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1 **Short running: Clinical supervisors' attitudes to assessment**

2

3 **Title: Are dietetics educators' attitudes to assessment a barrier to expanding**  
4 **placement opportunities? Results of a Delphi study.**

5

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1    **Authorship**

2    CP and SC designed the study and oversaw its implementation, data collection and  
3    analysis with support from SA, EB, HT and BJ. All authors contributed to drafting the  
4    manuscript and approve its contents.

5

6

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15

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17

18

1 **Abstract**

2 **Aim:** Assessment of entry-level health professionals is complex, especially in the work-  
3 based setting, placing additional pressures on these learning environments. This study  
4 aimed to gain understanding and ideally consensus regarding the setting for assessment  
5 of all elements of competence for entry-level dietitians across Australia.

6 **Methods:** Seventy-five experienced academic and practitioner assessors were invited to  
7 participate in an online Delphi survey. The 166 entry-level performance criteria of the  
8 Competency Standards for dietitians formed the basis of the questions in the survey,  
9 with rating on which ones could be assessed in the practice setting, those which could  
10 be assessed in a classroom/university setting and which could be assessed in either  
11 setting. Forty-three of 75 invited assessors responded to the first round of the Delphi. A  
12 second modified survey was sent to the 43 participants with 34 responding.

13 **Results:** Consensus was achieved for the assessment setting for 86 (52%) of the  
14 performance criteria after two rounds of surveying. The majority of these performance  
15 criteria achieving consensus at round one (n=44) and were deemed to be best assessed  
16 in the practice setting (n=55). This study highlighted the perspectives of assessors and  
17 their preference for the work-based setting for assessment.

18 **Conclusions:** To reduce the focus on work-based settings as the only place for  
19 competence-based assessment of health professionals there is a need to support  
20 individual and organisational change through challenging existing norms around  
21 assessment.

22

23 **Key Words:** assessment, competency, Delphi, work-based learning, dietitian

24

## 1 **Introduction**

2 There is increasing pressure on the health care system to be able to offer enough quality  
3 work-based learning experience for all health professional students.<sup>1</sup> This poses  
4 challenges to universities in ensuring appropriate assessment for their students in these  
5 resource-stretched settings. Health professional education programs should be working  
6 towards a systems or programmatic approach to assessment whereby multiple methods  
7 of assessment over time are used to inform the judgement of competence<sup>2, 3</sup> however  
8 little work has been undertaken to map elements of competence and their appropriate  
9 place in an assessment system.

10

11 Ensuring equity and comparability in assessment is essential for student learning and for  
12 education providers. Competency-based assessment is perceived to represent a burden  
13 to placement sites with evidence suggesting some assessors feel insecure about  
14 conducting assessment<sup>4, 5</sup> and recognise a conflict in having dual roles as both teacher  
15 and assessor.<sup>4</sup> The importance of the “right person” to perform assessment is imperative  
16 for accuracy of assessment.<sup>6</sup> There is evidence to suggest that experience is an essential  
17 component of ‘good’ assessment<sup>4, 7</sup> and feedback provided by assessors also a key  
18 requirement.<sup>8</sup> Assessment of competence in work-based settings is influenced by  
19 tradition and individual experiences<sup>9</sup> suggesting that health professional assessors are  
20 resistant to change. Changing the perspectives and then practice of health professionals  
21 requires an investment of time in considering the proposed new approach.<sup>10</sup> While it  
22 would appear that knowledge of assessment can improve practice in dietetics<sup>11</sup>, it  
23 remains unknown which strategies may facilitate and sustain change to assessment  
24 approaches. Studies suggest that lack of effective leadership and ownership are among

1 factors impeding change to practice within health care organisations.<sup>12</sup> Understanding  
2 the social constructs in which educators and assessors practice, and why individual  
3 assessor behaviour may be difficult to change, may be essential to break down barriers  
4 to change.

