is consistent with previous research that found nurses generally do not engage in the regular physical activity (Chin et al 2016, Perry et al 2016, Schneider et al 2019).

Another important finding was that, within the first 6 months of employment, shift work led to fatigue that reduced the participants' ability to establish healthy dietary and physical activity behaviours. Participants reported consuming discretionary foods to boost energy levels and offset fatigue, despite an awareness of the importance of limiting consumption of these foods. This result is consistent with other studies' findings that both experienced and new nursing graduates consume discretionary foods to combat fatigue, particularly during night shift (Gifkins et al 2018, Phiri et al 2014, Power et al 2017).

Participation in healthy behaviours is not only influenced by personal factors. The findings of this study suggest that interpersonal relationships both positively and negatively influenced the participants' ability to participate in healthy dietary and physical activity behaviours and maintain engagement with the intervention. Supportive interpersonal relationships were associated with an increased sense of accountability, and this increased their desire to engage in healthy behaviours. There are similarities between the attitudes expressed by participants and those described by Power et al (2017) and Gifkins et al (2018), who found that the support of colleagues can improve engagement in healthy lifestyle behaviours among nurses. However, not all peer interactions improved the

participants' dietary behaviours. The findings of this study confirm those of previous research (Phiri et al 2014, Power et al 2017) that nurses regularly consume discretionary foods within the workplace. The current study found that consumption of discretionary food increased between 6 weeks and 6 months, attributed to its frequent availability at nurses' stations and regular consumption by colleagues who were experienced nurses.

The exemplar project Start Healthy and Stay Healthy intervention and the strategies used to support new graduates to adopt and maintain healthy behaviours from career commencement reports several encouraging findings. Participants did not find the intervention to be burdensome, demonstrating its acceptability (Brogan et al 2022). A plausible explanation for this result is the intervention being embedded into the existing TPP as a standard component of the new graduate year. The feasibility and acceptability of the approach by participants has important implications for the delivery of future interventions (Boamah & Laschinger 2015, West et al 2007).

Another strength of the intervention was that it did not require participants to change too many behaviours at once or make substantial changes to their existing behaviours. Other research that used targeted interventions to produce improvements in diet and physical activity behaviours support this finding (Brunet et al 2020, Torquati et al 2018, Tucker et al 2011). Most participants indicated that the intervention helped them adopt and maintain healthy dietary behaviours and increase and/or maintain participation in regular physical activity (Brogan et al 2022).

The quantitative results reported that 75% of participants at 6 months had improvements in dietary and physical activity behaviours possibly attributed to engagement with the intervention, and this was reinforced in the qualitative findings (Brogan et al 2022). For example, the helpfulness of the intervention was related to acting as a prompt or reminder to monitor their behaviours. Finally, the intervention assisted participants to view their health as a priority during their transitional year, instead of focusing only on developing their clinical and time management skills (Brogan et al 2022).

RESEARCH IN BRIEF 19.2

In 2018, Torquati et al aimed to support nurses to promote improvements to the participants' diet and physical activity behaviours. Nurses working across two metropolitan hospitals in Australia were invited to participate in the 3-month pilot program. A total of 500 nurses were contacted and 65 nurses expressed an interest, with 47 participating in the intervention. The average age of participants was 41.4 years and they had on average 18.3 years of experience, which is representative of nursing cohorts. Most participants were registered nurses (n = 22), with the remaining participants including clinical nurses/nurse managers (n = 14), nurse educators (n = 5) and assistants in nursing or assistant midwives (n = 6). The intervention targeted diet via a study Facebook group where participants were encouraged to swap recipes, find a colleague with whom to participate in physical activity and share motivational content.

Changes to physical activity were targeted via access to an app and the provision of a pedometer. The intervention was guided by social cognitive theory, goal setting and control theory. Changes to physical activity measured using an accelerometer, and changes to diet were measured using the Food Frequency Questionnaire and the Australian Recommended Food Score. The results indicate that there was a significant increase in moderate-to-vigorous physical activity (p = 0.1) and an increase in daily step count (p = 0.04); however, no significant decrease in sedentary time was reported (p = 0.7) and a significant improvement to fruit and vegetable consumption was also reported (p = 0.04).

