

ORIGINAL RESEARCH

Using the Delphi process to identify priorities for Dietetic research in Australia 2020-2030

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Abstract

Aim: This research aimed to use a consensus process to develop a framework and definition for nutrition and dietetic research, and to identify dietetic research priorities for Australia for the period 2020 to 2030.

Methods: A three-round Delphi process was selected to enable dietitians with demonstrated research expertise to contribute to the national priority development. All Fellows of the Dietitians Association of Australia, Advanced Accredited Practising Dietitians and research leaders were invited to participate ($n = 84$). The questionnaire was distributed electronically using a 7-point Likert scale. Rounds 1 and 2 asked participants to comment on the proposed research framework, definition of dietetic research and to rate a set of priorities categorised within seven themes. Fields were available for comments for revisions to each section. Approval was considered when $\geq 70\%$ of participants ranked priorities as *Agree* or *Strongly agree*. In Round 3, participants were asked to rank the resultant priorities within themes.

Results: Through this Delphi process, Australian dietitians with demonstrated expertise contributed to and confirmed a framework and definition for dietetic Research. A ranked list of 15 priorities within five themes for dietetic Research in Australia for the period 2020-2030 was developed: *Healthy ageing; Vulnerable populations; Food systems and health/nutrition promotion; Informatics and evidence based practice* and *Achieving a balance between prevention and treatment approaches*.

Conclusions: It is anticipated that results will lead to the development of a research strategy to focus future dietetic research efforts, including the development of professional position papers as well as informing research competencies for dietetic education.

1 | INTRODUCTION

The United Nations (UN) Decade of Action on Nutrition 2016-2025 drew attention to worldwide issues relating to malnutrition and the double burden of chronic disease.¹ In Australia, the National Academy of Science's

production of a Decadal Plan for the Science of Nutrition has highlighted the need for greater investment in research as well as system wide changes to enhance the nutritional health of the population.²

Dietetics, or the practical application of a scientific understanding of nutrition, requires a strong evidence

base. Within the dietetic profession, research supports practice across public health, food service and clinical settings. The conduct of high-quality research requires research funding, infrastructure and training in research capability in order to ensure advances in knowledge, while minimising duplication and waste.³ Continuation of research on topics where sufficient evidence already exists is redundant and could be considered to represent misaligned research investment. Prioritising research in specific settings is one approach to ensure that limited funding and resources are targeted at areas where further evidence is required.⁴

Future visioning for dietetics in terms of research and practice has been undertaken in the United States⁵ and in the United Kingdom.⁶ While the dietetic profession's future areas of priority action has been outlined in those countries, a similar priority setting has not been undertaken in Australia. That said, there has been a considerable expansion of the dietetic profession in Australia in recent years,⁷ and a corresponding rise in research capacity,⁸⁻¹⁰ associated with the increase in academic positions. The increase in research output may also be due to the inclusion of research into National Competency Standards for Dietitians (eg, Competency 3.2 Conducts research, evaluation and quality improvement processes using appropriate methods).¹¹ Hence the development of research priorities for dietetics in Australia is needed to direct future research efforts.

Presently there is no recognised definition or framework for dietetic research. Such frameworks have been developed on a broader scope within international and national medical research institutes¹² and funding organisations,¹³ and can provide a useful starting point for research priority setting exercises. As such, the development of national dietetic research priorities is an opportunity to concurrently develop a definition and a framework specifically for the dietetic profession.

Many clinical specialties (eg, emergency¹⁴ and cancer nursing¹⁵), professional groups (radiographers¹⁶ and health education researchers¹⁷), and research funding organisations (eg, National Health and Medical Research Council¹⁸) have defined their future research priorities in an effort to focus research efforts within sectors of health care. The approach frequently used to develop research priorities is the Delphi method, where a panel of experts are specifically recruited to reach a consensus. This research aimed to use a consensus process to develop a framework and definition for dietetic research, and to define dietetic research priorities for Australia for the period 2020 to 2030.

