

# Towards healthy food retail: An assessment of public health nutrition workforce capacity to work with stores

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## Abstract

**Objective:** This article aims to investigate the capacity of nutrition professionals to engage in food retail practice change to improve population diet.

**Methods:** Convergent mixed method design was used that includes pre-interview surveys, in-depth interviews, and retrospective mapping of service provision. The study was conducted in organisations that provide a nutrition professional service to food retail stores in remote Australia. The study participants include 11 nutrition professionals and eight organisation representatives, including managers, organisation directors and policy officers. Systems-mapping and thematic analysis of the in-depth interviews were conducted using a capacity development framework. Descriptive analysis was applied to pre-interview survey and mapping data.

**Results:** A gap between the aspirational work and current capacity of nutrition professionals to engage effectively with stores was identified. Engagement with stores to improve population health was valued by organisations. Dominance of the medical health model limited organisation strategic support for store work and created barriers. Key barriers included the limited access to training, decision-support tools, information, financial resources and organisational structures that directed store work.

**Conclusions:** Provision of adequate store-specific training, resources and organisational support may empower the nutrition professional workforce to be powerful leaders in co-design for healthy food retail.

**Implications for Public Health:** Building capacity for this critical workforce to engage in food retail practice change must consider the influence of the broader health system and employer organisations and need for access to evidence-based decision-support tools.

**Key words:** Remote stores, Food retail, Public health nutrition, Capacity, Nutrition professionals

## Introduction

Optimising population diet is complex as the dietary patterns of populations are influenced by the food system and its social, cultural, economic and physical determinants.<sup>1</sup>

Understanding this food system and influencing these determinants to promote optimal nutrition and prevent illness is a core role of the public health nutrition workforce.<sup>1,2</sup> An emerging area of practice within this role is the partnering with the food industry to make food retail practices health-enabling. This collaboration of nutrition professionals with food retailers is showing great promise in effecting

customer food purchasing behaviour and in turn population health.<sup>3-7</sup> However, this type of partnership is novel for the public health nutrition workforce. Unique to remote Australia, governance structures of remote stores have enabled the collaboration of nutrition professionals with Aboriginal and Torres Strait Islander retail partners to improve community diet through store policy and store health promotion. In this setting, strategies to improve the food retail environment have demonstrated a meaningful impact on community dietary options and helped to reduce sales of nutrient-poor foods such as sugary drinks.<sup>8-11</sup> Exploring this unique experience of

### Abbreviations

ALPA, The Arnhem Land Progress Aboriginal Corporation; NT, Northern Territory; Far Northern QLD, Northern Queensland.

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nutrition professionals working with these communities therefore offers an important learning opportunity for the global public health nutrition workforce.<sup>3,6,12,13</sup>

Partnering with the food retail industry is a highly specialised area of public health nutrition. Due to the tensions between financial profit and health agendas, the co-design of balanced strategies that promote health while maintaining financial viability of stores requires specialist knowledge and skills.<sup>2,14–17</sup> On top of generalist professional competencies, nutrition professionals require analytical skills, communication skills, intervention management, implementation and evaluation skills and knowledge of health promotion principles and practices. Furthermore, the ability to apply these skills to different food retail settings requires a thorough sociocultural and political understanding of food behaviours, systems and policies.<sup>18–20</sup>

Due to the diverse range of skills and knowledge required, it may be unrealistic to expect novice nutrition professionals to be proficient to work successfully in a food retail setting. Time is needed to build expertise in applying these skills in addition to continual learning and professional development over many years of practice.<sup>18,21,22</sup> As the need for an alliance between food supply actors and nutrition professionals increases globally, the workforce needs to be well equipped to handle roles and responsibilities in this specialised setting. To date, to the best of our knowledge, there has been no examination of the nutrition profession's workforce capacity to undertake this responsibility.

This research therefore aimed to investigate the capacity of nutrition professionals to engage in public health nutrition strategies within the remote food retail setting of Australia. Workforce capacity not only relies on individual skills, knowledge and expertise but also on the structures that enable or hinder the application and ongoing development of competencies.<sup>20,23</sup> We aimed to assess workforce capacity through understanding the experience of nutrition professionals and their organisation's perspectives on the different elements of capacity that create barriers or support the workforce in their work with remote stores. Through this exploration, it is hoped that this research can highlight how strengthening the capacity of the public health nutrition workforce to work with food retailers has potential to make significant inroads to improving population diet among remote communities in Australia and more broadly in supermarket and other food retail settings.