Feedback from participants at 3-month follow-up included that pedometers and the Facebook group were appropriate intervention strategies; however, the app was considered less useful, or participants stopped engaging with it, a short time after the intervention commenced. Post-intervention semistructured interviews were conducted with 14 participants; the findings suggested that the intervention improved their awareness of healthy dietary behaviours, but some felt that changing more than one behaviour at a time was too difficult. Overall, these findings provided further evidence that nurses need targeted health promotion interventions to assist them to engage in healthy diet and physical activity behaviours.

Chapter 16—Writing Research Proposals and Grant Applications

Writing proposals and grant applications in nursing research is an essential step to not only secure funding for research projects, but also enable nurses to conduct rigorous studies, advance knowledge in the field and ultimately improve patient care and outcomes. When developing the proposal for Start Healthy and Stay Healthy, a crucial factor to consider was that it not only constituted a workplace health promotion intervention but also formed a significant part of a PhD project. Therefore, it was imperative to create a well-defined research plan that effectively conveyed the necessity for the

intervention and demonstrated the feasibility of conducting the study. In this project a research protocol was published (Brogan et al 2020).

The study protocol included an overview of the theoretical framework that informed the intervention, the study's methods including design, participants, data collection and analysis, along with the intervention design and strategies (Brogan et al 2020). The study proposal also informed the ethics application that was required to conduct the study and attend the varied sites across the Local Health District. The development of the study proposal was informed by a comprehensive search of the literature. A $5000 grant was awarded by the Local Health District to fund the intervention strategies embedded into Start Healthy and Stay Healthy.

Chapter 17—Managing a Research Project: Roles and Processes

The planning and management of a research project will begin before the first search of the literature or seeking out colleagues or external new experts to join the research team. It begins when you have that initial 'idea' and then you continue to think about that 'idea' and you develop and refine it into a topic, then a question, and finally it becomes something that is actionable and achievable. Once the preliminary thinking is completed, it is important to note that this critical 'thinking' does not end here. It will be an ongoing and vital part of conducting and managing any research project.

Scheduling and planning time to conduct the research phases includes writing up the research findings. These two stages are distinct, yet interconnected, as you will be writing during all the research phases of the project. For the Start Healthy and Stay Healthy study, there were three key components that required specific project management. First was the design and construction of the research study: defining the research question, searching the literature, selecting an appropriate methodology and well-aligned theoretical framework; also identification of the target population, sampling options, a feasible study setting, inclusion and exclusion criteria, identifying data collection tools and appropriate methods for data analysis, and finally, before commencing the study, obtaining ethical approval.

The development of a clearly articulated study protocol is an essential part of any research project to support and guide researchers to stay on track during the management of a research project. The study protocol is sometimes compared to a baker's recipe, as it outlines key elements that are required to successfully conduct the research and subsequently complete the project. It also assists researchers to avoid unnecessary or additional ingredients that will not progress the project towards completion. Another advantage of presenting a well-written study protocol is that the researcher may have the opportunity to publish the study protocol prior to publishing the findings from the research project, as was the case with the Start Healthy and Stay Healthy project (see Brogan et al 2020).

Another aspect that required project management during this study included the requirement of the first author to complete a higher degree by research. This Doctor of Philosophy had inherent requirements associated with a program of study at this level, including but not limited to hurdle requirements, milestones and submission deadlines. Each of these elements also needed to be considered when planning and reviewing the projects timeline. Lastly, the Start Healthy and Stay Healthy intervention included three distinct subphases: design and development, implementation and delivery of the intervention, which occurred for a period of 6 months, and the evaluation phase.

Start Healthy and Stay Healthy consisted of three intervention strategies and two planned intervention groups (intervention and comparison) (Brogan et al 2022). During development, regular consultation and meetings were held with the nursing executive of the Local Health District, the Workforce Education Management team and the nurse educators who have direct contact with the new graduate nurses during the delivery of the program. Obtaining stakeholder support for this project was essential because without the new graduate nurses we would have been unable to deliver the intervention or conduct the study. The intervention and comparison groups received the same 20-minute face-to-face education session during the TTP orientation day; the intervention group also were provided with three additional 20-minute face-to-face education sessions delivered during the compulsory TTP study days, twice-weekly text messages for a period of 6 months and an activity tracker (Fitbit Flex2). The text messages were delivered in an AM/PM then PM/AM schedule to ensure new graduates working night duty were not consistently awoken in the morning and they targeted their diet, physical activity, motivation and self-monitoring behaviours. The activity tracker aimed to increase their motivation to be physically active and to enable self-monitoring of behaviours. The comparison group received a one-off 1-hour mindfulness session to assist them with managing the challenges of transitioning from student to registered nurse.

