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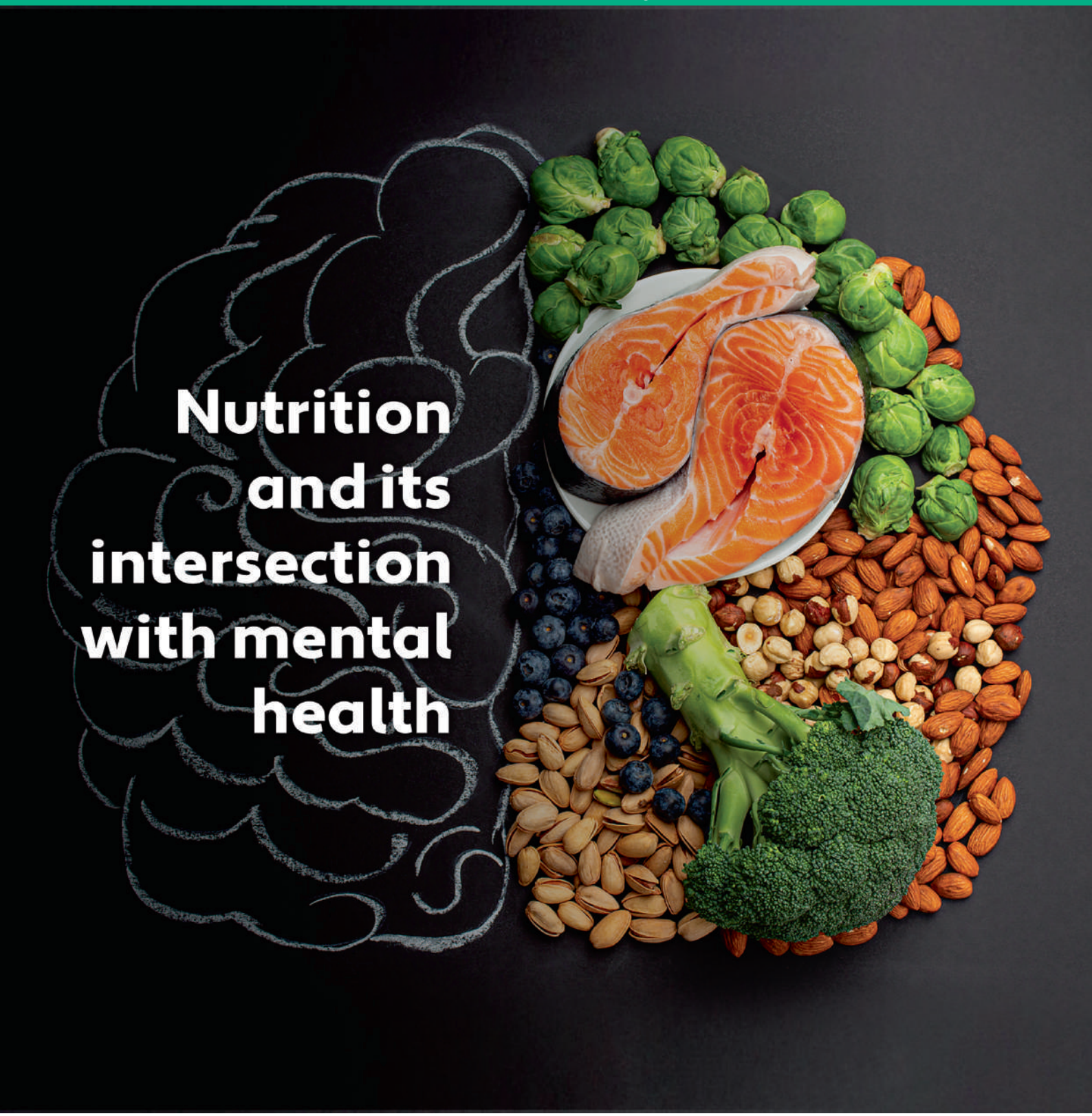

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EDITORIAL

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Mental health is EVERY dietitian's business!

Every dietitian will encounter clients or patients with mental ill-health at some point in their working life, especially since the COVID-19 pandemic and associated increases in rates of mental health conditions.[1,2] Mental health conditions often occur alongside other health conditions,[3] and current statistics indicate that half of all Australians will experience some form of mental illness in their lifetime.[4] This makes mental health every dietitian's business. Dietitians upskilled in mental health are well positioned to be able to undertake dietary assessment, and offer effective early(ier) intervention and/or appropriate referrals. Dietitians are health professionals qualified in clinical, food service, community and public health nutrition and should play pivotal roles in multidisciplinary mental health care teams. However, in many cases dietitians are not part of the mental health care team and other health professionals do not consider or prioritise food patterns, food security or malnutrition early enough in the treatment process, or understand the impact these can have on overall health and wellbeing.

Findings from the Global Burden of Disease Study highlight the impact of suboptimal dietary intake on chronic disease morbidity and mortality.[5] This includes 11 million global deaths in 2017 attributed to dietary risk factors including high sodium, and low whole grain and fruits consumption. In the context of mental health specifically, evidence demonstrates the interrelationship of dietary intake and mental health.[6,7] That is, dietary intake influences mental health, and in reverse, mental health affects dietary intake. Observational studies demonstrate an association of healthier dietary patterns (e.g. characterised by higher fruit and vegetable, and omega-3 fatty acids consumption) with a lesser likelihood of disorders including depression and anxiety, and the opposite association for unhealthy dietary patterns (e.g. characterised by high fat and sugar consumption).[8,9] Further, intervention studies have demonstrated improvement in mental health outcomes including depression levels and psychotic symptoms, following dietary intervention such as those focusing on whole of diet and omega-3 fatty acid, pre- and pro-biotic supplementation.[10–13] There is still much to be explored in terms of the directionality of effects between diet and mental health, and associated diet-related diseases, however the fact that an association exists is clear. This supports the need for dietitian involvement in mental health care, while guidelines such as the Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for mood disorders[14] recommend that lifestyle options including diet should form the first-line treatment strategy for mood disorders.

People living with mental illness are more likely to have poor dietary intakes, poor hydration status, irregular food intake and food insecurity,[15–18] yet nutrition is not standard in care plans. Poor diet quality, often characterised by foods high in energy and sodium and low in essential nutrients, can contribute to chronic disease including cardiovascular disease and diabetes, and is prevalent in people across the spectrum of mental illness, but particularly those with severe mental illness.[15,19] Individuals with mental illness may not access information about dietary intake, or those that do may source this information online where misinformation is common and, for some, is hard to discern from evidence-based information, or from health professionals who have low confidence in providing dietary information.[20]

Mental illness impacts society as a whole, and is associated with significant economic costs.[21] National spending on mental health-related services in Australia reached $11 billion in 2019–2020, while on an individual level, healthcare costs significantly increase for individuals with mental illness and other comorbidities.[21] Approximately 94% of Australians with a mental or behavioural condition have a comorbid long term health condition.[22] Common comorbidities in people with mental illness include obesity, cardiovascular disease, respiratory disease, and diabetes.[23] These conditions have established dietary interventions as evidenced in their respective best practice clinical guidelines.[24–27] Early intervention prevents progression and enhances the management of these illnesses for which dietary intervention is fundamental, as well as reducing healthcare costs.

Many groups are particularly vulnerable and experience increased risk of mental illness and associated comorbidities. These groups include for example veterans,[28] people with disordered eating,[29] people with a disability,[30] Aboriginal and Torres Strait Islander

Peoples,[30] young people,[30] older people,[31] people of cultural and linguistic diversity,[32] the LGBTQIA+ community,[33] victims of domestic violence and sexual assault,[34] and people in rural and remote communities,[35] among many others. These groups represent people who are at greater risk of mental illness, comorbid physical illness, early ageing and suicide. When you consider other risk factors such as socioeconomic status and education,[36] many are less likely to have nutrition and food skills.

In summary, dietitians can deliver effective, evidence-based dietary interventions to improve symptoms of mental illness and to prevent, treat and manage the physical illnesses associated with mental illness.[37,38] Dietitians working in mental health are highly equipped with assessment to screen for poor diet once mental ill health is recognised, to allow for timely and early intervention, monitoring and evaluation, counselling and psychoeducation skills, in addition to extensive behaviour and lifestyle modification techniques to help people living with mental illness. However, they continue to be underrecognised and underutilised.

In this issue of *Nutrition & Dietetics*, a range of differing conditions, outcomes, screening tools and population groups within an overarching mental health context are considered. This issue includes scoping reviews that synthesise the evidence to show promising outcomes in terms of effectiveness and cost effectiveness of dietary interventions for a range of conditions,[13,39] as well as a scoping review highlighting the need for validated nutrition risk screening tools in people with severe mental illness.[19] Further, a systematic review found the therapeutic relationship between client and dietitian is a valued and multifactorial component of clinical dietetic practice.[40] Studies also explored associations between nutritional status and caregiver burden in Alzheimer's Disease,[41] the influence of the COVID-19 pandemic on body image in LGBTQ+ individuals,[42] the prevalence of food insecurity among community-dwelling individuals with severe mental illness,[17] the influence of gender dysphoria in eating disorders among gender diverse individuals,[43] nutritional intake and food service satisfaction of adults in specialist inpatient mental health services,[18] and the issue of disordered eating among nutrition and dietetic students.[44] This issue of Nutrition & Dietetics allows for opportunities to upskill in mental health through increasing awareness of the realities and implications of good nutrition.

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REVIEW

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Effectiveness of dietary interventions in mental health treatment: A rapid review of reviews

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Abstract

Aim: This rapid review of reviews aimed to determine the extent of research undertaken on the effectiveness of dietary interventions for individuals with a mental disorder.

Methods: Three databases (MEDLINE, Embase, Cochrane Reviews and Cochrane Trials) were searched to February 2021 for systematic reviews including experimental studies assessing the effectiveness of dietary interventions with physical or mental health related outcomes in adults or children with one or more of: severe mental illness, depression or anxiety, eating disorders, or substance use disorder. Results are presented descriptively.

Results: The number of included reviews was 46 (67% in severe mental illness, 20% in depression and anxiety, 7% in eating disorders, and 7% in substance use disorders). Most reviews were published since 2016 (59%), and included studies conducted in adults (63%). Interventions in the eating disorders and severe

This work was conducted under the activities of the Dietitians Australia Mental Health Advocacy Working Group.

mental illness reviews were predominantly education and behaviour change, whereas interventions in the substance use disorders, and depression and anxiety reviews were predominantly supplementation (e.g. omega-3). Twenty-eight and twelve of the reviews respectively reported mental health and dietary outcomes for one or more included studies. Most reviews in severe mental illness, and depression and anxiety reported conclusions supporting the positive effects of dietary intervention, including positive effects on weight-related or mental health outcomes, and on mental health outcomes, respectively.

Conclusions: A larger number of systematic reviews were identified which evaluated dietary interventions in individuals with severe mental illness, and depression and anxiety, compared with substance use disorders, and eating disorders. Dietary intervention is an important component of the treatment that should be available to individuals living with mental disorders, to support their physical and mental health.

KEYWORDS

diet therapy, mental health, rapid review, scoping review, treatment efficacy

1 | INTRODUCTION

Mental health is a global issue, with an estimated 10% of the global population currently living with a mental disorder,[1] and almost 50% of the population estimated to experience a mental disorder in their lifetime.[2] Mental disorders are defined as syndromes which are reflective of psychological, biological or developmental dysfunction, and are characterised by clinically significant disturbance in cognitive function, emotion regulation or behaviour.[3,4] Mental disorders cover a broad set of conditions, including mood disorders (e.g. depression), anxiety, severe mental illness (disorders causing serious functional impairments e.g. schizophrenia and other psychotic disorders), substance use disorders (e.g. alcohol use disorder), and feeding and eating disorders (e.g. binge eating disorder).[3,4]

Over the last two decades, mental health-related services expenditure in Australia increased from $2.4 billion to $10.6 billion, but extra resources have not delivered better outcomes.[5] Each year, four million Australians experience episodic depression, anxiety, and addiction disorders, and over half do not receive early treatment due to a range of factors including stigma and issues with diagnosis.[5] Access to cognitive and behavioural therapy, the first line of treatment, has vastly improved recently.[5–7] Yet, people's everyday engagement with these practices remains poor.[8,9]

There is a recognised interrelationship between mental and physical health, and dietary intake, as well as a high incidence of diet-related chronic disease comorbidities in people with mental illness.[10] The importance of lifestyle behaviours in mental health care has been widely acknowledged, including dietary intake and behaviours specifically.[10] The recent Lancet Psychiatry Commission regarding physical health in individuals with mental illness identified an urgent need for optimised lifestyle interventions and associated implementation strategies.[10] The need for preventative intervention was particularly emphasised, as was the need to partner with qualified health professionals in respective fields for the development and delivery of these interventions. World Health Organization guidelines on the management of physical health in severe mental disorders recommends lifestyle intervention as a first-line treatment,[11] while World Health Organization standards for treatment of substance use disorders outlines the need for nutrition support during withdrawal treatment and to achieve a healthful diet as a treatment outcome.[12] In regards to eating disorders, the Australia and New Zealand Academy for Eating Disorders' eating disorder treatment principles outline the important role of dietitians within the multidisciplinary care team.[13] Further, the Royal Australian and New Zealand College of Psychiatrists now recommends lifestyle interventions (targeting exercise, sleep, diet, and alcohol intake) as the foundation of first-line treatments in their 2020 clinical practice guidelines for mood disorders.[14]

Lifestyle behaviours include health-related daily activities resulting from values, knowledge, and norms, and the broader socioeconomic environment, including diet, physical activity, and alcohol intake among others.[15] Lifestyle behaviours play a critical role in the aetiology and perpetuation of prevalent mental disorders, such as mood disorders and anxiety, and are highly modifiable.[14,16–18] However, despite >80% of people with

mental health problems expressing a desire for lifestyle medicine from their general practitioner, <5% actually get it.[16,19] Lifestyle modification has also been demonstrated to be therapeutic and cost effective for some mental disorders in individual studies.[20,21] For example, the SMILES and HELFIMED trials of dietary interventions for adults with depression reported lower health sector and societal costs, and lower cost per quality adjusted life year gained respectively when compared with comparative social support interventions.[22–25] Review evidence also suggests the effectiveness of dietary intervention in substance use disorder treatment.[26] However, lifestyle intervention is not routinely integrated into mental health care.[20,27]

Growing evidence demonstrates the effectiveness of lifestyle interventions, particularly exercise interventions, compared with or adjunct to psychopharmacology and psychotherapy for people with common mental illness including depression and anxiety, as well as severe mental illness and substance use disorders.[28–33] Recent publications have largely focused on physical activity and mental health with less of a spotlight on diet.[34,35] Dietitians are qualified health professionals trained to provide dietary assessment, intervention, monitoring, and evaluation in this space, and the available evidence demonstrates it is both needed and effective.[36,37] Dietary intervention can take on a prevention or treatment focus, which is important in the mental health space given the association between diet and mental health is likely to be a bidirectional one.[27] Poor diet has been shown to contribute to poor mental health, while experiencing a mental disorder can negatively influence dietary intake.[27] Dietary interventions can also vary in their focus such as whole of diet, dietary patterns, behaviour change or use of supplements, be integrated into multidisciplinary lifestyle interventions, and be delivered within different clinical settings (e.g. inpatient, community) and across different modalities (e.g. individual, group, in-person, online). However, the application of dietary interventions in mental health care to date have not been synthesised in one place, nor the associated diet and mental health outcomes.

The aim of this rapid review of systematic reviews was to determine the extent of research undertaken on the effectiveness of dietary interventions for individuals with a mental disorder (severe mental illness, depression and anxiety, eating disorders, substance use disorders). This set of mental disorders were selected as they cover some of the most prevalent mental disorders globally,[38] in the major practice areas in which dietitians are currently involved, and/or dietitian involvement is recommended and role statements are available.[10–14,39,40]

2 | METHODS

The processes for this review adhered to the Cochrane review guidelines for rapid reviews,[41] as well as the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews Checklist.[42] As a scoping review, the protocol was not registered. Three electronic databases (MEDLINE [Ovid], Embase [Ovid], Cochrane Reviews and Cochrane Trials) were searched for publications from date of inception to February 2021. Grey literature was not searched. Searches within each database were restricted to English language, human studies, and journal articles (i.e. excluding books, theses/dissertations, and conference abstracts). Reference lists of included articles were also searched for additional articles. Given the diversity of mental health disorders and the large number of articles to screen, searches were completed within each of the following areas to streamline the process: severe mental illness, depression and anxiety, eating disorders, and substance use disorders. Each search strategy can be found in Tables S1–S4 (online supplementary material) with the differences being the key words searched for each set of disorders. For clarity in reporting, and being a rapid review, the numbers of articles identified, screened and included are reported for each individual review area separately rather than combined. The search terms were reviewed by the research team prior to database searching, as per guidelines. Prior to abstract screening, 10% of all articles for each review were screened collectively as a team to ensure the search strategy was correct as well as to ensure consistency in screening. This comprised approximately 30–50 abstracts for each topic review to calibrate the review. Following this, titles and abstracts were screened by two reviewers for each review, with all excluded articles also checked by one reviewer. At the completion of each review, given the overlap in co-occurring mental disorders, excluded articles for each review were also checked for inclusion in one of the other review areas (i.e. excluded articles in the severe mental illness review were screened for inclusion in the depression and anxiety, eating disorders, and substance use disorder review, and so on).

Inclusion criteria for the review were broad and inclusive in line with the objectives of a scoping review,[42] to capture all relevant evidence and to determine the extent of evidence for dietary intervention in the specified areas of mental illness. *Participants/population:* Systematic reviews of children and/or adults (aged 18 years and older) with a mental disorder as defined by the Diagnostic and Statistical Manual of Mental Disorders were included.[3] Determination of a mental disorder could have included a range of assessments such as clinical interview or related assessment tool (e.g. Hamilton Depression Rating Scale). Those with multiple conditions/ diagnoses

were included in the most relevant review as determined by the research team (i.e. severe mental illness, depression and anxiety, eating disorder, or substance use). *Intervention(s)/exposure(s):* Systematic reviews with one or more experimental study which included a dietary intervention, and where the results were analysed and reported separately for the studies with dietary interventions, were included. This was achieved via consensus among the review team. Included dietary interventions for this review were those aiming to improve dietary intake, physical/metabolic health, or mental health symptomology, including but not limited to behaviour change interventions, prescribed diet or supplementation interventions, and multi-behaviour interventions with a dietary component. Regarding supplementation interventions, those where supplements were from food sources (e.g. omega-3 supplement) were included, while those where supplements were from herbal or botanical sources (e.g. ginkgo) were excluded. *Comparator(s)/control:* Systematic reviews were not included or excluded on the basis of comparator groups of included studies, i.e. reviews were not required to include studies with or without specified comparator groups. For those that did include studies with comparator groups, these could include any comparator (i.e. other dietary intervention, no intervention or waitlist control group). Types of studies: Only systematic reviews of experimental studies (e.g. randomised controlled trials, pre post studies) were included. Systematic reviews which included experimental studies as well as other study designs were included if the experimental study findings were reported separately. Narrative reviews or those without a clear search strategy were excluded. *Main outcome(s)*: Included reviews must have included a mental health or physical health related outcome. Mental health outcomes could have included symptoms of mental ill-health, mental disorder diagnosis, or severity of mental disorder. Physical health outcomes included but were not limited to: dietary intake such as reporting energy, nutrient, or food group intake, dietary patterns or diet quality, metabolic outcomes including body composition (e.g. body fat percentage measured by dual energy X-ray absorptiometry), weight, body mass index, waist circumference, blood lipids, blood pressure, smoking-related outcomes (e.g. smoking cessation), or blood glucose-related outcomes (e.g. HbA1c, fasting blood glucose). Other outcomes included other biomarkers (e.g. inflammatory markers) and quality of life.

Data extraction was completed using a standardised extraction tool developed by the authors and pilot tested prior to use. Data was extracted by one reviewer and checked by a second reviewer for consistency and correctness. A third reviewer was consulted in the case of any disagreements. Data extracted included systematic review characteristics (author, publication year, search dates, characteristics of included study populations, number and design of included studies), type of included dietary interventions and any comparators, outcomes (mental health, physical health [including dietary] and other outcomes reported), whether critical appraisal of included studies was conducted or not, presentation of results (meta-analysis/narrative summary), and broad conclusions of the review. The search dates of each review are presented in the results as timeline bar graphs to demonstrate potential overlap in search time periods. Data were extracted only for relevant studies within systematic reviews, for example if a review included both experimental and observational studies only the experimental studies were extracted and only this data reported. Given this was a scoping, rapid review, with a focus to determine the extent of evidence, the quality of included studies was not assessed.

