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

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

### 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.

### Keywords

identify, priorities, dietetic, research, australia, delphi, 2020-2030, process

### Publication Details

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

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25 Authorship declaration

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

29

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32 Dietetics.

33

- 34 Conflicts of interest
- 35 Authors have no conflicts of interest to declare
- 36

37 **Abstract**

38 Aim: This research aimed to use a consensus process to develop a framework and definition for  
39 nutrition and dietetic research, and to identify dietetic research priorities for Australia for the period  
40 2020 to 2030.

41 Methods: A 3-round Delphi process was selected to enable dietitians with demonstrated research  
42 expertise to contribute to the national priority development. All Fellows of Dietitians Association of  
43 Australia, Advanced Accredited Practising Dietitians and research leaders were invited to participate  
44 (n=85). The questionnaire was distributed electronically using a 7-point Likert scale. Rounds 1 and 2  
45 asked participants to comment on the proposed research framework, definition of dietetic research,  
46 and to rate a set of priorities categorised within 7 themes. Fields were available for comments for  
47 revisions to each section. Approval was considered when  $\geq 70\%$  of participants ranked priorities as  
48 Agree or Strongly agree. In Round 3 participants were asked to rank the resultant priorities within  
49 themes.

50 Results: Through this Delphi process, Australian dietitians with demonstrated expertise contributed  
51 to and confirmed a framework and definition for dietetic Research. A ranked list of 15 priorities  
52 within 5 themes for dietetic Research in Australia for the period 2020-2030 was developed: *Healthy*  
53 *ageing; Vulnerable populations; Food systems and health/nutrition promotion; Informatics and*  
54 *evidence based practice, and Achieving a balance between prevention and treatment approaches.*

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

58

## 59 Introduction

60 The United Nations (UN) Decade of Action on Nutrition 2016–2025 drew attention to worldwide  
61 issues relating to malnutrition and the double burden of chronic disease.<sup>1</sup> In Australia, the National  
62 Academy of Science production of a Decadal Plan for the Science of Nutrition highlighted the need  
63 for greater investment in research as well as system wide changes to enhance the nutritional health  
64 of the population.<sup>2</sup>

65 Dietetics, or the practical application of a scientific understanding of nutrition, requires a strong  
66 evidence base. Within the dietetic profession, research supports practice across public health, food  
67 service and clinical settings. The conduct of high quality research requires research funding,  
68 infrastructure and training in research capability in order to ensure advances in knowledge, whilst  
69 minimising duplication and waste.<sup>3</sup> Continuation of research on topics where sufficient evidence  
70 already exists is redundant and could be considered to represent misaligned research investment.  
71 Prioritising research in specific settings is one approach to ensure that limited funding and resources  
72 are targeted at areas where further evidence is required.<sup>4</sup>

73 Future visioning for dietetics in terms of research and practice has been undertaken in the USA<sup>5</sup> and  
74 in the UK.<sup>6</sup> While this has outlined the dietetic profession's future areas of priority action in those  
75 countries, a similar priority setting has not been undertaken in Australia. That said, there has been a  
76 considerable expansion of the dietetic profession in Australia in recent years<sup>7</sup>, and a corresponding  
77 rise in research capacity<sup>8-10</sup>, associated with the increase in academic positions. The increase in  
78 research output may also be due to the inclusion of research into National Competency Standards  
79 for Dietitians (eg. Competency 3.2 Conducts research, evaluation and quality improvement  
80 processes using appropriate methods).<sup>11</sup> Hence the development of research priorities for dietetics  
81 in Australia is needed to direct future research efforts.

82 Presently there is no recognised definition or framework for dietetic research. Such frameworks  
83 have been developed on a broader scope within international and national medical research

84 institutes<sup>12</sup> and funding organisations<sup>13</sup>, and can provide a useful starting point for research priority  
85 setting exercises. As such, the development of national dietetic research priorities is an opportunity  
86 to concurrently develop a definition and a framework specifically for the dietetic profession.

