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1 ABSTRACT

- 2 Aim: To assess the views and experiences of WA health practitioners on the use of
- 3 cooking as a public health nutrition intervention.

4	Methods: A 39-point online questionnaire was constructed using Survey Monkey. The
5	questionnaire was distributed via email distribution lists to practitioners working in the
6	areas of nutrition, dietetics, and public health. Questions were focused around four
7	objectives relating to; the value of cooking skills in public health, practitioner cooking
8	skills and training, practitioner views on cooking as a health intervention and
9	practitioner experiences in conducting cooking demonstrations.
10	Results: A total of 84 practitioners completed the questionnaire, of which over half
11	(58%) were employed in dietetic specific positions at the time of the survey. There
12	was overwhelming agreement that cooking skills are an important factor in the
13	prevention of nutrition related disease, and that cooking skill interventions have the
14	potential to change dietary intakes. However, only one quarter of practitioners
15	indicated that cooking skill interventions were a significant part of their current role.
16	Over half (58%) of the practitioners surveyed had either conducted or assisted in a
17	cooking demonstration or cooking class in the last 12 months.
18	Conclusions: WA practitioners place a high value on the use of cooking as a public
19	health nutrition intervention. Practitioners felt they have good knowledge and skills in
20	cooking but indicated the need to know more about conducting cooking skill
21	interventions. The findings suggest the need to improve outcome evaluation as a
22	component of cooking skill interventions to assess long term behaviour change.

1 Key Words: cookery, dietetics, health promotion, interventions, nutrition.

2 INTRODUCTION

With obesity rates continuing to rise in both children and adults in Australia^{1, 2}, there is 3 a need for effective public health nutrition initiatives to positively influence behaviour 4 change^{1, 2}. One area of nutrition that is under researched in Australia is the use of 5 cooking skill interventions^{3, 4}. For the purposes of this paper, a cooking skill 6 7 intervention (CSI) is any intervention that is designed to increase the amount of 8 cooking and/ or change cooking skills towards healthier food practices. Recently the Standing Committee on Health and Ageing released its report on obesity in Australia 9 and included a key recommendation for community programs to teach children and 10 11 adults the benefits of preparing and enjoying healthy and nutritious meals through initiatives such as cooking classes¹. 12 A group of dietary and physical activity experts have identified the rising use of 13 convenience food as one of the most important social trends contributing to 14 Australia's obesity problem⁵. Many authors have stated the value of improving 15 cooking skills in order to improve the dietary intakes of individuals ⁶⁻¹². In Australia 16 very few studies have looked at the relationship between cooking skills and health^{4, 11}, 17 18 however a recent Australian study by Winkler and Turrell demonstrated that confidence in cooking is associated with vegetable purchase⁴. Internationally, a 19 Canadian study assessed the impact of cooking classes run for senior men and found 20 successful behaviour change over the duration of their program⁷. There is limited 21 evidence available on how, and to what extent CSI's influence dietary behaviour 22 change. There is also little known about the views of health practitioners on the value 23

1 of cooking as a public health nutrition intervention and the types of CSI's currently

2 being utilised.

3	The purpose of this study was to assess the views and experiences of WA health
4	practitioners on the use of cooking skill interventions in public health. The specific
5	objectives of this study were to; (i) determine the value health practitioners place on
6	cooking for public health, (ii) assess the level of cooking skill and training of health
7	practitioners, (iii) assess practitioner views on cooking as a public health nutrition
8	intervention, and (iv) assess the experiences health practitioners have conducting
9	cooking demonstrations and cooking classes.
10	METHODS
4.4	Question raine Development
11	Questionnaire Development
12	A questionnaire was developed to obtain information in four key areas relating to the
13	objectives of this study. The development of the questionnaire was guided by a review
14	of the literature and constructed using Survey Monkey, an online web based
15	questionnaire program (www.surveymonkey.com). A 39-question survey was
16	developed containing both closed and open-ended questions.
17	As there are varying interpretations of the meaning of 'cooking', a definition for the
18	purpose of this survey was used, along with a definition for 'cooking skills' and 'cooking
19	skill interventions' as they were commonly used terms in the questionnaire. The
20	dictionary meaning for the term 'cook' is to prepare food by the action of heat, as by
21	boiling, baking, roasting etc, and someone who 'cooks' prepares food for the table 13 .
22	For the purposes of this study the ideas from Symons ¹⁴ were adapted to define
23	cooking as the preparation and production of food for meals and snacks, typically in