2 | METHODS

The multi-round Delphi process was selected to enable dietitians with demonstrated research expertise to contribute to the development of national priorities. The Delphi method is a multi-round approach, with each round building on the results from the previous round, in order to ultimately reach consensus opinion.¹⁹ Several rounds of questionnaires are distributed to the expert group, with anonymous responses aggregated and shared after each round.¹⁹ Ethical approval was obtained from Monash University HREC, Project ID 14376.

Dietitians who were considered to be leaders in research and/or in the profession were invited directly. Inclusion criteria were: Fellows of Dietitians Association of Australia (FDAA); Associate Professors and Professors from accredited dietetic programs in Australia; National Health and Medical Research Council (NHMRC), Australian Research Council and Heart Foundation fellowship recipients (including recipients of NHMRC Translating Research into Practice and Early Career Fellowships during the period 2014-2018) and senior dietetic researchers at the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Advanced Accredited Practising Dietitians (AdvAPDs) were invited through distribution of an invitation from the Dietitians Australia National Office. Participants were invited only once in the case of fulfilling more than one of the eligibility criteria. The authors of this paper did not participate in the Delphi process.

Round 1 was open in June-July 2019, Round 2 in November 2019 - January 2020 and Round 3 in February 2020. Participants who completed the previous round were again invited to take part in successive rounds. Participants were invited by email with one reminder email sent each round. The questionnaire asked participants to comment on the proposed research framework and definition of dietetic research. They were then asked to rate a set of priorities listed under seven themes.

The proposed research framework emerged after analysis of open text comments obtained in Round 1. The "Blue Highways" model from the US National Institute of Health¹² was adapted for comment in Round 2 as it aligned with the open text comments. Adaptations were made to the model to expand the scope of practice beyond the clinical and translational setting.

In the absence of a pre-existing definition for dietetic research, the definition distributed to participants in Round 1 was developed by the research team from existing research definitions. This was revised for Round 2 based on extensive feedback from Round 1 respondents, and was further refined using the research definition

used by the Australian Research Council¹³ and tested in Round 2, when agreement was reached.

The time period for the research priorities was defined from the outset by the research team as 2020–2030. As a starting point, research priorities considered in Round 1 were developed by the research team based on the established United States⁵ and United Kingdom⁶ dietetic leadership documents. Initially seven themes with associated research priority statements were extracted from these documents by the research team to form a framework for the first round. The themes were *Healthy ageing*, *Vulnerable populations*, *“Food systems and health/nutrition promotion,”* *Personalised nutrition*, *Digital technology and evidence based practice*, *Achieving balance between prevention and treatment approaches* and *Nutrition communications*. Research priorities were also extracted from the United States⁵ and United Kingdom⁶ for inclusion within each theme in Round 1. Each research priority was rated by participants using a 7 point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). Acceptance of priorities was agreed by the research team *a priori* where $\geq 70\%$ of participants rated a priority statement highly (either 6 or 7). Where this occurred in Rounds 1 and 2, these items were accepted as Agreed Priorities. At the completion of Round 2, all priorities that did not achieve $\geq 70\%$ support by participants were removed.

Open text comments from participants regarding potential additional themes and research priorities were sought in Round 1. These underwent synthesis by the research team to reduce duplication and were added into Round 2. New potential priority areas were also added into Round 2 in order to align with the publication of the Australian National Academy of Science Decadal Plan for the Science of Nutrition.² Further refinement and synthesis of research priorities occurred prior to Round 3 to reduce repetition through clustering of similar statements. Open text comments were not sought in Rounds 2 or 3.

Round 3 was a ranking round, with participants asked to rank the order of agreed priorities within themes. At the close of Round 3, scores within each theme were summed, and the order of priorities was determined as those with a cumulative total from lowest to highest.

3 | RESULTS

Eighty-four participants (11 males, 73 females) were invited to participate in Round 1. Participants invited directly were: 14 FDAA, 14 national Fellowship recipients, 31 senior academics (Associate Professor or

Professor level) and 25 AdvAPDs who responded to the invitation to all AdvAPDs. Based on response, 50 participants (7 males, 43 females) were then invited in Round 2, and likewise 38 participants in Round 3. Final data were contributed by 35 participants (4 males, 31 females) in Round 3 (Figure 1). The sample included dietitians from across all scopes of practice covering hospital, industry and academic settings. Participants contributed from most Australian states, although the majority were based on the east coast of mainland Australia. The questionnaires from each round are included in Supplementary files 1–3.