87 Many clinical specialties (eg. emergency<sup>14</sup> and cancer nursing<sup>15</sup>), professional groups  
88 (radiographers<sup>16</sup> and health education researchers<sup>17</sup>), and research funding organisations (eg.  
89 National Health and Medical Research Council<sup>18</sup>) have defined their future research priorities in an  
90 effort to focus research efforts within sectors of healthcare. Approaches frequently used to develop  
91 research priorities are using a Delphi method where a panel of experts are specifically recruited to  
92 reach a consensus. This research aimed to use a consensus process to develop a framework and  
93 definition for dietetic research, and to define dietetic research priorities for Australia for the period  
94 2020 to 2030.

## 95 **Methods**

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

102 Dietitians who were considered to be leaders in research and/or in the profession were invited  
103 directly. Inclusion criteria were: Fellows of Dietitians Association of Australia (FDAA); Professors and  
104 Professors from accredited dietetic programs in Australia; NHMRC, Australian Research Council and  
105 Heart Foundation fellowship recipients (including recipients of NHMRC Translating Research into  
106 Practice and Early Career Fellowships during the period 2014-18); and senior dietetic researchers at  
107 the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Advanced Accredited  
108 Practising Dietitians (AdvAPDs) were invited through distribution of an invitation from the Dietitians

109 Australia National Office. Participants were invited only once in the case of fulfilling more than one  
110 of the eligibility criteria. The authors of this paper did not participate in the Delphi process.

111 Round 1 was open in June-July 2019, Round 2 in November 2019 – January 2020 and Round 3 in  
112 February 2020. Participants who completed the previous round were again invited to take part in  
113 successive rounds. Participants were invited by email with one reminder email sent each round.

114 The questionnaire asked participants to comment on the proposed research framework and  
115 definition of dietetic research. They were then asked to rate a set of priorities listed under 7 themes.

116 The proposed research framework emerged after analysis of open text comments obtained in Round  
117 1. The 'Blue Highways' model from the US National Institute of Health<sup>12</sup> was adapted for comment in  
118 Round 2 as it aligned with the open text comments. Adaptations were made to the model to expand  
119 the scope of practice beyond the clinical and translational setting.

120 In the absence of a pre-existing definition for dietetic research, the definition distributed to  
121 participants in Round 1 was developed by the research team from existing research definitions. This  
122 was revised for round 2 based on extensive feedback from round 1 respondents, and was further  
123 refined using the research definition used by the Australian Research Council<sup>13</sup> and tested in round  
124 2, when agreement was reached.

125 The time period for the research priorities was defined from the outset by the research team as  
126 2020-2030. As a starting point, research priorities considered in Round 1 were developed by the  
127 research team based on the established USA<sup>5</sup> and UK<sup>6</sup> dietetic leadership documents. Initially seven  
128 themes with associated research priority statements were extracted from these documents by the  
129 research team to form a framework for the 1<sup>st</sup> round. The themes were *Healthy ageing, Vulnerable*  
130 *populations, 'ood systems and health/nutrition promotion, Personalised nutrition, Digital technology*  
131 *and evidence based practice, Achieving balance between prevention and treatment approaches* and  
132 *Nutrition communications*. Research priorities were also extracted from the USA<sup>5</sup> and UK<sup>6</sup> for



133 inclusion within each theme in Round 1. Each research priority was rated by participants using a  
134 seven point Likert scale (1=strongly disagree to 7=strongly agree). Acceptance of priorities was  
135 agreed by the research team *a priori* where  $\geq 70\%$  of participants rated a priority statement highly  
136 (either 6 or 7). Where this occurred in Rounds 1 and 2, these items were accepted as Agreed  
137 Priorities. At the completion of Round 2, all priorities that did not achieve  $\geq 70\%$  support by  
138 participants were removed.

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

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

## 149 **Results**

150 Eighty-four participants (11 males, 73 females) were invited to participate in Round 1. Participants  
151 invited directly were: 14 FDAA, 14 national Fellowship recipients, 31 senior academics (Level D or E)  
152 and 25 AdvAPDs who responded to the invitation to all AdvAPDs. Based on response, 50  
153 participants (7 males, 43 females) were then invited in Round 2, and likewise 38 participants in  
154 Round 3. Final data were contributed by 35 participants (4 males, 31 females) in Round 3 (Figure 1).  
155 The sample included dietitians from across all scopes of practice covering hospital, industry and  
156 academic settings. Participants contributed from most Australian states, although the majority were

157 based on the east coast of mainland Australia. The questionnaires from each round are included in  
158 Supplementary files 1-3.