## Methods

### Setting

The context of this research is the nutrition health service provided to Aboriginal and Torres Strait Islander communities and specifically to the food retail store businesses within these communities in remote Northern Territory, Australia.

Nutrition professionals servicing Aboriginal and Torres Strait Islander communities in remote Australia are largely employed by government and Aboriginal health service organisations that provide clinical, preventative and emergency health services and have a dual clinical dietetics and public health nutrition role.

The store setting in remote Australia includes stores owned and/or operated by different retail organisations and corporations. One of these organisations includes The Arnhem Land Progress Aboriginal Corporation (ALPA). The ALPA nutrition and health policy is

implemented in all 24 of ALPA-owned and/or operated stores in the Northern Territory (NT) and Northern Queensland (far Northern QLD), Australia. This policy sets a precedent for the prioritisation of nutrition and health promotion in stores. Health-enabling store layouts, consistent availability and subsidies of healthy foods and strategic health promotion marketing are examples of this policy's strategies. The policy is implemented by store managers and supported by the ALPA nutrition staff and the public health nutrition workforce where available. Other non-ALPA stores in remote communities may or may not have nutrition policies or health promotion strategies in place. This research was undertaken in collaboration with ALPA who through this research aimed to strengthen their partnership with the nutrition professionals and their organisations and to explore how they could work more effectively with this workforce.

### Study Design

Capacity was explored through the interpretation by the authors of the personal values, ideas and contexts of participants.<sup>24</sup> Data were gathered through a convergent mixed method design<sup>24–27</sup> that converged qualitative and quantitative type data to give an in-depth understanding of the important contextual characteristics of capacity and to strengthen research findings through triangulation of data.<sup>28</sup> “Systems-thinking,” the deep thinking about linkages, relationships, interactions and behaviours among the elements that characterise the system of interest,<sup>29</sup> was applied by the authors during data analysis to explore the complex relationships between different capacity components and to identify key leverage points for capacity strengthening. Authors' values and experience contribute to the interpretation of data. KDS is the ALPA Nutrition Manager and previously worked in the role of nutrition professional servicing remote communities with the NT government thereby bringing insider knowledge of the nutrition professional working context. JB also has had past experience with the NT government as a nutrition professional servicing remote communities, and has focused her research attention over the past two decades on health inequities and their determinants and specifically on factors impacting nutrition improvement with Aboriginal and Torres Strait Islander communities in remote Australia. CT at the time of the study was a recent Master of Dietetics graduate and GD a Bachelor of Nutrition Science graduate. JC has experience as a foodservice and clinical dietitian and works as an academic, with her research considering health service systems and the nutrition profession.

### Participants and recruitment

Nutrition professionals were recruited via convenience sampling. Potential participants (n=11) were identified and invited by email from a list developed by KDS of all nutrition or dietetic professionals who, in 2019, provided public health nutrition services to remote communities in the NT or Far Northern QLD and had at least one community in their service area with an ALPA-owned and/or managed store.

Participating nutrition professionals identified 17 health service providers who had responsibility for setting the direction and strategy that informed the work of nutrition professionals. Health service providers who were direct line managers, team leads and/or relevant government policy officers were contacted by JB via email and invited to participate. This excluded high level executives identified by the

health service providers, such as CEOs and/or government ministers. The health service providers are referred to as stakeholders herein.

**Procedures**

Semi-structured interviews were conducted face-to-face or via phone with nutrition professionals and stakeholders over the period July to December 2019, by JC and JB. JC had no existing relationship with participants she interviewed. Prior to the first interview, she accompanied a participant to a remote community to observe the service activity provided to the community to add context to her interviews. JB was known by and knew many of the nutrition professionals or stakeholders she interviewed. Data were audio recorded and transcribed using a professional transcription service. Interview guides (Supplementary Table 1) were informed by a capacity framework (Figure 1) adapted from the NSW health department “Framework for building capacity to improve health”<sup>30</sup> and the Adaptive capacity wheel<sup>31</sup> and designed by GD and JB with input from co-authors to gather perspectives of capacity to work in the remote retail setting. The capacity framework (Figure) included six capacity domains including organisation support, workforce development, leadership, partnership, resources and autonomous change. Interview guides were piloted and refined prior to data collection.