Another important aspect when managing a research project is coordination and management of the research team members. For Start Healthy and Stay Healthy the team consisted of a (former) doctoral candidate and nurse academic and two nursing professors, each of whom had academic responsibilities, service responsibilities and supervision of several other PhD and Master of Research students. A key strategy when working in

research teams is clear communication and allocation, and accountability for completion of tasks; this role generally resides with the research lead or chief investigator. In summary, management of the research project requires researchers to be across several different tasks and activities at any one time to ensure the project is delivered on time and within the budgetary requirements of any grant or funding received.

TUTORIAL TRIGGER 19.2

If you were putting together a research team for a project like this, who do you think should manage the project? What kind of skills or experience does that person need?

Chapter 18—Writing and Presenting Research Findings

The research project we have discussed in this chapter has been disseminated in manuscripts to peer-reviewed journals in nursing, as well as at nursing conferences. Peer-reviewed journals are considered to be higher-quality research than non-peer-reviewed journals because each manuscript is reviewed and critiqued before it is accepted for publication.

- *Qualitative findings:* One manuscript concerns the qualitative methodology, methods and findings of formative work that assisted in the development of the Start Healthy and Stay Healthy Intervention. Exploring the barriers and enablers to participation in healthy diet and physical activity behaviours formed an important part of this research project. Workplace health promotion interventions are complex to design and often difficult to implement, requiring organisational and participant buy-in to lead to the desired behaviour change. Therefore, designing an intervention without seeking the thought and opinions of the target audience can result in an intervention that does not meet the needs of the target audience; presenting the voices of those interviewed is also an essential and key consideration (Brogan et al 2020).
- *Study protocol:* Another manuscript details the study protocol phase of the project. The study design along with the theoretical framework and study intervention were provided in greater depth than can be presented in the intervention results (Brogan et al 2021).
- *Primary results:* The findings from the intervention were then published, including the diet and physical activity behaviours of new graduate nurses along with the feasibility and acceptability of the Start Healthy and Stay Healthy intervention (Brogan et al 2021).
- *Primary results of quantitative study:*
  - A poster presentation (Brogan et al 2021) highlighting the intervention findings was presented at the 5th Annual Australian Nursing and Midwifery Conference on 6–7 May 2021 in Newcastle.
  - Oral presentation of the qualitative formative work (Brogan et al 2020) was presented at the International ACORN & ASIORNA Conference, on 23–26 May 2018 in Adelaide.
  - An oral presentation of the intervention findings (Brogan et al 2021) was also presented at Council of Deans Nursing and Midwifery (Australia and New Zealand), Sunshine Coast on 29–30 March 2022, Australian College of Operating Room Nursing Online Conference November 2022, NSW Operating Theatre Association Conference March 2023 and 19th National Nurse Education Conference Gold Coast on 7–9 June 2023.

RESEARCH IN BRIEF 19.3

The recent pandemic has had a significant impact on not only the delivery of workplace health promotion programs but also the health of the nursing workforce. Rangel et al (2023) conducted an observational study to explore diet, physical activity and sleep behaviours of nurses working rotating shifts and caring for patients during the COVID-19 pandemic. A total of 57 nurses were observed across 10 hospitals in the USA; participants wore wrist actigraphs and pedometers to measure sleep and step counts, with their diet measured via a 7-day electronic food diary. The findings indicate that participants, on average, did not meet the recommended amount of sleep with night-duty nurses (n = 23), sleeping significantly less compared with day nurses (n =34). Both the day and night nurses reported poor dietary behaviours and just under half of day (n = 13) and night (n = 8) nurses reported not engaging in the recommended amount of physical activity. Rangel et al (2023) suggests the promotion of healthy behaviours among nurses is required—especially when the workforce faces heightened challenges such as the COVID-19 pandemic, which further limits the nurse's ability to engage in healthy behaviours.