3 | RESULTS

The total number of articles identified in the searches for each review area included severe mental illness ($N = 759$), depression and anxiety ($N = 3639$), eating disorders ($N = 623$), and substance use disorders ($N = 3082$). Flow diagrams are included as online supplementary material (Figures S1–S4). Of these, 46 systematic reviews were included in the rapid review, including 67% in severe mental illness, 20% in depression and anxiety, 7% in eating disorders, and 7% in substance use disorders. Further results are reported for each review area separately, with detailed characteristics of included studies reported in Tables S5–S8.

Thirty-one systematic reviews with a total of 340 dietary intervention studies in individuals with severe mental illness were included.[21,37,43–71] The reviews were published between 2003 and 2020, with 16 of the reviews[37,44,45,50,51,54,55,59,60,62–64,66,67,69,71] published within the last 5 years (i.e. since 2016). Figure 1 depicts the search dates of the included reviews. Three of the reviews had no included studies,[65,67,71] and therefore the remainder of the results are described for the 28 reviews which had included studies. Eighteen of the 28 reviews included studies of adult populations,[21,37,43,48–50,53–57,60,62–64,68,69] and 10 included children/adolescents and adults.[44–47,51,52,58,61,66,70] Twenty-seven reviews included studies with male and female participants, and in one review this was unclear.[57] Twenty-five reviews included studies where the majority of individuals had schizophrenia or schizophrenia spectrum disorders,[21,37,43,44,46–60,62–64,66,68,69] and three reviews included studies where the majority of individuals had bipolar disorder.[45,61,70]

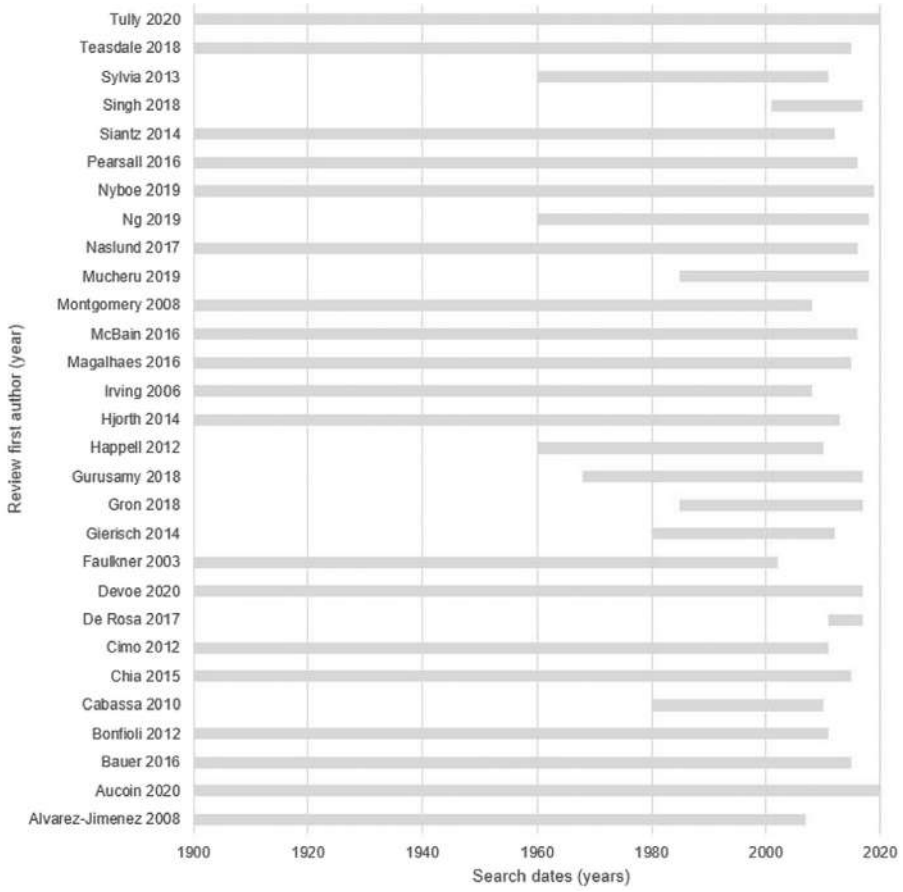

FIGURE 1 Search dates of included systematic reviews – severe mental illness. Search start dates described as 'from database inception' are recorded in the figure as 1900. Bradshaw 2005 and Nover 2013 are missing from the figure as full information on search dates was not reported.

Seven reviews included studies of diet-only interventions,[48,51,58,59,61,64,70] all of which were supplementation interventions (predominantly omega-3 supplementation). Thirteen reviews included studies of multi-behaviour interventions which had a dietary component.[21,43,45,46,49,50,53–55,60,63,66,68] Eight reviews included studies of diet-only and multi-behaviour interventions with a dietary component,[37,44,47,52,56,57,62,69] with most of these interventions involving combinations of nutrition education, counselling and behaviour change elements. Fourteen reviews reported mental health outcomes for one or more included study,[43–45,47,48,50,51,56,58,59,61,64,68,70] and eight reviews reported dietary outcomes for one or more included study.[37,45,47,50,56,57,60,62] Twenty-five of the reviews also reported other outcomes for one or more included study,[21,37,43–50,52–63,66,68,69] with 21 of these including a weight-related outcome (e.g. weight, body mass index, waist circumference).[21,37,43–47,49,50,52–57,60,62,63,66,68,69] Twenty reviews reported results in favour of dietary intervention for the treatment of severe mental illness, either by meta-analysis or with the majority of included studies reporting significant, positive results.[21,37,43–49,52–57,62,63,68–70] The remaining reviews cited lack of evidence and/or heterogeneity in results, and therefore inconclusive findings.[50,51,58–61,64,66]

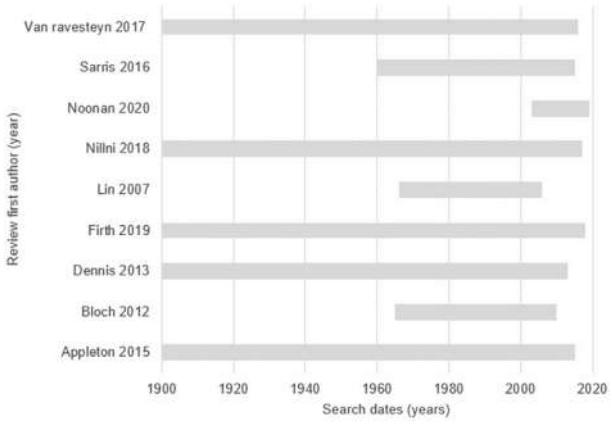

FIGURE 2 Search dates of included systematic reviews – depression and anxiety. Search start dates described as 'from database inception' are recorded in the figure as 1900.

Twenty-two reviews conducted a critical appraisal of included studies.[21,37,43,46,47,49–54,56,58–64,66,68,69]

Nine systematic reviews with a total of 102 dietary intervention studies in individuals with depression or anxiety were included.[36,72–79] The reviews were published between 2007 and 2020, with five of the reviews[36,76–79] published within the last 5 years (i.e. since 2016). Figure 2 depicts the search dates of the included reviews.

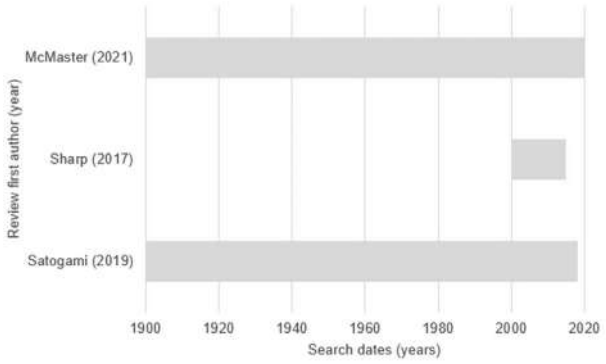

FIGURE 3 Search dates of included systematic reviews – eating disorders. Search start dates described as 'from database inception' are recorded in the figure as 1900.

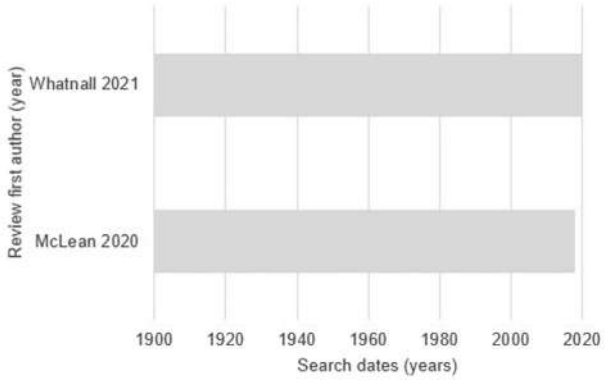

FIGURE 4 Search dates of included systematic reviews – substance use disorders. Search start dates described as 'from database inception' are recorded in the figure as 1900. Galduroz 2020 is missing from the figure as full information on search dates was not reported.

Seven of the reviews included studies of adult populations,[36,72–77] one included children/adolescents and adults,[78] and in one review this was unclear.[79] Four reviews included studies with male and female participants,[36,72,77,78] three included studies with females only,[74,76,79] and in two reviews this was unclear.[73,75] Five of the reviews included studies of individuals with depression,[36,72–74,78] while the other four reviews included studies of individuals with depression and/or other disorders including anxiety, bipolar disorder, and post-traumatic stress disorder.[75–77,79] In eight of the reviews the included dietary interventions within studies were supplementation interventions, including six reviews with omega-3 supplementation interventions,[72–76,79] one review with pre- and probiotic supplementation interventions,[77] and one review with any dietary supplementation intervention (with most studies including folic acid, omega-3 or tryptophan supplementation).[78] All nine reviews reported mental health outcomes for one or more included study, while none reported dietary outcomes. Six of the reviews conducted meta-analyses,[36,72,73,75,78,79] and four of these reported significant results in favour of the analysed dietary interventions for depression treatment,[36,72,75,78] however with small effect sizes and noted limitations (e.g. low quality evidence, evidence of publication bias). Seven of the reviews conducted a critical appraisal of included studies.[36,72–74,76,77,79]

Three systematic reviews with a total of 24 dietary intervention studies in individuals with eating disorders were included.[80–82] The reviews were published in 2017,[82] 2019,[81] and 2021.[80] Figure 3 depicts the search dates of the reviews. Two reviews focused on individuals with a diagnosis of anorexia nervosa, bulimia nervosa, binge eating disorder, or eating disorder not otherwise specified.[80,81] This includes the review by McMaster et al. including studies of nutrition education/behaviour change interventions in adults,[80] and the review by Satogami et al. including studies of omega-3 supplementation in adults and children.[81] Sharp et al. focused on avoidant/restrictive intake disorder in children, and included multi-behaviour interventions.[82] The reviews by McMaster et al. and Satogami et al. reported mental health outcomes for one or more included studies,[80,81] while McMaster et al. and Sharp et al. reported dietary outcomes for one or more included studies.[80,82] The reviews by McMaster et al. and Satogami et al. reported mixed and non-significant findings respectively, with both concluding that further research is needed.[80,81] The review by Sharp et al. reported positive findings in favour of intensive, multidisciplinary intervention for children with avoidant/restrictive intake disorder.[82] All three reviews conducted a critical appraisal of included studies.

Three systematic reviews with a total of 20 dietary intervention studies in individuals with substance use disorders were included.[26,83,84] Two reviews were published in 2020[83,84] and one in 2021,[26] and all included studies with adult populations. Figure 4 depicts the search dates of the reviews. Two reviews focused on individuals with alcohol use disorder, with Galduroz et al. including studies of omega-3 supplementation,[83] and McLean et al. including any nutrition intervention.[84] Whatnall et al. focused on any nutrition intervention in adults with substance use disorders for illicit substances or illicit use of pharmaceutical substances.[26] All three reviews reported mental health outcomes for one or more included study, while only Whatnall et al. and McLean et al. reported dietary outcomes for one or more included studies.[26,84] The consistent conclusion across the three reviews was the lack of and/or limited range of dietary intervention studies, with Galduroz et al. including one study, and Whatnall et al. including five studies. While McLean

et al. included 14 studies, all but one was supplementation interventions and therefore limited in terms of other types of dietary intervention. All three reviews conducted a critical appraisal of included studies.

4 | DISCUSSION

This rapid review of systematic reviews identified 46 reviews addressing the effectiveness of dietary interventions for individuals with severe mental illness, depression and anxiety, eating disorders, or substance use disorder. The majority of reviews were published in the last 5 years, which is in line with the growing recognition of the role of dietary intervention in mental disorder treatment. There were a larger number of reviews and with more included studies in the areas of severe mental illness, and depression and anxiety. The majority of reviews in both these areas reported conclusions in support of the positive effects of dietary intervention in the treatment of the respective mental disorders. The number of reviews, and therefore breadth of evidence, was more limited in the areas of substance use disorder, and eating disorders.

This review identified a large amount of evidence of dietary intervention in the treatment of severe mental illness, and depression and anxiety, with the majority of reviews providing evidence to support dietary intervention for these mental disorders. In the case of severe mental illness, those dietary interventions found to be effective were nutrition education and behaviour change type interventions, many of which focused on weight loss or weight management and reported positive changes in weight-related outcomes. The use of the term positive to describe change in outcomes here is reflective of the terminology and intended outcomes of the included reviews and their included studies. However, it should also be noted that weight in the context of diet and mental health is complex, and a weight increase or decrease may reflect an improvement or decline in mental health dependent on an individual's mental disorder diagnoses and other characteristics of the individual, intervention and setting. For depression and anxiety, supplementation interventions were found to be effective, predominantly omega-3, and in most cases reporting positive changes in depressive symptoms. The present review found limited evidence of the use of dietary intervention in eating disorders and substance use disorders, despite the high and/or increasing prevalence of these disorders in the last decades.[85,86] Although the included reviews in the areas of eating disorders and substance use disorders reported lacking evidence and inconsistent outcomes, benefits of integrated approaches to treatment were also shown, supporting previous calls for greater multidisciplinary collaboration in evidence-based management of not just these mental disorders, but mental disorders collectively.[10,11,14,87] When considering the breadth of evidence, it is important to factor in the types of interventions identified as well as the quantity of studies. With the exception of the severe mental illness review, there was consistency across other areas (i.e. depression and anxiety, substance use disorders, eating disorders) in that limited types of dietary interventions were identified.

The predominant type of dietary intervention studies identified and included within the systematic reviews differed by mental disorder diagnosis. Those interventions identified in the eating disorders and severe mental illness review areas were predominantly education and behaviour change interventions, where those identified in the substance use disorders, and depression and anxiety review areas were predominantly supplementation interventions. This highlights that a broader range of dietary interventions are needed, including more holistic dietary approaches that focus on addressing for example dietary patterns, diet quality and behaviour change, particularly in the areas of substance use disorders, and depression and anxiety. Consistently across reviews, dietary interventions were provided as an adjunctive treatment, however that is more so reflective of the inclusion criteria for the rapid review in that individuals within studies had to have a mental disorder diagnosis. If prevention interventions were also included then it is likely that more stand-alone dietary and/or lifestyle interventions might have been identified.[88,89]

Overall most reviews included studies of adult populations. Most reviews were limited to studies of adult populations, and those that were inclusive of studies in any age group identified mostly studies in adults. This suggests a greater focus on dietary intervention targeting adults with the mental disorders under study than children and adolescents. However, it might also be due to the fact that mental disorders more common in childhood, such as attention hyperactivity deficit disorder and behavioural conditions,[90] were not included in this set of reviews. Almost all reviews included studies with male and female participants. Three reviews within the area of depression and anxiety included only studies of female participants, however this was in accordance with a focus on either antenatal or perinatal depression.

This set of rapid reviews provides a much-needed overview of the research to date in terms of dietary interventions used in the treatment of severe mental illness, depression and anxiety, eating disorders, and substance use disorders. It is essential to guide future research and practice as to where the gaps are. Although a large amount of evidence (demonstrated by the number of

reviews identified) is available to synthesise in the areas of severe mental illness, and depression and anxiety, there are some noted limitations. This includes the ability to compare across studies due to their heterogeneity, the fact that three reviews in severe mental illness found no articles of relevance to include, and the predominance of supplementation interventions and the need therefore for further research of broader interventions (e.g. whole of diet or food-based interventions, and settings-based interventions). Future research should identify areas within the broad range of evidence identified here to conduct more focused systematic reviews and/or primary intervention studies to move the field forward in terms of identifying and implementing effective dietary intervention for individuals with a mental disorder diagnosis. For example, extending from the current review by considering each area or set of mental disorders within individual systematic reviews aiming to synthesise the possible effectiveness or efficacy of dietary interventions, or further specific types of dietary intervention approaches. Future research should synthesise the effectiveness of dietary approaches for both the prevention and treatment of mental disorders. Specifically, the focus should be on conducting studies that are powered to detect changes in both mental health outcomes and dietary outcomes as a result of evidence-based dietary interventions. This should also include comprehensive and validated assessment of dietary intakes of those with a mental disorder, particularly as this may assist in the early identification of those individuals who would benefit from a dietary intervention, for example those commencing medications where dietary intake may be affected.

The major strengths of this review are the use of a comprehensive search strategy and screening process, and adherence to the Cochrane review guidelines for rapid reviews[41] and the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews Checklist.[42] Acknowledging the heterogeneity of the mental disorders considered in this review as well as that of the included reviews (e.g. in population groups, dietary intervention types), the broad overview of evidence that this review provides is a strength in terms of the need to document the current evidence and guide future research and practice regarding dietary interventions in mental health care, including for specific subpopulations. Limitations of this review should also be acknowledged. The included systematic reviews were only those published in English, which may have excluded some relevant evidence in other languages. This review included only those systematic reviews which included studies of treatment interventions for those with a mental disorder diagnosis. Therefore reviews of interventions aiming to prevent mental disorders or including individuals without a mental disorder diagnosis were excluded as this was outside the scope. This also meant that reviews of interventions in mixed study participants (i.e. individuals with and without a mental disorder diagnosis) were excluded which may have excluded some relevant evidence, however to include these would have affected the specificity of the review findings. Reviews of dietary interventions using any experimental research design were included. While this is inclusive of some lower quality evidence rather than limiting to reviews of randomised controlled trials, it is important to include a broader range of study designs as it may not always be ethical or feasible to conduct a randomised controlled trial. For example it may not be ethical to include a control group depending on the mental disorder diagnoses of the individuals in the target population, the type of intervention being offered, or the setting. While the scoping review approach is appropriate for the aims of this review, a limitation of this approach is that data is extracted at the broad level, and with this being a review of reviews, the level of detail in data extraction is also dependent on that of the included reviews. For the purposes of the review, studies were grouped on the major mental disorder diagnosis. However, this does not reflect that in many instances an individual may have multiple mental disorders or other comorbidities as well as a mental disorder. When interpreting the findings of this review, it is important to note there is some overlap of included studies within the included systematic reviews, as demonstrated by the timeline bar graphs of review search dates. However, differences in review inclusion criteria should also be considered such as including only supplementation trials or trials of any nutrition intervention.

In terms of implications for practice, the large number of systematic reviews identified overall in this review, as well as the recency of these reviews, demonstrates a growing evidence base of dietary interventions for mental health. Dietitians should be aware of this growing evidence base, especially in relation to highly prevalent mental disorders. Future research and implementation of dietary interventions for individuals with mental disorders should utilise the expertise of dietitians practising in this area throughout the research process (e.g. dietary assessment, intervention development, participant recruitment, intervention delivery), to assist in moving the field forward. It is critical that these and future research findings are widely disseminated in advocacy efforts, to promote the role of dietitians in mental health care and strengthen calls to government regarding funding and access to dietitians in mental health care settings. Dietary intervention is an important component of the care and treatment that should be available to individuals living with mental disorders, in order to support their physical health as well as

mental health. Greater recognition of the role and importance of dietitians and dietary intervention, and funding to support this, is needed to further implement initiatives such as the National Mental Health Commission's Equally Well Consensus Statement 2016.[91] In addition, a recent report from New Zealand highlighted the large evidence-to-practice gap regarding the discrepancy between the growing number of individuals with mental ill health, and the low number of dietitians employed in mental health care and therefore available to support these inviduals.[92] Dietitian involvement as part of the core multidisciplinary care team is essential in order to deliver lifestyle interventions for individuals with mental disorders as per recommendations for best practice.[11,14,92]

AUTHOR CONTRIBUTIONS

All authors conceptualised the study design. TB, TR, ST, AF, DH, JS and MW conducted the article screening. TB, MW, ST, TR and AF conducted the data extraction. TB and MW drafted the initial manuscript. All authors contributed to the interpretation of results, critically reviewed the manuscript and approved the final version.