Pre-interview, participants completed a structured online survey (XM, Qualtrics, Proto, UT, 2018) designed by GD with input from co-authors about capacity to work with remote stores. This survey was conducted for demographic data collection, data triangulation and interview readiness (Supplementary Table 2). Nutrition professionals also participated in retrospective mapping of service provision where phone calls made at the end of each week by GD aimed to map the dose and reach of nutrition services provided to remote stores by participants during an 8-week period (NT 8 July – 30 August 2019, far Northern QLD 19 August - 11 October 2019) (Supplementary Table 3).

**Data Analysis**

Descriptive statistics including n (%) and median and interquartile range (IQR) were generated by JC and GD to report aggregate or participant level findings of pre-interview survey and retrospective mapping of service provision data, for NT and far Northern QLD nutrition professionals separately.

Thematic analysis of de-identified interview transcripts was conducted deductively by GD and CT with input from JB using NVivo Software (NVivo version 12, QSR International, Burlington, MA, USA, 2018) and the capacity framework.<sup>32,33</sup> Interview data of nutrition

Figure 1: Capacity framework adopted in research for exploring the current capacity of the public health nutrition workforce to work with remote food retail stores<sup>1,2</sup> Figure adapted from The NSW Health Department Capacity Building Framework and The Adaptive Capacity Wheel<sup>1,2</sup>



1. Hawe P. A framework for building capacity to improve health. New South Wales Health Department. 2001;  
 2. Gupta J, Termeer C, Klostermann J et al. The adaptive capacity wheel: a method to assess the inherent characteristics of institutions to enable the adaptive capacity of society. Environmental Science & Policy. 2010;13(6):459-471.

professionals and stakeholders were analysed separately using codebooks that were pre-piloted by GD, CT and JB by checking alignment of coding for one interview from each data set before commencement of coding. Coding of nutrition professionals interviews was conducted by GD and stakeholder interviews by CT<sup>34,35</sup> (Supplementary Table 4). A second phase of inductive coding was conducted by GD and CT where major themes for each data set were drawn out from the coded data using annotation functions in NVivo and Microsoft word. Annotations were transferred to a Microsoft Excel spreadsheet where they were organised into themes under each code and then consolidated to create major themes within each capacity domain.<sup>33,35</sup> Key quotes were identified under each theme.

Following thematic analysis, the two sets of data were converged where final themes from nutrition professionals and stakeholders were compared and contrasted by GD and CT. With the input from co-authors, these themes were consolidated by GD to draw major findings on the different individual, organisational and system-level factors that contributed to the capacity of the nutrition professionals to work with stores. Preliminary coding data were re-referenced by GD to ensure interpretations were appropriate, to add nuance and extract additional quotes. Systems-thinking was also applied by GT and CT with input from JB to develop a systems map of these factors.<sup>29</sup> Developed using VensimPLE software (8.0, Vensim), the major and subthemes were broken down into smaller elements and added as variables and links in the systems map by GD. Findings were reported to nutrition professional participants and participating stakeholder organisations by GD, JB and KDS.

## Results

Eleven nutrition professionals and eight stakeholders (total n=19) participated in a semi-structured interview. Of the nutrition professionals, seven were employed in the NT and four in far Northern QLD. The employment structures of the nutrition professional's positions varied between employing organisations and state/territory jurisdictions. Seventy percent of the NT roles were split clinical and public health nutrition ongoing service delivery type positions, compared to the far Northern QLD participants, whose roles were largely non-clinical, project-based positions. Stakeholders represented different levels of responsibility within the health system. Two were employed as policy officers for the state/territory government, two were the head of their department and the remaining four were direct line managers of participating nutrition professionals. Ten nutrition professionals (91%) and seven stakeholders (88%) completed the pre-interview survey. Participant characteristics from this survey are presented in Table 1.