SUMMARY

This chapter has highlighted the importance of supporting the next generation of the nursing workforce to adopt and maintain healthy behaviours from career commencement. Conducting formative work to explore the barriers and enablers, along with new graduate nurses' attitudes towards health promotion programs, enabled the research team to design and develop an intervention that was appropriate. Exploring the current diet and physical activity

behaviours of new graduate nurses provided valuable insight into the changes that occur during the first 6 months of employment as a nurse. Alongside was testing the feasibility and acceptability of the Start Healthy and Stay Healthy Intervention for new graduate nurses. Workplace health promotion interventions play an important role in supporting not only new graduate nurses but all nurses to engage in healthy behaviours to ensure their longevity in the nursing profession. The Start Healthy and Stay Healthy Intervention was adopted by the Local Health District and now forms part of their TPP delivered to new graduate nurses during their first year of clinical practice.

KEY POINTS

- Research comprising both qualitative and quantitative methods is valuable, and its findings are used to further our knowledge of the role of health promotion in nursing.
- The use of an MMR approach can result in more-robust outcomes to guide the development and evaluation of workplace health promotion programs for new graduate and experienced nurses.
- This study has demonstrated the importance of supporting new graduate nurses to adopt and maintain healthy behaviours from career commencement, as healthy dietary and physical activity behaviours can be established within the first 6 months of employment.
- This study demonstrates that research which is translated into practice can be conducted by PhD students/early-career researchers with the right support and research supervision.
- We have captured the difficulties experienced during recruitment and delivery of the intervention. Specifically, the challenges of transitioning from a student to a registered nurse and the demand and negative impact of shift on new graduate nurses are important considerations for any future research projects involving this cohort. However, they are one of the most important groups in nursing because they are our future nurses, leaders and clinicians.

TIME TO REFLECT

To write the 'Research in brief' sections in this chapter, the literature was searched for relevant evidence-based resources from Australia or New Zealand. The criteria were that the articles should be written by workplace health promotion interventions and studies exploring nurses' diet and physical activity behaviours in peer-reviewed journals published within the last 7 years. More specifically, the articles should target nurses and focus on non-nursing populations when delivering workplace health promotion interventions. While a couple of articles have been mentioned in this chapter, they were primarily written by non-nurses, and this highlights the importance of nurses designing, developing and implementing targeted workplace health promotion interventions as nurses have an unique understanding of the workplace challenges and cultures that may contribute to the establishment of healthy or unhealthy behaviours by nurses. The best research questions, as with the overarching question for the project in this chapter, come from a burning desire to understand more about how to support the next generation of the nursing workforce to look after their own health from career commencement because we need our new graduate nurses to ensure we have long-term workforce sustainability and can meet the rising demand for healthcare by our ageing population and individuals with chronic disease and comorbidities.

Reflect on the following: A study from Queensland explored whether registered nurses' health behaviours were in line with the Australian Recommendations and what were the barriers to healthy lifestyle behaviours among experienced nurses (Heidke et al 2020). A cross-sectional survey of nurses working in public and private hospitals in regional Queensland was invited to complete an anonymous survey. A total of 123 nurses responded to the survey; the results indicated that 42% of participants self-rated their health as good. Only 18% of participants reported they consume five vegetables per day; however, 61.7% reported consuming two portions of fruit per day. Ninety-nine participants responded to the physical activity questions and the findings suggest that only 24% of participants engaged in the recommended 150 minutes of moderate physical activity per week. These behaviours are known risk factors for the development of chronic diseases such as obesity. The participants also reported that a lack of time and shift work negatively impacted on their ability to engage in healthy behaviours. A proportion of participants felt their personal behaviours did not have a direct influence on their ability to provide health education to patients.

Questions

1. Why is it important for nurses to engage in and role model healthy behaviours?
2. Reflect on the information given and answer these questions:
   a. What was the research design?
   b. In terms of results, why is it important to understand the current health behaviours of nurses?
   c. What is one strategy that could be implemented to increase vegetable consumption among this nursing population?

For further content associated with this chapter visit: https://evolve.elsevier.com/cs/product/9780729596794?role=student

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