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Maggie Beer's Big Mission: implementation and service-system outcomes of a multi-component and multi-disciplinary mealtime model in residential aged care

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Abstract

Background Older people living in residential aged care homes are at high risk of malnutrition. This study evaluated the implementation and service system outcomes of a multi-component and multi-disciplinary mealtime model that sought to transform the meals and dining experiences in a single aged care home.

Methods Mixed methods were used to examine the acceptability and adoption of the model through semi-structured interviews, alongside audits and direct observations of mealtimes. Measures were taken at three time points: baseline (T0), early implementation (T1), and early maintenance (T2), spanning a 10 month period. Normalisation Process Theory was used to examine mechanisms supporting early embedding of the model.

Results Staff and residents endorsed the acceptability and adoption of the mealtime model, with perceived improvements in aspects of meal quality, meal access, and mealtime experiences. Audit and mealtime observation data demonstrated service-system change with a transition towards more person-centred mealtime care practices and a calmer, more home-like dining environment. Factors mediating implementation and service-system outcomes included a shared vision, project timelines, external accountability, communication, training, role modelling, and leadership. There was evidence that normalisation processes had been activated to help embed the model into routine mealtime care.

Conclusions The study provides evidence for the acceptability and adoption of the multi-component mealtime model from the perspectives of staff and residents. The findings demonstrate that aspects of meal quality, meal access, and mealtime experiences can be transformed simultaneously, enabled by a systematic and multi-disciplinary approach. Future research is needed to examine the sustainability and cost-effectiveness of the model.

Keywords Aged care, Dining, Malnutrition, Person-centred care, Multi-disciplinary care, Implementation research, Residential care

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Background

The Royal Commission into Aged Care Quality and Safety in Australia in 2021 revealed the national failings of the aged care system and the need for greater care, dignity, and respect for older people [1]. The quality of food and mealtime experiences, as well as high rates of malnutrition were identified as areas requiring immediate attention, given associated mortality, morbidity, and economic burden [2, 3]. Many of the factors contributing to malnutrition are modifiable, spanning levels of the food system and presenting opportunities for proactive and preventative interventions [4–7]. Changing food systems and improving quality of nutritional care and mealtime experiences are, however, inherently challenging processes given the complexity of the aged care system and engrained nature of task-oriented care [6–9]. The need for feasible multi-component mealtime models has been highlighted internationally to drive practice change, modify nutritional risk, and improve quality of life outcomes for residents, holistically [6, 9, 10].

Multi-component models of mealtime care target more than one determinant or level of the food system simultaneously, offering broader potential to improve nutritional health and wellbeing outcomes, compared to single level interventions [6, 10]. For example, targeting aspects of meal quality, meal access, and/or mealtime experiences, which have been identified in the *Making the Most of Mealtimes* (M3) model as critical determinants of food intake and, as a result, can significantly impact the nutritional health and wellbeing of residents [6]. Previous research has identified evidence-based strategies that could be combined in multi-component models such as renovations to the dining room (e.g., creating smaller and more home-like dining spaces) and interventions to promote choice and self-service (e.g., using communal serving dishes or offering restaurant-style continental breakfasts) [10]. Staff training in nutrition and mealtime assistance skills have also been embedded within multi-component models [10, 11]. The component strategies have been associated with increased food consumption, independence, and social interaction during meals, contributing to more positive and health-promoting mealtime experiences [10, 12, 13].

While more mealtime intervention studies are being published, few have systematically targeted aspects of meal quality, meal access, and mealtime experiences simultaneously, or measured implementation outcomes across each of these domains [10]. For example, an integrative review by Heikkilä and colleagues [9] found that most mealtime interventions have focused on a few aspects, rather than the whole, complex, and dynamic mealtime context. It is known, however, that making even small changes to food and dining in residential aged care is challenging [14], requiring change in the management

control system, in addition to attitudinal and behaviour change in leadership and frontline staff [9, 15]. Further, staff across levels of the organisation require support to prepare for, implement, and sustain change [8, 9, 11, 14, 15]. Previous mealtime intervention studies have used implementation strategies like audits and feedback, education and training, staff meetings, champions, visual reminder systems, and environmental re-structuring [12, 15, 16]. The need for mentoring and coaching beyond classroom training and instruction has been highlighted to enable staff to enact new mealtime care practices [17, 18]. Additionally, the role of multi-disciplinary input, effective leadership, and external facilitation have been identified as important mechanisms for empowering and engaging staff in change processes [9, 18, 19–21], drawing on implementation science, behaviour change, and organisational change theories [16, 20].

Kotter's Change Model [22] and Normalisation Process Theory (NPT) [23] are two complementary frameworks with potential to support future mealtime implementation research. Both theories emphasise the importance of a shared vision and understanding of the need for change, and outline actions that staff and teams must take to empower, enact, build on, and institutionalise change. Kotter's model helps formulate an implementation plan, while NPT examines the mechanisms of action underpinning change. NPT consists of four main components: coherence (sense-making), cognitive participation (engagement and commitment), collective action (collaborative work to embed practices), and reflexive monitoring (appraisal of the intervention to refine and sustain the model) [23]. Utilising these implementation frameworks has potential to support the adoption and embedding of new models of mealtime care in real-world care settings.

Study aim

This study aimed to evaluate the implementation and service-system outcomes of a multi-component and multi-disciplinary mealtime model. Guided by the M3 model [6], transformational processes targeted aspects of meal quality, meal access, and mealtime experiences simultaneously by activating behaviour, practice, and culture change across resident, staff, and organisational levels. The implementation process was documented in a three-part television series (*Maggie Beer's Big Mission*) [24] featuring Maggie Beer AO, an iconic Australian cook who has advocated for improved nutritional care in residential aged care homes for over a decade through her work with the Maggie Beer Foundation [25]. Clinical outcomes for residents will be reported in a separate paper. The specific aims of the study were to:

1. Examine the acceptability and adoption of the mealtime model from the perspectives of staff and residents.
2. Evaluate the service-system outcomes using audits and direct observations of mealtimes to assess whether shifts towards more person-centred mealtime care and a more home-like dining environment occurred.
3. Examine factors influencing the implementation of the model and activation of normalisation processes.

Methods

Research design

A mixed methods design was used to examine the implementation and service-system outcomes of the multi-component and multi-disciplinary mealtime model. This involved the simultaneous collection of qualitative and quantitative data for exploration and evaluation purposes, appropriate in early implementation research [26]. Implementation processes and mediating factors were examined across a 10-month period (July 2023 to May 2024). Data were collected across three timepoints; baseline (T0), early implementation (T1), and early maintenance (T2). The study was conducted in an applied, real-world setting (i.e., working aged care unit) and approved by the University of Tasmania Human Research Ethics Committee (Project ID: 29040).

Setting and context

The mealtime model was implemented in one area of a single aged care residence in Perth, Western Australia, home to 44 residents. The organisation responded to a request for expressions of interest to host the project and feature in the television series. The organisation had introduced a new model of care, *Partners in Care*, 12-months earlier. The executive team saw this as an opportunity to advance their culture change efforts through a focus on mealtimes and leveraging the support provided by the Maggie Beer Foundation and external consultants engaged to coordinate the project. External funding supported production of the television series including project coordination, involvement of the Maggie Beer Foundation, as well as a portion of the evaluation costs (e.g., contributed towards a research assistant [RA] position). The organisation was responsible for funding all major renovation works related to equipment purchases, as well as costs of external consultants who trained and mentored staff.

Participants

Recruitment occurred between June and July 2023. Convenience sampling was used, given the applied nature of the research, conducted in a single area of the aged care residence. All 44 residents, and all regular staff

(approximately 60) working in the unit at the time of the study, including the external consultants, were invited to participate and were informed about the study through posters, flyers, letters, resident and family meetings, and one-on-one conversations.

Thirty of 44 residents (68%) and/or their legally appointed decision-makers consented to participation in the evaluation; 63% were female, with an average age of 89.07 years (range: 75–105 years). While few of the residents had a formal diagnosis of dementia, 92% presented with some degree of cognitive impairment on the Montreal Cognitive Assessment (MoCA) [27], with a mean score of 13.68/30. 78% of residents were identified as malnourished or at risk of malnutrition on the Mini-Nutritional Assessment Short Form (MNA-SF) [28]. The external consultants, an experienced occupational therapist, registered nurse, and dietitian, completed the MoCA and MNA-SF respectively at T0 and T1. The MoCA was not re-administered at T2. A senior nurse was trained by the external consultants to complete the MNA-SF at T2, supporting the organisation to take over responsibility for outcome measurement. The consent provided permission for de-identified data to be provided to the external research team for evaluation purposes.