CONFLICT OF INTEREST

All members of the research team are members of Dietitians Australia. Julia Schindlmayr is a staff member of Dietitians Australia. The authors have no other conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analysed in this study.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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REVIEW

The therapeutic relationship between a client and dietitian: A systematic integrative review of empirical literature

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Abstract

Aim: Scientific evidence underpins dietetics practice; however, evidence of how the therapeutic relationship influences outcomes is limited. This integrative review aims to provide a comprehensive overview of the topic of the therapeutic relationship between clients and dietitians in the individual counselling context by summarising empirical literature into qualitative themes.

Methods: An electronic literature search of the Cumulative Index of Nursing and Allied Health Literature, PsychInfo, Scopus and Web of Science databases was conducted in October 2018 and repeated in February 2021. Studies were included if they explicitly referred to the therapeutic relationship (or associated terms), were based on study data and available in full text. Extracted data were checked by a second researcher and the methodological quality was evaluated independently by two researchers using the Mixed Methods Appraisal Tool. An iterative process of qualitatively coding, categorising and comparing data to examine recurring themes was applied.

Results: Seventy-six studies met the inclusion criteria. Five themes were identified which showed the extent and nature of research in this area. Studies revealed the therapeutic relationship: (i) is valued within clinical dietetic practice, (ii) involves complex and multifactorial interactions, (iii) is perceived as having a positive influence, (iv) requires skills training and (v) is embedded in practice models and tools.

Conclusion: Studies show the therapeutic relationship is a valued and multifactorial component of clinical dietetic practice and is perceived to positively influence the client and dietitian. Observational data are needed to assess the extent to which the strength of the therapeutic relationship might contribute to clients' health outcomes.

KEYWORDS

systematic review, patient-centered care, professional-patient relations, qualitative research, therapeutic relationship

1 | INTRODUCTION

Dietetics is an evidence-based profession where peer-reviewed, scientific research underpins practice. The International Confederation of Dietetic Associations describes evidence-based practice as a skill for dietitians to guide their decision-making. They describe dietitians having to combine an assessment of how valid, applicable and important evidence is with their own expertise and the client's values and circumstances.[1] Hence, an evidence-based approach requires critical skills of the dietitian in understanding, evaluating and applying scientific knowledge in a meaningful way for the client. In Australia, dietitians are required to practise within an evidence-based approach as outlined by the Statement of Ethical Practice[2] and National Competency Standards,[3] a requirement that is supported by the International Code of Good Practice published by the International Confederation of Dietetic Associations.[4] Thus, practising in a way that is built upon credible, scientific evidence is fundamental to the dietetic profession. This evidence should also relate to *how* effective practice is conducted, including consideration of the therapeutic relationship with clients.

Although governing documents depict the therapeutic relationship as crucial for clinical dietetic practice, comprehensive descriptions of its key components are scarce.[3,5] For example, the competency standards for dietitians in Australia state dietitians must 'build an effective relationship' with little articulation of what an effective relationship might look like.[3] In earlier research, the authors have shown that meaningful therapeutic relationship development is a complex and multi-faceted process.[6] However, prior to this, many studies simply identified stand-alone qualities (such as 'trust') as important for relationship development without detailed descriptions of the process of meaningful relationship development as a whole.[7–9] The limited descriptions of important relationship components may in part be due to the heavy influence of biomedical and nutritional sciences as sources of evidence for practice. A qualitative study that explored dietitians' perceptions of evidence-based practice reported that dietitians did not perceive knowledge about communication skills to be 'evidence-based'.[10] In contrast to biomedical and nutritional information, dietitians did not feel they needed to retrieve information from the scientific literature to understand the evidence-base around communication skills. These skills were instead considered as 'know-how', gained through professional development opportunities rather than scientific literature.[10] The therapeutic relationship is integral to communication and counselling practices, as they are pivotal to how effectively the client and dietitian engage and are able to work together.[11] However, these findings suggest dietitians may also not consider knowledge and skills in the development of therapeutic relationships as part of the 'evidence-based' reference framework. This suggests a need for more scientific knowledge of therapeutic relationships, particularly as it can indeed provide evidence that informs practice.

Exploratory research may be required in the first instance. Integrative literature reviews are appropriate as they can provide a more comprehensive understanding of a specific healthcare phenomenon by summarising relevant literature and allowing various methodologies to be included.[12] Integrative reviews on therapeutic relationships can be found in other disciplines such as nursing, physiotherapy and occupational therapy, but are limited in dietetics.[13–17] One integrative review of published studies from 1997 to 2016, focused on patient-centred care in dietetics.[18] It highlighted the significance of the therapeutic relationship and noted this relationship as an important dimension in delivering patient-centred healthcare. Although patient-centred care and the therapeutic relationship are related concepts, the integrative review on patient-centred care did not comprehensively focus on the therapeutic relationship. The inclusion criteria specified 'relationship' only and did not include other terms known to represent the phenomenon of the therapeutic relationship, for example, 'alliance', 'connection' and 'rapport'. Dietetic students were also excluded and hence the review on patient-centred care did not capture literature describing how students might be trained in therapeutic relationship development. There remains a need to review research that comprehensively focuses on the concept of the therapeutic relationship (including other like terms), particularly those published prior to 1997 and since 2016.

The integrative review reported here addresses the broad question 'What does research on the therapeutic relationship tell us about the phenomenon in clinical dietetic practice?'. The aim of this study was to provide a comprehensive overview of the topic of the therapeutic relationship between clients and dietitians in the individual counselling context by summarising empirical literature into qualitative themes. The term 'therapeutic relationship' is widely used across healthcare literature and hence is used throughout to refer to the purposeful relationship between a client and dietitian for the client's therapeutic benefit.[19] 'Therapeutic alliance' is also used, as it is a term used within the psychology discipline that refers to a component of the therapeutic relationship.[20]

2 | METHODS

This integrative review was written in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.[21] The

integrative review methodology was guided by the work of Whittemore and Knafl who specify five key stages: problem identification, literature search, data evaluation, data analysis and data presentation.[12] The approach has been applied previously by Sladdin et al. in a study of patient-centred care in the dietetic context.[18]

A systematic electronic literature search was conducted in October 2018 and repeated in February 2021 to account for studies published after the original search date. The terms 'dietitian', 'client' and 'relationship' were used as a foundation to identify other relevant search terms. To ensure a comprehensive list of terms was achieved a health sciences librarian was consulted and the online version of the Oxford thesaurus was used in addition to the first author's knowledge of terminology expressed in the literature.[22] Medical subject headings (MeSH) were also utilised to ensure key terms were included and truncated appropriately, for example, searching for 'relation*' rather than 'relationship'. Search terms corresponding to the dietitian and client included: 'dietitian', 'dietician', 'nutritionist', 'client' and 'patient'. Search terms corresponding to 'relationship' included: 'relation*', 'alliance', 'partner*', 'collaborat*', 'connect*', 'rapport', 'bond*' and 'interaction*'. Boolean connectors 'AND' and 'OR' were used. Four electronic databases were searched: Cumulative Index of Nursing and Allied Health Literature (CINAHL), PsychInfo, Scopus and Web of Science. Research shows electronic database searches may yield only half of the eligible studies and therefore other strategies were applied, including ancestry searching and hand searching of key dietetic journals.[23] Google Scholar and Scopus databases were used to attain articles identified through ancestry and hand searching. All citations obtained through searching were imported into EndNote for data management purposes.[24]

One researcher screened the titles and abstracts of articles according to the inclusion and exclusion criteria. Studies were included if they: (i) explicitly referred to the relationship, alliance, partnership, collaboration, connection, rapport, bond or interaction between a client and dietitian, nutritionist or nutrition and/or dietetic student concerning the study being reported, (ii) were empirical (that is based on data collected for a study), and (iii) were available as full text. Studies were excluded if they referred to the relationship (as outlined in the inclusion criteria above) but only with regard to group-based interventions, or described a multidisciplinary context but it was unclear if the relationship was between a client and dietitian, nutritionist or nutrition and/or dietetic student specifically. No exclusion criteria for study language or year was applied to maximise the opportunity for relevant data to be captured. English translations of the full-text version of published articles were requested from authors via email. Articles were obtained and each full-text article was read by the researcher to determine if they met the inclusion criteria.

Data were systematically extracted into a Microsoft Excel[25] table that included study authors, year and country, study design and aim, inclusion criteria, sample, data collection and analysis methods and findings concerning the therapeutic relationship or associated terms. One researcher extracted all data which were checked by a second researcher using a method for source data verification (that is comparing original documents to recorded data).[26] The percentage of errors identified was within the acceptable error rate (≤5%) meaning no further checking of data was required.[26]

The methodological quality of each study identified in the initial search was independently scored by two researchers using the Mixed Methods Appraisal Tool (MMAT). This was performed due to the subjectivity of the MMAT.[27] Researchers discussed differences between scores and an agreed score was decided. Justification for the agreed scores was documented and used to score studies identified in the repeated search.

Following processes outlined by Whittemore and Knafl, the data were 'ordered, coded, categorised and summarised' by one researcher and refined through discussions with the interdisciplinary research team (dietetics and psychology).[12] Initially, studies were ordered according to whether they referred to the 'relationship' or 'alliance', or associated terms such as 'connection'. Data concerning the terms 'relationship' and 'alliance' were analysed together because both are established terms in the psychology discipline with evidence-based constructs (e.g., psychologist Bordin's 'working alliance').[20] These terms were initially analysed separately from other terms in anticipation of a possible difference in findings given their link to evidence-based constructs. Data were then ordered according to study design (either qualitative, quantitative, mixed methods or literature reviews).

Whittemore and Knafl suggest applying the constant comparative method particularly for analysing data from different methodologies.[12] All extracted data were copied directly from the data extraction table for coding by one researcher. Data concerning the relationship and alliance were coded first, followed by data concerning associated terms. The coding process began with assigning initial codes, which were codes that described evidence in the data extract for either 'relationship', 'alliance' or associated terms. These codes were then compared, where similarities between codes were identified and consequently grouped together to form common themes.[12] This process involved re-reading codes and adjusting preliminary

themes to ensure the themes reflected the codes. Once themes were developed for data within each study design, they were then compared across study designs and merged where similarities were seen (e.g., quantitative and qualitative data showing the relationship is important). Data were collated across study designs to reflect merged themes.[12] This process occurred separately as part of the analyses for both primary terms ('relationship' and 'alliance') and associated terms (e.g., 'connection').

Established themes within both primary and associated terms analyses were compared, with similarities and differences documented. These notes allowed identification of major themes across both analyses, and where appropriate these were adapted to reflect data from both analyses. Following this, data were collated and findings were reviewed to confirm each theme. The final phase of the analysis involved drafting a summation of each theme where its meaning was further crystallised.[12] Meetings were also held with the interdisciplinary research team where the emerging analysis was discussed, critiqued and refined. This team consisted of researchers from both dietetics and psychology and allowed for themes that were developed from a dietetics lens to be challenged from a psychology perspective. Additional notes were kept by the researcher to document the emerging analysis, analytical decisions and possible directions for further analysis.[12]

3 | RESULTS

From 2433 studies identified for screening, 76 studies were included (Figure 1). Most quantitative studies were descriptive, and predominantly utilised surveys ($n = 21$)

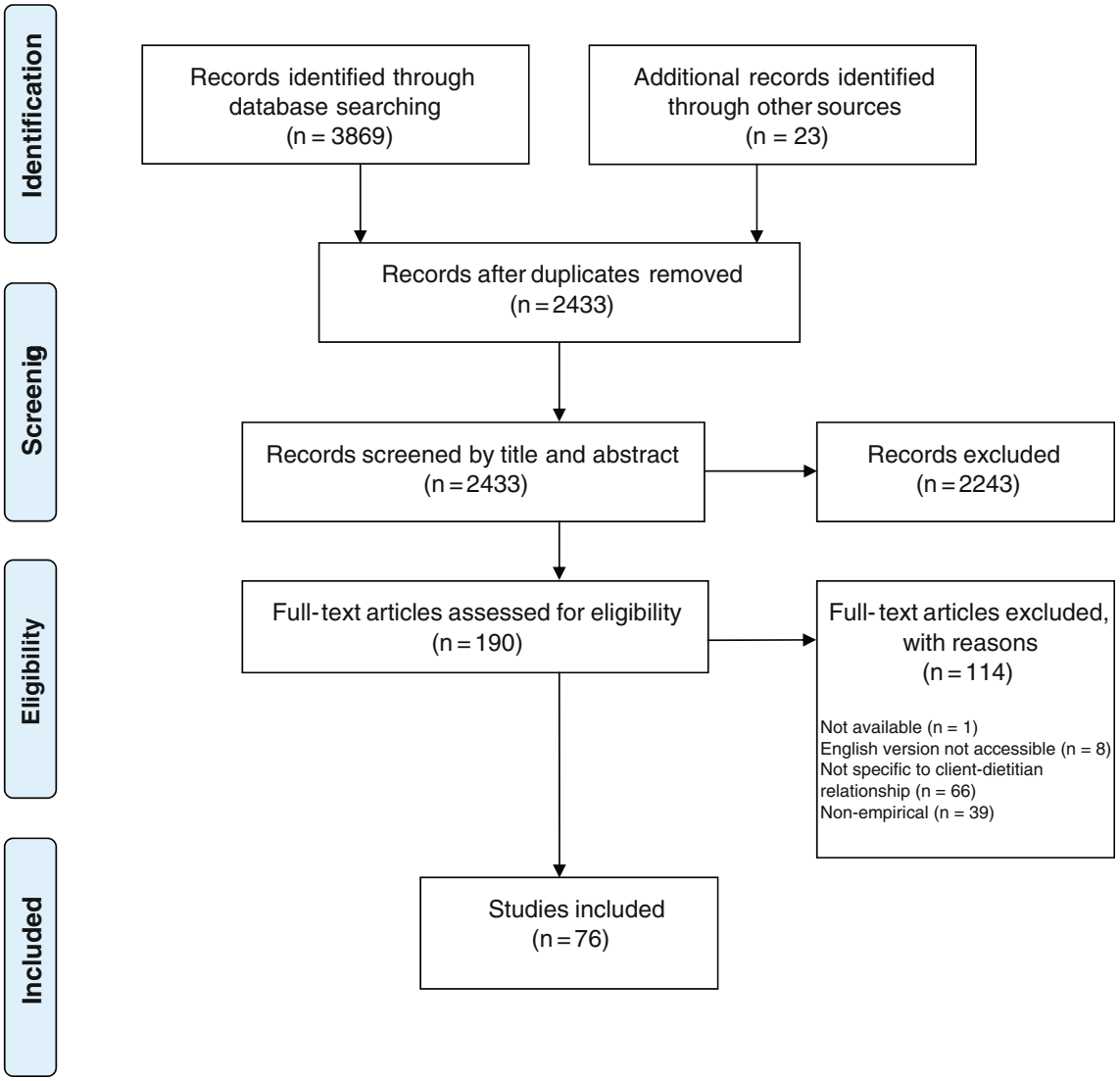

FIGURE 1 PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) flow diagram showing the selection of included studies for the integrative literature review (combined results from all searches)

TABLE 1 Summary of included studies with key findings referring to primary terms ('relationship' or 'alliance') and associated terms (e.g., connection) in alphabetical order by first author

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
Ash et al.,[28] Australia	Qualitative: interviews and guided discussions (secondary analysis)	Dietitians (1991 interviews $n = 26$) (1998 interviews $n = 23$) (2007 interviews $n = 19$) Dietitians and employers (2014 guided discussions $n = 7$)	To explore how a competency-based education framework influenced competency standards and their application and how this influenced dietetic practice in Australia since 1990	*****	Communicating for better care, as part of the therapeutic relationship, remained a central dietetic role (throughout dietetic competency standards in Australia)	Communication skills of dietitians have evolved from educating clients to negotiating with clients. Competency standards have reflected this change, from 'Interprets and translates nutrition information' (1993 competency standards) to 'Collaborates broadly with clients...' (2015 competency standards)
Ball et al.,[7] Australia	Qualitative: semi-structured interviews (telephone)	Clients ($n = 10$)	To explore the nutrition care needs of newly diagnosed patients over time, as well as their views on how dietitians can best support the long-term maintenance of dietary change	*****	Clients value genuine relationships few participants perceive an ongoing relationship with their dietitian to be useful. The importance of the dietitian treating the patient as a person for the relationship	
Brody et al.,[29] USA	Quantitative—descriptive: Delphi	Dietitians ($n = 73$)	To describe the practice activities performed by clinical advanced practice registered dietitian nutritionists that reached consensus using the Delphi technique	***		Dietitians reached a consensus on 'establishing trust and rapport' being an essential component of advanced dietetic practice
Brown et al.,[30] USA	Quantitative—descriptive: survey (paper)	Dietitians ($n = 395$)	1. To identify the motivational strategies used most often by dietitians when counselling individuals with diabetes mellitus 2. To determine those strategies that dietitians	****	Identification of effective strategies for establishing a comfortable relationship with client: using positive external motivators, individualising recommendations and exhibiting organisational management of content	The rapport between a patient and dietitian was not identified as a barrier to dietary adherence for patients managing diabetes

(Continues)

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
			perceive as being most effective 3. To identify barriers perceived by dietitians as being the most significant obstructions to dietary adherence experienced by individuals with diabetes 4. To explore the effect of various demographic variables such as level of education, years of experience, setting of practice, and certification as a diabetes educator on the use of motivational strategies			
Buttenshaw et al.,[31] Australia	Quantitative—descriptive: survey	Dietitians ($n = 185$) (Study 1) Dietitians ($n = 458$) (Study 2)	To develop a reliable instrument to measure generalist dietitians' confidence about working with clients experiencing psychological issues	***		'Build rapport' was included in the initial confidence scale, however, it was not included in the final scale
Cairns and Milne,[32] Canada	Quantitative—descriptive: survey (mail)	Dietitians ($n = 65$)	To determine what counselling strategies are being used and identify the educational needs of registered dietitians who work with clients with eating disorders in Canada	***		'Rapport building' was identified as a common type of strategy used by dietitians. Some dietitians (10% of sample) did not want more training in rapport-building strategies, with the most common reason being they felt well-trained in this skill already. The following strategies were listed as rapport-building strategies: reflective listening, attending to non-verbal communication, person-

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
						centred approach, humour, immediacy, socratic interview style, self-disclosure
Cant and Aroni,[33] Australia	Mixed methods: survey (online)	Dietitians ($n = 258$)	To critically examine practising dietitians' experiences and perceptions of their roles in education of individual clients, both in applying entry level communication skills, and in progressive skill development	***	Dietitians aim to develop a working alliance with their clients as desired in more collaborative relationships	Dietitians who were trained 30 years before the study date commented on the transition in practice from educating clients, to more modern practice utilising a partnership with the client and skills in nutrition counselling
Cant and Aroni,[11] Australia	Mixed methods: focus groups and semi-structured interviews (face-to-face or telephone) (Phase 1) and survey (online) (Phase 2)	Dietitians ($n = 46$) clients ($n = 34$) (Phase 1) Dietitians ($n = 258$) (Phase 2)	To examine perceptions of both dietitians and their patients about dietitians' skills and attributes required for nutrition education and individuals	*****	Understanding the results of the study (as a guide to communication practice) might help enhance dietitian-patient relations	'Partnership' and 'collaboration' identified as part of interpersonal and communication skills in a model of professional performance in communication. Results suggest that collaboration is required in the professional competencies of dietitians in the 21st century
Cant and Aroni,[34] Australia	Mixed methods: focus groups and semi-structured interviews (face-to-face or telephone) (Phase 1) and survey (online) (Phase 2)	Dietitians ($n = 46$) clients ($n = 34$) (Phase 1) Dietitians ($n = 258$) (Phase 2)	To examine dietitians' perceptions of process in education of individual clients and to validate performance criteria for dietitians' nutrition education and counselling of individuals	*****	'Counselling' used by 93% of dietitians (where counselling was described as the use of a relationship to problem-solve with clients). 'Relationship-building skills' identified as the first step of nutrition education in developed model. 'Relationship-building skills' defined as 'develop rapport through introductions, informality, verbal, non-verbal	'Rapport' was included in the definition of the first step of the nutrition education model, 'relationship-building skills'. The definition read 'develop rapport through introductions, informality, verbal, non-verbal communication, own presence'. The developed model suggests dietitians build a relationship with

(Continues)