### Retrospective mapping of service provision

Nine (82%) nutrition professionals completed the retrospective mapping of service provision. One participant withdrew due to time constraints and another due to overlapping scheduled leave. Throughout the 8 weeks of mapping, NT participants spent a median of 30 (IQR 0, 131) minutes per week on store work, while far Northern QLD participants spent a median of 0 (IQR 0,30) minutes per week (Table 2). Most of the activities reported involved on-the-ground support for store managers. This included building relationships with managers, offering health promotion recommendations and

answering nutrition-related questions. NT participants reported that the majority of store-work time was spent on the collection of the Market Basket Survey (MBS) directed by an NT government strategy.<sup>36</sup> Tasks such as meeting with store stakeholders (store boards, store manager, store organisations), nutrition policy development and structured in-store health promotion activity were not reported frequently in the 8-week period.

### Major findings: Nutrition professional's role working with remote stores

Both nutrition professionals and stakeholders expressed that work with stores was important to address issues such as food availability and affordability. Nutrition professionals and stakeholders described the public health nutrition workforce as "on-the-ground" support for store managers and staff. They worked collaboratively, were responsive to questions, assessed food availability, made recommendations and helped guide store managers and staff in their endeavours to promote healthy foods. Activity performed by nutrition professionals was considered by nutrition professionals to be mostly at a basic level (group/staff education, individual store assessment/support, cooking demonstrations) rather than at a strategic level (e.g., partnering with stores at an organisational level, influencing store nutrition policy, store board engagement, healthy marketing strategies).

These strategic "higher-level" activities were viewed by nutrition professionals to be more effective in the long term, able to withstand frequent store staff turnover and to potentially have bigger impact on community health outcomes. A few nutrition professionals had participated in this type of work with stores in the past, including implementing healthy food promotion projects and product displays. No participants reported working with store boards or on store nutrition policies. Some participants expressed they faced barriers to fulfilling this aspirational role.

"I guess previously, not an awful lot. I've talked to them about having different posters and things in their store, which most of them have been pretty happy with. But yeah, definitely going to be working with them more about advocating for availability of different products and ensuring stock levels of healthy foods that are appropriate." (N11)

### Organisation support

While individual stakeholders supported and valued store work, organisational structures were barriers to store work. Barriers included (1) prioritisation of clinical work over work with stores due to a focus on the medical health model within organisation policies; (2) limited role definition, formal communication or guidance about store work requirements; (3) limited stakeholder knowledge to provide guidance and leadership to nutrition professionals; and (4) lack of reporting requirements for store work.

Dominance of a medical model of the health system was seen at the organisation and health system levels, where store-related outcomes were often omitted in health service goals, direction and policy. Nutrition professionals independently managed the tension between the plethora of public health duties, clinical duties and differing community contexts in a number of different community settings with minimal organisational guidance. Although working with stores was perceived to be a pivotal part of a nutrition professional's roles, this was not clearly defined or formally communicated by

**Table 1: Characteristics of nutrition professionals (n=10) and stakeholders (n=8) as reported in pre-interview survey.**

	Nutrition Professionals (%)	Stakeholders (%)
Gender n (%)	Male	0 (0)
	Female	11 (100)
State n (%)	NT	7 (64)
	Far Northern QLD	4 (57)
Workforce Role n (%)	Split Clinical/PHN	7 (70)
	PHN only	3 (30)
Stakeholder relationship to workforce n (%)	Department head	2 (25)
	Direct line manager	4 (50)
	Government policy officer	2 (25)
Employer Health Service n (%)	Government	5 (45)
	Community corporation	4 (50)
Years working in PHN (years n %)	Categories	
	≤ 3 years	3 (30)
	3.1 – 4.9	4 (40)
	≥ 5 years	3 (30)
Years working in remote communities n (%)	Categories	
	≤ 3 years	5 (50)
	3.1 – 4.9	4 (40)
	≥ 5 years	1 (10)
Years working with Remote stores n (%)	Categories	
	≤ 3 years	6 (60)
	3.1 – 4.9	3 (30)
	≥ 5 years	1 (10)
Number of stores served by nutrition professionals n (%)	Categories	
	≤ 3 stores	4 (40)
	4-5 stores	3 (30)
	≥ 6 stores	3 (30)
Self-reported percentage of time allocated to store work in current role	Median (IQR)	10 (6,3,10)
	Categories n (%)	
	≤5%	3(30)
	10%	5 (50)
	20%	1 (10)
	≥30%	1 (10)

NT, Northern Territory; QLD, Queensland; PHN, Public health nutrition.