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

163 The definition proposed for dietetic research in Round 1 of the Delphi survey (Figure 2) received a  
164 high level of support. The median value for the level of agreement with the Round 1 definition was  
165 6 (Strongly agree score of 7: n=4; score 6: n=21; score 5: n=14; scores 1-4: n=9). Feedback indicated  
166 the definition needed to be extended to consider discovery research, including human clinical  
167 research (n=12 comments), and be more inclusive across a range of settings (n=6 comments). Other  
168 recommendations from experts (n=3 comments) were to acknowledge the inter-professional nature  
169 of research, where research is 'done on, by or with dietitians'.

170 Nine priority statements received  $\geq 70\%$  support in Round 1. A further 13 priorities received  $\geq 70\%$   
171 support in Round 2. These 22 priorities were further synthesised into 15 priorities for the ranking  
172 process undertaken in Round 3. The dietetic research priorities by themes for Australia for the  
173 period 2020-2030 are shown in Figure 3. Priorities within two of the initial themes did not receive  
174 adequate support from the Delphi scores. These were *Personalised medicine* and *Nutrition*  
175 *communications*. The *Personalised medicine* theme included priorities for research at an individual  
176 and health system level (eg. application of nutrigenomics and targeting the health care system based  
177 on the genetic predisposition for diet/disease prevention model). The theme *Nutrition*  
178 *communications* listed some broad priorities including capacity building of the nutrition workforce  
179 and development and evaluation of strategies to enhance nutrition literacy. Scores for these stated  
180 priorities did not reach the cut off points for inclusion.

181 **Discussion**

182 Through this Delphi process, Australian dietitians with demonstrated research expertise contributed  
183 to and confirmed a definition and framework for dietetic research, and identified the 15 top  
184 research priorities for dietitians in Australia across the period 2020 to 2030.

185 Some notable omissions emerged amongst the proffered research priorities. The absence of priority  
186 statements relating to the theme of *Personalised medicine* appears at odds with the Decadal Plan for  
187 the Science of Nutrition <sup>2</sup> where one pillar is nominated for 'Precision and Personalised Nutrition'.

188 This may indicate a lack of Delphi participants with experience of working in that area, and/or  
189 suggest this is an area of emerging research practice, which may attain greater prominence in the  
190 coming years.<sup>20</sup> Certainly there appears to be a strong emphasis in areas relating to population  
191 health, health promotion/disease prevention and policy development which may reflect existing  
192 strengths in epidemiology and program evaluation. The other omitted priority, *Nutrition*  
193 *communications*, could be considered across several of the included research priorities, for example  
194 the use of telehealth dietetic models<sup>21</sup>.

195 Despite original reference to overseas documents, there was both similarities and differences in  
196 priorities that emerged in this Delphi study. In the case of the visioning statement from the  
197 Academy of Nutrition & Dietetics,<sup>5</sup> similarities include 'food as medicine in the continuum of health',  
198 'the impacts of an ageing population', and the priority for 'population health/health promotion'.  
199 Notable differences were the omission of those ranked in the bottom tier of the USA visioning  
200 statement, namely, 'tailored health care to fit genetic profiles', 'the use of simulation as an  
201 instructional method', and 'the development of collaborative ready health professionals'. Again, this  
202 may reflect differences in choice of words, and could be considered in the broader light of  
203 statements that emerged from the current study. Direct comparisons with the UK Future Dietitian  
204 2025 vision statement were more challenging as this document aimed to inform a workforce  
205 strategy for dietetics in the UK.<sup>6</sup>

206 There are several limitations to this study. Firstly, while the contribution from participants who were  
207 FDAA, AdvAPDs, senior academics and recipients of national fellowships represented a broad range  
208 of settings, including dietitians practising in healthcare, industry and academic settings, there was a  
209 predominance of dietitians employed in academia. Although they likely comprise the largest group  
210 of research active dietitians, the priorities may reflect individuals' current research interests.

211 Secondly, a larger response rate may have allowed greater confidence in the interpretation of  
212 findings. A further limitation is the predetermined content of the survey. Rather than an open set of  
213 questions, key professional documents from the UK and the USA formed a basis for Round 1.