Twenty six of approximately 60 staff (43.3%), including five external consultants and two members of the film production crew, consented to participation in the evaluation, with an average of 12 (SD=9.31) years of experience working in aged care and 4.81 (SD=5.28) years of experience working at the organisation. The majority of staff and external consultants were female (88.5%), representing a range of roles (e.g., leadership, nursing, care assistants, allied health, food service, and leisure and lifestyle). Participant demographics are provided in Table 1. Any instances of missing data will be discussed in the separate paper on clinical outcomes.

The developed mealtime model

The model was developed in partnership between the organisation and the external consultants (MB, EO, JS). The development process involved conversations to understand and build on the organisation's existing *Partners in Care* model. Audits and evaluations were conducted to gather baseline data regarding aspects of meal quality, meal access, and mealtime experiences, identifying opportunities for improvement. The audit and evaluation findings were used to create a comprehensive baseline report for the organisation to identify opportunities and priorities for change. An outline of the audit tool is provided as Supplementary Material. Targets for change were identified, guiding the selection of evidence based components and implementation strategies, based on previous research [10, 12, 15, 20] and the *Creating an Appetite for Life* program developed by the Maggie Beer

Table 1 Demographics of residents and staff at baseline

Resident characteristics	Mean (SD)/Total (%)	Staff characteristics	Mean (SD)/Total
Age	89.07 (6.99, range: 75–105)	Female (male)	23 (3)
Female (Male)	19 (11)	Years working in aged care	12 (SD = 9.31, range: 0.6–45)
Cognitive impairment (/30)	13.68 (7.39)	Years working at the organisation	4.81 (SD = 5.28, range: 0.2–19)
Weight	68.92 (14.00)	Position	Total: 26 (7 external)
BMI*	25.42 (5.36)	Executive / leadership	3
Underweight (< 23)	10 (35.7%)	Nursing	3 (1)
Healthy weight (24–30)	13 (46.4%)	Staff development	1
Overweight (> 30)	5 (17.9%)	Personal care assistants	7
Nutritional status (MNA-SF [^] ; /14)	10.60 (2.18)	Chef / cook	1 (1)
		Food service assistants	2
Depression (GDS [#] ; /15)	5.09 (3.26)	Leisure and lifestyle	1
		Allied health	1 (3)
		Film production team	(2)

*Adjusted BMI cutoffs used noting increased risk of mortality in older people with a BMI < 23.0 [29]

[^]Mini-Nutritional Assessment Short-Form (MNA-SF) [28] used to identify malnutrition risk

[#]Geriatric Depression Scale (GDS-15) used to screen for depression [30]

Foundation [31]. The co-developed components of the mealtime model included (1) meals, (2) dining environment, (3) buffet, and (4) activities and roles; each with its own aim and elements as detailed in Table 2. Staff across all levels of the organisation had the opportunity to contribute to the development process through the care training workshops and staff meetings held during the planning and preparation stage.

Implementation of the model

Implementation of the model was coordinated by the external consultants (EO, JS), with a focus on training and capacity building of staff and physical renovations to the dining environment and outdoor courtyard spaces. An implementation plan was developed, underpinned by Kotter's eight-step change model [22] (see Supplementary Material). Baseline audit data and examples of previous mealtime innovations were used to demonstrate the urgency for change and a multi-disciplinary team was formed to guide the change process. In the early implementation stage (September 2023 to January 2024), the external consultants actively supported the change process, for example helping to make the environmental changes, to establish new processes, and work alongside the organisation staff during mealtime care, facilitating role modelling, coaching, and shared problem solving. This equated to a 1.2 full time equivalent (FTE) role. The support of the external consultants was withdrawn after the early implementation stage to allow organisation staff to assume responsibility for instituting and sustaining the model.

Training

The training modules were developed and delivered in-person by the external consultants (EO, JS, NO,

EF). Training embedded evidence-based content and interactive educational strategies (see Table 3). Training was completed during work hours and estimated to cost \$598.00 AUD per staff member, accounting for the back-fill cover required. Further training and coaching were provided on the floor, with the external consultants working alongside the care delivery staff in the early implementation phase. Kitchen staff were also provided with free access to the Maggie Beer Foundation training modules [31], alongside small group training with Foundation chefs, the dietitian and speech pathologist in cooking techniques.

Data collection

Data collection involved audit and evaluation processes conducted at the three time points (T0, T1, and T2) spanning the initial 10-months of implementation. This provided longitudinal data to examine implementation and service-system outcomes.

Implementation outcomes

Qualitative insights were gathered from staff and residents via semi-structured interviews and completion of a training evaluation form. These insights were analysed to examine evidence for the acceptability and adoption of the model, including perceived improvements in meal quality and mealtime experiences, as well as perceived shifts in thinking, behaviour, and care practices.

The training evaluation form was developed for the study and has not been published elsewhere. The evaluation form was designed to elicit feedback on the quality of training, key learnings, and attitudes towards translating knowledge gained into practice. The form included 12 questions; seven closed and five open-response questions, completed immediately following the care model

Table 2 Components of the mealtime model

Intervention component	Aim	Elements
Meals	To improve the nutritional profile, flavour, appearance, and variety of meals with the external consultants working alongside the organisation's head chef and kitchen staff.	• Recipes: Identified and enhanced residents' favourite meals. Introduced new recipes, increasing use of fresh ingredients and nutritious bulk-prepared bases (e.g., brodo, sauteed onions; MBF). Completed nutritional profiles for all recipes. • Training and mentoring: Provided training and mentoring for kitchen staff to improve food preparation and cooking techniques (<i>Creating an Appetite for Life</i> program). Included a focus on texture modified diets, with support of a speech pathologist. • Policies and procedures: Reviewed policies and procedures to optimise food systems and kitchen flow. • Meal temperature: Identified solutions to improve temperature of meals (e.g., heated trolleys). • Chef's presence: Increased head chef's presence in the dining room to gather and respond to feedback. • Food forums and tastings: Held food forums and tasting sessions with residents and staff.
Dining environment	To transform physical and social aspects of the dining room in response to baseline audits to create a calmer, more enabling, and enriching dining environment.	• Renovations: Divided the 44-seat dining room into two 22 seat areas. • Transforming the dining room: Renovated dining room to make it more inviting and home-like (e.g., painting, new décor, lighting, signage, and memory supports). • Training: Trained staff in dementia friendly design principles and enabling mealtime environments. • Outdoor spaces: Renovated outdoor courtyard and garden spaces (e.g., herb garden, places to eat).
Buffet	To introduce a breakfast buffet-service to provide residents with increased choice and variety, as well as opportunities to self-serve to promote independence and engagement in meals.	• Training – Trained staff on the role of the buffet in promoting choice, independence, and self-service. • Buffet menu: Developed a buffet breakfast menu. • Equipment: Installed buffet cabinets and sourced equipment. • Policies and procedures: Established new policies and procedures to implement the buffet, alongside changes to rosters and duty lists. • Self-service: Trained and mentored staff to invite and encourage residents to view the buffet and self-serve as able.
Activities and roles	To promote residents' engagement in meal related activities and roles to optimise independence, occupation, and purpose, contributing to a positive mealtime experience.	• Training: Trained staff in ways to engage residents and give a sense of purpose through job roles and activities. • Surveys: Surveyed residents to explore interests and suitable roles and activities. • Chores group: Established resident-led job roles group (later called <i>Helping Hands</i>). Residents participated each weekday to complete meal related tasks (e.g., cleaning and re-filling condiment jars, ironing and folding serviettes, arranging flowers, setting tables). • Activities: Trained and mentored staff to use Montessori Task Boxes (EO) to engage residents in meaningful activities between meals. • Conversation groups: Ran conversation groups for higher functioning residents (e.g., food reminiscence).

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training using a paper based form (see Supplementary Material). The training forms were collected at the end of the training with feedback entered into the de-identified database for analysis.