**Table 2: Remote store tasks and duration completed by nutrition professionals during 8-week mapping period.**

	NT (n=5)	Far Northern QLD (n=4)
Total combined time spent on store work for 8-week period (mins)	3145	1205
Percentage of combined total store work time spent		
-In store (%)	58	38
-Preparing for trips (%)	7	7
-On "other" <sup>a</sup> store related tasks (%)	34	55
Number of minutes spent on store work per week per participant	30 (0,131)	0 (0,30)
Median (IQR)		
Total combined number of store visits for 8-week period	29	6
Number of minutes spent in store for 8-week period per participant (aggregated data for all store visits)	60 (15,90)	60 (26,105)
Median (IQR)		

<sup>a</sup>Time that was not spent in store during visits, or in preparation for visits. Included tasks such as; project planning, professional development, communication type activities etc.

organisations. The majority of the nutrition professionals therefore reported no clear guidelines regarding work requirements in this retail setting. This made it hard to prioritise this work, particularly in the face of depleted manpower, competing pressures and the challenges associated with store work. The level of flexibility required to be responsive to community needs made addressing these barriers difficult.

“Obviously, the priority for the Department is around health in these communities, generally speaking, but, in terms of stores specifically, I don’t think we have really clear directive or guidance on what we should be doing with them or how we should be doing it. So yeah, I think, hence why the work we do with stores probably varies quite a lot between (Nutrition professionals) and between communities.” (N9)

“They’re just a bit under resourced to work in population health but they’re certainly very interested... I think it could support both of them to do more work in that area...they’re quite underfunded in that area and a bit overwhelmed by the clinical work they’ve got to do. But I think having a structure in place helps you actually prioritise that. Make the time for it.”(S1)



Not all stakeholders had a clear understanding of the services the nutrition professionals were providing to stores in their area and if the service delivered met organisation expectations. One stakeholder acknowledged that the lack of organisational direction involving remote retail settings was due to gaps in their own retail knowledge. Minimal reporting expectations between the nutrition professionals and key stakeholders within their organisations meant limited opportunity to present data highlighting achievements or gaps in store work and gain stakeholder support.

While there were gaps in the organisational support of store work, NT stakeholders and nutrition professionals identified the Market Basket Survey (food availability and price survey) as a structure which enabled work with stores.<sup>36</sup> This territory-wide government strategy was reported as a key role of NT nutrition professionals within stores, and this survey data were used to highlight food supply issues. Other policies mentioned by two of the NT participants were the NT Government Department of Health “Nutrition and Physical Activity Strategy,” which was reported to include three Key Performance Indicators (KPIs) related to the remote food retail setting. These KPIs were at the discretion of the nutrition professional’s organisations and managers to manage and enforce.

### Workforce development

Nutrition professionals prioritised and cultivated community relationships which allowed them to have a good understanding of the communities they serviced and be led by community direction. They showed commitment and passion for their work and demonstrated adaptability when faced with challenges. Nutrition professionals expressed a range of characteristics that supported their work with stores including optimism, persistence, resilience, understanding of community nutritional needs, communication skills and the ability to build and maintain valuable networks and partnerships.

Participants indicated limited confidence in their expertise to independently facilitate collaboration between the health sector and stores to support the implementation of store based public health nutrition strategies. The “business vs. health paradigm” alongside the cultural context of communities contributed to this. Participants were interested in training opportunities to accelerate skill development. They aspired to increase their confidence and self-efficacy to work with stores in the areas of store operations knowledge, marketing, store licensing, store nutrition policies, sales data analysis, key stakeholder engagement and successful “upstream” strategies for public health nutrition practice in stores.