1	the domestic setting. Cooking skills were defined as the theoretical and practical skills
2	that enable efficient preparation and production of food for meals and snacks, typically
3	in a domestic setting.
4	Pilot Testing
5	The questionnaire was pilot tested with 5 practitioners who worked in public health
6	and nutrition education in a university setting. Minor wording adjustments were made
7	before distribution. The practitioners involved in the pilot testing were also invited to
8	participated in the final survey.
9	Ethics
10	Ethics approval was granted from the School of Public Health at Curtin University of
11	Technology. Informed consent was assumed as a condition of taking part in the
12	questionnaire. Practitioners were invited to email their contact details at the
13	conclusion of the questionnaire to go into a draw for two supermarket vouchers.
14	Sample
15	The primary target group for the questionnaire were members of the Nutrition WA
16	network, a network run by health practitioners for health practitioners, the majority of
17	whom have dietetic training. Nutrition WA is a group that has been established since
18	1996 and is dedicated to improving the dietary intakes in WA through strategic and
19	coordinated service delivery. At the time of this survey there were 66 members of
20	Nutrition WA who communicate through an email distribution list and face-to-face

21 meetings. An email explaining the purpose of the research and an invitation to

22 participate was distributed at the start of a four week survey period. Practitioners

23 were encouraged to forward the email to colleagues that were not on the Nutrition

1 WA email list and a reminder email was sent half way through the survey period.

2 There were also three other email distribution methods utilised. Firstly, an invitation to

- 3 participate was sent to all health promotion managers of non-government
- 4 organisations conducting nutrition programs outsourced by the Department of Health
- 5 in WA. The email distribution list of the WA branch of the Dietitians Association of
- 6 Australia (n=250) and the Public Health Association of Australia (n=115) were two
- 7 other distribution lists utilised to capture additional practitioners and to serve as a
- 8 reminder to those on the Nutrition WA email list.

9 Data Analysis

Survey Monkey produced descriptive statistics at the end of the survey period. As the
 purpose of this study was to assess practitioner views on cooking and current use of
 CSI's, frequency counts were used as the principle form of analysis. Open ended
 questions were coded into groups representing common themes and tabulated.

14 **RESULTS**

15 Participant Demographics

A total of 84 practitioners completed the online questionnaire. Practitioners working
in dietetic specific positions made up over half (58%) the participants surveyed.
Practitioners working in public health nutrition positions made up the vast remainder
of the sample, with three respondents working as aboriginal health workers and one
working as a cook making up the complete sample. Approximately half (55%) the
practitioners worked for the Department of Health in WA. Thirty eight percent of
practitioners had been working in their field for over 10 years and one third of

practitioners had been working in their field for between 1-5 years. Fifty percent of
 the practitioners were between 25-39 years of age.

3

4

5 Cooking Skills for Public Health

6 There was overwhelming agreement (98%) that cooking skills are an important factor 7 in the prevention of nutrition related disease, and that CSI's have the potential to 8 change dietary intakes. Interestingly, 57% of practitioners agreed that cooking skills 9 should be taught by health practitioners, while almost one fifth (19%) of those 10 surveyed disagreed. Close to 40% of practitioners indicated they were not sure if people who participate in CSI make changes to dietary intakes. Table 1 illustrates 11 12 other perceptions practitioners have on cooking skills and CSI's. 13 Insert Table 1 14 The majority of practitioners (83%) felt that people who attended CSI's valued 15 obtaining cooking knowledge and skills. Over three quarters (80%) of practitioners 16 believed that the use of cooking as a health intervention was a positive way to educate 17 various groups in the community, particularly hard to reach groups (74%). However, 18 only one quarter of practitioners indicated that CSI's were a significant part of their 19 current role.