Semi-structured interviews with residents and staff were conducted at each time point and transcribed verbatim by the RA (KR), who was external to the organisation and implementation team, however, not blinded to the purpose of the study. Questions for staff elicited information about their experience in aged care and their perspectives on the organisation's model of care, meals and mealtime care, the new mealtime model and change process, training and support received, and the filming and documentary. The questions for residents were similar, exploring their preferences for and satisfaction with meals, dining experiences, involvement in roles and activities around the home, and interactions with staff.

The staff interview guide is provided as Supplementary Material.

Service system outcomes

Audit data were collected by the external consultants (EO, JS) at all timepoints through a walkthrough of the environment, conversations with staff, and review of relevant documents (e.g., policies, procedures). The audit tool (see Supplementary Material) was developed for the project by the external consultants. In this study, audit data relevant to the components of the mealtime model were extracted (e.g., meals, dining environment, buffet and meal access, and involvement in mealtime activities and roles).

Direct observations of mealtimes were completed to examine evidence for service-system change and provision of person-centred mealtime care. Direct observations of mealtimes were completed by the RA (KR)

Table 3 Training content and activities

Training	Description of content and educational strategies
Leader training	Half-day (4 h) training for leaders. Topics included: • <i>Partners in Care</i> model and components of the new mealtime model. • Change processes and the role of leadership in change management, including Kotter's eight-step model to lead change [22]. • Personal values and characteristics of high performing teams and ways to overcome resistance to change.
Care model	Full-day (7 h) training for all staff. Topics included: • Person-centred care, importance of mealtimes, enabling environments, job roles and activities, and barriers and enablers to culture change. • Developing a shared purpose and vision for the new mealtime model. • Examples from previous mealtime innovation and culture change projects (e.g., breakfast buffet, resident job roles). • Immersive activities to experience task-focused versus person-centred mealtime care.
Clinical	Full-day (7 h) training for clinical and allied health staff. Topics included: • Importance of mealtimes, including social aspects, and understanding and overcoming clinical barriers to nutritional intake, including strategies to prevent malnutrition. • Role of the pharmacist, occupational therapist, speech pathologist, and dietitian in mealtime care. • Importance of leadership and accountability of all staff, exploring roles in mealtime care. • Oral health, malnutrition, hydration, and mealtime considerations during end-of-life care.
Dysphagia	Short training sessions (2 h) for all staff involved in meals. Topics included: • Anatomy and physiology of normal swallowing. • Overview of swallowing disorders (i.e., dysphagia), including signs, symptoms, and consequences (e.g., choking, aspiration, malnutrition, dehydration). • Speech pathology role and intervention approaches, alongside the importance of a team-based approach to managing dysphagia. • The International Dysphagia Diet Standardisation Initiative (IDDSI) framework, with a focus on texture modified diets [32]. • Safe swallowing strategies, positioning, mealtime assistance, and the importance of balancing risk with quality of life. • Practical activities, for example, making foods to a required IDDSI level and compliance testing a lunch time meal.

using a standardised observation form separated into four components (i.e., providing choices and preferences, promoting the social aspects of eating, supporting independence, and showing respect [33]). The mealtime observation protocol was adapted from one used in our team's previous mealtime research [12]. Staff use of personal enhancing actions and personal detractors were tallied in each domain, reflecting person-centred and task-focused mealtime care respectively [33]. Final year speech pathology students on placement at the aged care home assisted the mealtime observations at T0 and T1, and one of the change consultants (EO) assisted at T2. All raters were trained in use of the observation form and completed practice mealtime observations, reviewing application of codes with the RA. Each rater was directed to focus on two sections of the form, while the RA completed observations and ratings across all four components. The raters met at the end of each mealtime to de-brief and discuss ratings. Any queries or disagreements were discussed and resolved, working collaboratively to reach consensus. The RA then checked the tallies against video recordings of each observed mealtime. The profiles captured the degree of person-centred mealtime care practices observed. Mealtime observations were completed at breakfast, morning tea, and lunch across three non-consecutive days at T0 and T1, and two non-consecutive days at T2. Each observation timeframe was approximately 30 minutes. No observations of evening meals or weekends were undertaken in this study.

Mediating factors

The semi-structured interviews with staff and residents were also used to gather insights into factors influencing the implementation process, including perceived facilitators and barriers to change.

Data analysis

Qualitative insights from interviews and training evaluation forms were analysed using conventional content analysis [34], managed using NVivo release 15 [35]. The first author read the text repeatedly to interpret and code meaning. Codes were defined during analysis and then compared and organised into categories based on similar meaning. Once all data had been coded at each timepoint, data within particular codes were reviewed, combining and splitting, or adding new codes where appropriate. The first author met with two other members of the research team (KR, EO) during the coding process to discuss decisions and reach consensus on final themes. For the current study, codes, themes, and illustrative quotes were organised with respect to the study aims (i.e., acceptability and adoption of the model, mediating factors, and alignment with NPT [23]).

Audit data are presented descriptively, with no further analysis. The mealtime observation data were analysed quantitatively and qualitatively to examine the service-system outcomes. Quantitative counts of staff use of personal enhancing actions and personal detractors were summed across the observed mealtimes and then averaged for each timepoint. The averages at T1 and T2 were

then compared to the T0 counts using Fisher exact analysis (two tailed) to measure the significance of change. Qualitative data were also captured to characterise the counts at each timepoint.

Results

The implementation outcomes pertaining to acceptability and adoption of the model are presented first, followed by the service-system outcomes, and factors influencing early implementation and embedding of the mealtime model.

Implementation outcomes

Implementation outcomes are presented below with respect to the training evaluation, followed by qualitative analysis of the perceived acceptability and adoption of the model. Ten staff and six residents contributed qualitative interview data at T0, 23 staff and 12 residents at T1, and eight staff and five residents at T2.

Training

A total of 175 hours of training were delivered. The care model session was the main component, attended by 163 of 174 staff (93.7%) from across all levels of the organisation, extending beyond staff employed in the single area of the aged care home where the model was being implemented. Training evaluation forms were completed by 134 staff with an average quality rating of 9.6/10 (SD=0.67). All respondents agreed that the facilitators were knowledgeable and that they would be able to apply knowledge gained in practice. Staff valued the practical, interactive, and engaging aspects of the training. Staff identified that the training focused on finding *“real solutions for real problems”*. Staff valued opportunities to put themselves *“in [a resident’s] shoes to be reminded of how important the little things are.”* Staff expressed how the training extended their understanding of their own roles and ways to improve outcomes for residents through enhanced mealtime care. Further, staff described how the training helped them to think about their roles and the residents differently, viewing them *“in a new light.”* Staff left the training with practical ideas for making meals more pleasurable, for promoting choice, and doing more *“with”* rather than *“for”* residents. Staff described excitement and optimism about the mealtime model and conveyed a readiness to apply knowledge gained in routine care. The organisation’s leadership team was positive about the training and expressed the need for refresher training in the future and embedding core content within orientation training for new staff.

Acceptability of the model

The qualitative interview data provided consistent evidence of the acceptability of the model from the

perspectives of staff and residents. This endorsed the vision of the model, the intervention components, as well as the perceived benefits for residents and staff.