“I think I can absolutely see the benefit of doing some type of activity in the store with the store...However I guess my confidence isn’t there to know what to do. And in my time here there’s not been directive from either my organisation, [store organisations], or the private stores to say this is what could be useful. But the prospect of having something that’s more solid or that I know is being done elsewhere I’d absolutely...advocate to my management to say that’s useful because we know that food environment is so important and it could have much greater effect if there are changes made or different things are supported. So it annoys me that I don’t know how to work with stores better. So I’d be so open to that [training].” (N7)

Stakeholders identified that for novices to work effectively in this setting, knowledge development of community context,

merchandising, commercial retail and store governance structures areas were key, in addition to possessing good communication skills for policy negotiation, advocacy, conflict management and relationship building in order to influence store board members and policy makers. Limited store-specific training or professional development opportunities however were available for nutrition professionals and access to these was constrained by financial restrictions, limited training resources, access to experienced personnel and manpower. Instead, stakeholders relied on the expertise of more experienced stakeholders, knowledge sharing through peer networks and upskilling facilitated by “on-the-job” learning, which were highly valued and accessed by the nutrition professionals. Networking with both peers, community and store stakeholders, was largely facilitated by nutrition professionals themselves.

I think they can bring some great knowledge in terms of theory and products and health promotion initiatives. But I think what they really need support in is actually talking the shop talk and looking at how do you balance promoting your nutrition without causing the store to lose significant amounts of business and then have to close because then you’ve got the risk of food security and it’s a much bigger concern.” (S7)

### Partnerships

Building partnerships was identified as a vital and challenging aspect of nutrition professional’s role within remote communities. Participants described an adaptive strength in proactively engaging a variety of stakeholders and building the networks to enhance the community’s public health capacity. Getting past “initial introductions” to engage in “higher level” activity with stores however was seen to be particularly challenging. Frequent store staff turnover, lack of time to build effective relationships, low frequency of contact with stores and limited experience in the setting were said to contribute to this. Respecting and understanding a store’s business objectives and their need to remain financially viable were an important part of building trust within these partnerships. The majority of nutrition professionals suggested that specialist knowledge and resources would help them to understand these objectives and enable an effective co-design approach for manager engagement.

### Resources

Stakeholders unanimously indicated that a lack of financial resources underpinned limited workforce capacity to collaborate with stores. Within some organisations, limited funding for positions had led to the workforce servicing several communities and for some, carrying out dual public health nutrition and clinical dietetics roles. These “stretched” nutrition professionals had less time to invest in building relationships with stores essential to the aspirational work described such as policy, advocacy, and evaluation of outcomes.

“I don’t think there is capacity to do the clinical on top of the public health for five communities but we will just stretch them into - just like everything. This is what is expected.” (S5)

Funding for resource development, training, and monitoring and evaluation was said to have “dried up.” At the organisational level, this contributed to less available data to inform practice, demonstrate outcomes and inform policy. In addition, no platform existed for nutrition professionals to regularly present data to stakeholders and

other policymakers to highlight achievements or gaps in their work with stores.

Furthermore, gaps were identified in the workforce's access to evidence-based information on store interventions, successful past approaches, store sales data and store nutrition policies. Participants therefore relied on sourcing helpful information through their professional networks. When equipped with tools such as the Market Basket Survey and a purpose-designed tool, Store Scout App, nutrition professionals described these tools as enhancing their capacity to work with stores, facilitating engagement with store staff, giving purpose to store visits and providing intelligence to guide their work.<sup>36,37</sup>

### Leadership

Minimal leadership shown by the Australian federal government to improve food environments of remote communities including remote stores was mentioned as impacting capacity. Some stakeholders felt an "individual approach" to health improvement was prioritised within the Australian health system. This approach placed more importance on clinical dietetics work to address the determinants of diet-related disease rather than a broader public health approach. This was particularly noted for QLD, where there was 90% reduction of the government funded public health nutrition workforce between 2009 and 2013. The ability to support store work now relied on "soft funding" from short-term grants and temporary project positions.<sup>38</sup>

"Although the health department as a whole here should be worrying about the health of the whole population, they tend to focus in our own clinics and actually the population that goes to our sector now is a bit larger so it's a bit of a narrowminded kind of view...they're still pretty narrowly focusing on the clinics ... and it would be better if they took a bit more of a leadership role across the board as well." (S1)

Support from higher levels within organisations through advocacy and strategy was described to have a positive impact on capacity for store work. Nutrition professionals reported how increased organisational awareness of food security issues and "the bigger picture" lead to a reduced emphasis on downstream individual approaches such as community dietetic referrals and transition to community-level approaches. Examples of this leadership were the inclusion of food security and store work in the Northern Territory government health strategy, which were reflected in internal organisational statements and policies.