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					communication and own presence' model for nutrition education suggesting dietitians build a relationship through developing rapport 'Communication skills' identified as underpinning nutrition counselling practice, and defined as 'applies advanced communication skills to counselling to develop a professional relationship with clients' (where client's own experiences and knowledge are central and carry authority within the relationship).	clients through developing rapport 'Collaboration skill' was identified as a second step of the developed model, and was partly defined as aiming 'for partnership with client to problem solve' The developed model describes collaboration and partnership within a nutrition education and counselling consultation with individual clients
Cant,[8] Australia	Qualitative: focus groups and semi-structured interviews (face-to-face or telephone)	Dietitians ($n = 46$) Clients ($n = 34$)	To explore dietitians' and clients' perceptions of trust and to develop a model to explain trustworthiness and professionalism in a health care setting	*****	Dietitians desire to build relationships with patients Building relationships assist the development of the patients' trust Dietitians perceive their own integrity as important in building relationships with patients Dietitians perceive the relationship as depending on openness and the client's assessment of their trustworthiness Use of self-disclosure by the dietitian enhances the depth of the relationship Emphasis on the need to keep the relationship 'professional'	Dietitians aimed to build rapport to gain the trust and respect of the client Clients viewed a desirable communication style as enabling a positive partnership Clients portrayed collaborative partnerships with their dietitian 'Collaboration' was included as part of 'professionals' verbal and non-verbal communication' within the developed model of trust

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					Developed model of trust showing trust as being affected by the relationship	
Cant,[35] Australia	Mixed Methods: Focus groups and semi-structured interviews (face-to-face or telephone) (Phase 1) and survey (online) (Phase 2)	Dietitians ($n = 46$) clients ($n = 34$) (Phase 1) Dietitians ($n = 258$) (Phase 2)	This study focuses on the dress style of dietitians as part of the verbal and/or nonverbal communications within individual client consultations. The study aimed to describe how dietitians and their clients interpret this dialogue and to explore the implications for practice.	*****	There was agreement that professionals' dress formed a nonverbal communication relevant to their relationship, however, there was no evidence that this applied universally	
Cant,[36] Australia	Mixed methods: survey	Dietitians ($n = 365$)	To explore patterns of delivery of dietetic care for patients referred under medicare chronic disease management	****		Dietitians reported allocating patients longer consultation times (predominantly for initial consultations) to build rapport
Chapman et al.,[37]Canada	Qualitative: focus groups	Dietitians ($n = 104$)	To describe Canadian dietitians' approaches to counselling adults seeking weight-management advice, including how dietitians' approaches differ between clients with and without associated risk factors and long histories of dieting	**	Dietitians described their strategy of explaining their approach to clients (when perceived to be misaligned with clients' goals) and enabling clients to decide if they wished to continue the counselling relationship	
Cotugna and Vickery,[38] USA	Quantitative—descriptive: food diary and survey	Students ($n = 11$)	To examine the attempted compliance of 11 student dietitians who were assigned to follow calorie-controlled diabetic diets for 1 week	**	Students perceived the experience of attempting to comply with a diabetic diet as helping them to demonstrate empathy and build more effective relationships	

(Continues)

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
Danish et al.,[39] USA	Quantitative—descriptive: ratings of observed practice	Students ($n = 29$)	To develop a model whereby the anatomy of a typical dietetic counselling interview can be assessed	*	The length of the 'relationship-establishing phase' (versus 'problem-solving phase') varied among counsellors and interviews	In developing rapport, the dietitian being able to demonstrate 'continuing responses' when engaging with the client is crucial. Results indicated that few verbal responses which facilitate rapport development were used by students in interviews A suggestion was made that the length of the 'relationship-establishing phase' (5 min) would not be sufficient to develop rapport and trust
Devine et al.,[40] USA	Qualitative: semi-structured interviews (face-to-face or telephone)	Dietitians and nutrition practitioners ($n = 24$)	To understand dietetics and nutrition professionals' experiences of their practice roles	*****	Dietitians perceived clients' unrealistic expectations as having the potential to interfere with effective therapeutic relationships	
Endevelt and Gesser-Edelsberg,[41] Israel	Qualitative: semi-structured interviews and focus groups	Clinical dietitians ($n = 12$) Supervisory dietitians ($n = 5$) Clients (not specified, $n = 12$ focus groups)	To ascertain the role of the dietitian-patient relationship and the counselling approach in influencing individual patients' decisions to adhere to treatment by continuing or not to adhere by terminating their nutritional treatment	*****	Relationship described in a 'counselling and therapeutic approach', versus an 'educational and therapeutic approach', as both parties working together rather than the patient being solely responsible	The patient-dietitian interaction has a significant impact on the conception of the dietitian's role The patient-dietitian interaction influences the patient's response to education counselling and the extent of commitment and adherence to their treatment plan A 'counselling and therapeutic approach' to practice was described as enabling a partnership between the dietitian and client

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
						There are unique barriers at play in the context of the dietitian-patient interaction
Foley and Houston,[42] Australia	Mixed methods: patient referral and attendance data, focus groups and interviews	General practitioners ($n = 6$) Practice nurses ($n = 7$) Receptionist ($n = 1$) Patients ($n = 13$)	1. To ascertain if changes to dietetic services increased referrals and attendance rates 2. To learn from clinical staff and patients what is important to them in a dietetic service	*		Patients mentioned the dietitian taking time to make a personal connection as a factor contributing to them feeling safe with the dietitian Dietitians forming a personal connection with their patients facilitates improved attendance at the clinic
Gesser-Edelsberg and Birman,[43] Israel	Qualitative: focus groups and interviews	Dietitians ($n = 72$)	To ascertain the impact of the physical environment on the dynamics and communication between a dietitian and a client in a meeting, based on perceptions of dietitians	*****	Recognising dietetics as a constantly changing field, and as moving towards needing to develop deeper therapeutic relationships Dietitians defining success as creating a relationship that motivates change for client	Dietitians perceived that a change to the spatial environmental design (according to the dynamic model) might positively impact the therapeutic interaction Dietitians perceived that changes in the physical environment might undermine patients' feeling of wellbeing and unsettle the therapeutic interaction Most dietitians commented that they had not received training in managing the emotional aspects of the therapeutic interaction and there was no permanent or supportive arrangement to do so The concept of the organisation of the space

(Continues)

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
						in which the dietitian-patient interaction occurs is neither taught nor addressed in professional or educational frameworks Most dietitians view their profession as a dynamic therapeutic interaction process
Gibson and Davidson,[44] Australia	Quantitative—cross-sectional analytical: ratings of observed practice	Students ($n = 215$)	To explore the impact of a student-simulated patient interview on the development of communication skills during formative and summative objective structured clinical exams	*****		'Building rapport' listed as an example of a foundation skill targeted before students undertook simulations
Green et al.,[45] Canada	Mixed methods: survey and interview	Dietitians ($n = 135$) (Phase 1) Dietitians ($n = 17$) (Phase 2)	To explore registered dietitians' perceptions about expressive touch as a means to provide client-centred care	No criteria met	Majority of dietitians perceived that the use of expressive touch may enhance the therapeutic relationship Less than 5% disagreed Dietitians working in community health centres, hospitals, and long-term care reported greater agreement with the statement that expressive touch enhances the therapeutic relationship More opportunities existed for expressive touch in lower acuity environments, where dietitians have a physical layout and practice more conducive to meaningful communication (where the	Dietitians described positive experiences with the use of expressive touch, using different forms of touch to communicate empathic concern, kindness, teamwork and gratitude that facilitated building rapport More opportunities existed for expressive touch in lower acuity environments, where dietitians have a physical layout and practice more conducive to meaningful communication (where rapport is more likely to develop) Dietitians who were less comfortable with touch

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					relationship is more likely to develop) Dietitians expressed concern that expressive touch would erode trust in therapeutic relationship Dietitians described positive experiences of using expressive touch, including reducing the power differential in the relationship Dietitians are attempting to navigate the complexities of expressive touch to strengthen relationships with clients	used other techniques to build rapport
Gregory et al.,[46] USA	Quantitative—descriptive: survey and ratings of observed practice	Not applicable	To develop an instrument for evaluating dietitians' interviewing skills	*		'Rapport' was included as a subcategory of interviewing skills within the developed scale, including: Opportunity for client questions/concerns, sensitivity to client concerns, feedback and social support and no undue interruptions
Hancock et al.,[47] UK	Qualitative: focus groups and semi-structured interviews (telephone)	Clients ($n = 6$) Dietitians ($n = 44$)	To explore qualitatively patients' experiences of dietetic consultations, aiming to achieve a better understanding of their perspectives	*****		'Partnership' and 'rapport' were identified as factors affecting participants' experience of dietetic consultations Patients-reported treating the consultation as a partnership and an important factor in the effectiveness of the consultation

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TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
						Patients described a good rapport between themselves and the dietitian as essential A lack of rapport with the dietitian was listed as contributing to the client's negative experience of dietetic consultations and impacting their outcome achievement and perceived effectiveness of consultations
Harper and Maher,[48] Australia	Qualitative: semi-structured interviews (face-to-face or telephone)	Dietitians ($n = 11$)	To develop an explanatory theory of how dietitians in private practice source, utilise and integrate practice philosophies	*****	Dietitians described forming collaborative relationships with clients to nurture change The private practice context compels dietitians to develop mutually beneficial therapeutic relationships with patients Intellectual virtues (episteme, techne and phronesis) are fundamental to how dietitians adapt their strategies for developing therapeutic relationships Dietitians recognise the importance of developing a therapeutic relationship, and identified these relationships as vital to clients' wellbeing and dietitians' livelihoods The need to establish a relationship where the client feels comfortable	'Facilitating client autonomy' was seen as a necessary part of enhancing rapport Techniques used to build rapport vary according to dietitians and clients Dietitians perceived that facilitating follow-up visits hinged on establishing a rapport and connection from the first consult Building a rapport was shown to be an important aspect of practice The private practice context provided the motivation to establish a rapport with clients and a rich learning environment in which to foster the skills to do so

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					and engaged, before education or the intervention is delivered, was identified Techniques used to develop the relationship vary, and are dependent on the client and dietitian The relationship as a complex interpersonal experience was recognised	
Harris-Davis and Haughton,[49] USA	Quantitative—cross-sectional analytical: survey (paper)	Dietitians ($n = 343$)	To develop and test a model for multicultural nutrition counselling competencies for registered dietitians	***	The factor 'believe that cultural differences do not have to negatively affect communication or counselling relationships' was included under the broader category of 'multicultural awareness' within the multicultural nutrition counselling model	
Harvey et al.,[50] UK	Quantitative—descriptive: survey (paper)	Dietitians ($n = 187$)	1. To assess and compare dietitians' views about overweight and obese people 2. To assess and compare dietitians' reported weight management practice of overweight and obese people 3. To explore the associations between dietitians' views and weight management practices	**	Results for the item 'I (would) make sure I spend time developing a good relationship with clients': overweight questionnaire mean = 5.09 (SD = 0.93), obese questionnaire mean = 4.95 (SD = 1.21) Dietitians reported spending time developing good relationships with clients Reduced acceptance of obese people was associated with a reduction in time spent developing a good relationship with a client	

(Continues)

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
Hauenstein et al.,[51] USA	Quantitative—descriptive: survey (mail)	Dietitians ($n = 194$)	To explore dietitians' perceptions of various techniques that are known to affect dietary adherence of patients with type II diabetes	***		Shared decision making and individualisation of instruction were described as helping to establish a strong rapport between a dietetic educator and client Revealing one's own efforts and problems in achieving dietary adherence was described as a technique used to help build rapport and support behaviour change
Horacek et al.,[52] USA	Quantitative—descriptive: survey and ratings of observed practice	Students ($n = 99$)	1. To assess dietetic students' and interns' use of skills to apply a lifestyle-oriented nutrition counselling model 2. To assess if differences exist between their self, client or expert evaluations; or by student type: coordinated program, didactic program in dietetics and dietetic intern	***	Interviewing skills are crucial to establishing the collaborative relationship needed for effective counselling	'Establishing rapport' was included in the developed lifestyle-oriented nutrition counselling model Students (mean = 4.41, SD = 0.44) rated themselves as significantly higher than their supervisor (mean = 4.26, SD = 0.38) ($p < 0.01$). Students are more confident in their abilities than the experts assessed, indicating room for improvement Students rated their rapport building skills as improving throughout training (pre-training: mean = 3.36, SD = 1.19, pre-counselling: mean = 4.01, SD = 0.79, post-counselling: mean = 4.39, SD = 0.74) ($p < 0.001$)

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
Isselmann et al.,[53] USA	Quantitative—descriptive: survey and interviews	Participants from variety of nutrition counselling settings (not further specified) ($n = 40$)	To develop a continuing education workshop in nutrition counselling	No criteria met	'Client-counsellor relationship' was included in the workshop outline The enhancement of the value of the patient-counsellor relationship through the application of skills and techniques from psychological models was recognised	
Jager et al.,[54] Netherlands	Qualitative: semi-structured interviews	Clients ($n = 12$)	To explore experiences and views of ethnic minority type 2 diabetes patients regarding a healthy diet and dietetic care in order to generate information that may be used for the development of training for dietitians in culturally competent dietetic care	*****		Further research was suggested, in that observations of dietetic consultations may provide information on the 'actual interaction' between dietitians and clients who are migrants managing type 2 diabetes
Jager et al.,[55] Netherlands	Qualitative: interviews	Dietitians ($n = 12$)	To explore the experiences of dietitians and the knowledge, skills and attitudes they consider to be important for effective dietetic care in migrant patients	*****	Trust identified as an important factor in the relationship Dietitians aware that a trusting relationship facilitates information sharing Small gestures that facilitated a warm interaction were identified as important for the relationship Some dietitians found it difficult to build a trusting relationship with migrant patients due to the language barrier and cultural differences Dietitians wanted to learn how to build a trusting	

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TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					relationship and convey information with migrant patients	
Jakobsen et al.,[9] Denmark	Qualitative: semi-structured interviews and observations of counselling sessions	Dietitians ($n = 2$) Counselling session observations ($n = 15$)	To determine whether narrative dietary counselling applied together with motivational interviewing versus motivational interviewing alone is experienced to strengthen the relationship and collaboration between counsellors, and clients with a chronic disease	**	Identification of a particular practice approach 'narrative dietary counselling' as improving relationship building between a client and dietitian Dietitians perceive trust as the most important, yet challenging, prerequisite of relationship building The use of whiteboards and narrative learning strategies fosters an equal relationship (as part of 'narrative dietary counselling' approach)	Dietitians indicated that using the whiteboard (as part of narrative dietary counselling) strengthened their collaboration with the client Collaboration is both important and challenging in dietary counselling Challenges to collaboration were identified as the clients' expectations of dietary counselling and the dietitian's role, and the presumed private character of food and eating issues Dietitians experienced the narrative approach to dietary counselling to be a powerful tool in collaborating with clients through specific techniques used
Jarman et al.,[56] Canada	Mixed methods: ratings of observed practice, survey, interviews and focus groups	Clients ($n = 50$) Dietitians (intervention: $n = 1$, control: not specified)	1. To compare experiences and perceptions of using healthy conversation skills between the intervention and control registered dietitians 2. To compare perceptions of support received from the registered dietitians by intervention and control women, as well as the acceptability of the intervention	*****	The intervention dietitian commented that the healthy conversation skills approach was useful for building relationships with participants by exploring and understanding their barriers and solutions to issues they had 'building relationships' identified as a theme	

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
Jones et al.,[57] UK	Qualitative: semi-structured interviews (face-to-face)	Clients ($n = 24$)	To obtain views of patients attending community dietetic clinics, on the dietetic service, the outcomes of dietary treatment in terms of lifestyle change and the impact that attending the dietitian had on their lives	*****	Half of the clients interviewed reported a positive relationship with their dietitian Clients valued ongoing, supportive and positive relationships with their dietitian Clients reported a link between their levels of motivation and their relationship with their dietitian	
Karupaiah et al.,[58] Malaysia	Quantitative—cross sectional analytical: ratings of observed practice	Dietetic interns ($n = 27$)	This article shares the experience at the National University of Malaysia in assimilating the nutrition care process into the dietetics curriculum. A performance evaluation tool was designed by incorporating the key elements of the nutrition care process and was applied to assess dietetic interns' competencies and skills in identified clinical areas.	**	A 'collaborative counsellor-patient relationship' was identified as a learning component of the performance evaluation tool Learning attributes and skills were identified: Demonstrating appropriate bedside manner, eye contact and intonation, listening skills and identification of relevant information, involving family members in counselling process, setting priorities for dietary advice and establishing goals for patient, creating individualised plans, providing practical advice, acknowledging and fostering patient's self efficacy	

(Continues)

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
Knight et al.,[59] UK	Quantitative—descriptive: survey	Nutrition and dietetics students ($n = 112$)	To measure attitudes of student dietitians with respect to communication skills teaching and how experiential learning using simulated patients impacts confidence in their communication skills	*****	Almost all students rated communication skills as important for relationships with patients (99.1%) Significant difference in number of students who were very or extremely confident in 'building and sustaining a trusting relationship with patient' before and after communication skills teaching	
Lambert et al.,[60] Australia	Qualitative: semi-structured interviews	Dietitians ($n = 27$)	1. To explore the experience of renal dietitians regarding the process of educating patients with end stage kidney disease 2. To describe the strategies they perceived to help patients understand the renal diet to support adherence	*****	Dietitians have a strong desire to form a collaborative relationship with their client, as it contributed to their pride and professional satisfaction Dietitians perceived a trusting relationship as important in optimising patients' ability to self-manage Dietitians perceived empathy as an important enabler of trusting relationships Dietitians described a discrepancy between 'ideal' and actual practice in not having adequate time to effectively develop the dietitian-patient relationship	Follow-up phone reviews were perceived by dietitians to be 'cutting corners' and detrimental to maintaining rapport Dietitians perceived layering advice helped to preserve rapport and empower patients which facilitated long-term professional relationships Findings are consistent with previous research confirming the critical role of developing rapport with patients
Lambert et al.,[61] Australia	Quantitative—descriptive: ratings of observed practice	Dietitians ($n = 4$) Patients ($n = 24$) Carers ($n = 11$)	1. To evaluate the impact of a renal diet question prompt sheet on patient	****	The proportion of utterances devoted to building a relationship reduced	

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
			centredness in dietitian outpatient clinics 2. To describe the impact of a renal diet question prompt sheet on the volume and pattern of communication between dietitians and patients/carers		significantly (from 15.7% to 9.8%) ($p < 0.0001$)	
Laquatra and Danish,[62] USA	Quantitative—cross-sectional analytical: ratings of observed practice	Nutrition and nursing students ($n = 30$)	To evaluate an attempt to have nutrition counselling students, who were previously trained by the Danish, D'Augelly, and Hauer method through an academic course, transfer helping skills to the nutrition counselling setting	*	Students in the experimental group differed from the control group in their verbal behaviours which facilitated the development of a helping relationship	
Lee and Won,[63] Canada	Quantitative—descriptive: survey (paper)	Clients ($n = 130$)	To examine the patterns of patient-provider collaboration among patients undergoing radiotherapy	***		Client scores for collaboration with dietitians were significantly lower than scores for radiation oncologists, radiation therapists and nurses The level of client-dietitian collaboration may depend on the level of symptom distress the client is experiencing
Levey et al.,[64] Australia	Qualitative: semi-structured interviews (telephone)	Dietitians ($n = 12$)	To explore the barriers and enablers to delivering patient-centred care from the perspective of primary care dietitians	*****		Dietitians explained that it was challenging to build rapport (among other required tasks) in the allocated time Dietitians described rushing in an attempt to meet perceived expectations from clients and

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TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
						consequently neglecting to spend time building rapport with them Dietitians felt pressure from physicians to address clients' concerns immediately rather than spend time building rapport
Lewis et al.,[65] USA	Quantitative—cross sectional analytical: ratings of observed practice	Nutrition students ($n = 34$)	To evaluate a 3-hour workshop as a method for teaching relationship-establishing skills to nutrition students	**	Some skills that were taught within the workshop were described as 'initial relationship-building skills'	'Establishes rapport' identified as an interviewing skill that was demonstrated by less than half of the experimental group pre-workshop. Post-workshop scores of experimental and control group students did not differ significantly
Lok et al.,[66] China	Mixed methods: ratings of observed practice and interviews	Nutritionists ($n = 4$) Clients ($n = 24$)	To explore the views of four nutritionists and observe their practice and relationship with patients attending a community-based lifestyle modification program on lifestyle and behaviour change, and whether this affected the outcomes of the lifestyle modification program in terms of overall weight loss	***	Common themes emerged from all four nutritionists on the importance of establishing a good relationship with the patient Some nutritionists had a shared understanding of the importance of the nutritionist-patient relationship in helping patients find underlying issues and solutions Nutritionists need to be trained to conduct programs in the same way as it can affect their relationships with clients and consequent weight outcomes	Rapport was identified as a subtheme across multiple themes (attitude towards patients, strategy to tackle weight loss and counselling skills) Common themes emerged on the importance of establishing a good rapport with patient Nutritionists identified establishing rapport as a main counselling strategy Unconditional acceptance, genuineness and empathy were identified as highly important to achieve rapport