At T0 staff supported the vision of the model and the focus on meals. Staff identified that food and mealtimes were important to residents’ health and daily routines, providing *“structure”* to their days, offering *“comfort”*, and an opportunity to *“bring residents together”*. Staff were proud of the quality of care provided overall; however, recognised that there was *“definitely room for improvement”* regarding the presentation and quality of meals, as well as the dining ambience, and identified the need to make the dining room *“more homely”, “calmer, less chaotic”,* and to *“brighten it up.”* At T0, staff recognised that there were limited opportunities for residents to be involved in meal related tasks and endorsed the need to optimise independence. Staff expressed some apprehension about the buffet and how it would work, however, could see that it would promote choice and independence for residents able to serve themselves. Staff consistently noted the need to improve texture modified diets, for example, *“well it needs to be presented nicely and not just slopped on the plate”* and to offer more variety. Staff described the need to improve the mealtime experience holistically, as illustrated by the following quote:

“I think although we don’t get a lot of food complaints, that doesn’t mean that the satisfaction is as high as it could be, so I think elevating the experience for the residents.” (Staff_Leadership_T0)

At T1 and T2, staff were positive about the mealtime changes, describing the model as one *“that actually works”*. Staff identified that the change process had *“made food a focus”* with staff *“talking about food”* and *“taking more of an interest in diet”*, including ways to make meals more appetising and visually appealing. Staff endorsed the environmental changes to the dining room, describing the ambience as *“less chaotic”, “quieter”, “brighter”, “more relaxing”, “more homely”,* and *“not overcrowded”*. Staff consistently described the *Helping Hands* group as *“really positive”*, allowing residents to be *“part of that community that supports each other having job roles”*. Staff perceived the residents to be *“happier”, “enjoying meals”,* and spending more time in the dining room. Overall, while agreeing the change process had been challenging, staff endorsed it as *“worthwhile”*. The model was perceived to be *“improving lives”*, with reciprocal benefits noted for residents and staff. For example, one staff member described the model as *“easy for them, easy for us”* and another, *“It’s so good for the carers’ work and for the residents.”*

Feedback gathered from residents further supported the acceptability of the model. At T0, residents described

restricted choice and variety of meals, as well as limited opportunities to complete meal-related tasks, despite being willing to help. At T1 and T2 residents endorsed the changes to the dining environment, describing the ambience as “quieter” and “more relaxing.” One resident commented, “I’m pretty happy with it. Since we painted and everything, it’s well, it’s a lot better” and another “The renovations are beautiful. I said to Maggie, you’ve made a big difference here. It’s lovely.” Residents valued the *Helping Hands* group, providing opportunities to contribute to meals and “meet up with others”. Residents perceived that helping with meal related tasks had reciprocal benefits for staff as reflected in the quote below:

“We [residents] put the tablecloth on and put the serviettes there and the cutlery and that’s good. We like doing that, it’s good socially... and takes pressure off the staff. They can do other things that we can’t do or not allowed to do. I like doing that. I’ll keep doing that whenever I can.” (Resident_T2)

Residents were positive about the buffet and expressed that they “would love the buffet to stay”. One resident acknowledged that not everyone was able to access the buffet independently, captured in the quote below.

“When you look at it, there would only be 50% of the people in the room that were capable of going up to the buffet because the others were in wheelchairs and they can’t walk.” (Resident_T2)

Staff shared similar views, noting that some residents preferred to be served and required encouragement to access the buffet, more evident at lunch compared to the morning buffet where there was a “decent amount of choices with the continental breakfast”. At lunch, there were typically only “two options” and staff felt that residents were “not bothered about having to carry their own plates back”.

In contrast to the above views, one resident expressed that while she could not use the buffet herself due to her vision, she could appreciate the benefits for those who could. Further, residents associated the buffet with “getting served more quickly” and maintaining independence as reflected in the quotes below:

“I want to do what I can while I can. I don’t want to sit and be waited on... I like to go over and get the food that I want and go back and sit down and have it.” (Resident_T2)

“I think it’s good for us to have the buffet, it’s good for us to be independent too and to get up.” (Resident_T2)

Adoption of the model

The qualitative insights from staff and resident interviews demonstrated adoption of the model through shifts in thinking and behaviour of both staff and residents during mealtimes. The qualitative data also documented how successfully the different intervention components had been adopted and where ongoing efforts were needed. The change process was identified to be complex and challenging, however, successful and worthwhile overall, as captured by the quote below:

“Change is hard for a lot of people, but if you persist and give the support it does eventually happen.” (Staff_Leadership_T2)

As evidence of adoption, care staff described how thinking about their roles and mealtime care practices had changed. One staff member commented, “so much things have changed. Even your thought processes changed, the process of delivering care”, and another that staff were “working in a very different way than they were six months ago”. As a result, staff now saw themselves to be enacting “different roles” and “routines”, which meant “a whole new way of dining” had been adopted. A member of the leadership team stated that the model had been embraced by “a larger percentage of the staff than [they] would have immediately expected” and another, that the staff were “going above and beyond”. Changes in residents’ behaviour were also described by staff and residents themselves, reflecting their ability to adapt to and accommodate the new model. For example, some residents who previously ate meals alone in their rooms had started to come to the dining room, while others described how they had developed new systems, as reflected in the following quotes:

“She’s very happy... before she never used to come out from her room for breakfast. We always have to go and deliver the tray. After Maggie Beer’s project, she’s the first person to come in the dining [room] and she help us to set up the tables.” (Staff_Carer_T1)

“I go up early, so I don’t have to wait very long, and I get the porridge, get the prunes and the sugar and the milk and everything. I’ve got a system.” (Resident_T2)

Adoption of the model was further evidenced by a perceived shift in the quality of mealtime care. One staff member described this as a transformational change from, “caring on an industrial scale to a more personal customised working.” This was also described as “getting out of being task focused” and becoming “more multi-skilled”. Staff described that they were spending more

time interacting with residents, which allowed them to “get to know” residents better, to see their strengths (e.g., “You don’t realise how independent some people can be”) and, as a result, “provide better care”, which one staff member described as “a more humane approach to looking after people”.

At T1, staff reported that new recipes and changes to meal preparation techniques had been achieved, however, were “slow to come online”, reflecting the time taken for recipes to be developed, tested, and scaled by the external consultants (MBF). Staff described this as a work in progress. Implementing new recipes was further impacted by administrative pressures on the head chef and the level of prior training and skill of the catering team. Further, adoption of the model was perceived to be most challenging for the food service assistants and catering staff who experienced the most significant role disruption. For example, one staff member commented:

“I think all the care staff have been fine with it. It’s the kitchen hands that have really struggled because it’s a completely different role than what they had before. I don’t think they have particularly enjoyed it. They liked to serve the residents and make the toast for them and we’re saying to them, don’t do that anymore. I think they were probably the most unprepared for the changes.” (Staff_Carer_T1)

Despite the challenges experienced for the catering staff and kitchen assistants, staff across levels of the organisation perceived improvements in meal quality at both T1 and T2, including the variety, appearance, smell, and taste of food, illustrated by the following quotes:

“Better quality food and how it’s presented overall. The food looks better. It’s just more aesthetically pleasing.” (Staff_Carer_T1)

“The food already looks better, right? So it’s not, I don’t call it slop. You know that we get slop in the past, but for instance, the vegetables, they’re more colourful... and they don’t look boiled, and they don’t smell.” (Staff_Carer_T2)

Resident feedback endorsed enhancements in meal quality, however, also conveyed the need for continued efforts. Residents reported that “the meals have improved” and “taste better”. Another stated, “at least I’ll get toast now, not cardboard!”. Residents did, however, report that the evening meals remained less appealing (e.g., “I’d just say dinner at night could improve”) and that temperature was still an issue at times (e.g., “it’s not hot enough and there’s never hot soups”). While some residents reported that there was now “more variety”, others felt that choice was still limited. For example, one resident reported that they

were “sick to death of pasta” and residents requiring texture modified diets indicated limited choice, apart from breakfast.

Service-system outcomes

Audit data provided evidence of service-system change with respect to all components of the mealtime model. For example, by T2, 77 new recipes had been introduced, with documented improvements in the nutritional profile of recipes and increased use of fresh ingredients, rather than supplements and pre-prepared or processed foods. New processes to support workflow in the kitchen were also established, for example, installing new equipment and kitchen rosters to assist preparation of bases for batch cooking (e.g., brodo, bechamel sauce). Improvements to the dining environment were documented, including successful renovations to establish a second dining room, allowing 22 residents to dine in each space. The dining rooms were noted to include more home-like features at T1 and T2, with calmer ambience, more natural light, and increased social interaction between staff and residents, as well as between residents. Up to 50% of residents were documented to be accessing the buffet independently or with the support of staff, and around one third of residents were routinely attending the *Helping Hands* group. A comprehensive summary of audit results is provided as Supplementary Material, showing the scale of change implemented.

Direct observations of mealtimes focused on core domains of person-centred mealtime care; providing choices, supporting independence, promoting the social side of eating, and showing respect [12, 33]. In each domain, counts of staff use of personal enhancing actions and personal detractors were compared across timepoints.