Nutrition professionals differed in their attitudes toward whose responsibility it was to initiate and lead the charge in working with stores. Many nutrition professionals were willing to take initiative in this space. One participant spoke of the tension they balanced between taking the lead and allowing the communities or store organisations to lead action within stores. For this reason and other challenges, some interviewees reported that novice nutrition professionals particularly may prioritise other community settings and activities where they felt most confident and would receive greatest reward for time invested. Stakeholders felt that nutrition professionals would be well-placed to be leaders in working with stores however highlighted that a lack of manpower and specialised skills may restrict them from acting in this way.

### Systems-thinking

The application of systems-thinking and the resulting systems map (Figure 2) revealed key leverage points. One leverage point included the workforce access to learning opportunities specific to the remote setting. This gap was shown to impact the nutrition professional's self-efficacy to work with stores and their time allocation for this setting. There was minimal opportunity for "on-the-job" learning, which further reinforced the need for upskilling. Another key leverage point was strengthening of organisation managerial value for store work. Low managerial direction impacted the communication of expectations for workforce store engagement and contributed to individual-level priority setting in health improvement. A lack of structures to collect and report evidence on store-related work and issues reinforced this.

### Discussion

This mixed-methods research provides a novel synthesis of the current capacity of a workforce uniquely positioned from a global perspective to provide a nutrition service to a food retail setting. It highlights the significant strengths of nutrition professionals and the barriers faced by this workforce in engaging with the food retail sector to improve population health. This investigation of the remote community context of Australia, where a nutrition professional–food retailer relationship has existed for some decades, demonstrates how policy and organisational structures interplay with individual capabilities, to effect workforce capacity. A lack of policy directive to support store work at the organisational and health system levels is preventing this workforce from developing their capacity to perform tasks and achieve the outcomes they desire. While nutrition professionals enter their work with stores with a valuable set of competencies, gaps exist, and up-skilling is needed to work in the specialised setting of health-enabling food retail.

Engaging with remote food retail for improved population health is a specialised context for public health nutrition as reported in the literature.<sup>16,17</sup> A 2019 systematic literature review by Cedric et al. demonstrates that intervention in the food retail setting requires the consideration of a long list of factors including the conflicting values regarding health promotion and commercial viability, logistics of product supply, consumer characteristics and demand, multi-store competition and government regulations. Individual store cultures, structures and operations of retail businesses and the existence of consistent collaborative relationships between store actors were shown to impact the implementation of healthy food-store interventions.<sup>17</sup> The public health nutrition graduates have extensive nutrition knowledge and competencies that may be applied to different settings.<sup>21</sup> The complexity of the retail setting however may be overwhelming for a novice practitioner not sufficiently equipped with the necessary skills and knowledge to navigate these factors unique to retail public health nutrition work. As suggested by Hughes et al., continual learning and ongoing setting-specific competency development is vital.<sup>18,20</sup> This research demonstrates that expecting nutrition professionals to have health-enabling food retail expertise may be unrealistic due the absence of store-specific training, the limited time spent building expertise through "on-the-job" learning and the reduced access to guidance from experienced personnel.

This research highlights the importance of policy and organisational structures in the formation of workforce capacity. Capacity of health





overall improved their practice.<sup>16</sup> Similarly, the provision of decision-support tools such as the “Store Scout App” and the “remote Indigenous Stores and Takeaways” (RIST) tool have also been shown to effectively facilitate work with stores.<sup>37,54,55</sup> Equipping the workforce with resources that aid store assessments highlight potential solutions as these facilitate on the job skill development and provide more structure and guidance for work with stores.