5  
6 Determining the focus for assessment in the work-based setting is essential to reduce  
7 burden on clinical educators and supervisors. This would potentially increase capacity  
8 and consistency of work-based learning and assessment. To foster flexibility in the  
9 design of work-based placement, increase authenticity of assessment and increase  
10 placement opportunities by reducing burden, there is a need to understand if there is an  
11 opportunity to move some assessment to the university. This is especially true for the  
12 profession of nutrition and dietetics in Australia where an increasing number of  
13 preparatory courses require an ever increasing amount of work-based placement  
14 learning with a finite capacity to deliver.

15  
16 The Dietitians Association of Australia (DAA) National Competency Standards for  
17 entry-level dietitians<sup>13</sup> describe what a graduate is able to do upon completion of an  
18 accredited degree in nutrition and dietetics in order to enter the workforce. Work-based  
19 learning placements (also known as ‘professional practice’, ‘fieldwork’ or ‘clinical  
20 placements’) are widely acknowledged as playing a key role in facilitating learning in  
21 the development of competence across the health professions<sup>1</sup> and form part of  
22 accreditation requirements in most professions. Dietitians are currently required to  
23 spend 100 days (approximately 800 hours) in practice placement across three

1 compulsory contexts of individual case management, food service management and  
2 community and public health nutrition work-based settings.<sup>14</sup>

3

4 This study aimed to gain understanding and consensus regarding the setting for  
5 assessment of all elements of competence for entry-level dietitians in Australia. The  
6 findings should inform the development of assessment systems and the role of  
7 assessment prior to work-based learning as part of a system of assessment.

8

## 9 **Methods**

10 A Delphi technique<sup>15-17</sup> was used to gain consensus of opinion among experts in  
11 nutrition and dietetics education. Experts commented on which of the entry-level  
12 competency performance criteria they believed can only be demonstrated in the practice  
13 or placement environment, compared to those which can be demonstrated in a  
14 classroom or university setting or through simulation, and those where either setting can  
15 be used. The theoretical framework underpinning the methodology was that  
16 competency-based assessment includes performance in controlled situations mimicking  
17 practice and also performance in actual practice.<sup>18, 19</sup>

18

19 The Delphi technique uses a survey to gather anonymous and diverse opinions from  
20 experts who participate in a series of rounds of the survey with the aim of gaining  
21 consensus of opinion.<sup>15</sup> It is useful in gaining data across diverse geographical locations  
22 and has been used to gain consensus on competencies related to nutrition practice.<sup>20, 21</sup>

23 Ethics approval was obtained from the relevant human research ethics committees  
24 (approval numbers: 2011001765, 2012000036 and 1200000001).

1  
2 An electronic, internet based survey using Qualtrics<sup>®</sup> was developed based on the entry-  
3 level competency standards for Dietitians in Australia.<sup>13</sup> The 44 elements and 166  
4 required performance criteria were used as the basis for the survey as a reflection of  
5 tasks required to demonstrate ability to perform entry-level work role.<sup>22</sup> A five point  
6 Likert scale was used as the rating for participants to judge assessment settings where 1  
7 = Strongly disagree - can only be assessed in a practice setting, 2= Disagree - predominantly  
8 assessed in a practice setting, 3= Neither agree nor disagree - could be either setting, 4 =  
9 Agree - can be mostly assessed in the classroom/university setting, 5 = Strongly agree - can  
10 be assessed entirely in the classroom/university setting. The survey was divided into nine  
11 sections, reflective of the eight units of entry-level competency standards for which  
12 there were performance criteria and an additional section for demographic information  
13 (experience, practice area of experience and area of employment). Participants were  
14 also able to leave qualitative comments in each of the eight performance criteria  
15 sections. The survey maintained anonymity of participants avoiding dominant  
16 viewpoints or peer pressure to influence responses and allowed time for considered  
17 responses across a broad geographical area.