Personal enhancing actions

Staff demonstrated a significant increase in use of personal enhancing actions providing choice at T1 (Fisher exact $z=5.88$, $p < .001$ two tailed) and T2 (Fisher exact $z=3.62$, $p < .001$ two tailed). Similarly, a significant increase in personal enhancing actions supporting independence was demonstrated at T1 (Fisher exact $z=2.22$, $p = .027$ two tailed) and T2 (Fisher exact $z=6.83$, $p < .001$ two tailed). Staff use of personal enhancing actions for promoting the social side of eating did not change over time. Further, staff use of personal enhancing actions showing respect did not change over time, noting that respect counts were high at baseline. These results are presented in Table 4 below.

Personal detractors

A significant reduction in staff use of personal detractors was seen at T1 in the choice, independence, and respect

Table 4 Fisher exact results for personal enhancing actions (reference is T0 for all effects)

	Time point 1 (compared to Baseline)				Time point 2 (compared to Baseline)		
	T0	T1	z	p	T2	z	p
Choice	50.67	131.00	5.88	<0.001*	95.50	3.62	<0.001*
Social	36.70	38.67	0.11	0.911	34.00	0.20	0.840
Independence	41.70	65.67	2.22	0.027*	133.00	6.83	<0.001*
Respect	120.67	132.00	0.65	0.516	111.00	0.57	0.569

Key. *Significance $p < .05$, two-tailed

Table 5 Fisher exact results for personal detractors (reference is T0 for all effects)

	Time point 1 (compared to Baseline)				Time point 2 (compared to Baseline)		
	T0	T1	z	p	T2	z	p
Choice	159.67	35.33	8.83	<0.001*	45.00	7.94	<0.001*
Social	17.67	10.67	1.13	0.26	18.00	-0.11	1.00
Independence	60.67	16.00	4.99	<0.001*	4.50	6.83	<0.001*
Respect	42.33	11.67	4.04	<0.001*	23.00	2.27	0.023*

Key. *Significance $p < .05$, two-tailed

domains (Fisher exact $z = 8.83$, $p < .001$ two tailed; Fisher exact $z = 4.99$, $p < .001$ two tailed; Fisher exact $z = 4.04$, $p < .001$ two tailed, respectively). A significant reduction was also recorded at T2 across each of these domains (Fisher exact $z = 7.94$, $p < .001$ two tailed; Fisher exact $z = 6.83$, $p < .001$ two tailed; Fisher exact $z = 2.27$, $p = .023$ two tailed, respectively) (see Table 5). The most notable reduction was evident with respect to providing choice, with the average counts of personal detractors reducing from 159.67 (T0) to 35.33 (T1) and 45.00 (T2) in this domain. No significant changes in personal detractors were seen in the social domain.

Qualitative data collected during the mealtime observations supported the quantitative analysis. For example, at T0, staff were observed to serve meals without providing choice or explaining meal options, to serve food without acknowledging the resident, and to call out to each other over residents (e.g., “she refused lunch”, “she vomited, I need gloves”, “did anyone feed her?”, “he’s soft”). One staff member was observed to joke, “She wants me to cut the ice-cream”. Staff were also observed to use personal enhancing actions at T0, for example, showing warmth and genuineness, as well as emotional validation (e.g., “Are you enjoying your food?”).

At T1, staff were observed to spend more time facilitating choice and asking residents about their preferences (e.g., “Would you like milk? Sugar? Strong? Weak?”). The buffet allowed residents to go at their own pace and come up to the buffet as they were ready, with examples of residents buttering their own toast and self-serving at the buffet recorded. At T1 instances of personal detractors were still observed, for example, one resident requested a cup of tea, however, was told to wait until after the meal, and staff performed tasks that residents could have completed for themselves (e.g., wiping a resident’s face).

At T2, breakfasts were observed to be quiet and calm, with frequent examples of staff greeting residents by name and leaning in when interacting with them. Staff were observed to explain to residents what they were about to do during mealtime care (e.g., “I will push your chair in”). Some aspects of the mealtimes were observed to have regressed from T1, for example, use of artificial flowers, pre-packaged vegemite and jam, and the buffet not being fully stocked (e.g., “no fruit today”) were noted. Residents were observed to clear their own plates and use the buffet independently, with some accessing the buffet several times during the breakfast sitting. Interactions between staff were mostly discreet, however, there were occasions of staff calling out across the dining room to each other.

Overall, the observation data indicated a shift towards more person-centred mealtime care. This is illustrated in Fig. 1 below. The reduction in the size of the personal detractor counts at T1 and T2 suggest a reduction in more task-focused mealtime care. The increase in staff use of personal enhancing actions, particularly with respect to choice and independence, reflect an increase in person-centred mealtime care.

Mediating factors

The final research aim was to examine factors influencing the implementation process (see Table 6), interpreting findings with reference to NPT.

Facilitators included organisational readiness and preparedness for the change process, having a clear vision and defined roles, openness of staff and residents to the change process, high quality training, and support of the external consultants on the floor in the early implementation stage of the project. Staff described how this allowed them to see, feel, and experience the model and its benefits to understand the vision, promote buy-in, and to

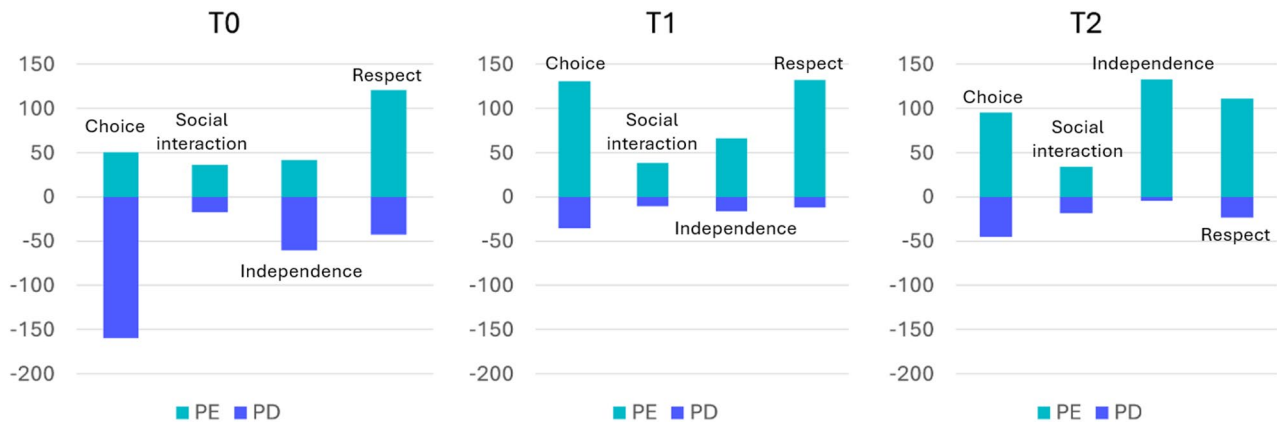


Fig. 1 Direct observation of mealtime care. Quantifying staff use of personal enhancing actions (PE) versus personal detractors (PD) with respect to domains of person-centred mealtime care [12, 33]

Table 6 Facilitators and barriers to implementation

Facilitators	Barriers
Shared vision and plan	Communication
Organisation readiness and preparation for the change process	Production constraints on what could be shared initially
Empowerment and contribution to the vision and implementation plan	Time
Clear roles and expectations	Rate and scale of change
Openness to change	Production timelines
Time to adapt and establish new processes	Staffing
External consultants	Staffing levels and expertise (kitchen)
Extra set of hands	Orientating and training new staff
Allied health expertise	Leadership dynamics
Capacity building support	Attitudes towards change processes
Support for staff	Re-imagining what is possible and what staff and residents are capable of
Training, role modelling, and shared problem solving on the floor	
Peer support, carer mentors, buddy shifts	
Teamwork	
Management support	
Infrastructure	
Renovations	
Right equipment and tools	
Ongoing audits and evaluation	

overcome initial scepticism and resistance to the change process. Management support and open communication played an important role whereby staff were encouraged to express their concerns, to think about the new model as a “trial”, and to give it time. One member of the leadership team noted how this meant that “those little niggles got nipped in the bud very quickly by a manager” and staff became more open to change once initial resistance was

acknowledged and addressed. Staff recognised this, captured in the quotes below:

“Accepting that change is very important... because change is for your own betterment. Sometimes it works, sometimes it may not but when you accept it that makes a big difference... we actually to be honest, we were not happy you know, we were really, really not happy [in the early stages of the project]. But then again, I thought it like, you know, I think the change is for the better of the resident.” (Staff_Carer_T1)