### Limitations

A strength of this research was its capturing of participant views from two jurisdictions, the Northern Territory and far Northern QLD, that differ substantially in their public health nutrition workforce capacity and the insider knowledge of the study context within the research team. The sample of four participants working in the state of QLD however may not be an adequate sample to capture the diversity of the QLD public health nutrition workforce (S1, S6, S7). The retrospective mapping of service provision for the NT participants occurred when the Northern Territory Government MBS data were being collected which may mean mapping data underestimate additional store activity to that of the MBS; however, the MBS was seen by participants as providing a tool to engage with stores, which was challenging otherwise. While there is a chance that the pre-interview survey and interview content may have influenced the type of activity or total time spent with stores and therefore the mapping data, this influence is likely to be minimal as visits to communities are at most times planned in advance.

All nutrition professionals were connected to ALPA stores; however, results also attain to participant work with non-ALPA stores. Research outcomes can therefore be extended to apply to the wider remote store work of nutrition professionals employed in similar government and Aboriginal health service roles particularly for those in the NT. Furthermore, evidence is emerging outside of the remote context in Australia and overseas where the health sector has engaged with the food retail sector to implement public health nutrition and retail strategies that aimed to improve store food environments.<sup>17,56,57</sup> These studies reported similar need for skill development and barriers including; the conflicting values regarding health and commercial viability, engaging store owners or managers and the insufficient knowledge and capacity of personnel for retail health promotion.<sup>(19, 58)</sup> Therefore, these research findings have relevance to a broader workforce of nutrition professionals who are working in food retail settings across the globe.

### Implications for Research and Practice

Capacity of the nutrition workforce is impacted by a multitude of systemic factors acting at the health system, organisation, individual and community levels. The excellent networking and communication skills, adaptability, and commitment to serving the needs of community cannot be overlooked when considering the capacity of nutrition professionals. Interventions that further equip these professionals with additional store-specific training, resources and organisational structures that outline clear expectations and guidance for store work may provide practical support and empower this critical workforce to be powerful “on-the-ground” leaders in co-design for health-enabling food retail.

### Conclusion

A gap between the aspirational work and current capacity of nutrition professionals to engage effectively in health-enabling remote food retail was identified. Key barriers included the limited access to training, decision-support tools, evidence-based information, financial resources and health service organisational structures that prioritised and directed store work. Provision of adequate store-specific training, resources and organisational support may empower the nutrition professional workforce to be powerful leaders in co-design for healthy food retail. Capacity building of this critical workforce for health-enabling food retail must consider the influence of the broader health system and employer organisations and the need for access to evidence-based decision-support tools.

### Ethics approval and consent to participate

This study was led by Monash University in collaboration with the Arnhem Land Progress Aboriginal Corporation. All procedures involving research study participants were approved by the Northern Territory Department of Health and Menzies School of Health Research Human Research Ethics Committee (HREC) [EC00153], Central Australian HREC [EC00155] and Far North QLD HREC [EC00157], and Monash University HREC [EC00234]. Written informed consent was obtained from all subjects. Letters of support were gained from all six participating organisations.

### Consent for publication

Participants provided consent with the understanding of the research being published.

### Availability of data and material

Access to data will be considered on direct request to the corresponding author.

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### Authors' contributions

GD, JC, KDS and JB conceptualised the study. JC and JB interviewed participants. GD undertook the mapping activity with participants. GD and CT conducted the data analysis, guided by JB. GD led the writing of the manuscript with JB and critical intellectual input from all authors. All authors reviewed and approved the final manuscript.

### Notes

This study was led by Monash University in collaboration with ALPA. All procedures involving research study participants were approved by the Northern Territory Department of Health and Menzies School

of Health Research Human Research Ethics Committee (HREC) (EC00153), Central Australian HREC (EC00155) and Far North QLD HREC (EC00157), and Monash University HREC (EC00234). Written informed consent was obtained from all subjects. Letters of support were gained from all six participating organisations.

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## Conflicts of interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Julie Brimblecombe reports financial support was provided by the National Health and Medical Research Council. Co-author Khia De Silva was employed as Nutrition Manager by The Arnhem Land Progress Aboriginal Corporation (ALPA). This co-author had no input in to data collection or analysis and had input in to all other aspects of the study.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.anzjph.2023.100056>.