18  
19 Expert assessors from academia and practice involved in dietetics education, identified  
20 through snowball sampling from dietetic course convenors, were identified as the  
21 sample for the study from all the 14 accredited dietetics programs in Australia at the  
22 time of the study. These expert assessors were sent an invitation to participate in round  
23 one of the Delphi survey via an email link, and were sent two reminders over a one



1 month period from the initial invitation. It was predicted that two rounds of the data  
2 collection would achieve consensus based on similar work in the practice area.<sup>20 23</sup>  
3  
4 Round two of the survey was sent to the participants who completed round one of the  
5 survey. Again these participants were sent two reminders to complete round two of the  
6 survey over a one month period. Performance criteria items that achieved consensus on  
7 the first round were removed from round two of the survey. The revised survey was sent  
8 to participants who were provided the group results (medians) for each item from the  
9 previous round to allow them to consider the group response before making their own  
10 response. Qualitative data were not shared with participants.

11  
12 Frequency of responses of items scored 1-2, 3 or 4-5 by more than 70% of the panel, as  
13 has been recommended for Delphi studies<sup>15</sup>, were deemed to have reached consensus for the  
14 practice, university or either setting. Text responses were collated and analysed using a  
15 basic thematic analysis<sup>24</sup> to assist gaining insight into the rationale behind participant's  
16 responses.

17

## 18 **Results**

19 Seventy-four assessors from academia (n=52) and practice (n=22) were invited to  
20 participate in the study representing 11 of the 14 universities accredited to provide  
21 dietetics education. The researchers conducting this study, all with experience in  
22 assessment of entry-level dietitians, were excluded from participating. Forty-three  
23 participants (58% response rate) completed round one of the Delphi and were sent  
24 round two. Thirty-four experts (79% retention rate) completed round two. The majority

1 of the respondents in round one (79%) were currently working in academia in either  
2 teaching only or research and teaching roles (Table 1). Practitioners with affiliated  
3 appointments with universities were classified as practitioners. When asked to describe  
4 their main areas of practice, the majority of the 43 round one respondents described  
5 their expertise as individual case management (n=18, 42%) and as a career academic  
6 (n=15, 35%). Only seven reported public health nutrition, two food service management  
7 and one management as their focus areas.

8

9 Greater than 70% agreement was obtained for two of the nine units of competence  
10 defining practice (individual case management and community and public health  
11 nutrition) and less than 20% agreement for units describing nutrition communication  
12 and nutrition assessment, units which underpin dietetic practice (Table 2). Overall,  
13 agreement was achieved for the assessment setting for 86 (52%) of the performance  
14 criteria after two rounds of the survey, with minimal additional performance criteria  
15 being achieved in round 2, with the exception of community and public health nutrition  
16 (Table 2). The majority of performance criteria where consensus was achieved (55 or  
17 64%) were deemed to be required to be assessed in the practice setting. By area of  
18 work (academia or practice) descriptive analysis together with qualitative analysis  
19 provided evidence that practitioners perceived the assessment setting differently to  
20 academics. Practitioners (n=9 round 1 and n=4 round 2) did not believe any  
21 performance criteria could be assessed in the university setting, whereas academics  
22 (n=34 round 1, n=30 round 2) agreed that 5% of the performance criteria could be  
23 assessed at university.

24

1 There was a perception that tasks can be practised and formatively assessed in the  
2 university classroom but must be summatively assessed in a practice setting for  
3 achievement of competence. It was reported that assessment in the practice setting  
4 develops additional skills and provides rich learning and that any competency area  
5 involving oral communication skills needs to be undertaken in practice. It was however  
6 acknowledged that preparation prior to a work-based placement is essential to support  
7 learning. Qualitative comments also reflected a lack of acceptability of the current  
8 Competency Standards performance criteria in that there were too many specific tasks  
9 reflected and significant repetition.