20 Personal Cooking Skills and Training

21 Practitioners were asked to rate their cooking knowledge and skills using a

22 predetermined scale ranging from very good to no skills. Overall the majority of

1	practitioners rated their cooking knowledge and skills as very good. The majority
2	(93%) of practitioners indicated they enjoyed cooking. A variety of factors influenced
3	practitioner's current cooking knowledge and skills, with the most common positive
4	influences coming from cookbooks (98%), mothers influence (90%), and recipe
5	websites (83%). Almost all practitioners (99%) felt that everyone should have a
6	minimal level of cooking skills. One third of practitioners indicated they were
7	sometimes asked questions about cooking skills they could not answer.
8	Insert Table 2
9	Practitioners were asked to provide their own definition of cooking in an open-ended
10	question. Over half (56%) of practitioners broadly defined cooking as the preparation
11	and combining of food, either fresh or processed. Some examples of responses
12	include the following.
13	Preparing food for consumption.
14	Any kind of food preparation using ingredients to make a meal.
15	Process of combining ingredients to make something else.
16	
17	The second most common definition, expressed by 23% of practitioners defined
18	cooking broadly to include the preparation of food with a particular emphasis on using
19	fresh, unprocessed, or raw ingredients. Typical responses for this broad definition
20	include the following.
21 22 23	Taking raw ingredients, and through some process turning them into a meal. This does not necessarily involve cooking, as in using heat to prepare food – it may be as simple as slicing or arranging on a plate.
24	

1 2	Sourcing fresh, unprocessed produce and turning it into something delicious, healthy and nutritious.
3	
4	Approximately 17% of practitioners defined cooking broadly to include the preparation
5	of food with a particular emphasis on the application of heat, typical responses
6	included the following.
7 8	Combining ingredients together usually involving some form of heat, I don't think making a salad is cooking.
9 10 11	Preparing meals using open fire and/or other means of heating.
12	Almost all practitioners (92%) indicated they had no formal training in cooking skills.
13	Those practitioners who reported having formal training indicated the qualification to
14	be the catering component of their tertiary degree, with the exception of one
15	practitioner with a TAFE cookery qualification. Approximately half (51%) of
16	practitioners indicated they would like further training in cooking knowledge and skills,
17	and 56% of practitioners indicated they would like further training in conducting CSI's.
18	Three quarters of practitioners indicated they would use a resource outlining good
19	practice techniques for conducting CSI's.
20	Cooking as a Public Health Nutrition Intervention
21	Seventy-one percent of practitioners indicated they provide education on general
22	cooking knowledge and skills to individuals and groups. There was variation as to how
23	often practitioners addressed this component of nutrition education. Some
24	practitioners delivered education on general cooking knowledge and skill weekly
25	(28%), others monthly (24%), some annually (17%), and few on a daily basis (2%).

The most common CSI delivered on a weekly basis by practitioners was education on
modifying recipes (43%), this was followed by provision of recipe handouts (35%).
Practitioners rated the nutritional value of a recipe, the taste, and the picture of the
finished recipe as the three most important factors they considered when selecting
recipes or cookbooks to use in CSI's, other factors are outlined in table 3.

6 Insert Table 3

7 Forty five percent of practitioners indicated they often used the Department of Health

8 WA cookbooks and 'Go for 2&5' campaign material. When asked to indicate the most

9 significant barriers to conducting a cooking demonstration, cooking class or

10 community kitchen, approximately half of the practitioners indicated the cost of food

11 (51%) and finding a suitable venue (47%) to be the most significant barriers.

12 Experiences with Cooking Demonstrations/ Cooking Classes

13	Over half (n=45) of the 84 practitioners surveyed had either conducted or assisted in a
14	cooking demonstration or cooking class in the last 12 months. Two thirds of these
15	were involved in cooking classes (n=31) and one third were involved in cooking
16	demonstrations (n=14). The majority of practitioners (64%) had been involved in up to
17	5 of these types CSI's in the last 12 months.