“I think it’s a good concept and once you know, we settle into the idea of it and we fully grasp it... it obviously is going to be something fantastic, but like any new experiment and any new change it will take some time to get used to because in aged care we’ve been doing things a different way for such a long time so those old habits die hard.” (Staff_Nursing_T1)

Staff described how the external support and expertise helped to accelerate the change process, enabling them to get “all of that stuff done in a short space of time, which would have taken us quite a long time to achieve”. Further, the external accountability of the production timeline was a facilitator, with the team aware that the implementation process and outcomes would be televised nationally. This meant that even when resistance or challenges were encountered, the project had to keep moving forward. The involvement of a celebrity cook was also influential, helping to motivate staff and residents about the proposed changes. Other facilitators included management support and providing reinforcement and encouragement for staff (e.g., “reminding them of their successes”). This included recognising and empowering staff capacity for change, illustrated in the quote below:

Table 7 Outcomes mapped to NPT mechanisms [22]

	Coherence	Cognitive participation	Collective action	Reflexive monitoring
Evidence	Strong evidence of a shared vision, being on the same page, and having the same understanding of the model. Staff were able to differentiate the new model from previous mealtime care. “Makes sense!” “We all got the training, we all got that same knowledge. So we can communicate same idea.”	Staff engaged in development and implementation processes and expressed motivation for change. Shifts in thinking were described after learning about and experiencing the model and its benefits. “My thought process has really changed in terms of care.” “Seeing it in action rather than just trying to learn it without seeing it was definitely a turning point.”	Staff described working as a team to implement the model and problem solve. Care staff described using skills taught during care routines (e.g., setting up the buffet, facilitating choice). Staff described how implementing the model (action) helped promote buy-in and momentum. “I feel like without realising they’re doing it... they’ve taken on board what they learned in the training.” “I think it’s a whole team of people, it’s every-one sort of doing their bit. I don’t know. It’s just part of life. It’s just how we are now.”	Staff expressed their commitment to monitoring, sustaining, and refining the model, ensuring they did not fall back into old habits. The need for refresher training and ongoing support were identified. “I’m proud of how they’ve stood up and said, oh, hang on a minute, we’ve all learned that this is not probably a really good way of doing it. So let’s do it this way rather than just slipping back into what is not really our new practice.”

“I think I’ve learned, oh, I don’t know, just to give more credit to the staff and their willingness and ability to adapt to whatever changes we’re putting in place, you know, to give more credit to the staff.” (Staff_Leadership_T1)

Barriers to implementation of the model were also evident. Resistance and tensions were experienced in the initial stages of the project, which required negotiation. Further, the timelines of the project, the “pressures of filming”, and scale of the proposed changes added pressure. One staff member commented “it’s been very stressful, but we’ve managed to get it done and it’s only been four months or so”. Much of the initial resistance related to communication and constraints around how much detail about the project could be provided, due to confidentiality of the television series, the dynamic nature of the changes, and the different teams involved. As a result, staff did not feel fully informed or involved initially, which impacted relationships with the external consultants that needed to be repaired over time. This is reflected in the following quote:

“Planning is key and communication and keeping everybody informed is really important because when people are informed and know what’s happening then they have less questions or their questions are less aggressive because they have some knowledge. They just have questions rather than having concerns because they didn’t know what was happening.” (Staff_Leadership_T2)

Staffing levels and time were identified as barriers, in particular, regarding the number of food attendants and the capacity and skill level of kitchen staff. Resident factors were also identified as barriers, for example, being “small eaters”, “creatures of habit”, and “preferring to be served”. These may, however, reflect attitudinal barriers of staff. Leadership dynamics and styles were noted to influence implementation. The leadership team were protective

of staff and cautious of not placing additional burdens on them during the change process. This contributed to tensions when developing the vision and implementation plan and how staff would be engaged and involved. Over time, the leadership team were able to recognise the increased capability of the care staff with the support of the external consultants, however, this took time to negotiate.

Normalisation processes

The qualitative data, combined with the service-system outcomes, were examined to extract evidence of normalisation processes, which are important for the early embedding of change. There was evidence that each of the four NPT mechanisms had been activated, helping to embed the model in routine care (see Table 7). For example, the perceived acceptability of the model provided evidence for coherence and a shared vision, with staff and residents consistently expressing belief in the model and its benefits. The training, coaching, and active involvement of all staff in the change process reflected cognitive participation and collective action, with evidence of staff working collaboratively with the external consultants to make and embed change. There was evidence that staff engagement in the implementation process allowed them to see and experience the benefits of the model, further supporting coherence, cognitive participation, and collective action. Finally, there was evidence that staff were committed to keeping the model going. At T2, staff expressed that they had “maintained the changes and it’s just really keeping those changes”. It was evident that staff across levels of the organisation were engaging in reflexive monitoring, to help sustain the changes, reflected in the quote below:

“At the moment we haven’t had any serious concerns regarding staff falling back yet... going back to their own ways. Once we remind them, they continue to do what we should be doing” (Staff_Nursing_T2)

Discussion

This study examined the implementation and service-system outcomes of a multi-component and multi-disciplinary mealtime model that sought to transform meals and mealtime experiences in a single area of a residential aged care home. The mealtime model was perceived by staff and residents to be acceptable and successfully adopted, with evidence of service-system change and normalisation processes. The findings demonstrate the feasibility of combining multiple evidence-based intervention strategies in an integrated model of mealtime care, modifying multiple determinants of food intake and making holistic change across different levels of the food system [6, 9]. All staff and residents supported roll-out of the mealtime model across the organisation, as well as uptake by other residential aged care homes. Factors influencing the implementation and service-system outcomes were identified, informing future change initiatives.

Previous research has called for the implementation of multi-component mealtime interventions that combine many different aspects across the *M3* model [6] – including strategies focused on meal quality, meal access, and mealtime experiences to optimise outcomes [10]. The current study has demonstrated that this is possible, transforming the quality of food, the dining environment, opportunities for self-service through the buffet, as well as inclusion of residents in mealtime related tasks and roles. Consistent evidence for the acceptability and adoption of all components of the model were demonstrated, with perceived reciprocal benefits for staff and residents. In particular, the dining atmosphere was observed to become calmer and more home-like. This is consistent with previous studies where mealtime interventions and physical renovations targeting the dining room have been feasible and associated with residents spending more time in the dining room, eating more, and rating mealtime satisfaction more favourably [9, 10].

The breakfast buffet was one of the more contentious aspects of the model. Similar to previous research [10], not all residents were able to access the breakfast buffet independently due to a range of factors (e.g., mobility, cognition), however, staff and residents consistently described the buffet as beneficial, providing opportunities for independence and involvement of residents, and influencing the care load for staff. This is consistent with previous studies where buffet-style meals have been feasible and accepted in residential aged care settings, contributing to greater opportunities for choice, improved meal temperature and food quality, as well as more social and enjoyable mealtimes [12, 36]. Residents in the current study were more likely to use the buffet at breakfast, rather than self-serve at lunch, where only two main options were on offer. This suggests the importance of genuine choice to encourage self-service.

The qualitative data demonstrated that while all components of the model were acceptable and adopted, continued efforts were needed to build on and extend the early implementation and service-system outcomes achieved. For example, while improvements in the taste, temperature, and appearance of food were consistently reported, there were still concerns expressed regarding the quality of the evening meals, in particular the soups. While 77 new recipes had been introduced by the final timepoint, it was noted that the changes to menus had been slower to implement, due to the time taken for recipes to be tested and scaled by the external consultants (MBF), as well as administrative pressures on the head chef and training needs of kitchen staff. Previous research has highlighted the logistics in the kitchen as important, and that implementation processes must consider management control systems to enable change [9]. This reflects the complex nature of mealtimes and the need to tailor implementation strategies across different components of the model and levels of the system, depending on readiness and the amount of time and support needed. The findings highlight the critical need for sustained collective efforts and a flexible, dynamic approach when implementing multi-component models.