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
Lordly and Taper,[67] Canada	Qualitative: semi-structured interviews (telephone and face-to-face)	New graduate dietitians ($n = 8$) Program supervisors ($n = 6$)	To examine dietitians and graduate perceptions of the risks and benefits associated with the acquisition of entry-level clinical competence within a single practice environment	*****	Decreased opportunity to establish relationships in acute care versus long-term care settings was recognised, where greater opportunity to focus on relationship building was identified The long-term care environment was identified as providing rich opportunity to gain important entry-level competencies related to relationship-building	
Lovestam et al.,[68] Sweden	Qualitative: analysis of dietitians' documentation of patient consultations	Dietetic entries in patient file ($n = 30$)	To explore how the dietetic notes contribute to the construction of the dietetic care and patient-dietitian relationship	*****	A lack of representation of the dietitian-patient relationship within dietetic entries identified A negative effect of the dietitian's picture of the patient (constituted through writing in patient notes using a particular language) on the relationship with a patient was suggested The importance of the relationship in dietetics was identified, and justified through the explanation that dietetic counselling involves sensitive personal issues	
Lovestam et al.,[69] Sweden	Qualitative: focus groups	Dietitians ($n = 37$)	To explore Swedish dietitians' experiences of the nutrition care process terminology in relation to patient record	*****	Dietitians emphasised the importance of the dietitian-patient relationship over needing to document according to	

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TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
			documentation, the patient and the dietitians' professional role		the nutrition care process terminology Dietitians described postponing and revising their formulation of a diagnosis statement where appropriate, until a stable relationship with their patient was established Dietitians described needing time to develop a relationship in the initial stage of engaging with a client	
Lu and Dollahite,[70] USA	Quantitative—descriptive: survey (online)	Dietitians ($n = 612$)	To develop a valid and reliable instrument and use it to measure dietitians' nutrition counselling self-efficacy and reported use of a set of counselling skills. The association between nutrition counselling self-efficacy and various factors were also examined.	***	Some skills generated from the survey were described as those most often employed for 'relationship-building purposes' Self-efficacy scores for survey item 'clarify to your clients the roles and responsibilities of the dietitian-client relationship': All participants (mean = 7.03, SD = 1.76), those participants who counsel more than 50% of their work week (mean = 7.10, SD = 1.79) and those who counsel for less than 50% of their work week (mean = 6.75, SD = 1.61). The difference between those participants who counsel more than 50% of their work week and those who do not was significant ($p < 0.05$)	

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
MacLellan and Berenbaum,[71] Canada	Quantitative—descriptive: Delphi	Dietitians ($n = 57$) (Round 1) Dietitians ($n = 48$) (Round 2)	To determine the meaning that dietitians ascribe to the client-centred approach and to identify the important concepts and issues inherent in this approach to practice	***	Wording of the survey concerned some participants as it was perceived to suggest an imbalance of power in the client-dietitian relationship Whether dietitians respect the expertise that clients bring to counselling relationships was questioned	Whether dietitians are ready to be working in partnership with clients was questioned
MacLellan and Berenbaum,[72] Canada	Qualitative: open-ended interviews (telephone)	Dietitians ($n = 25$)	To explore dietitians' understanding of the client-centred approach to nutrition counselling	***	'Building a relationship' identified as a theme in dietitians' responses as to how they understand client-centred counselling The importance of understanding how to develop a therapeutic relationship with clients as part of being an effective counsellor was identified	
Madden et al.,[73] UK	Qualitative: interviews (telephone or face-to-face) and focus groups	Clients ($n = 29$) Carers of clients ($n = 5$)	To identify the preferences for diet and nutrition-related outcome measures of patients with coeliac disease and their carers	*****		Clients preferred to see the same dietitian at each appointment, where an example was given of being able to develop rapport over time
McCarter et al.,[74] Australia	Qualitative: semi-structured interviews (telephone)	Clients ($n = 9$)	To explore experiences of head and neck cancer patients receiving a novel dietitian-delivered health behaviour intervention based on motivational interviewing and cognitive behavioural therapy as part of a larger investigation examining the effect of this intervention on	***	The importance of the dietitian being empathetic and supportive for the relationship was identified	A supportive partnership was an important part of valued working relationships between patients and their dietitian

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TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
			malnutrition in head and neck cancer patients, undergoing radiotherapy. More specifically, to explore the patient's working relationship with the dietitian, specific components of the eating as treatment interventions and suggestions for improving the intervention.			
Milosavljevic et al.,[75] Australia	Qualitative: semi-structured interviews	Dietitians ($n = 32$)	To examine how New South Wales public hospital dietitians perceive their workplace and its influence on their ability to function as healthcare professionals	*****	Relationships were described as a source of value across all career stages, and particularly important for specialist dietitians and mid-career dietitians	
Morley et al.,[76] Canada	Qualitative: discussion groups (telephone)	Dietitians ($n = 22$)	To develop guidelines for client-centred nutrition education	***	A model for collaborative client-centred nutrition education was developed and described in the context of 'fostering collaborative relationships with clients'	Collaborative client-dietitian partnerships are integral to helping clients find ways of eating, feeding or thinking about food that are actionable and consistent with their lives
Morris et al.,[77]UK	Qualitative: semi-structured interviews (telephone)	Patients ($n = 20$)	To explore and describe the renal patient's perspectives of the dietitians' different communication styles, and to qualitatively evaluate which approaches provide the best level of patient-satisfaction when engaging with dietetic services	*****	The 'adult-adult ego state', experienced as a helpful engagement style, showed evidence of improved relationships when dietitians employed good counselling skills Risks were identified for the relationship if the 'parent–child dynamic' dominates the client-dietitian relationship	'Effective partnership' was identified as a subtheme of the main theme 'helpful engagement style' The suggestion was made that prescription interventions should be consciously chosen with caution, awareness and sensitivity by the dietitian to not inhibit further

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					Relationships were described as building from collaborative power-sharing between the client and dietitian, and problematic relationships were described when consultations are dietitian-centred The potential of the client's amount of disposable income, food preparation skills and family commitments was suggested as having the potential to diminish the relationship	communication and collaboration Good rapport forms part of the foundation needed for a directive message to be well received Higher literacy levels of the client might contribute to a more equal partnership with the dietitian rather than a parent–child dynamic
Murray et al.,[78] Australia	Quantitative—randomised controlled trial (secondary analysis): ratings of observed practice	Clients ($n = 307$) Dietitians ($n = 29$)	To explore whether therapeutic alliance improved after dietitians were trained in eating as treatment	****	No effect of the intervention (eating as treatment) was found on dietitian-rated alliance ($p = 0.237$) Patient-rated alliance was 0.29 points lower after intervention training ($p = 0.016$) No specific motivational interviewing techniques predicted patient-rated alliance Dietitian acknowledgement of patient challenges was related to dietitian-related alliance ($\beta = 0.15$, $p = 0.035$), and described as being worthy of inclusion in future efforts to develop a therapeutic alliance	

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TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					No evidence was identified to suggest therapeutic alliance was improved by training dietitians in motivational interviewing The need to further explore motivational interviewing and its impact on therapeutic alliance was identified, specifically using appropriate and sensitive alliance measures	
Nagy et al.,[79] Australia	Quantitative—descriptive: ratings of observed practice	Health coaches ($n = 2$) Study participants ($n = 50$)	To explore relationships between therapeutic alliance and various contextual factors in health coaching sessions held within a weight loss trial	****	The session duration was significantly correlated with 'Bond' scores ($r = 0.42$, $p = 0.002$). The suggestion that spending more time in a session appears related to increased bonding (a key component of therapeutic alliance) was made Participants who had completed preparatory exercises had significantly higher total alliance ($F(2, 47) = 4.88$, $p = 0.012$), 'Goal' ($F(2, 47) = 6.76$, $p = 0.003$) and 'Task' scores ($F(2, 47) = 4.88$, $p = 0.012$). The suggestions that preparatory work may help build therapeutic alliance and agreement on goals appears to influence follow-up completion were made	

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					Participants who completed the follow-up session scored significantly higher for 'Goal' compared to no follow-up' (t [20.61] = 2.29, $p = 0.03$) The suggestion that findings from this study provide future directions for research addressing the professional relationship in dietetic consultations for weight loss was made	
Nagy et al.,[6] Australia	Qualitative: Semi-structured interviews (online and telephone)	Dietitians ($n = 22$)	To explore dietitians' perspectives of how they develop meaningful relationships with clients in the context of lifestyle-related chronic disease management	*****	Conceptual model of relationship development from the dietitians' perspective was developed. The model shows that from the dietitian's perspective, relationship development appears complex due to the dietitian's role of simultaneously managing both the direct interaction with their client and other influences. The model consisted of three main categories 1. 'Sensing a Professional Chemistry' (an apparent natural 'chemistry' important for relationship development) 2. 'Balancing Professional and Social Relationships' (two relationships existing, one that focuses on the roles of 'professional' or	The category 'Sensing a Professional Chemistry' arose from dietitians' descriptions of good relationships, where 'gelling', 'clicking', 'connection', 'subconscious aspect' and 'vibe' were used. Dietitians further explained these terms to an extent, which included 'rapport' 'Duality of developing rapport' was identified as a thematic subcategory of the conceptual model, which refers to dietitians perceiving that developing rapport is both a natural and unnatural skill, both easy and difficult with particular clients, and should be a focus both during initial stages of interacting and throughout all interactions The

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TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					'client', the other focuses on 'humans' interacting and the importance of humanity) 3. 'Managing Tension with Competing Influences' (relationship development can be influenced by factors unrelated to their direction interaction e.g. physical environment)	suggestion was made that the apparent duality of rapport development may depend on the individuals within the interaction
Notaras et al.,[80] Australia	Quantitative—descriptive: survey (paper)	Dietitians ($n = 17$) (pilot) Dietitians ($n = 34$) (second round) Dietitians ($n = 50$) (pre and post evaluation)	To develop, implement and evaluate an education program on improving communication and nutrition counselling skills for dietitians working in both acute inpatient and outpatient settings within the South Western Sydney Local Health District in New South Wales, Australia	****	The session outline included 'therapeutic relationship between patient-dietitian' The suggestion that sub-optimal nutrition counselling skills may hinder the development of an effective dietitian-patient relationship was made The relationship was identified as the cornerstone of having successful motivating conversations that have the potential to promote patients' intrinsic motivation for eating behaviour change	
Raaff et al.,[81] UK	Qualitative: semi-structured interviews (telephone)	Dietitians ($n = 18$)	To explore dietetic views, attitudes and approaches to weight management appointments with preadolescent children	*****	Dietitians identified the importance of building relationships with paediatric clients	Dietitians identified the importance of building rapport with paediatric clients (as part of subtheme 'dietitian verbally engages the child in the conversation'). Establishing rapport with the child from the beginning of the

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
						consultation was identified as a strategy to include the child in verbal disclosure
Russell et al.,[82] USA	Quantitative—descriptive: survey and ratings of observed practice	Students ($n = 7$)	1. To assess untrained graduate students in nutrition on their application of a set of 31 specific clinical skills for resolving dietary adherence problems 2. To describe the procedures for and feasibility of the evaluation program	*	Very few students demonstrated possession of listening skills These findings were described as 'concerning' due to these skills being crucial to establishing the collaborative relationship needed for effective counselling	Describing interviewing skills identified in the study as being crucial to developing rapport
Sharman et al.,[83] Australia	Qualitative: semi-structured interviews (telephone)	Dietitians ($n = 14$)	To explore in detail dietitians' perceptions of the interviewing process, the degree to which this is challenging and the nature (if at all) of any challenges involved in conducting investigative interviews with children	*****		Strategies were identified to overcome disengagement from paediatric clients and build rapport with them Focusing on rapport, rather than in-depth questioning, was identified as a strategy to ensure paediatric clients' engagement in consultation
Sladdin et al.,[84] Australia	Qualitative: semi-structured interviews (telephone)	Clients ($n = 11$)	To explore patients' experiences and perspectives of patient-centred care in individual dietetic consultations	*****	'Fostering and maintaining caring relationships' was identified as a main theme involving developing a holistic understanding of the client, being invested in the client's wellbeing and possessing caring qualities Clients who experienced caring relationships with their dietitian suggested a desire to continue their relationship, thus the importance of caring	A participant described having a partnership with their dietitian (forming part of major theme 'fostering and maintaining caring relationships')

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TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					relationships was identified Clients identified dietitians being positive, enthusiastic, supportive, respectful and trustworthy as valuable to their relationship Some clients described their relationship with a dietitian as being instrumental to their healthcare progress Identified themes suggest an integrated approach to fostering caring relationships The need for dietitians to relinquish control during consultations to facilitate improved relationships was suggested	
Sladdin et al.,[85] Australia	Quantitative—descriptive: survey (mail)	Clients ($n = 133$) Dietitians ($n = 180$)	To compare patients' and dietitians' perceptions of patient-centred care in dietetic practice	***	Patients reported significantly lower scores compared to dietitians for their perceptions of a caring patient-dietitian relationship ($p = 0.009$) The importance of considering strategies for dietitians to foster and maintain good relationships with patients was identified The suggestions were made that patients may be encouraged to engage in ongoing care with their dietitian if a good	Establishing a shared understanding at the beginning of the consult may help foster collaboration between patients and dietitians

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
					relationship is developed, and that establishing a shared understanding at the beginning of a consultation may help foster positive relationships	
Sladdin et al., Australia[86] USA	Quantitative—descriptive: interviews and survey	Dietitians ($n = 10$, interviews) Dietitians ($n = 180$, survey)	To develop and test a dietitian-reported inventory to measure patient-centred care in dietetic practice	***	'Patient-dietitian relationship' identified as component of conceptual model of patient-centred care, described as 'a genuine, reciprocal relationship... based on trust, respect, rapport building and mutual understanding' Fifth factor of developed inventory identified as 'caring patient-dietitian relationships'	
Stetson et al.,[87] USA	Quantitative—descriptive: ratings of observed practice	Dietitians ($n = 30$) Clients ($n =$ not specified) Complete recordings ($n = 29$)	To assess the teaching and adherence promotion skills of dietitians in routine clinical practice	**		Dietitians were described as using accepted strategies for developing and maintaining good interpersonal rapport with patients
Sullivan et al.,[88] USA	Quantitative—descriptive: survey (mail)	Internship directors ($n = 66$)	To determine internship directors' expectations for preparedness of entering interns and the emphasis given to preparation for both nutrition education and nutrition counselling in internship programs. The directors' perceptions of the need for students to have advanced preparation in these areas after the	*	'Uses helping skills and develops a trusting relationship with client' was listed as a knowledge/skill area questioned in survey Results for internship directors' expectations for intern preparation in nutrition education and counselling knowledge/skills (as percentage): pre-internship preparation;	

(Continues)

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
			internship were also addressed.		basic (68) and advanced (21), internship training; none (3), moderate (39) and extensive (56), post-internship training needs; preparation adequate (73) and needs more (19)	
Sullivan et al.,[89] USA	Quantitative—descriptive: survey	Dietitians ($n = 40$)	To examine overall job satisfaction and specific domains of job satisfaction among renal dietitians	***	The most commonly named positive aspects of working as a renal dietitian consisted of 'developing long-term relationships with patients' (33% of respondents)	
Sussmann,[90] UK	Qualitative: semi-structured interviews (face-to-face)	Patients' and patients' partners ($n = 8$)	To examine the difficulties faced by renal dialysis patients on a restricted diet and to ascertain how the dietitian can most effectively help patients deal with these difficulties	*****	The suggestion that findings support the argument for mutually cooperative, genuine and personal relationships was made The recommendation that dietitians develop a friendly and supportive relationship to facilitate a trusting relationship was made	
Taylor et al.,[91] Canada	Survey (online and mail)	Dietitians ($n = 349$)	To elicit registered dietitians' beliefs, guided by the theory of planned behaviour, regarding using a nutrition counselling approach in their daily practice and describe variables influencing registered dietitians use of Nutrition Counselling Approach in their practice	**	The approach used in the study, named as the 'nutrition counselling approach' was described as a 'collaborative counsellor-client relationship'	Dietitians perceived improved collaboration between them and their patients as an advantage of a particular counselling approach (nutrition counselling approach)
Trudeau and Dube,[92] Canada	Survey (mail)	Clients ($n = 49$)		**	A tested component of dietary counselling was	

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
			1. To explore the variation in patients' satisfaction and compliance intentions 2. To measure the effect of a series of individual characteristics and contextual factors on patients' overall satisfaction and compliance intentions		identified as 'affective communication skills', and defined as 'interpersonal qualities of the dietitian (e.g., courtesy, warmth and attentiveness) that help build a positive relationship with the patient' No significant impact of affective communication skills on patient satisfaction was identified. The suggestion was made that patients would have needed to be either more extremely pleased or disappointed with the dietitian to make a conscious satisfaction judgement based on communication skills	
Warner et al.,[93] Australia	Qualitative: semi-structured interviews (telephone and face-to-face)	Clients ($n = 21$)	To describe the patients' acceptability and experiences of a telehealth coaching intervention using telephone calls and tailored text messages to improve diet quality in patients with stage –4 Chronic Kidney Disease	*****	'Valuing Relationships' identified as one of five major themes consisting of subthemes: receiving tangible and perceptible support, Building trust and rapport remotely, Motivated by accountability, Readily responding to a personalised approach, Reassured by health professional expertise	'Building... rapport remotely' identified as subtheme of major theme 'valuing relationships Individualised text messages were found to 'enhance participant-clinician interactions' (between dietitian as telehealth coach and participant)
Whitehead et al.,[94] UK	Quantitative—descriptive: survey (mail)	Dietitians ($n = 1158$)	1. To ascertain dietitians' experiences of, and views	**	Post-registration training had been undertaken by 73% of	

(Continues)

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
			on, both pre and post-registration dietetic training 2. To identify any barriers to incorporating a patient-centred approach and communication skills for behaviour change within the profession		respondents, of which 90% perceived had led to improvements in their relationship with patients The suggestion was made that better relationships with patients lead to improved working environment and retention of staff	
Whitehead et al.,[95] UK	Mixed methods: ratings of observed practice, survey and interviews	Dietitians ($n = 15$) (Face and content validity) Student dietitians and dietitians ($n = 113$) (Intra-rater reliability, construct and predictive validity) Dietitians ($n = 9$) (Inter-rater reliability) Dietitians ($n = 8$) (Face validity)	To develop a short, easy-to-use, reliable, valid and discriminatory tool for the assessment of the communication skills of dietitians within the context of a patient consultation	***	A transition from a 'relationship-building' phase to 'advice-giving' phase in a dietetic consultation was described	'Establishes rapport' was perceived to be important and thus was included in the developed communications tool Observations from interviews suggested that most dietitians established rapport but did not maintain rapport throughout the consultation Rapport was lost when dietitians moved onto the more dietetic-specific content of the consultation
Williamson et al.,[96] USA	Quantitative—descriptive: interviews (telephone)	Dietitians ($n = 75$)	1. To identify factors that contribute to barriers to dietary adherence in individuals with diabetes identified in a 1998 study 2. To obtain recommendations from registered dietitians for overcoming the barriers	*		'Building rapport' was identified as a common recommendation for overcoming barriers to dietary adherence in individuals managing diabetes
Yang and Fu[97] Malaysia	Quantitative—descriptive: survey (online and paper)	Dietitians ($n = 69$)	1. To determine the clinical dietitians' empathy level in Malaysia	***	Suggested that the dietitian's capability in expressing empathy will influence the development of 'good'	

TABLE 1 (Continued)

Author, Country	Design	Participants, sample size	Study aim/s	MMAT[a]	Key findings related to primary terms	Key findings related to associated terms
			2. To determine the factors associated with the dietitian's level of empathy		therapeutic dietitian-patient relationships	
Yang et al.,[98] Malaysia	Quantitative—descriptive: surveys	Dietetic interns ($n = 57$) Clients ($n = 99$)	1. To investigate the empathy level of dietetic interns at selected primary and tertiary health-care settings through self-reported measures and patient perception 2. To determine the association between both measures	***		Suggestion that further research should consider the duration of the interaction between clients and dietetic interns as impacting the extent to which dietetic interns can demonstrate empathy

[a]Mixed Methods Appraisal Tool. Quality evaluation tool applied to quantitative, qualitative and mixed methods study designs. Score ranges from meeting none of the five criteria (as specified in table) to meeting all five criteria (*****).

and ratings of observed practice ($n = 7$). One study involved a secondary analysis of control and intervention data from a randomised controlled trial. Qualitative study designs mostly utilised interviews ($n = 26$) and focus groups ($n = 9$). Most studies were conducted in Australia ($n = 27$) or the USA ($n = 18$), and published between 2010 and 2020 ($n = 50$). Most studies had between 11 and 395 participants ($n = 66$) which included dietitians or nutritionists ($n = 47$), clients or patients, and their family or carer ($n = 25$), or nutrition and dietetic students ($n = 11$). Dietitians in the studies were working in private practice ($n = 12$), hospitals and outpatient clinics ($n = 13$) and community or public health services ($n = 6$). From the studies that articulated the health conditions of clients, most were described as managing chronic diseases ($n = 14$). A summary of included studies is provided in Table 1. Studies varied in their methodological quality (Table 2). The number of studies that fulfilled all five design-specific criteria in the MMAT was 31 (of 76 eligible studies), with most being qualitative ($n = 25$).