Only 2% of these CSI's were run as men only groups, whereas women only groups made up 36%. Over half (56%) of the groups run were targeted toward adults and 18% targeted to older adults. Whereas only 7% of these CSI's were targeted to children and 7% to adolescents. The largest proportion (46%) of these cooking skill interventions were held in the Perth metropolitan area with 31% being held in small country towns. 1 Eighty-four percent of the time an attendance fee was not charged. When an

2 attendance fee was charged, it was to only cover the cost of food.

3 The two most common activities that practitioners included in their cooking 4 demonstration or cooking class were skills in simple cooking techniques (82%) and 5 provision of recipes (73%). Over half of the practitioners also included education in 6 recipe modification (57%), label reading (54%) and discussion on the use of seasonal 7 fruit and vegetables (52%). Forty-five percent of practitioners included education on appropriate portion size. Whereas only 20% of practitioners included information on 8 9 the use of frozen meals to save money and time, and on storage techniques to reduce 10 food wastage.

Only a small number of practitioners (11%) used outcome evaluation to measure participants actual dietary change following the CSI. Process evaluation was used by the majority (78%) of practitioners, while 36% of practitioners used impact evaluation to assess effectiveness of the CSI. A small number of practitioners (11%) did not use any form of evaluation.

16 **DISCUSSION**

The present study provides information on the current views and use of CSI's by WA
health practitioners. As far as it is known, this is the first time in Australia that the role
of CSI's in public health nutrition has been reported on³.

Practitioners overwhelmingly agreed that cooking skills are an important factor in
reducing the risk of nutrition related disease and have the potential to improve dietary
intakes, a view that is also well represented in the literature^{5-8, 10-12, 15, 16}. However, the

1 number of practitioners who identified CSI's as a significant part of their current

2 position was much smaller.

3 One third of practitioners indicated they were sometimes asked questions about 4 cooking skills they could not answer. This is understandable as cooking skills have not been an explicit component of the entry level competency standards for dietitians in 5 Australia since their inception in 1993¹⁷. This finding is similar to that reported by 6 Zwick-Hamilton et al ¹⁸ who found that 39% of American dietitians felt they could not 7 8 explain some culinary techniques. There is a definite need for cooking skills to be considered in dietetic training¹⁷, and a resource to be developed outlining good 9 10 practice techniques for CSI's.

The findings from this survey agree with Campbell et al¹⁹, who reported that the 11 12 majority of dietitians surveyed include practical cooking and shopping advice when 13 delivering nutrition education. It appears that WA practitioners place a high value on the use of recipes and recipe modification when delivering education on cooking skills. 14 Stead et al¹⁶, suggests that the use of recipes as a method for motivating and teaching 15 16 individuals to cook may be problematic for some, particularly those individuals with 17 low levels of cooking confidence, reading difficulties, and a lack of basic kitchen equipment¹⁶. Discussing recipes and recipe modification are CSI's with probably the 18 19 least number of barriers associated with their delivery, as compared to the commonly reported barriers of food cost and venue availability associated with running cooking 20 21 demonstrations and cooking classes reported in this survey. This may be one of the 22 reasons many WA practitioners provide recipes and education on recipe modification on a regular basis. Some authors^{15, 20} suggest it is important that education provided 23 in CSI's take into account the social context of food choice and cooking practices of 24