10

## 11 **Discussion**

12 This study aimed to determine which settings are currently believed to be  
13 appropriate for assessment of all elements of competence for entry-level dietitians in  
14 Australia. To our knowledge this is the first study to investigate assessors' perceptions  
15 of the setting for assessment. We found a trend towards perceiving the traditional  
16 practice or work-based setting as the setting which provides the optimum environment  
17 for assessing the majority of entry-level competencies and that few competencies could  
18 be assessed in the university classroom-based setting. Despite the exploratory nature of  
19 the study design, these findings have implications for the future preparation of the  
20 health workforce and the development of assessment systems.

21

22 The higher levels of consensus for the number of performance criteria in the individual  
23 case management domain on competence may indicate an acknowledgement of the key  
24 work role of dietitians in individual patient care or the larger sample from this area of

1 practice. The lower levels of consensus for community and public health nutrition and  
2 food service competencies required to be assessed in actual practice may reflect a lack  
3 of experience of the participants in these areas. The limited consensus achieved for  
4 nutrition communication and nutrition assessment was unexpected given that these  
5 areas underpin dietetic practice. This finding may reflect a diversity of views among  
6 participants or be driven by the requirement for accredited programs that all  
7 performance criteria are assessed in practice.<sup>14</sup> It highlight a need to grow the  
8 profession's understanding of competency based assessment.

9  
10 It is accepted that competency-based assessment programs must incorporate assessment  
11 in the simulated and real practice settings<sup>19</sup> to facilitate regular assessment and  
12 feedback.<sup>25</sup> There is sound evidence in medicine of the ability of simulated learning and  
13 assessment experiences, such as role play and simulated patients, to develop  
14 communication and clinical skills<sup>26, 27</sup> and acknowledgement that assessment develops  
15 competence.<sup>25</sup> For the profession of dietetics to embrace the concept that individual  
16 competencies or skills can be developed in the simulated setting there is a need for  
17 greater evidence. There is no denying the role of the work-based setting for  
18 demonstrating competence as a whole, however the literature suggests that refinement  
19 of skills such as nutrition assessment and communication in simulated settings is  
20 possible and would reduce the need to develop and assess these skills in work-based  
21 settings.

22  
23 There has been much recent attention to coordinate and enhance the student clinical  
24 placement experience for all students of medicine, nursing and allied health. Some of

1 this work has been on supporting the preparation of students prior to work-based  
2 learning experiences with the aim of reducing the amount of learning time required in  
3 the health care system.<sup>28</sup> That is, modalities such as simulated learning have been  
4 developed as tools to reduce the need for work-based learning and assessment by better  
5 preparation of students to enter health care settings.<sup>29</sup> The findings of this study provide  
6 interesting insights into the views of those involved in dietetics education, where a  
7 preference for the traditional work-based learning for the development of competence is  
8 clearly identified. While there is no denying the instrumental role of assessment in the  
9 health care system, the role of assessment in classroom settings as part of a systems  
10 approach to competency based assessment needs to be better acknowledged. This has  
11 implications for health professions generally and seems to contrast evidence appearing  
12 on the value of pre-placement, simulated or classroom based learning in developing  
13 competence.<sup>30</sup>

14

15 The entrenched positions found in this study are not congruent with modern  
16 understanding of assessment of competence that should be focused on a systems-based  
17 approach to assessment that recognises the role of multiple pieces of assessment as  
18 contributing to judgement of competence.<sup>3,31</sup> Involving the student in assessment may  
19 also be considered.<sup>32</sup> Setting standards for assessment in the work-based placement  
20 setting is an essential part of an assessment system for entry-level competency.  
21 Universities need to take leadership and provide academic and practitioner educators  
22 with support to implement work-based assessment but also to support a shared  
23 understanding of the role of assessment prior to work-based learning.

24

1 The assessment attitudes and behaviours of health professional educators are likely to  
2 be influenced by existing professional social norms.<sup>33</sup> In order to change the  
3 perspectives and practice of health professions there is a need to consider the  
4 plausibility, feasibility and efficiency of any proposed new methods.<sup>10</sup> Furthermore, if  
5 change is suggested for health care professionals, including academics working in  
6 health professional education, there is a need for a greater body of evidence confirming  
7 the value of different assessment methods and standards of assessment and the role of  
8 the university setting in assessing entry-level standards. This is of key significance as  
9 academics and educators embark on implementation of best-evidence health  
10 professional education. Any proposal to change standards for assessment and transition  
11 from work-based practical placement assessment to other assessment settings must  
12 consider the approaches of current assessors.