Five themes were identified across both analyses, which pertained to the primary terms ('relationship' and 'alliance') and associated terms (e.g., 'connection'). The themes showed that the therapeutic relationship: (i) is valued within clinical dietetic practice, (ii) involves complex and multifactorial interactions, (iii) is perceived as having a positive influence, (iv) requires skills training, and (v) is embedded in practice models and tools. The findings are described below by theme and whether they correspond to primary terms or associated terms.

The first theme reflected the finding that the therapeutic relationship appears important and valued by both parties as a component of the clinical dietetic consultation. This was mostly seen within qualitative findings; however, was also reported from quantitative and mixed methods findings. For example, Sladdin et al. undertook semi-structured interviews with patients to explore their

TABLE 2 The proportion of quantitative, qualitative or mixed method studies ($n = 76$) meeting a number of criteria specified within the Mixed Methods Appraisal Tool[27]

MMAT[a]	
Number of criteria met	***n* (%)**
0	2 (3)
1	7 (9)
2	10 (13)
3	20 (26)
4	6 (8)
5	31 (41)

[a]Mixed Methods Appraisal Tool.

TABLE 3 Summary of identified dietitian and client-related factors as facilitators or barriers to the development of the client–dietitian relationship

	Attributes		Techniques	
	Facilitators	**Barriers**	**Facilitators**	**Barriers**
Dietitian-related factors	Genuineness Supportiveness Caring Positivity Enthusiastic Empathic Understanding Respectful Honesty Having integrity Trustworthy Invested in client's wellbeing Friend/ Friendliness Non-judgemental Openness Dress	'Unhelpful engagement style': patronising tone, not listening to patients' needs, biochemical agenda, instructive advice giving, overbearing support Manipulative Dishonest Unaccepting of client Anxious Lacking confidence	Individualising recommendations Organising content Quality of introduction Clarifying reason for referral early in consultation Clarifying client's understanding of role of diet Using theories and models of behaviour change Explanation of health consequences to client Developing rapport Mode of communication (e.g., telephone calls) Communication skills: using advanced-level language and visual means, listening skills, questioning and reflection, warmth, courtesy, attentiveness Acknowledging client's challenges Self-disclosure Holistic understanding of client Asking client evaluative questions Respecting the client's expertise Using knowledge effectively with clients Clarifying dietetic approach Enabling client choice in continuing relationship Prioritising relationship in the first consultation Expressive touch Specific named approaches: 'Healthy Conversation Skills' intervention,[56] 'Narrative Dietary Counselling' (use of whiteboards and narrative learning strategies),[9] 'Counselling and Therapeutic' approach[41]	Sub-optimal counselling skills Creating parent-child dynamic Leading practitioner-centred consultation from parental ego state Expressive touch
Client-related factors	Facilitators		Barriers	
	Completing preparatory work for consultations Attending follow-up consultations Respect for dietitian Client response to dietitian interaction: feeling prioritised, heard and remembered, comfortable, engaged, empowered, an important individual, motivated by sense of accountability, having received personalised care, reassured by expertise of dietitian		Poor perception of dietitian: lacking integrity, untrustworthy Unrealistic expectations of diet Prejudices and assumptions Openness to disclosing eating behaviours	

perspectives of patient-centred care and concluded that 'patients want to have caring relationships with dietitians'.[84] Descriptors of the type of relationship valued by dietitians and clients included 'caring', 'genuine', 'positive', 'supportive' and 'ongoing'. However, a qualitative study described few clients perceiving that an 'ongoing' relationship would be useful in the context of type 2 diabetes management, based on the content and delivery of initial consultations attended.[7] Authors specified that this was the case for clients who were both satisfied and unsatisfied with their consultation; however, only specified a reason for those that were satisfied. Authors described these clients as perceiving that they had obtained the information they needed and did not perceive the need for an additional consultation.[7] Hence, the majority of data indicated that the client-dietitian relationship is valued but one study found clients with diabetes did not view an ongoing relationship as being of value.

The importance of the client and dietitian establishing a 'connection', 'rapport', 'partnership' and 'collaboration' was apparent, reflected through the descriptors 'essential', 'critical' and 'important'. One study that used qualitative interviews with dietitians about their weight management practice with children found that establishing rapport in initial interactions with paediatric clients was particularly important.[81]

The second theme reflected the complex and multifaceted nature of the therapeutic relationship between clients and dietitians that was apparent from the identification of multiple factors and their influence on the relationship within numerous studies. This finding is typified by the description of the relationship as a 'complex interpersonal experience'.[48] The majority of factors appeared to be either attributes of the dietitian or client, techniques used by the dietitian or contextual factors (e.g., setting). Factors specific to either the dietitian or client are summarised in Table 3. Some examples include the dietitian being trustworthy and respectful, and the client's expectations of the consultation. Three contextual factors were identified; the type of care setting where the client–dietitian interaction occurs, the duration and frequency of interactions, and documentation requirements for the consultation. For example, two qualitative studies described long-term care (vs. acute care) and private practice settings as conducive to relationship development.[48,67]

Factors were identified as influencing the 'rapport', 'connection', 'collaboration', 'partnership' and 'interaction', which were also specific to either the dietitian or client, or the context of their interaction (Table 4). Most factors were similar to those identified from the analysis of primary terms, however, some differed. For example, perceiving the dietitian as approachable and sensitive was thought to facilitate collaboration and rapport building. Contextual factors described were specific to developing a 'connection', 'rapport' and 'therapeutic interaction'. These included the amount of allocated time for the consultation as determined by the workplace (that is having more time facilitated rapport building)[36,43,64] and having a patient-centred physical environment where consultations occurred (e.g., 'neutralising hierarchy' by removing physical barriers such as a desk).[43] Qualitative studies that explored dietitians' perspectives identified that dietitians felt pressure from physicians to prioritise addressing clients' health rather than building rapport, and consequently spent less time focusing on rapport,[64] and that the private practice context was a 'motivator' to develop rapport with clients.[48] Reasons for this included maintaining their professional reputation and source of income. Another qualitative study that explored preferences of clients managing coeliac disease described clients preferring to engage with the same dietitian over repeated consultations. This was explained as assisting with rapport development.[73]

The third theme indicated that a good therapeutic relationship appears to have a positive influence on clients and dietitians. Most findings were qualitative and taken from dietitians and clients' perspectives expressed through semi-structured interviews. For example, Morris et al. explored renal patients' perspectives of dietitians' communication styles and found that a 'good working relationship' facilitated patients 'feeling good' about themselves.[77] No studies were identified that analysed the statistical impact of the strength of the therapeutic relationship on tangible outcomes (such as improved diet quality scores) and as a result, the apparent positive influence of a good therapeutic relationship appears based on the perspectives of clients and dietitians only.

Findings pertaining to 'rapport', 'interaction', 'connection' and 'partnership' also mostly came from qualitative interview data. Perceptions of a positive influence on client's attendance and adherence to the treatment plan were described within several studies. For example, findings from a mixed methods study in an Indigenous Australian context described establishing a 'personal connection' as encouraging patients to attend their appointments.[42] Developing rapport was reported within qualitative studies as influencing clients' thoughts and feelings, specifically their trust and respect for the dietitian and confidence in engaging with the dietitian.[8,47] For example, results from a qualitative study that explored clients' and dietitians' perceptions of trust across multiple healthcare settings found that dietitians 'aimed' to build rapport to 'gain' the trust and respect of their client.[8]

TABLE 4 Summary of identified dietitian-related factors as facilitators or barriers to the rapport, collaboration, partnership and interaction between clients and dietitians

	Associated term	Facilitators	Barriers
Attributes	*Rapport*	Approachable Friendly Sensitive Relaxed, comfortable and natural Confident Non-judgemental Genuine Unconditionally accepting Empathic	
	Collaboration	Sensitive Aware	
Techniques	*Rapport*	Humour Immediacy Facilitating client autonomy Giving clients opportunity to ask questions and express concerns Applying a person-centred approach Individualising instructions Putting client at ease Interviewing skills Layering advice Attending to client's non-verbal communication Socratic interview style Self-disclosure Using continuing responses Shared decision making Communicating interest in patient's dietary problems Active listening: paraphrasing, restating, verbal and non-verbal encouragement, silence, reflecting feelings Introductions Gradually directing more specific enquiries Asking client about their preferences Changing questioning approach to prioritise rapport development Providing feedback and social support Verbal and non-verbal communication skills Expressive touch	Interrupting client through verbal or non-verbal behaviour Phrasing questions to client with implied answers Using telephone interviews as form of follow-up Using series of direct questions Trying to meet client's perceived expectations in the first consult Feeling the need to address all relevant content immediately
	Collaboration	Verbal and non-verbal communication skills Establishing shared understanding at beginning of consultation 'Narrative Dietary Counselling' (specific approach named in study)[9]: narrative learning strategies including use of whiteboards 'Nutrition Counselling Approach' (specific approach named in study)[91]	
	Partnership	Desirable communication style Working as a team 'Counselling and Therapeutic Approach' (specific approach named in study)[41]	
	Interaction	Applying a person-centred approach Sending individualised text messages	

The fourth theme showed that therapeutic relationship development seems to be a valued component of training for dietitians, and should be a skill dietitians are trained in. This was identified across three areas: (1) the inclusion of relationship development skills in training programs, and findings describing (2) training adequacy and (3) the impact of training. Several studies described training programs for students and dietitians that focused on, or included components of relationship development.[53,58,65,80] One study described a training program designed to teach 'relationship-establishing skills' to nutrition students and thus appeared focused on the relationship itself.[65] In contrast, other studies listed the relationship as a component of training programs but often focused on different skill aspects of relationship development, such as counselling or communication skills.[53,58,80] Factors contributing to relationship development were articulated as part of these training programs and reflected those identified in the second theme (e.g., listening skills).[58] One study surveyed dietetic internship directors and reported that 73% thought students' preparation in developing a trusting relationship was adequate, while 19% indicated more training was needed (from a total sample of 66).[88]

Results concerning the impact of dietitians' training on the relationship varied. In a quantitative survey, post-registration training was reported as contributing to improved relationships by 90% of dietitians surveyed. Unfortunately, details of the type of training were not elaborated upon.[94] Results from a mixed methods study suggested clients who engaged with dietitians trained in a particular program identified as being helpful in building relationships, felt 'more supported' than clients whose dietitian had not undertaken this training.[56] In addition, a non-randomised cross-sectional study reported findings that students trained in relationship-building skills displayed different verbal behaviours that were conducive to relationship development (e.g., responses that facilitated trust), compared to those students who were not trained.[62] These studies seemed to suggest a positive influence of training, but the aspects of the relationship that improved were often unclear. A secondary analysis of data from a stepped-wedge cluster-randomised controlled trial that evaluated the impact of motivational interviewing-based training on clients' and dietitians' ratings of therapeutic alliance found no evidence that motivational interviewing-based training supported improvements in therapeutic alliance.[78]

The value of dietitians' training was also evident with regard to building 'rapport' and the 'therapeutic interaction'. A quantitative survey found dietitians felt adequately trained in rapport building in the context of eating disorder management.[32] In contrast, a qualitative study found dietitians working in public hospitals and private clinics in Israel did not feel adequately trained in managing 'emotional aspects' of the therapeutic interaction.[43] In addition, three quantitative studies presented data on nutrition students' rapport building skills after undergoing training.[39,52,65] Two studies found that students' skills in rapport building did not improve post training,[39,65] and one study reported that students' rated their rapport-building skills as more proficient than their assessors.[52] An Australian study found that competency standards had evolved to focus more on dietitians 'collaborating' and 'negotiating in partnership' with clients, further highlighting the need for dietitians to be trained in relationship building skills.[28]

The fifth theme indicated that the therapeutic relationship was embedded to varying degrees throughout practice models and assessment tools for clinical practice. The development of a conceptual model and inventory for assessing patient-centred care was described by one quantitative study, which included establishing a genuine, caring and reciprocal therapeutic relationship.[86] A mixed methods study articulated 'relationship-building skills' as the first step in a process model for nutrition education and counselling.[34] Another mixed methods study described the development of the DIET-COMMS tool for assessing dietitians' communication skills with clients.[95] Unlike earlier models described, the therapeutic relationship was not the specific focus of the DIET-COMMS tool, nor was it an explicit component. Instead, the authors described the tool as a response to the relationship being at the core of the 'Nutrition and Dietetic Process', which may suggest the DIET-COMMS tool was developed to address some relationship development skills (i.e., communication skills specifically).[95]

'Rapport', 'partnership' and 'collaboration' were embedded as components of assessment tools and practice models. 'Rapport' formed part of two different assessment tools, one that evaluated dietitians' interviewing skills[46] and another that evaluated their communication skills.[95] Rapport was also described as part of a nutrition-counselling model[52] and trialled within a scale that measured dietitians' confidence working with clients managing psychological conditions.[31] 'Partnership' and 'collaboration' were identified as components of models for both communication and nutrition education in two different studies by the same authors.[11,34]

4 | DISCUSSION

This integrative literature review provides a comprehensive overview of the topic of the therapeutic relationship between clients and dietitians in the individual

counselling context. It has done so by summarising existing research into qualitative themes. This review builds on previous knowledge gained from earlier research (including an integrative review on patient-centred care)[18] by including data that not only relates to explicit terms (such as 'relationship'), but also other terms with similar meanings (such as 'connection' and 'partnership'). Furthermore, this review builds on previous knowledge by including empirical research on students' training and studies published across all years. Hence, it adds to the evidence base by summarising literature that focuses more thoroughly on the phenomenon of the therapeutic relationship from all publication dates, including more recent evidence. In doing so, this comprehensive review has provided a footing for further work to be performed on this crucial aspect of clinical dietetic practice by identifying clear avenues for further research.

Major findings were that the therapeutic relationship appears to be a valued component of clinical dietetic practice and is perceived to have a positive influence on clients and dietitians. This was evident from mostly qualitative data describing dietitians' and clients' perspectives, and aligns with the philosophies of patient-centred, and relationship-centred healthcare paradigms.[99,100] These findings are consistent with other healthcare literature that also emphasise the importance of client-practitioner relationships, particularly with regard to improved health outcomes for clients. Within psychotherapy, a multilevel longitudinal meta-analysis by Flückiger et al. concluded that the therapeutic alliance, a recognised component of client-practitioner relationships, is a 'critical therapeutic element'.[101] Flückiger et al. confirmed robust findings from previous meta-analyses that have shown the therapeutic alliance accounts for approximately 7% of the variance in therapy outcomes across therapy types and study designs.[20,101–103] Although modest, Flückiger et al. describe this relationship between therapeutic alliance and therapy outcomes as greater than those of other treatment variables, such as the therapist's adherence to the treatment manual.[101] Hence, psychotherapy research has clearly identified and quantified the importance of the therapeutic alliance in relation to its positive impact on various treatment outcomes.

Interestingly, the current review did not identify any studies that quantitatively analysed the strength of the therapeutic relationship with tangible outcomes for clients in a dietetic context (such as diet quality scores). Unlike psychotherapy, this review has shown that the value of the therapeutic relationship and its positive influence on clients and dietitians appears to mostly come from qualitative data describing clients' and dietitians' perspectives. The extent of the research undertaken in psychotherapy highlights that substantial quantitative data that describes therapeutic relationship strength is lacking, and furthermore to what extent relationship strength accounts for client's therapeutic outcomes. Hence, there is a need for observational studies that assess the strength of these relationships in clinical dietetic practice from multiple perspectives (client, dietitian and observer) and their associations with client outcomes. For example, this could include investigating the correlation between client-rated relationship scores and their levels of motivation or self-efficacy. Quantitative data of this nature, that is alliance-outcome data, would assist the profession in better understanding how the therapeutic relationship may impact client's health outcomes and support existing qualitative descriptions of the relationship's positive influence.

A starting point for dietetics may be to focus on psychotherapist Bordin's 'working alliance' which captures several components of therapeutic alliance.[104] Key factors of the client–dietitian relationship identified in this review reflect Bordin's conceptualisation of the therapeutic alliance which articulates three components: (1) agreement on goals between therapist and client, (2) agreement on tasks to achieve the client's goals, and (3) their bond.[104] For example, this review has identified clients' unrealistic expectations of dietary change as a factor impacting relationship development, which can be interpreted as reflecting Bordin's 'Agreement on Goals'.[104] If a client has unrealistic expectations about the extent to which they can change their diet, it may be more difficult for the dietitian and client to agree on the client's goals. According to Bordin, this would impact the extent to which they can develop a strong alliance.[104] The current review has identified several relationship factors that are consistent with Bordin's conceptualisation of the therapeutic relationship. Of course, additional research is needed since the nature and importance of therapeutic relationships for health outcomes may be different in a dietetics context compared to a clinical psychology or psychotherapy context. Measures to assess the therapeutic alliance (e.g., Working Alliance Inventory)[105] have been used in one dietetics context already and other allied health disciplines.[78,106] The 'Working Alliance Inventory' has been adapted for use in other disciplines, such as physiotherapy.[102,105,107,108] This tool consists of 32 items, such as 'the client and therapist feel they trust one another.[105] Additional research is needed to assess the validity and reliability of this tool in dietetics, but it appears a feasible measure for the profession to begin to collect alliance-outcome data. This tool may also be useful for clinical dietitians to use within clinical supervision sessions to guide critical reflective practice and assist dietitians in articulating nuanced components of relationship development they feel they are doing well or could improve.

Findings from this review also provide some guidance as to what client outcome measures may be helpful to examine. Establishing a good 'relationship, 'connection' or 'rapport' were identified from primarily qualitative data as being important for treatment adherence, attendance and gaining the client's trust and respect. Thus, the relationship between therapeutic alliance and attendance and/or treatment adherence may be useful outcomes. Client engagement, how they felt about themselves and their ability to self-manage their diet were also identified in the review.

Studies from other allied health disciplines have applied the Working Alliance Inventory[105] to assess the impact of the therapeutic alliance on client outcomes. For example, Sønsterud et al. evaluated whether the therapeutic alliance between clients and speech therapists correlated with clients' motivation as part of stutter therapy.[109] A systematic review by Hall et al. also identified multiple studies that assessed whether the therapeutic alliance is related to client outcomes in a physiotherapy context. Hall et al. identified studies that also examined treatment adherence and satisfaction as outcomes.[108] The findings reported here and those from other allied health disciplines suggest that clients' attendance, as well as self-efficacy and motivation, might be useful outcome measures to begin to examine to support existing qualitative data in dietetics. Longitudinal designs would be useful in assessing how relationship quality may change over a treatment period and therefore how this may impact longer-term health outcomes.

There are strengths and limitations of this integrative literature review. The therapeutic relationship is a challenging, 'broad and complex' construct.[13] In order to capture this complexity, a comprehensive review was achieved by applying a systematic and healthcare-specific method.[12] In doing so, a number of search terms that reflected the therapeutic relationship (other than 'relationship' itself) were included. Several sources were searched, resulting in 76 included studies that were conducted in a variety of countries and employed different study designs. Despite this, grey literature was not searched and therefore some data concerning the therapeutic relationship is likely to have been missed. It is also plausible that despite every effort to ensure a comprehensive search strategy, some applicable studies may not have been retrieved.

To conclude, empirical literature recognises and discusses the therapeutic relationship between a client and dietitian to an extent, both explicitly and through other similar terms. A variety of studies support a good therapeutic relationship as a valued and multifactorial component of clinical dietetic practice that is perceived to positively influence the client and dietitian. There are limited descriptions of how the relationship exists in everyday clinical practice and the extent to which relationship strength might contribute to clients' health outcomes. Data describing how dietitians are trained and assessed in relationship-development skills and the impact of this training is also limited. Observational studies are needed to assess the extent to which the therapeutic relationship might be associated with health outcomes specific to dietetic interventions, and further support the data identified in this review.

CONFLICT OF INTEREST

The authors wish to declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

AN, AM, LT and FD contributed to the study conceptualisation and design. AN undertook the literature search, and extracted and analysed data. AN, AM, LT and FD contributed to data analysis. AN developed the manuscript for publication, and AM, LT and FD critically reviewed the manuscript prior to submission. All authors are in agreement with the manuscript.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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ORIGINAL RESEARCH

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High occurrence of food insecurity in young people attending a youth mental health service in regional Australia

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Abstract

Aim: Despite the relationship between food insecurity and poor mental health, food insecurity in young people attending mental health services in Australia remains understudied. This study aimed to determine the occurrence and predictors of food insecurity, and the relationship with dietary factors in young people attending a mental health service.