The audit data and direct observations of mealtimes provided quantitative and qualitative evidence of service-system change. Consistent with our team's previous research, this shows the potential of multi-component models to promote shifts in care practices towards more person-centred mealtime care [12]. This is a positive finding as previous studies targeting isolated aspects of mealtimes have, for example, improved the dining environment but not influenced how staff interact with or include residents during mealtime care [9, 37]. Further, staff have experienced difficulties enacting new mealtime care practices, often due to structural and systemic factors that were not addressed systematically through the mealtime intervention [6, 17]. In the current project, environmental re-structuring, changes to mealtime policies and procedures, as well as the nature of training and support provided to care staff were identified as critical factors enabling staff to enact new mealtime practices and for new mealtime routines to be established. The positive shifts were evident in staff use of personal enhancing actions versus personal detractors during mealtime care, in particular, promoting residents' choice and independence, which reflect more person-centred mealtime care [33]. As a result, the model provides a blueprint for creating more home-like, as well as more person-centred and enabling dining experiences.

The training and support provided by the external consultants were identified as important strategies supporting implementation and service-system outcomes. Novel aspects of this training were its multi-disciplinary,

hands-on, and experiential nature. Further, the training extended beyond the classroom to provide role-modelling, coaching, and implementation support during routine care. This responded to previous mealtime intervention research, where staff have requested additional “*reflection and hands on approaches beyond education*” (17, p.14) to support implementation. Staff valued the training, role modelling, and shared problem-solving during mealtime care. This is consistent with previous research where staff have valued the opportunity to engage in change processes that allow them to clarify and enact shared values to improve quality of care [12, 20]. The organisation’s leadership team identified that the training and support helped accelerate their culture change efforts and that the investment in workforce development was justified. This is consistent with previous mealtime interventions that have used external facilitation as a key implementation strategy [15, 18]. Future research is necessary to explore the optimal amount of time needed for this external implementation support and whether internal champion models can be used to help implement, embed, and sustain change [38].

There was evidence that normalisation processes had been activated, underpinning the acceptability and adoption of the model, as well as the observed service-system change. While the change process was perceived to be complex and challenging, it was enabled by site readiness and preparation for the change process, a shared vision, active thinking about the intervention components and staff roles, collective action, as well as a shared commitment to sustaining the model – reflecting all four NPT mechanisms. These are factors that can be replicated by other organisations, ensuring adequate time and seeking external support, if needed, to plan and prepare for implementation and service-system change. The structured implementation approach, underpinned by Kotter’s change model [22], appeared successful in engaging and empowering staff in the change process and promoting teamwork and shared problem solving. Key barriers to implementation concerned communication and timelines, which were largely imposed by the production aspect of the project. There were details of the project that could not be widely communicated initially, which contributed to early resistance. Wu and colleagues [17] found that open communication lines between leadership, team members, and external research staff is critical, allowing early barriers to be resolved in a timely way. The production timelines were, however, also identified as an enabler, providing strong external accountability.

Limitations and future directions

This research was conducted in a single area of an aged care home and sought to examine implementation processes in this specific context. While the findings cannot

be transferred directly to other residential aged care settings, the learnings can be used as a starting point for other organisations to guide their own local mealtime initiatives [17]. Future large-scale, multi-site studies would allow replication of the model and more robust examination of outcomes, including use of external assessors, blinded to the intervention components implemented and purpose of the study. Further use of videos, a single rater, and reliability checks, would increase rigor of the mealtime observations. The current study did not complete observations of the evening meal as the mealtime changes focused more extensively on the breakfast buffet, morning tea, and lunch time service. Future research could extend the mealtime model and observation periods to the evening and weekend meals. Some of the mediating factors in this study were unique, given the involvement of a celebrity cook and the production aspect of the project, supporting and inhibiting aspects of the change process. While these factors are outside usual practice, the findings have demonstrated the importance of charismatic leadership and external accountability to create the urgency for change and to engage staff and residents in the change process. Future studies could explore innovative ways of replicating these factors in other contexts, for example, by engaging chefs from local restaurants or local champions to help build momentum for change. We acknowledge that the support of the external consultants in this project was extensive and may be beyond the resourcing of some aged care homes. The findings demonstrate the scale of what can be achieved with this level of support in this short time span, however, could be scaled back or tailored to the needs and resources of an individual home. For example, given the model has discrete components it can be implemented compartmentally, without adherence to all components of the model. Resources have been created by the external consultants and hosted on the *Maggie Beer Foundation* website to facilitate future change initiatives or replication of the model [31]. Future research could compare outcomes across different levels of external support to guide implementation initiatives and undertake economic comparisons. Finally, future studies should be extended to ensure the longer term sustainability of multi-component and multi-disciplinary mealtime models. This should include cost-effectiveness analyses that were beyond the scope of this early implementation study.

Conclusions

This study demonstrates the acceptability and adoption of a multi-component and multi-disciplinary model of mealtime care to improve aspects of meal quality, meal access, and mealtime experiences simultaneously in a residential aged care setting. The use of Kotter’s

eight-step change model and Normalisation Process Theory supported the implementation and evaluation of the mealtime model, allowing factors promoting and inhibiting the change process to be identified. The findings show that mealtime experiences and care practices can be transformed when the right resources and supports are in place, and a systematic, multi-disciplinary approach is utilised. The findings provide direction for future research and practice innovations aiming to improve mealtime experiences and wellbeing outcomes for residents.

Abbreviations

BMI	Body mass index
GDS	Geriatric depression scale
IDDSI	International dysphagia diet standardisation initiative
MBF	Maggie Beer Foundation
MNA-SF	Mini nutritional assessment – short form
NPT	Normalisation process theory
RA	Research assistant

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12877-026-07690-6>.

Supplementary Material 1: Care model training evaluation forms.

Supplementary Material 2: Kotter's change model.

Supplementary Material 3: Interview guide.

Supplementary Material 4: Audit tool.

Supplementary Material 5: Audit summary.

Supplementary Material 6: Mealtime observation form.

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Authors' contributions

Conceived and designed the evaluation plan: JC, EO, CR, MB, AW, LRG, CEB. Developed and implemented the mealtime model: EO, JS, CR, EF, NO, KR. Collected and entered de-identified data: EO, JS, KR, NO, EF. Data analysis and interpretation: JC, DV, KR, AW, LRG, SM, EO, EF, NO. Contributed to preparation of the manuscript: All authors, with JC, DV, EO, AW, LG, and CEB contributing most. All authors read and approved the final manuscript.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethics approval was granted by the University of Tasmania Human Research Ethics Committee (Project ID: 29040). All participants provided written

informed consent for de-identified data to be provided to the University for analysis purposes. The research was conducted in compliance with the Helsinki Declaration.

Consent for publication

Not applicable.

Competing interests

The authors have the following conflicts. Financial competing interests: MB, EO, JS, NO, and EF were paid consultants and featured in the Maggie Beer's Big Mission television series. CR and JC featured in the television series, however, have no financial competing interests.

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References

1. Commonwealth of Australia. Royal Commission into Aged Care Quality and Safety. Final report: Care, dignity and respect. Volume 1, Summary and recommendations Canberra (AU): Commonwealth of Australia; 2021. Available from: <https://www.royalcommission.gov.au/aged-care/final-report>. [Cited 12 Mar 2025].
2. Neyens J, Halfens R, Spreeuwenberg M, et al. Malnutrition is associated with an increased risk of falls and impaired activity in elderly patients in Dutch residential long-term care (LTC): a cross-sectional study. *Arch Gerontol Geriatr*. 2013;56(1):265–9. <https://doi.org/10.1016/j.archger.2012.08.005>.
3. Norman K, Haß U, Pirlich M. Malnutrition in older adults—recent advances and remaining challenges. *Nutrients*. 2021;13(8):2764. <https://doi.org/10.3390/nu13082764>.
4. Blanař V, Hödl M, Lohrmann C, Amir Y, Eglseer D. Dysphagia and factors associated with malnutrition risk: A 5-year multicentre study. *J Adv Nurs*. 2019;75(12):3566–76. <https://doi.org/10.1111/jan.14188>.
5. Keller HH, Carrier N, Slaughter SE, et al. Prevalence and determinants of poor food intake of residents living in long-term care. *J Am Med Dir Assoc*. 2017;18(11):941–7. <https://doi.org/10.1016/j.jamda.2017.05.003>.
6. Keller H, Carrier N, Duizer L, et al. Making the Most of Mealtimes (M3): grounding mealtime interventions with a conceptual model. *J Am Med Dir Assoc*. 2014;15(3):158–61. <https://doi.org/10.1016/j.jamda.2013.12.001>.
7. O'Keeffe M, Kelly M, O'Herlihy E, et al. Potentially modifiable determinants of malnutrition in older adults: A systematic review. *Clin Nutr*. 2019;38(6):2477–98. <https://doi.org/10.1016/j.clnu.2018.12.007>.
8. Koh RTG, Thirumanickam A, Attrill S. How are the mealtime experiences of people in residential aged care facilities informed by policy and best practice guidelines? A scoping review. *BMC Geriatr*. 2022;22(1):737. <https://doi.org/10.1186/s12877-022-03340-9>.
9. Heikkilä K, Andersson S, Lagerbielke E, Persson C, et al. Mealtime interventions and their outcomes in care homes for older people considering the five aspects meal model: An integrative review. *Geriatr Nurs*. 2022;1(47):171–82. <https://doi.org/10.1016/j.gerinurse.2022.07.011>.
10. Vuca V, Keller HH, Ducak K. Interventions for improving mealtime experiences in long-term care. *J Nutr Gerontol Geriatr*. 2014;33(4):249–324. <https://doi.org/10.1080/21551197.2014.960339>.
11. Wu SA, Morrison-Koechl JM, McAiney C, et al. Multi-Level Factors Associated with Relationship-Centred and Task-Focused Mealtime Practices in