13

14 The results of this study also report dissatisfaction with current performance criteria and  
15 may reflect different interpretations of, or reflect ambiguity in, the current entry-level  
16 competencies for dietitians among academics and practitioners. Recent work has shown  
17 that students perceive clinical educators to have difficulty interpreting the actual  
18 requirements of competence.<sup>32</sup> If this is the case, then opinions on how this assessment  
19 takes place may be flawed. Our methodological approach also assumed that respondents  
20 had an understanding of the continuum of competence assessment and the role of  
21 'showing' as well as 'doing' in simulated or real-life practice.<sup>18</sup> Respondents to the  
22 Delphi survey may not have had this knowledge and therefore the results should be  
23 interpreted with caution.

24

1 This study is limited in that it only represents the views of a selected group of dietitian  
2 educators. Their opinion on assessment may be more informed by experience than  
3 evidence. The limitations of the Delphi methodology in obtaining perspectives rather  
4 than actually testing assessment of different elements of competence are also a  
5 limitation. The lack of consensus on 80 of the 166 performance criteria which cannot be  
6 interpreted is unknown. While there was little additional agreement between rounds one  
7 and two of the Delphi survey, a third was not undertaken as a workshop of interested  
8 parties conducted as part of a larger activity, did suggest that further agreement would  
9 be difficult to reach.<sup>34</sup> There is a need for health professional groups to set standards for  
10 achievement of competence as part of a system of assessment. Setting milestones to  
11 describe the progression of capabilities as part of an assessment system rather than  
12 seeing assessment of competence as a final hurdle may be required. Further research  
13 should investigate the appropriateness of simulated or classroom based assessment in  
14 contributing to a system of assessment.

15

16 In conclusion, this study identified a consensus preference towards the traditional  
17 practice or work-based setting as that which provides the optimum environment for  
18 assessing the majority of entry-level performance criteria. There is an urgent need to  
19 address dietetic educators' perceptions of assessment to be able to implement best-  
20 practice assessment. Resistance to change may be a critical barrier in reducing  
21 assessment burden in work-based placement, enhancing practice and expanding  
22 placement opportunities to more novel sites.