The Dietetic Research Framework developed through this Delphi study is shown in Figure 2. The framework illustrates that dietitians practise across many settings, whilst recognising the role that dietitians play in leading or contributing to inter-professional research. This framework received high levels of agreement of ranking 6 ($n = 14$, 36.8%) or 7 ($n = 17$, 44.7%) by participants in Round 2.

The definition proposed for dietetic research in Round 1 of the Delphi survey (Figure 2) received a high level of support. The median value for the level of agreement with the Round 1 definition was 6 (Strongly agree score of 7: $n = 4$; score 6: $n = 21$; score 5: $n = 14$; scores 1–4: $n = 9$). Feedback indicated the definition needed to be extended to consider discovery research, including human clinical research ($n = 12$ comments), and be more inclusive across a range of settings ($n = 6$ comments). Other recommendations from experts ($n = 3$ comments) were to acknowledge the inter-professional nature of research, where research is “done on, by or with dietitians.”

Nine priority statements received $\geq 70\%$ support in Round 1. A further 13 priorities received $\geq 70\%$ support in Round 2. These 22 priorities were further synthesised

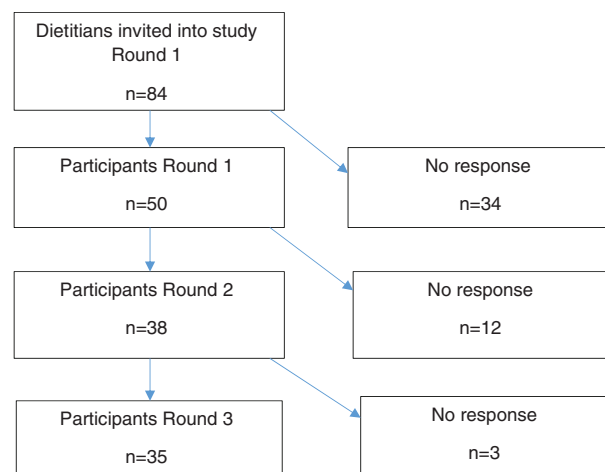


FIGURE 1 Participant flow through the Delphi process

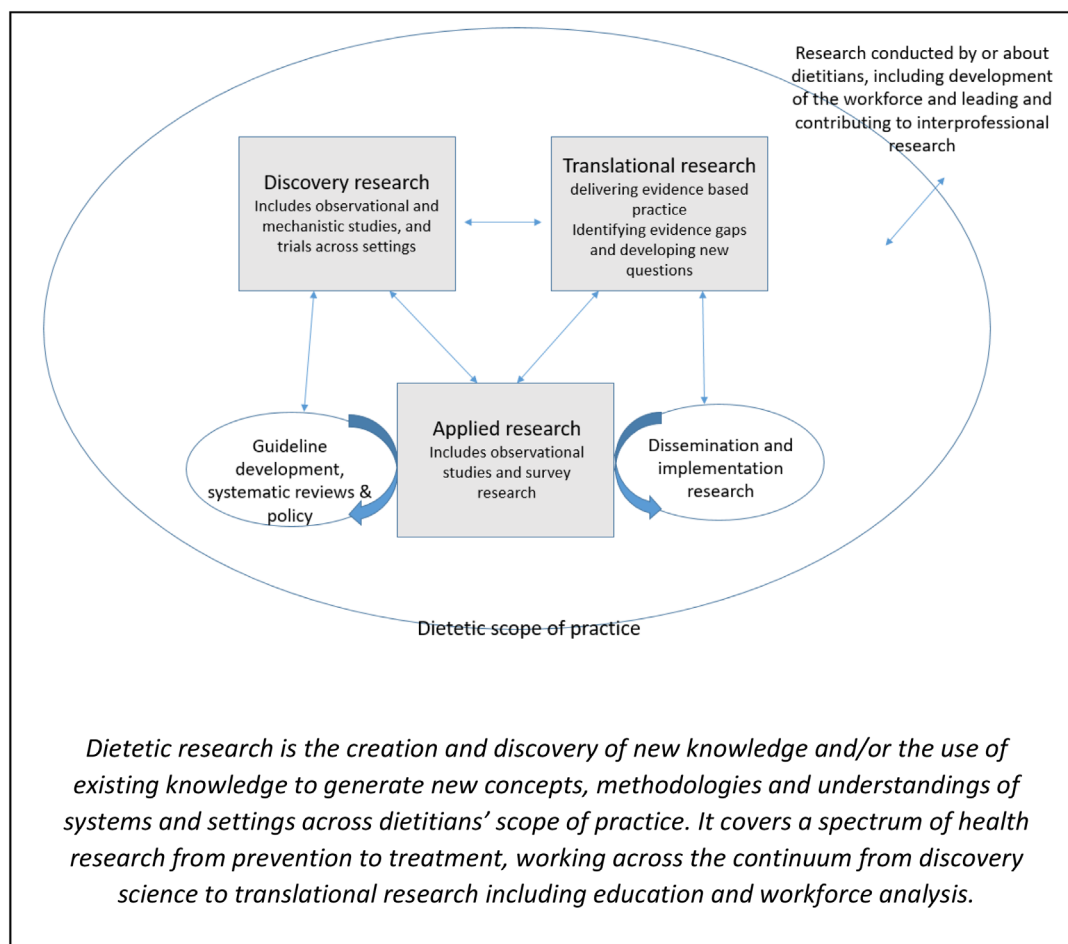


FIGURE 2 Dietetic research framework and definition

into 15 priorities for the ranking process undertaken in Round 3. The dietetic research priorities by themes for Australia for the period 2020-2030 are shown in Figure 3. Priorities within two of the initial themes did not receive adequate support from the Delphi scores. These were *Personalised medicine* and *Nutrition communications*. The *Personalised medicine* theme included priorities for research at an individual and health system level (eg, application of nutrigenomics and targeting the health care system based on the genetic predisposition for diet/disease prevention model). The theme *Nutrition communications* listed some broad priorities including capacity building of the nutrition workforce and development and evaluation of strategies to enhance nutrition literacy. Scores for these stated priorities did not reach the cut off points for inclusion.

4 | DISCUSSION

Through this Delphi process, Australian dietitians with demonstrated research expertise contributed and

confirmed a definition and framework for dietetic research, and identified the 15 top research priorities for dietitians in Australia across the period 2020 to 2030.