- Long-Term Care: A Secondary Data Analysis of the Making the Most of Mealtimes Study. *Can J Aging*. 2023;42(4):696–709. <https://doi.org/10.1017/S0714980823000156>.
12. Cartwright J, Roberts K, Oliver E, et al. Montessori mealtimes for dementia: A pathway to person-centred care. *Dementia*. 2022;21(4):1098–119. <https://doi.org/10.1177/14713012211057414>.
 13. Abbott RA, Whear R, Thompson-Coon J, et al. Effectiveness of mealtime interventions on nutritional outcomes for the elderly living in residential care: a systematic review and meta-analysis. *Ageing Res Rev*. 2013;12(4):967–. <https://doi.org/10.1016/j.arr.2013.06.002>.
 14. Kelly M, McSweeney E. Re-visioning respite: a culture change initiative in a long-term care setting in Eire. *Qual Ageing Older Adults*. 2009;10(3):4–11. <https://doi.org/10.1108/14717794200900020>.
 15. Caspar S, Davis E, Berg K, et al. Stakeholder engagement in practice change: enabling person-centred mealtime experiences in residential care homes. *Can J Aging*. 2021;40(2):248–62. <https://doi.org/10.1017/S0714980820000082>.
 16. Low L-F, Fletcher J, Goodenough B, Jeon Y-H, Etherton-Beer C, MacAndrew M, et al. A systematic review of interventions to change staff care practices in order to improve resident outcomes in nursing homes. *PLoS ONE*. 2015;10(11):e0140711. <https://doi.org/10.1371/journal.pone.0140711>.
 17. Wu S, Morrison JM, Dunn-Ridgeway H, et al. Mixed methods developmental evaluation of the CHOICE program: A relationship-centred mealtime intervention for long-term care. *BMC Geriatr*. 2018;18:1–14. <https://doi.org/10.1186/s12877-018-0964-3>.
 18. Keller HH, Wu SA, Iraniparast M, Trinca V, Morrison-Koechl J, Awwad S (2021). Relationship-centered mealtime training program demonstrates efficacy to improve the dining environment in long-term care. *J Am Med Dir Assoc*. 2021; 22(9): 1933–1938. <https://doi.org/10.1016/j.jamda.2020.11.008>.
 19. Tyler DA, Lepore M, Shield RR, et al. Overcoming resistance to culture change: Nursing home administrators' use of education, training, and communication. *Gerontol Geriatr Educ*. 2014;35(4):321–36. <https://doi.org/10.1080/02701960.2013.837049>.
 20. Etherton-Beer C, Venturato L, Horner B. Organisational culture in residential aged care facilities: a cross-sectional observational study. *PLoS ONE*. 2013;8(3):e58002. <https://doi.org/10.1371/journal.pone.0058002>.
 21. Venturato L, Horner B, Etherton-Beer C. Development and evaluation of an organisational culture change intervention in residential aged care facilities. *Aust J Ageing*. 2020;39(1):56–63. <https://doi.org/10.1111/ajag.12667>.
 22. Kotter J. *Leading change*. Boston (US): Harvard Business School Press; 1996.
 23. Murray E, Treweek S, Pope C, et al. Normalisation process theory: a framework for developing, evaluating and implementing complex interventions. *BMC Med*. 2010;8:1–11. <https://doi.org/10.1186/1741-7015-8-63>.
 24. Baker L. director. (2024). *Maggie Beer's Big Mission* [television broadcast]. Australia: Australian Broadcasting Corporation; 2024 July 23. <https://www.arte.misfilms.com/productions/maggie-beers-big-mission/>.
 25. Anderson K. Maggie beer-the champion for quality food in aged care. *Aust Nurs Midwifery J*. 2022;27(8):55. <https://anmj.org.au/wp-content/uploads/2023/11/ANMJ-2022-%E2%80%93JUL-SEP.pdf>.
 26. Palinkas LA, Aarons GA, Horwitz S, et al. Mixed method designs in implementation research. *Adm Policy Ment*. 2011;38:44–53. <https://doi.org/10.1007/s10488-010-0314-z>.
 27. Nasreddine ZS, Phillips NA, Bédirian V, et al. The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. *J Am Geriatr Soc*. 2005;53(4):695–9. <https://doi.org/10.1111/j.1532-5415.2005.53221.x>.
 28. Kaiser MJ, Bauer JM, Ramsch C, et al. Validation of the Mini Nutritional Assessment Short-Form (MNA®-SF): A practical tool for identification of nutritional status. *J Nutr Health Aging*. 2009;13:782–8. <https://doi.org/10.1007/s12603-009-0214-7>.
 29. Winter JE, MacInnis RJ, Wattanapenpaiboon N, Nowson CA. BMI and all-cause mortality in older adults: a meta-analysis. *Am J Clin Nutr*. 2014;99(4):875–90. <https://doi.org/10.3945/ajcn.113.068122>.
 30. Yesavage JA, Sheikh JL. Geriatric depression scale (GDS) recent evidence and development of a shorter version. *Clin Gerontol*. 1986;5(1–2):165–73. https://doi.org/10.1300/J018v05n01_09.
 31. Maggie Beer Foundation. *Creating an appetite for life*. Adelaide (AU): Maggie Beer Foundation 2025; Available from: <https://maggiebeerfoundation.org.au/>. [Cited 12 Mar 2025].
 32. Cichero JA, Lam P, Steele CM, Hanson B, et al. Development of international terminology and definitions for texture-modified foods and thickened fluids used in dysphagia management: the IDDSI framework. *Dysphagia*. 2017;32(2):293–314. <https://doi.org/10.1007/s00455-016-9758-y>.
 33. Reimer HD, Keller HH. Mealtimes in nursing homes: Striving for person-centered care. *J Nutr Elder*. 2009;28(4):327–47. <https://doi.org/10.1080/01639360903417066>.
 34. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15(9):1277–88. <https://doi.org/10.1177/1049732305276687>.
 35. QSR International Pty Ltd. *Nvivo software* (version 15). 2022. Available from: <https://help-nv.qsrinternational.com/20/win/Content/welcome.htm>.
 36. Remsberg RE, Luking A, Baran P, Radu C, et al. Impact of a buffet-style dining program on weight and biomechanical indicators of nutritional status in nursing home residents: A pilot study. *J Am Diet Assoc*. 2001;101(12):1460–3.
 37. Hung L, Chaudhury H, Rust T. The effect of dining room physical environmental renovations on person-centered care practice and residents' dining experiences in long-term care facilities. *J Appl Gerontol*. 2016;35(12):1279–301. <https://doi.org/10.1177/0733464815574094>.
 38. Windle A, Marshall A, Harvey G, Davy C. We are the champions, my friend! Key considerations in selecting and supporting champions to promote implementation in aged care. *JBI Evid Implement*. 2025;10–1097. <https://doi.org/10.1097/xe.0000000000000493>.

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