214 Although the Delphi process allowed for open ended comments, and there were multiple rounds,  
215 the closed system of scoring for statements still delimits responses and may not capture the full  
216 extent of opinions relating to research priorities. Further research that examines the outputs  
217 (publications, doctoral theses, successful competitive grants) and impacts (policy uptake, new  
218 products and services) of dietitian-led research would provide a useful comparative source of  
219 information to cross reference with these results. This would also align dietetic research with  
220 mainstream research infrastructure and funding bodies (eg. National Health and Medical Research  
221 Council, Australian Research Council) which sustains and recognises research expertise.

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

228 This process has highlighted the broad range of research that dietitians are involved in and the  
229 extensive range of settings and systems to which dietitians are contributing. There is no doubt that  
230 there is a need for leaders who have the capability to both drive and perform research with in multi-

231 disciplinary teams<sup>22</sup>, and supporting research leaders will be crucial if dietetics is going to expand its  
232 influence in the next decade. We anticipate that the findings from this Delphi process will contribute  
233 to a research strategy that focuses future dietetic research efforts, including the development of  
234 professional position papers as well as informing research competencies for dietetic education. It  
235 also indicates which of the Decadal Plan goals that dietitians may be most likely to contribute to in  
236 the short term. This, in turn, will help to maximise research investment into the future in dietetic  
237 research.