Some notable omissions emerged amongst the proffered research priorities. The absence of priority statements relating to the theme of *Personalised medicine* appears at odds with the Decadal Plan for the Science of Nutrition² where one pillar is nominated for "Precision and Personalised Nutrition." This may indicate a lack of Delphi participants with experience of working in that area, and/or suggest this is an area of emerging research practice, which may attain greater prominence in the coming years.²⁰ Certainly there appears to be a strong emphasis in areas relating to population health, health promotion/disease prevention and policy development which may reflect existing strengths in epidemiology and program evaluation. The other omitted priority, *Nutrition communications*, could be considered across several of the included research priorities, for example the use of telehealth dietetic models.²¹

Theme: Healthy ageing

1. Research on the cost effectiveness of evidence-based nutrition care in the prevention, treatment, and management of malnutrition and chronic disease in older populations
2. Research that develops and evaluates nutrition related strategies that support healthy ageing and longevity
3. Research in nutrition and specialties of older adults to support optimal health and improve health outcomes for a diverse aging population

Theme: Vulnerable populations

1. Research into interventions and processes that address the nutrition and health inequalities of Indigenous populations
2. Research into interventions and processes that address the nutrition and health inequalities of people with mental health issues, people with disabilities, and people who are homeless
3. Research into interventions and processes that address the nutrition and health inequalities of maternal and child food and nutrition issues including the first 1000 days of life

Theme: Food systems and health/nutrition promotion

1. Research on the effects of food choice and dietary patterns on health, well-being, planetary health and sustainability
2. Research that addresses the development, implementation and evaluation of a National Nutrition Policy
3. Implementation and evaluation research on initiatives that lead to more sustainable food systems
4. Research on frameworks for the food system that support equitable access to healthy foods and effective population nutrition interventions
5. Research on the relationship between the food and nutrient intake and health status of Australians, to inform development of dietary interventions and health promotions strategies/policies