Methods: A cross-sectional online survey was conducted in a sample of young people (15–25 years) who attended a mental health service in Launceston, Australia. The survey utilised a single-item food insecurity screening tool and eight demographic, health and service use questions. Five questions determined self-reported intake of fruit, vegetables, breakfast, water, sugar-sweetened beverages and takeaway foods. Binary logistic regression determined predictors of food insecurity. Cross-tabulations determined differences in dietary intake according to food security.

Results: Of survey respondents ($n = 48$; 68% female), 40% ($n = 19$) were food insecure. Respondents living out of home or in unstable accommodation were at significantly higher risk of food insecurity (odds ratio [OR]: 4.43; SE: 0.696; 95% CI: 1.13–17.34; $p = 0.032$) compared to those living with their parents. Those receiving government financial assistance (OR: 5.00; SE: 0.676; 95% CI: 1.33–18.81; $p = 0.017$) were also at significantly higher risk of food insecurity. Regardless of food security status, self-reported intake of fruits, vegetables and breakfast were low, and respondents regularly consumed takeaway foods and sugar-sweetened beverages.

Conclusions: There was a high occurrence of food insecurity and poor dietary intake in young people attending a youth mental health service demonstrating that initiatives to support access to healthy food in this group should be a priority, with potential benefits for mental health outcomes.

KEYWORDS
adolescent, food security, mental health, young adult

1 | INTRODUCTION

Food security exists 'when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life'.[1] Food insecurity is the absence of these factors, and it persists even in high-income countries including Australia. The prevalence of food insecurity in a representative sample of the Australian population has been conservatively estimated to be approximately 5%[2] but is reported to be much higher in socioeconomically disadvantaged groups.[3] A review of Australian studies in various population groups has reported that food insecurity prevalence statistics varied greatly depending on the measurement tool applied and subgroup studied, with the highest prevalence observed in very remote communities.[4]

Overall, there is a paucity of research about food security in adolescents and young adults in Australia, with a focus on families with young children[5] and older adults.[6] Some limited data regarding food insecurity in specific sub-groups of vulnerable young people in Australia exists with those experiencing homelessness or living in supported accommodation, experiencing a substantially higher occurrence of food insecurity (66% food insecure) compared to the wider adult population.[7] However, there are a lack of food security data for young people in general in Australia and an absence of literature which links food insecurity with health outcomes in this group, despite the growing body of convincing evidence about the relationship between food insecurity and poor mental[8] and physical health outcomes[9] in other populations. In international literature within other high-income countries, food insecurity is shown to be higher in young people when compared to older age groups. For example, a recent analysis in Canada reported that 30% of young people (aged 16–30 years) were living in food-insecure households, and these food-insecure respondents were two and a half times more likely to experience poor mental health outcomes.[10] Another study conducted in the United States reported that more than 23% of young people were food insecure, which was associated with poorer diet quality and increased prevalence of substance use.[11] Furthermore, food insecurity was associated with increased mental health care service utilisation in both younger and older adults.[12]

Young people who are food insecure are more likely to have poorer diets.[13] The nutritional consequences of food insecurity, such as eating less food or lower quality food, are critical for young people as adequate nutrition is required for optimal growth and development both physically and mentally.[14] In addition, adolescence and young adulthood are key windows of development as during this period, eating behaviours are established and many psychiatric conditions emerge for the first time.[15] In Australia, 14% of young people have been diagnosed with a mental disorder.[16] A growing body of international evidence highlights the importance of healthy nutrition behaviours for supporting positive mental health outcomes in young people.[17] Unhealthy dietary patterns are consistently linked to poorer mental health outcomes in young people.[18] Furthermore, as food insecurity increases, the odds of young people having a mental disorder also increase.[19] This is supported by evidence from a recent review which evaluated the psychosocial outcomes related to food insecurity for young people, reporting that food insecurity is associated with depression, anxiety, suicidal ideation, substance use disorder and an increased need for psychological care.[20] Therefore, increasing our understanding of the role of diet and food insecurity in young people with poor mental health should be a priority.

Although a great deal of research exists on the burden of food insecurity in many vulnerable groups within Australia,[4] studies in young people attending mental health services are scarce. A critical window exists for screening young adults in this setting to prioritise interventions for both their future mental health and food security. However, to the authors' knowledge, no research on the occurrence and demographic predictors of food insecurity nor its relationship with dietary intake has been conducted within this group. This is a major research gap as mental disorders are prevalent conditions among young Australians. Importantly, gathering this evidence could provide additional support in regard to the role dietetics services may have in the prevention and early intervention of mental illness.[16] Therefore, this cross-sectional study in a sample of young people (aged 15–25 years) attending a youth mental health service in regional Australia aimed to answer the following research questions:

- What is the occurrence of food insecurity in young people attending a mental health service?
- What are the demographic predictors of food insecurity in this group?

- What is the relationship between food insecurity and measures of dietary intake such as self-reported intake of fruits, vegetables, breakfast, takeaway foods and sugar-sweetened beverages?

The main hypothesis of this research was that there will be a high burden of food insecurity within this population and that discrete demographic groups of young people attending a youth mental health service will experience food insecurity. Secondly, we hypothesised that there will be a relationship between food security status and poor dietary habits, namely lower intakes of fruits, vegetables as well as the consumption of breakfast, and/or higher intakes of takeaway and sugar-sweetened beverages.

2 | METHODS

The *headspace* Launceston (Cornerstone Youth Services) is a youth mental health service based in the regional city of Launceston in Tasmania, an island state of Australia sitting south of the mainland. Tasmania has a population size of nearly 542 000 people[21] with a median age of 42 years. In 2016,[22] there were approximately 91 000 people aged 10–24 years, comprising around 18% of the Tasmanian population. Tasmania is highly diverse in terms of remoteness, incorporating the capital city of Hobart (regional city), and other major regional centres including Launceston, Burnie and Devonport, as well as many rural communities.[23]

There are several services in Tasmania providing support, counselling, and therapeutic interventions for young people experiencing poor mental health.[24] Specifically, *headspace* Launceston provides early intervention mental health and wellbeing services to young people aged 12–25 years including counselling, psychology and mental health services delivered by a range of practitioners including mental health workers, general practitioners and psychiatrists. Clients are referred to external dietetic support upon request from clients, with limited funding to support this service internally for their clients.

This study is a sub-analysis of a larger project,[25] which aimed to inform improvements in service delivery to support young people accessing *headspace* Launceston to improve nutrition and physical activity behaviours in their clients. Ethical approval to conduct this study was obtained from the Tasmania Social Science Human Research Ethics Committee (H0023475) and the study was conducted in accordance with the Declaration of Helsinki. Compliance to the STrengthening the Reporting of OBservational studies in Epidemiology – Nutritional Epidemiology (STROBE-nut) tool has been addressed.

A quantitative, online survey was developed by the project team for the purpose of this study. Only the relevant questions for the analyses underpinning this manuscript are described. For a full list of the survey outcomes please see the published report.[25] The survey was assessed for face validity and legibility by several stakeholders including *headspace* management and staff, members of headspace Launceston's Youth Reference Group (who are made up of young people passionate about mental health and wellbeing), and a high school teacher. The survey was also edited using Grammarly (2021 © Grammarly Inc) to ensure the reading level for the survey was no higher than the age of 12 years, to suit the known literacy level in the area.

The survey measured food security status using a single item food security screening tool, which is the most commonly applied tool in Australia, including in national health surveys.[4,26] The question asks "Over the past year, have you ever run out of food and couldn't afford to buy any more?". An affirmative response to this question indicates food insecurity. This tool was selected to minimise participant burden compared to other food security assessment tools.

Demographic characteristics were collected including age (continuous variable), gender (male, female, self-described), living situation (living with parents, living independently, living in short term/unstable accommodation or homeless), postcode and town name, whether they were of Aboriginal and/or Torres Strait Islander background (yes or no), whether they were receiving government financial assistance (yes or no) and the number of visits to *headspace* over the past 12 months (continuous).

Brief nutrition-related questions were based on recommendations made in a review of short questions to assess the food consumption of children in Australia.[27] Two questions determined how many serves of fruits and vegetable participants usually ate each day (including fresh, frozen, and tinned varieties). The self-reported daily frequency of consuming fruit was recorded as: either do not consume, 1 serve, 2 serves or more than 2 serves. For vegetables, response options were recorded as: do not consume, 1 serve or less, 2 serves, 3 serves, 4 serves, 5 serves, or more than 5 serves. Four questions determined how frequently participants usually ate breakfast, drank water, sugar-sweetened beverages, and ate take-away food, with the response options including never/rarely, less than once a week, weekly, a couple of days a week, daily, more than once per day.[27] Portion size guides were provided to participants to improve the estimation of their self-reported intake of these foods.

Participants were young people aged between 15 and 25 years who self-identified as having contact with *headspace* Launceston within the past 12 months. Young people aged 12–14 years and attending *headspace* were not eligible due to ethical concerns about providing assent. Data collection was undertaken between February and June 2021 through LimeSurvey (LimeSurvey GmbH, Hamburg, Germany). Participants were recruited through *headspace*, where clinicians distributed printed flyers promoting the study to clients attending the service. The flyers had a link and QR code to enter the survey. Due to the low uptake via this method, a 5-week paid advertisement was run on social media platforms Facebook and Instagram with the parameters set to target 15–25 year olds living in Launceston or surrounds (within a 50 km radius). Over this period, the survey post reached 26 253 young people, with 621 survey link clicks that led to the information sheet that specified eligibility, and the opportunity to review the screening questions to enter the survey. Of this, there were 140 attempts at the screening questions that were employed to determine informed assent (those aged 15–17 years) and consent (those aged 18–25). Participants had to correctly confirm that (i) they were not under a child protection order; (ii) that no one would know they have done the survey; (iii) and, that they understood if they started the survey, they could stop at any time. Of the 140 attempts, 53 completed and answered all screening questions correctly. There were several instances of duplicate IP addresses being used within a matter of minutes with a high level of homogeneity between survey answers, indicating a lack of authenticity in these survey responses. Therefore, duplicate surveys received within 10 min from the same IP addresses were deleted, leaving a final sample size of 48.

Data were exported from the online software into Microsoft Excel (Microsoft Corporation, 2018), then transferred into IBM SPSS Statistics for Windows, version 26.0 (IBM Corp., Armonk, NY, USA) for analysis. All available survey data were used in the analyses, with surveys excluded if a response to the food security question were not provided. If data were missing for other demographic characteristics, they were only excluded for the relevant univariate analyses or cross-tabulations to retain as much data as possible. The significance level for all analyses was set at $p < 0.05$.

Food security status was determined by classifying an affirmative response to the single item question as food insecure and a negative response as food secure. To assist in comparative analyses and due to the distribution of the data, binary variables were generated, with age coded into those aged 15–17 years or 18–25 years, and the number of visits to *headspace* were coded into 1–3 visits or 4 or more visits using a data-driven approach. Living situation options 'living in short term/unstable accommodation' and 'homeless' were merged into one group due to low cell counts. Postcodes and town names were used to classify people according to levels of rurality using the Modified Monash Model[28] (levels 1–6), which were then collapsed into a binary variable of regional[2] and rural.[3–6]

Intake of fruits and vegetables was interpreted against the Australian Guide to Healthy[29] Eating which recommends adolescents consume at least 2 serves of fruit and 5 serves of vegetables per day. Therefore, participants were coded into binary groups ('meeting recommendations', 'not meeting recommendations'). However, due to low cell counts in the meeting recommendations group, the fruit and vegetable groups were further recoded into 'eaten daily' or 'not eaten daily'. In addition, for breakfast, a binary variable was coded by collapsing for breakfast ('eaten daily' or 'not eaten daily'); water ('multiple times per day'; 'only once a day or less'); sugar-sweetened beverages and takeaway food ('weekly or more'; 'less than once a week').

Cross-tabulations with chi-square statistics were used to compare the proportions of food secure and food-insecure respondents, according to their demographic characteristics, and to compare dietary intake variables by food security status. Binary logistic univariate regression was used to determine the demographic predictors of food security status in the sample.

3 | RESULTS

Survey respondents providing a response to the food security screening question ($n = 48$) were predominantly classified as food secure (60%; $n = 29$) and 40% ($n = 19$) were classified as food insecure (Table 1). Of the study sample, most were aged 18–25 years (65%), female (68%), living in an outer regional area (89%), not of Aboriginal and/or Torres Strait Islander background (89%) and had visited *headspace* more than three times over the past 12 months (Table 1). Nearly half of the study sample (49%) were living independently out of the family home, and 44% were living with their parent/s. Less than a quarter (21%) of those living with their family were food insecure compared to nearly half (48%) who were living independently. A minority of the study sample (7%) were either 'homeless' or 'living in unstable accommodation' and all of these respondents were food insecure (Table 1). More than a third (36%) of survey respondents were receiving government financial assistance. However, the majority of those receiving these payments were food insecure (63%) (Table 1). A greater proportion of those who attended *headspace* 4 or more times in the past

TABLE 1 Demographic characteristics of the study sample of young people attending a youth mental health service according to food security status showing the proportion of the total study sample in each category (total column); and the proportion (*n* [%]) of food secure and food-insecure respondents in each category (food-secure and food-insecure columns)

Characteristic	Category	Total *n* (%)	Food secure *n* (%)	Food insecure n (%)	χ^2	*p*-Value
Age ($n = 43$)	15–17	15 (34.9)	10 (66.7)	5 (33.35)	0.371	0.543
	18–25	28 (65.1)	16 (57.1)	12 (42.9)		
Gender ($n = 44$)	Female	30 (68.2)	19 (63.3)	11 (36.7)	0.205	0.903
	Male	12 (27.3)	7 (58.3)	5 (41.7)		
	Self-identity as other	2 (4.5)	1 (50.0)	1 (50.0)		
Living situation ($n = 43$)	At home with parent/s	19 (44.2)	15 (78.9)	4 (21.1)	7.877	0.019
	Living out of home	21 (48.8)	11 (52.4)	10 (47.6)		
	Unstable accommodation/ homeless	3 (7.0)	0 (0.0)	3 (100.0)		
Rural classification (modified Monash model[28]) ($n = 41$)	1–2	36 (87.8)	22 (61.1)	14 (38.9)	0.002	0.962
	3–6	5 (12.2)	3 (60.0)	2 (40.0)		
Receiving government financial assistance ($n = 44$)	No	28 (63.6)	21 (75.0)	7 (25.0)	6.039	0.014
	Yes	16 (36.4)	6 (37.5)	10 (62.5)		
I am Aboriginal and/or Torres Strait Islander ($n = 44$)	No	39 (88.6)	24 (61.5)	15 (38.5)	0.004	0.947
	Yes	5 (11.4)	3 (60.0)	2 (40.0)		
Number of visits to *headspace* ($n = 42$)	1–3	20 (47.6)	14 (70.0)	6 (30.0)	1.061	0.303
	4+	22 (52.4)	12 (54.5)	10 (45.5)		
Received a mental health diagnosis ($n = 44$)	No	18 (40.9)	13 (48.1)	5 (29.4)	1.515	0.218
	Yes	26 (59.1)	14 (51.9)	12 (70.6)		
Total		48	29 (60.4)	19 (39.6)		

12 months were food insecure (46%) compared to those who attended 3 times or less (30%) (Table 1).

The univariate regression (Table 2) identified that respondents who were living out of home and in unstable accommodation were four times more likely to be food insecure compared to those living at home. Furthermore, those receiving government financial assistance were five times more likely to be food insecure compared to those not receiving these payments (Table 2).

Most respondents (70%) consumed fruit daily and around half (52%) reported consuming vegetables daily (Table 3). However, only 18% and 8% of survey respondents met the public health recommendations for the consumption of fruits and vegetables intake, respectively. In addition, only 33% of survey respondents consumed breakfast daily (Table 3). However, there was no significant difference between food secure and food-insecure respondents for these dietary intake variables. Most respondents (63%) consumed water more than once per day, but this result was being driven by water consumption in food secure respondents (76%) but not food-insecure respondents (42%). There was no difference between food secure and food-insecure respondents' consumption of takeaway or sugar-sweetened beverages, and overall, most survey respondents consumed these more than once per week (58% and 54%, respectively; Table 3).

4 | DISCUSSION

This study is the first in Australia to screen for the occurrence, and determine the demographic predictors, of food insecurity in a convenience sample of young people attending a youth mental health service. The study also assessed the relationship between food security status and dietary intake in this group. The results suggest that the occurrence of food insecurity in this vulnerable group is much higher than the wider Australian population, and that young people living out of home or living in unstable accommodation, and those receiving government financial assistance, are at the highest risk of food insecurity. The results are not surprising, given the

TABLE 2 Univariate regression demonstrating the relationship between demographic characteristics and risk of food insecurity in a sample of young people attending a youth mental health service ($n = 48$)

		Odds ratio	SE	Confidence intervals	*p*-Value
Age, years ($n = 43$)	<18	—	—	—	—
	≥18	1.500	0.668	0.405–5.552	0.544
Gender ($n = 43$)	Female	—	—	—	—
	Male	1.234	0.697	0.314–4.840	0.763
	Self-identity as other	1.727	1.464	0.098–30.450	0.709
Living situation ($n = 43$)	At home with parent/s	—	—	—	—
	Living out of home/ Unstable accommodation/ Homeless	4.432	0.696	1.133–17.341	0.032
Rural Classification—Modified Monash Model[28] ($n = 41$)	1–2	—	—	—	—
	3–6	1.048	0.975	0.155–7.079	0.962
Receiving government financial assistance ($n = 44$)	No	—	—	—	—
	Yes	5.000	0.676	1.329–18.814	0.017
I am Aboriginal and/or Torres Strait Islander ($n = 44$)	No	—	—	—	—
	Yes	1.067	0.971	0.159–7.145	0.947
Number of visits to *headspace* ($n = 42$)	1–3	—	—	—	—
	≥4	1.944	0.649	0.545–6.940	0.306
Received a mental health diagnosis ($n = 44$)	No	—	—	—	—
	Yes	2.229	0.657	0.615–8.078	0.223

TABLE 3 Dietary intake according to food security status in the study sample of young people attending a youth mental health service ($n = 48$) showing the proportion of the total study sample in each category of dietary intake (total column); and the proportion (n (%)) of food secure and food-insecure respondents in each category of dietary intake (food-secure and food-insecure columns)

		Total *n* (%)	Food secure *n* (%)	Food insecure *n* (%)	χ^2	*p*-value
Fruit intake	Not eating daily	14 (29.2)	7 (24.1)	7 (36.8)	0.897	0.344
	Eating daily	34 (70.8)	22 (75.9)	12 (63.2)		
Vegetable intake	Not eating daily	23 (47.9)	12 (41.4)	11 (57.9)	1.255	0.263
	Eating daily	25 (52.1)	17 (58.6)	8 (42.1)		
Breakfast intake	Not eating daily	32 (66.7)	17 (53.1)	15 (46.9)	2.134	0.144
	Eating daily	16 (33.3)	12 (75.0)	4 (25.0)		
Water intake	Multiple times per day	18 (37.5)	7 (24.1)	11 (57.9)	5.851	0.018
	Once a day or less	30 (62.5)	22 (75.9)	8 (42.1)		
Sugar sweetened beverages intake	Less than once a week	20 (41.7)	11 (37.9)	9 (47.4)	0.421	0.517
	Weekly or more	28 (58.3)	18 (62.1)	10 (52.6)		
Takeaway food intake	Less than once a week	12 (25.0)	6 (20.7)	6 (31.6)	0.726	0.394
	Weekly or more	36 (75.0)	23 (79.3)	13 (68.4)		

relationship between food security status and social disadvantage and low incomes that persists across all age groups in Australia, but particularly in young people.[3,30] The results point to a clear opportunity to implement regular screening for food insecurity for young people attending a youth mental health service who would

benefit from targeted support enabling them to access sufficient, safe and healthy food. Given the relationship between mental health, diet quality and food security,[8] this could improve mental and physical health outcomes in this vulnerable group.