23

## 1 References

- 2 1. National Health Workforce Taskforce. *Data, capacity and clinical placements*  
3 *across Australia: a discussion paper*. 2008.
- 4 2. Dijkstra J, Van der Vleuten C and Schuwirth L. A new framework for designing  
5 programmes of assessment. *Adv in Health Sci Educ* 2010; 15: 379-93.
- 6 3. Norcini J, Anderson B, Bollela V, et al. Criteria for good assessment: Consensus  
7 statement and recommendations from the Ottawa 2010 conference. *Med Teach*. 2011;  
8 33: 206-14.
- 9 4. Berendonk C, Stalmeijer R and Schuwirth L. Expertise in performance  
10 assessment: assessors' perspectives. *Adv in Health Sci Educ* 2012; 18: 559-71.
- 11 5. Palermo C, Beck E, Chung A, et al. Work-based assessment: qualitative  
12 perspectives of novice nutrition and dietetics educators. *Journal of Human Nutrition*  
13 *and Dietetics*. 2013; 27: 513–52.
- 14 6. Crossley J and Jolly B. Making sense of work-based assessment: ask the right  
15 questions, in the right way, about the right things, of the right people. *Med Educ*. 2012;  
16 46: 28-37.
- 17 7. Govaerts M, Schuwirth L, van der Vleuten C and Muijtjens A. Workplace-based  
18 assessment: effects of rater expertise. *Adv in Health Sci Educ*. 2011; 16: 151-65.
- 19 8. Boud D and Molloy E. *Feedback in Higher and Professional Education.*  
20 *Understanding it and doing it well*. Oxon: Routledge, 2013.
- 21 9. Van der Vleuten C, Newble D, Case S, et al. Methods of assessment in  
22 certification. In: Newble D, Jolly B and Wakeford R, (eds.). *Certification and*  
23 *Recertification in Medicine: Issues in the Assessment of Clinical Competence*.  
24 Cambridge Cambridge University Press, 1994, p. 105-25.
- 25 10. Eccles M, Grimshaw J, Walker A, Johnston M and Pitts N. Changing behaviour  
26 of healthcare professionals: the use of theory in promoting the uptake of research  
27 findings. *J of Clin Epi*. 2005; 58: 107-12.
- 28 11. Lennie S and Juwah C. Exploring assessment for learning during dietetic  
29 practice placements. *J Hum Nutr Diet*. 2010; 23: 217-23.
- 30 12. Scott T, Mannion R, Davies H and Marshall M. Implementing culture change in  
31 health care: theory and practice. *Int J Qual Health Care*. 2003; 15: 111-8.
- 32 13. Dietitians Association of Australia. *National competency standards for entry-*  
33 *level dietitians*. 2009.
- 34 14. Dietitians Association of Australia. *Manual for accreditation of dietetic*  
35 *education programs. v1.2*. Canberra: Dietitians Association of Australia, 2011.
- 36 15. De Villiers M, De Villiers P and Kent A. The Delphi technique in health  
37 sciences education. *Med Teach*. 2005; 27: 639-43.
- 38 16. Okoli C and Pawlowski S. The Delphi method as a research tool: an example,  
39 design considerations and applications. *Information and Management*. 2004; 42: 15-29.
- 40 17. Skulmoski G, Hartman F and Krahn J. The Delphi method for graduate research.  
41 *Journal of Information Technology Education*. 2007; 6: 1-21.
- 42 18. Rethans J, Norcini J, Baron-Maldonado M, et al. The relationship between  
43 competence and performance: implications for assessing practice performance. *Med*  
44 *Educ*. 2002; 36: 901-9.
- 45 19. Khan K and Ramachandran R. Conceptual framework for performance  
46 assessment: Competency, competence and performance in the context of assessments in  
47 healthcare – Deciphering the terminology. *Med Teach*. 2012; 34 920–8.



- 1 20. Hughes R, Begley A and Yeatman H. Aspirational competency expectations for  
2 public health nutritionists in Australia: A consensus study. *Nutr Diet*. 2013; [online  
3 ahead of print].
- 4 21. Ayres E, Greer-Carney J, Fatzinger-McShane P, Miller A and Turner P.  
5 Nutrition informatics competencies across all levels of practice: a national Delphi study.  
6 *J Acad Nutr Diet*. 2012 112: 2042-53.
- 7 22. Ash S and Phillips S. What is dietetic competence? Competency standards,  
8 competence and competency explained. *Nutr Diet*. 2000; 57: 147–51.
- 9 23. Chipchase L, Buttrum P, Dunwoodie R, Hill A, Mandrusiak A and Moran M.  
10 Characteristics of student preparedness for clinical learning: clinical educator  
11 perspectives using the Delphi technique. *BMC Medical Education*. 2012; 12: 112.
- 12 24. Liamputtong P. *Research methods in health. Foundations for evidence based  
13 practice*. South Melbourne: Oxford University Press, 2010.
- 14 25. Holmboe E, Sherbino J, Long D, Swing S and Frank J. The role of assessment in  
15 competency-based medical education. *Med Teach*. 2010; 32: 676-82.
- 16 26. May W, Park J and Lee J. A ten-year review of the literature on the use of  
17 standardized patients in teaching and learning: 1996-2005. *Medical teacher*. 2009; 31:  
18 487-92.
- 19 27. Lane C and Rollnick S. The use of simulated patients and role-play in  
20 communication skills training: a review of the literature to August 2005. *Patient  
21 education and counseling*. 2007; 67: 13-20.
- 22 28. Health Workforce Australia. Simulated Learning Environments (SLEs).  
23 Canberra: Australian Government, 2013.
- 24 29. Herriot A, Bishop J and Truby H. The development and evaluation of Student  
25 Training, Education and Practice for Dietetics CD-ROM: a computer-assisted  
26 instruction programme for dietetic students. *J Hum Nutr Diet*. 2004 17: 35-41.
- 27 30. Williams P and Beck E. Simulation in dietetic education in Australia. *Nutr and  
28 Diet*. 2012 69: 47.
- 29 31. Dijkstra J, Van der Vleuten C and Schuwirth L. A new framework for designing  
30 programmes of assessment. *Adv Health Sci Educ Theory Pract*. 2010; 15: 379–93.
- 31 32. Palermo C, Chung A, Beck E, et al. Evaluation of assessment in the context of  
32 work-based learning. Qualitative perspectives of new graduates. *Nutr Diet*. 2014;  
33 accepted ahead of print.
- 34 33. D'Eon M, Overgaard V and Rutledge-Harding S. Teaching as a social practice:  
35 Implications fo faculty development. *Adv Health Sci Educ*. 2000; 5: 151-62.
- 36 34. Palermo C, Capra S, Ash S, Eleanor B, Truby H and Jolly B. Professional  
37 competence standards, learning outcomes and assessment: Designing a valid strategy  
38 for nutrition and dietetics. Canberra: Office for Learning and Teaching, 2013.