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

243

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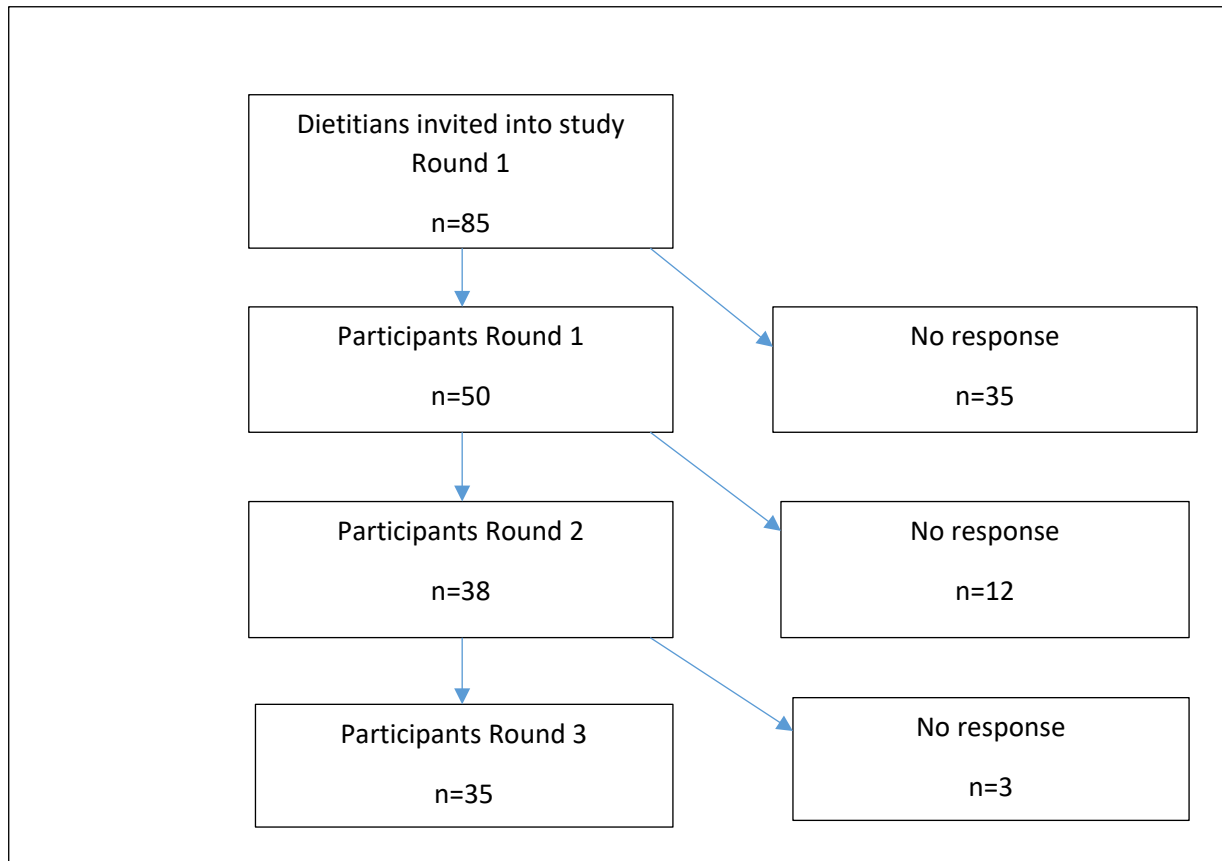
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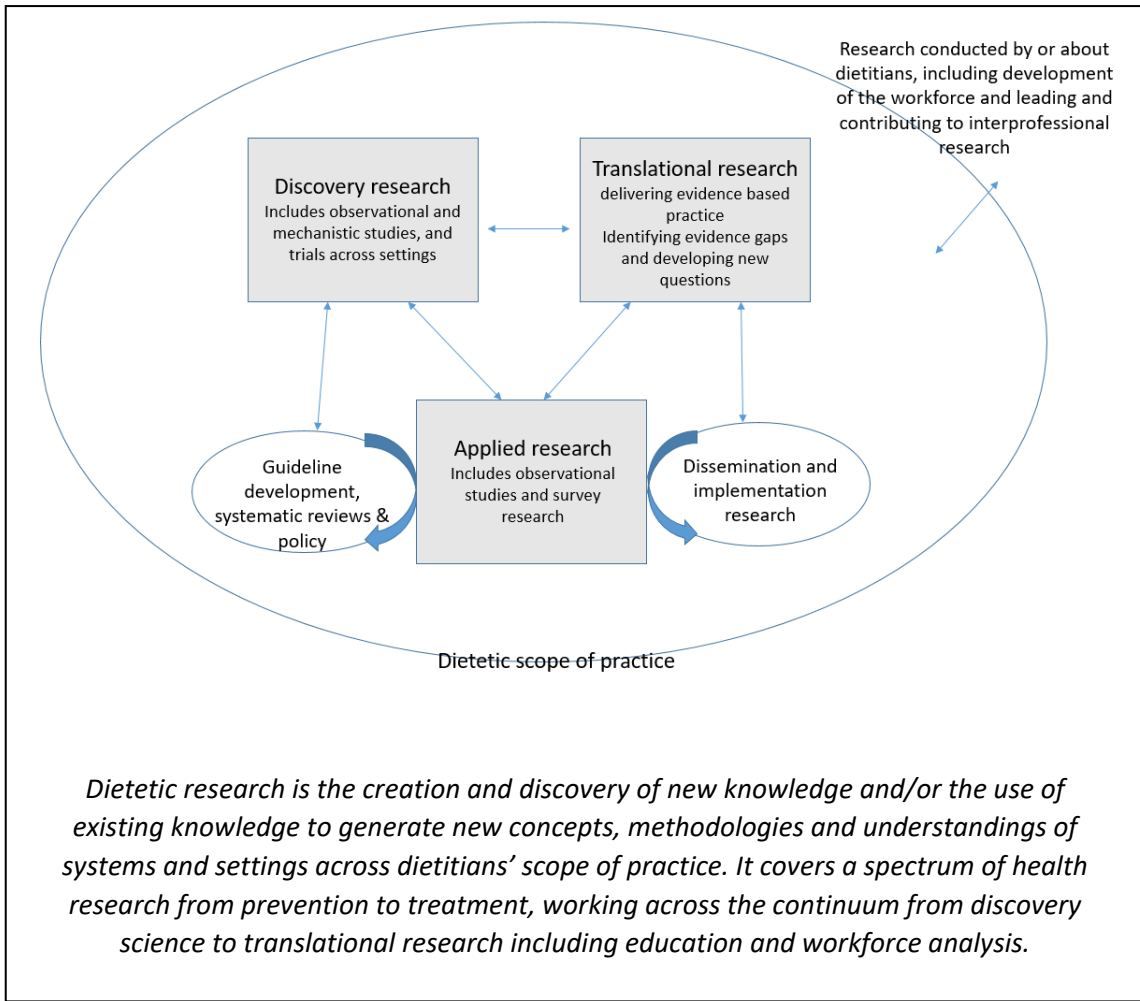


313 Figure 1: Participant flow through the Delphi process

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316 Figure 2: Dietetic research framework and definition

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**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