Theme: Informatics and evidence based practice

1. Research that examines the use of tele-dietetics models and nutrition apps and their effect on clinical outcomes

Theme: Achieving a balance between prevention and treatment approaches

1. Translational research on the effectiveness of nutrition-related approaches to prevention of disease and ill health that leads to policy formulation and implementation
2. Research into the effectiveness of preventive aspects of health care
3. Research on lifestyle risk-factor modification and weight management as essential components of health promotion and disease prevention programs

FIGURE 3 A thematic understanding of Australian Dietetic Research Priorities for the period 2020-2030

Despite original reference to overseas documents, there was both similarities and differences in priorities that emerged in this Delphi study. In the case of the visioning statement from the Academy of Nutrition & Dietetics,⁵ similarities include “food as medicine in the continuum of health,” “the impacts of an ageing population” and the priority for “population health/health promotion.” Notable differences were the omission of those

ranked in the bottom tier of the US visioning statement, namely “tailored health care to fit genetic profiles,” “the use of simulation as an instructional method” and “the development of collaborative ready health professionals.” Again, this may reflect differences in choice of words, and could be considered in the broader light of statements that emerged from the current study. Direct comparisons with the UK Future Dietitian 2025 vision

statement were more challenging as this document aimed to inform a workforce strategy for dietetics in the United Kingdom.⁶

There are several limitations to this study. First, while the contribution from participants who were FDAA, AdvAPDs, senior academics and recipients of national fellowships represented a broad range of settings, including dietitians practising in health care, industry and academic settings, there was a predominance of dietitians employed in academia. Although they likely comprise the largest group of research active dietitians, the priorities may reflect individuals' current research interests. Second, a larger response rate may have allowed greater confidence in the interpretation of findings. A further limitation is the predetermined content of the survey. Rather than an open set of questions, key professional documents from the United Kingdom and the United States formed a basis for Round 1. Although the Delphi process allowed for open ended comments, and there were multiple rounds, the closed system of scoring for statements still delimits responses and may not capture the full extent of opinions relating to research priorities. Further research that examines the outputs (publications, doctoral theses, successful competitive grants) and impacts (policy uptake, new products and services) of dietitian-led research would provide a useful comparative source of information to cross reference with these results. This would also align dietetic research with mainstream research infrastructure and funding bodies (eg, National Health and Medical Research Council, Australian Research Council) which sustains and recognises research expertise.

Strengths of this study are that it attempted to engage members across the dietetic profession regardless of their membership status of Dietitians Australia and included contemporary researchers, early career researchers with nationally competitive fellowships and emerging leaders in research. There was less engagement than anticipated from AdvAPDs, possibly attributed to the competencies for AdvAPDs that relate to practice based skills/roles rather than research expertise *per se*.

This process has highlighted the broad range of research that dietitians are involved in and the extensive range of settings and systems to which dietitians are contributing. There is no doubt that there is a need for leaders who have the capability to both drive and perform research with in multi-disciplinary teams,²² and supporting research leaders will be crucial if dietetics is going to expand its influence in the next decade. We anticipate that the findings from this Delphi process will contribute to a research strategy that focuses future dietetic research efforts, including the development of professional position papers as well as informing research

competencies for dietetic education. It also indicates which of the Decadal Plan goals that dietitians may be most likely to contribute to in the short term. This, in turn, will help to maximise research investment into the future in dietetic research.

It is important to note that this is an initial consensus process and should be re-visited periodically and, as such, can be viewed as a contemporary way in which dietitians can have greater influence into the Australian research agenda. Importantly, it can help to ensure that research investment, including research capacity building and leadership, remains focused across a period in which research investment may be limited.

CONFLICT OF INTEREST

Authors have no conflicts of interest to declare.

AUTHOR CONTRIBUTION

All authors conceived this research, contributed to interpretation of results, manuscript development and review and approved the manuscript for submission. JP facilitated all stages of data collection.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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