1 **Table 1: Demographics of participants in round 1 and 2.**

2

	<b>Round 1</b>	<b>Round 2</b>
Gender	3 male; 49 female	2 male; 41 female
Years since commence practice (mean $\pm$ SD)	19.8 $\pm$ 8.6 years	20.4 $\pm$ 8.4 years
<b>Area of current work</b>		
Academic (n, % total)	34 (79%)	26 (76%)
Practitioner (n % total)	9 (21%)	8 (24%)

3

4

**Table 2: Results of Round 1 and Round 2 of Delphi survey. Number of performance criteria that achieved consensus >70% agreement.**

Number of performance criteria within each unit of competence for rounds 1 and 2 combined	Nutrition Communication	Collection, analysis and assessment of nutrition/ health data	Individual Case Management	Community and Public Health Nutrition	Food Service Management	Research and Evaluation	Management and Organisation	Professionalism, advocacy, innovation and leadership
<b><i>Assessed in practice setting</i></b>								
Round 1 = 39	Round 1=1	Round 1=1	Round 1=21	Round 1=6	Round 1=4		Round 1=1	Round 1=5
Round 2 = 16		Round 2=1	Round 2=1	Round 2=3	Round 2=4	Round 2=1	Round 2=3	Round 2=3
Total = 55	Total = 1	Total = 2	Total = 22	Total = 9	Total = 8	Total = 1	Total = 4	Total = 8
<b><i>Assessed in <u>either</u> practice or classroom/university setting/simulation setting</i></b>								
Round 1 = 0								
Round 2 = 26	Round 2=1	Round 2=1	Round 2=1	Round 2=14	Round 2=4	Round 2=2	Round 2=1	Round 2=2
Total = 26	Total = 1	Total = 1	Total = 1	Total = 14	Total = 4	Total = 2	Total = 1	Total = 2
<b><i>Assessed in the classroom/university setting/simulation setting</i></b>								
Round 1 = 5				Round 1=4		Round 1=1		
Round 2 = 0								
Total = 5				Total = 4		Total = 1		
<b>Total performance criteria to reach consensus</b>	<b>2 out of 17 (12%)</b>	<b>3 out of 16 (19%)</b>	<b>23 out of 32 (72%)</b>	<b>27 out of 34 (79%)</b>	<b>12 out of 23 (52%)</b>	<b>4 out of 12 (33%)</b>	<b>5 out of 11 (45%)</b>	<b>10 out of 21 (48%)</b>