1	individuals. Equally important is the involvement of the family unit when delivering
2	CSI's, so that new nutrition knowledge and cooking skills will be accepted and
3	supported by family members and will allow successful dietary change to take place ²¹ .
4	This survey indicates that CSI's such as cooking demonstrations or classes are being
5	extensively used in WA as part of public health nutrition program delivery. Some
6	practitioners reported including education on the use of seasonal fruit and vegetables
7	and food storage to reduce wastage as a component of their CSI. Such areas of
8	nutrition education are considered important to include in CSI's, particularly when
9	educating individuals on low incomes ^{10, 22} .
10	The majority of practitioners agreed that people enjoy CSI's, a finding that concurs well
11	with the literature ^{6, 7} . However, the practitioners were divided over whether CSI's
12	actually facilitate long term change in food habits. The best way to evaluate any long
13	term change in eating behaviour is to utilize impact and outcome evaluation methods,
14	of which only a small number of practitioners in this survey applied. There is a need
15	for more research to focus on the effectiveness of CSI's in changing health outcomes.
16	The collection of data supporting long term behaviour change associated with CSI's is
17	essential for better understanding of the use of CSI's as a public health intervention.
18	CSI's have the potential to improve confidence and skills in cooking, and improve
19	knowledge in healthy cooking ^{4, 7, 8, 10, 21} , particularly when run by health professionals ⁷ .
20	Stead et al ¹⁶ makes the point that some individuals may be put off by the concept of
21	healthy cooking, and encourages practitioners designing interventions to include
22	healthy eating in innovative ways. This may include structuring cooking classes around
23	topics identified as important by participants and fitting healthy eating concepts into
24	these classes, rather than structuring the classes around healthy eating concepts ¹⁶ .

1	Abbott et al ²¹ found that Aboriginal people were motivated to attend cooking classes
2	and make dietary change principally due to the practical nature of the classes and the
3	provision of an enjoyable and supportive group learning environment.

4 CONCLUSION

- 5 The findings from this study indicate that WA practitioners and cooking mix well.
- 6 Many practitioners are currently using CSI's, feel they are a useful strategy in program
- 7 delivery, and are interested in gaining knowledge and skills on conducting effective
- 8 CSI's. However, it is apparent that more research is needed on the effectiveness of
- 9 CSI's in changing health outcomes. Particularly given the growing obesity rates in
- 10 children and adults in Australia^{1, 2} and the recent recommendation by the Standing
- 11 Committee on Health and Ageing to teach children and adults the benefits of preparing
- 12 and enjoying healthy and nutritious meals through initiatives such as cooking classes¹.
- 13

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19 Table 1 Health practitioner perceptions on cooking skills and cooking skill interventions

Questionnaire Item	Agree	Disagree	Undecided
	(%)	(%)	(%)
Cooking skills are declining in Western Australia	81	8	11
Cooking skills are an important factor in the	98	1	1
prevention of nutrition related disease			
Cooking skill interventions have the potential to	98	0	2
change dietary intakes			
People like to receive cooking knowledge in	87	2	11
interventions			
Practitioners have fully explored cooking's potential	17	63	20
as an effective public health strategy			
Cooking skills should be taught by health	57	19	24
practitioners			
People who participate in cooking skill interventions	55	6	39
make changes to dietary intakes			
Cooking skill interventions are a significant part of	30	65	5
my organisations program implementation			

20 Practitioners (n=84). Agree = agree plus strongly agree. Disagree = disagree plus strongly

- 21 disagree.
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29

Table 2 Practitioner rating of personal cooking knowledge and skill

Questionnaire Item	Very Good [†] (%)	Good [‡] (%)	Acceptable [§] (%)	Poor [¶] (%)	No Skills ^{††} (%)
Rate your personal cooking knowledge and skills	72	26	2	0	0
knowledge and skills Practitioners (n=78) [†] Can use al					

Practitioners (n=78). ⁺Can use all types of recipes, invent dishes without recipe, like to try new foods. [‡]Happy to use recipes although tend to stick to standard range of foods and dishes,

rarely try something new. [§] Can do basics but not adventurous. [¶] Find it difficult to prepare basic dishes, rather eat out. ^{††} Cant boil water, rely on others to cook for me, or always eat out.

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7 Table 3 Factors rated as a top priority by practitioners when choosing recipes and/or

8 cookbooks to use in cooking skill interventions

Factor relating to recipe/ cookbook	Number of practitioners who rated the factor as an area of top priority $(\%)^{\dagger}$
Nutritional value of recipes	62
Taste of recipes	49
Picture of finished recipes	46
Step-by-step written instructions	39
Cooking skill required	38
Cost of ingredients	29
Cultural considerations	28
Number of ingredients	25
Step-by-step picture instructions	23
List of utensils required	16
Title of recipe	6

Practitioners (n= 63). [†] Practitioners were able to select more than one factor as a top priority.