In the current study, 40% of survey respondents were food insecure, which is very similar to the 38% of university students experiencing food insecurity in the same state of Tasmania, Australia,[31] and slightly lower than the prevalence in a sample of Australian adults with mental illness (45%).[32] In comparison, these statistics are substantially lower than those included in a report from Foodbank (an Australian emergency food relief agency) who reported that in July 2021, in a representative sample of Australian adults, 65% of people aged 18–25 years were food insecure, which was higher than any other age group and most likely related to the loss of casual work during the COVID-19 pandemic in Australia.[33]

Critically, the current study found that young people living independently or in unstable accommodation, and those receiving government financial assistance were at substantially higher risk of food insecurity. It is well established that people or households with low economic resources are at high risk of food insecurity, and that the primary reason for food insecurity in Australia is material hardship and inadequate financial resources.[34] Young people in Australia also face substantial financial challenges due to precarious casual work arrangements[35] and unaffordable housing.[36] Indeed, in a study of young people living in community housing, private rentals, or staying with friends and family, the occurrence of food insecurity was 85%.[7] Until adequate government financial assistance is provided, food insecurity will continue to be pervasive in its recipients, regardless of age, given the government assistance payments fall several hundred dollars a week below the poverty line.[37] The results of a national Think Tank to address the mental health crisis in young Australians have been published, calling on the Australian government to urgently raise the rate of government financial assistance payments as a measure to reduce the growing issue of poor mental health in young people, and reduce the burden on over-stretched mental health services.[38] Young people with mental illness may be at substantially higher risk of long-term reliance on government financial assistance due to their limited capacity to work when symptoms of mental illness are distressing them.[39]

The current study indicated that a higher proportion of respondents who were food insecure attended the mental health service more frequently and had received a mental health diagnosis compared to those who were food secure, but this was not significantly different between groups. This is most likely due to the small study sample resulting in underpowered subgroup analyses. In international research, food insecurity has been associated with higher mental health service use,[12] and this factor should be a consideration for future research in larger sample sizes. Further understanding of the relationship between mental health service use and food security in young people may provide further support for dietetic involvement in multidisciplinary healthcare teams. For people regularly attending mental health services, it has been suggested that dietitians could provide integral support for improving food security and dietary habits through nutritional assessments, interventions, documentation of care, patient education and staff training,[40] with benefits for both physical and mental health outcomes.[41,42]

In the current study, food security was not related to lower dietary intakes of fruit, vegetables or breakfast. However, most young people in our study did not meet the Australian Government's dietary recommendations for these foods regardless of their food security status. In 2017–2018, it was reported that of young Australians aged 15–24 years, 18% did not consume a whole serving of fruit daily, and 9% did not consume a serving of vegetables daily.[43] In the current study, dietary intake of fruits and vegetables was substantially worse, with nearly half of respondents (48%) not eating vegetables daily and 30% of respondents not eating fruit daily. This highlights the extent of poor diet within this vulnerable sample, and is similar to dietary outcomes in a vulnerable group of young adults experiencing homelessness.[7] Furthermore, in Australian adults with severe mental illness, food-insecure respondents were significantly less likely to consume fruit, vegetables and protein-based foods at least daily.[32] Another Australian study determined that young people diagnosed with a severe mental illness had low overall diet quality.[44] In that particular study, 43% of energy was derived from discretionary (energy dense, non-nutritious) foods.[44] The study also reported that poor dietary intake was observed even in the early stages of mental illness, which likely contributed to poor physical and mental health outcomes in that group.[44]

Most participants in the current study, regardless of food security status, reported consuming sugar-sweetened beverages and takeaway foods at least once a week, indicating that these are potentially contributing substantially to overall dietary patterns. In addition, the frequency of consumption of water as a beverage was higher in food secure young people in our study. This may relate to the relatively better dietary habits or better access to fresh water in this group. Lastly, in the current study, only a third of respondents reported consuming breakfast daily regardless of food security status, which is lower than in other studies of young people in Australia

showing 92% consume breakfast daily.[45] However, a study by Pepetone et al.[46] reported that young women in food-insecure households reported preparing a lower proportion of breakfasts at home, which was related to financial precarity, rather than lack of food skills. These findings suggest a need for interventions to substantially improve the dietary habits of young people attending youth mental health services, regardless of food security status. Future research should prioritise determining the specific barriers and enablers towards achieving high diet quality in this group.

While this study presents some of the first results of food insecurity in young people attending a mental health service, the study should be considered in the context of some limitations. First, as is common for this cohort of vulnerable young people, the study has a small sample size. This may lead to Type II errors in the identification of risk factors and does not allow for subgroup analyses. While the total number of young people (aged 12–25 years) who were engaged in at least one appointment with *headspace* Launceston in over the previous 12 months was approximately 1100, the exact number of eligible participants (aged 15–25 years) is unknown due to limitations in accessing this data from the *headspace* referral system. However, the current study employed multiple recruitment strategies to reach this at-risk group, highlighting challenges in sampling this population that should be considered in future research. In addition, the regional location of the study setting further limits the generalisability of the results to other populations and geographical areas. Lastly, the sample contained a high proportion of female respondents (68%) which, while not uncommon in research related to food security,[26] is a factor that should be considered when interpreting the results of this study. Ongoing research could focus on more opportunistic or face-to-face data collection strategies, which were not possible throughout 2020/2021 in Australia due to the COVID-19 pandemic restrictions. The food security screening tool used was selected to minimise participant burden, but it has been reported to be a less-sensitive measure of food security,[26] particularly marginal security which includes anxiety over food sufficiency in addition to running out of food.[3] Utilising this screening tool may be appropriate for staff in a mental health service setting to identify clients at risk of food insecurity so that appropriate referrals, such as to a dietitian for full assessment, and relevant interventions can be initiated. However, future in-depth research in this setting should consider utilising a food security tool that can classify respondents according to the severity of food insecurity, or a tool that considers multiple dimensions of food insecurity particularly around diet quality and challenges experienced accessing nutritious foods. In addition, the dietary intake variables were selected based on recommendations from previous research in adolescents that suggested very simple dietary screening questions are preferable to more comprehensive dietary assessment techniques.[27] Future in-depth research may consider exploring diet in a more comprehensive way in this population, perhaps through interviewer administered 24-h recalls or a food frequency questionnaire that could provide a more complete and valid measure of dietary intake.

In conclusion, this research found a high occurrence of food insecurity in young people attending a youth mental health service, with those living independently or in unstable housing, or receiving government financial assistance at the highest risk indicating that financial access to food is a major contributor to food insecurity in this group. Given the results of the study, there is a clear need for additional research in Australia to explore food insecurity in a representative sample of young people, including the main demographic drivers and relationship with mental and physical health outcomes. This should be a priority given the long-term impacts on physical health[47] and education outcomes[48] for young people experiencing food insecurity over their lifespan. Most relevant for this study are the long-term impacts on mental health, where food insecurity in childhood has been shown to be associated with a higher risk of mental health issues in adolescents and young adults.[49] Regardless of food security status, this study showed that dietary intake of fruits, vegetables and breakfast was poor, and respondents regularly consumed takeaway foods and sugar-sweetened beverages. The results of this study could be utilised by managers and funders of youth mental health services to inform changes in service delivery that support improving diet. Literature suggests that routine screening and improved access to interventions by dietitians should be considered given the relationship between mental health, diet quality and food security and that dietitians have unique skills and knowledge to address these issues.[50,51] Further research surrounding the benefit of integrating dietetic support in the youth mental health setting is warranted. Lastly, continued advocacy for increasing government financial support packages will be paramount in reducing the financial limitations to food access in this at-risk group.

AUTHOR CONTRIBUTIONS

Conceptualization, KK, SM, TM, HB; methodology, all authors; formal analysis, KK and DV; investigation, TM, HB; resources, HB; data curation, TM and KK; writing—original draft preparation, KK; writing—review and editing, all authors.; project administration, HB; funding acquisition, HB. All authors have read and agreed to the published version of the manuscript.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data utilised in this manuscript are available upon reasonable written request to the corresponding author.

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Nutritional intake and foodservice satisfaction of adults receiving specialist inpatient mental health services

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Abstract

Aim: Meeting the nutritional needs and foodservice expectations of hospital inpatients is challenging. This study aimed to determine whether adults receiving specialist inpatient mental health services meet their energy and protein requirements and are satisfied with the foodservice.

Methods: An observational study of adults admitted to three specialist inpatient mental health services within a large health service. Energy and protein intake were determined over 24 h via observation, and nutritional requirements were estimated using standard procedures. Validated questionnaires were used to assess satisfaction with the lunch meal, elements of the foodservice system, and overall foodservice satisfaction.

Results: Among 74 participants, the median (IQR) energy intake (6954 [5111–10 250]kJ/day) was less than estimated requirements (8607 [7319–9951]kJ/day), whilst protein intake (85 [62–120]g/day) exceeded requirements (59 [46–70]g/day). Food from external sources was consumed by 50% of participants. Satisfaction surveys found vegetables were rated more poorly than the meat or carbohydrate portion of the meal, food quality was rated lowest compared with meal service, staffing and physical environment. The majority of participants (89%) rated their last meal as average, with the remainder (11%) rating it as poor.

Conclusion: There are opportunities to improve the meal and foodservice experience for this patient group to meet their nutritional requirements and expectations. Investment in quality food and menus that are appropriate for the demographics, exploration of the most appropriate foodservice system, and adequate dietetic resourcing are needed to improve nutrition care within specialist inpatient mental health services.

KEYWORDS

foodservice, hospital, mental health, nutrition, satisfaction

1 | INTRODUCTION

In Australia one in five (20%, or 4.8 million) Australians reported that they had a mental or behavioural condition during the 12-month period from July 2017.[1] Individuals with mental health conditions are likely to suffer comorbidities, particularly physical health problems,[2,3] with 11.7% (1.9 million) Australians reporting both a mental disorder and a physical condition.[3] National Health Survey data indicates a range of lifestyle factors are present, which contribute to and compound mental and physical health problems.[1] One third of individuals with mental health conditions consumed sugar sweetened drinks daily, one fifth did not meet the recommendations for consumption of fruit and vegetables, and one fifth consumed alcohol in excess of guidelines.[1] The Australian Government has a range of policies and plans in place to support the mental health of Australians, and access to appropriate healthcare including specialist inpatient services.[4]

People who require hospitalisation for a mental health condition are a unique population, different to those admitted for care for physical health conditions. The national average length of stay in a public acute hospital psychiatric unit is 15.7 days compared with that of the general population where the average length of stay in a public hospital is 5.7 days.[5] People aged 35–44 and 18–24 years have the highest rate of admissions for specialist mental health care, which is younger than many patients admitted with chronic conditions.[6] Balancing risk of chronic disease[7] and malnutrition[8] in this patient cohort is at odds with the challenges of addressing the inpatient malnutrition prevalence in many other hospitalised patients. The Agency of Clinical Innovation have produced dedicated Nutrition Standards for consumers of inpatient mental health services, reflecting the uniqueness and priority of their food and nutrition needs.[7] They identify that disability and other physical and mental health conditions, along with medication side effects, dictates the need for the broader foodservice system to be flexible to meet these patients' complex needs.[7] However, dedicated Nutrition Standards do not exist in all states of Australia.

The challenge for health service delivery is to provide a menu and foodservice system that meets the needs of a range of different patient groups simultaneously. This is particularly difficult in hospitals where specialist inpatient mental health services are collocated with patients admitted for physical health conditions. Constraints to the systems and contracts in place for meal ordering, production, plating and the skills and schedule of the foodservice workforce can limit flexibility. In turn, this may impact patients' nutritional intake, further compounding their physical and mental health conditions, and influence their experience of meals and mealtimes. The foodservice provided to specialist inpatient mental health services is further complicated by dietetic staffing pressures within the acute hospital system.[9] Although the collocation of specialist inpatient mental health services can support patients to engage with physical health care,[10] access to dietetic services may be challenging within collocated service models.

The present study aimed to determine whether adults receiving specialist inpatient mental health services meet their energy and protein requirements and are satisfied with the foodservice.

2 | METHODS

This observational study was reported using the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.[11] Approval to undertake this research was received from the Eastern Health Human Research Ethics Committee (reference QA57-2016).

The setting was a large multi-site health service with a catchment of more than 750 000 people in Victoria, Australia. The study was undertaken in the adult (aged 18–65 years) mental health units collocated at the two largest hospitals (one ward at one hospital [site A] and two wards at another hospital [site B]), each ward accommodated 25–30 admissions. Collection of participant-level social and medical history was outside the scope of the ethics approvals for this study, however due to the broad admission criteria it is likely that participants were heterogeneous in terms of their mental health diagnoses and other characteristics. There were no differences in admission procedures to the units, nor any differences in the menus provided.

The healthcare network operates a cook-chill foodservice system, where the majority of meals (soups, main meals, desserts) are prepared off-site at a large central production kitchen, prior to being delivered chilled to the hospitals. At site A meals were plated cold and rethermalised and at site B food was heated in bulk and plated hot in the hospital kitchen prior to distribution to patients at mealtimes. Meals were delivered by a patient service assistant and patients on the mental health wards ate in a communal dining room. The menu throughout the healthcare network was a 4-week cycle menu for main meals and static menu for mid meals, with an additional barbeque meal for adults admitted to specialist inpatient mental health services every 1–2 weeks. At site A the foodservice system was contracted to an external provider and at site B the foodservice system was managed by an in-house workforce. Meal ordering using

paper menus occurred up to 48 h prior to meal service with meal service at 8 a.m., 12 midday and 5 p.m.

Senior nursing staff identified a convenience sample of patients to be observed each day. In selecting patients to be invited to participate, staff considered patients' mental health status and length of stay. Patients with less severe mental health symptoms who had longer lengths of stay were invited preferentially so that they had sufficient time to experience the foodservice system. Observational data were collected during a 3-week period in late-2016, with dietary intake of participants observed for 1 day. A maximum of nine patients were observed each day, with a predicted sample size of 70–90 participants accounting for patient discharge and new admissions.

The primary outcomes were intake of energy (kJ/day) and protein (g/day) and satisfaction with the foodservice. During the day of observation, the intake of all main meals was estimated by trained observers using the validated one-quarter method,[12] while intake of mid-meals and snacks was self-reported by patients at the next meal period (the following day for supper intake). Intake records were analysed using the detailed hospital dietetics ready reckoner to estimate energy (kJ/day) and protein (g/day) consumption for the 24 h period. NUTTAB 2010 within Foodworks 7.0[13] was used to determine the energy and protein content of foods consumed that were from sources external to the hospital menu.

Age, gender and weight (measured by nursing staff on admission) were collected from medical records. Height was derived from ulna length measured with a tape measure according to a recommended process.[14] Energy requirements were estimated using the Schofield equation[15] (applying 1.3 activity factor, no stress factor), with protein requirements estimated according to the Nutrient Reference Value.[16] To calculate requirements, if participant BMI < 30 kg/m^2 actual weight was used, whilst if BMI≥30 kg/m^2 adjusted ideal body weight ([(weight − IBW) * 0.25] + IBW, where IBW is weight at BMI = 25 kg/m^2) was used.[17] The percent of estimated requirements met by intake was determined.

Satisfaction with the foodservice system was evaluated using the Acute Care Hospital Foodservice Satisfaction Questionnaire,[18] a tool developed for use within the acute hospital setting. This survey includes 18 statements measuring aspects of foodservice satisfaction using a 5-point Likert scale ("always", "often", "sometimes", "rarely" or "never"). Responses are converted to a numerical value and a score is derived for satisfaction with four domains; food quality score, meal service quality score, staffing/service issues score, and physical environment score. Domain scores were calculated where there were complete responses for all required statements. One statement of overall satisfaction is measured using a 5-point Likert scale ("very good" to "very poor").

TABLE 1 Demographic details of the adults receiving specialist inpatient mental health services ($n = 77$)

Variable	All participants
Age, years (median [IQR])	36 (29–47)
Gender (n, %)	
Male	40, 52
Female	37, 48
Length of stay at data collection,[a] days (median [IQR])	5 (2–15)
Body mass index,[b] kg/m^2 (median [IQR])	23.9 (21.1–27.4)
Body mass index[b] (n, %)	
Underweight (BMI <20 kg/m^2)	9, 13
Healthy weight (BMI 20–25 kg/m^2)	32, 46
Overweight/obese (BMI > 25 kg/m^2)	29, 41
Estimated energy requirements,[c] kJ/day (median [IQR])	8607 (7319–9951)
Estimated protein requirements,[c] g/day (median [IQR])	59 (46–70)

[a]Data missing for one participant.
[b]Data missing for seven participants.
[c]Data incomplete for nine participants.

The Meal Assessment Tool[19] was utilised to assess satisfaction with a particular meal. This tool uses a seven-point Likert scale ("excellent" to "very poor) to rate the flavour and taste, appearance and quality of the meat or meat alternative, potato or other carbohydrate source, and the vegetables, of the last meal received. Responses are converted to a numerical value. One additional question assesses whether the meal met expectations using a 5-point Likert scale ("very good" to "very poor"). These surveys were administered verbally with each participant after the midday meal on the day of obtaining their 24 h food intake. Researchers determined whether the participant received the meal they ordered, or whether a default meal was provided.

Data collection was performed by trained nutrition and dietetics students from Monash University. All students received 1 day of training by the principal investigator in the accurate estimation of intake to reduce inter-rater variation in measurement and to complement their pre-existing skills in dietary assessment. A pair of data collectors (breakfast/lunch and lunch/dinner) observed and estimated intake of three or four patients per meal. Students also received site orientation prior to commencing data collection with a focus on safety procedures within the inpatient mental health setting.

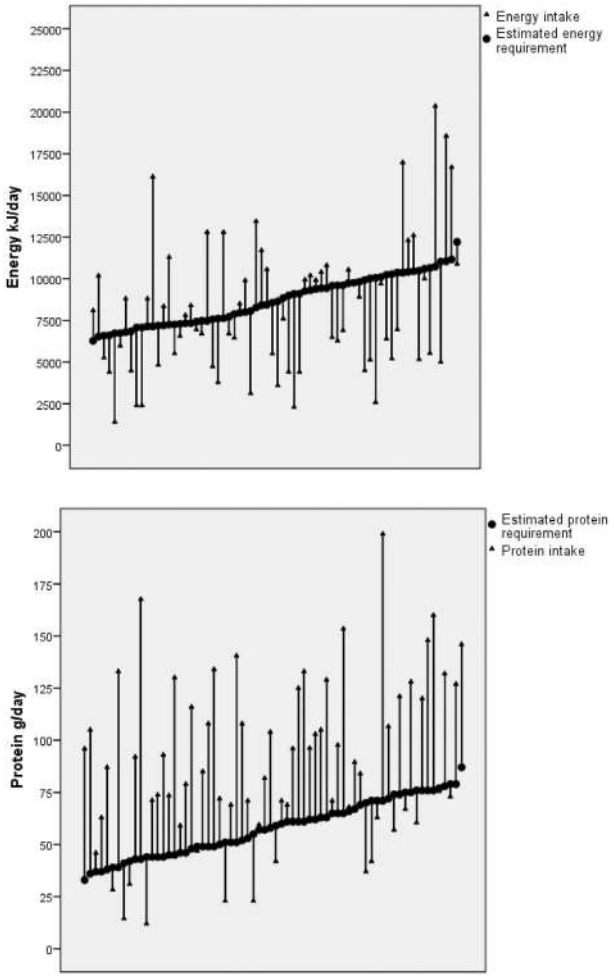

FIGURE 1 Comparison of estimated requirements and intake of energy and protein of people receiving specialist inpatient mental health services ($n = 68$).

Descriptive analyses of demographic characteristics, nutritional intake and satisfaction with the foodservices were performed using IBM SPSS Statistics for Windows (Version 22.0. Armonk, NY: IBM Corp.). To ascertain parametricity, Shapiro–Wilk normality tests along with skewness and kurtosis were assessed for all variables. Median and interquartile range (IQR) were reported for non-normally distributed continuous variables, mean and standard deviation (SD) were reported for normally distributed variables and number (n) and percentage (%) were reported for categorical variables. Analyses were completed with available data.

3 | RESULTS

In total, 77 patients were recruited over the 3-week data collection period, described in Table 1. Over 40% were overweight or obese, and nine (13%) were underweight. There was a large range in energy and protein requirements due to body composition and gender differences (Figure 1).

Two participants had leave of absence from the ward at dinner, an additional patient was discharged during the day of their observation. Data from these patients were removed from the original $n = 77$, leaving $n = 74$ records for nutritional analysis. Among the group with complete 24 h intake records, the median total intake of energy was 6954 kJ/day (IQR 5111–10 250, range 1400–20 359) and the median intake of protein was 85 g/day (IQR 62–120, range 12–199). There were 43% (29/68) of participants who consumed ≥100% of their energy requirements and 77% (52/68) who consumed ≥100% of their protein requirements; the remaining participants (57% for energy, 23% for protein) did not meet their estimated requirements. At the group level, the variability in the requirements and intake of participants was large. Figure 1 plots the requirements (circle) and the intake (triangle) of each participant to illustrate the difference between these at the individual level, and across the group. Half of participants (37/74, 50%) consumed food from external sources. Where participants chose food in addition to the hospital menu, the energy provided by external sources was often large (median 1648, IQR 800–2903 kJ/day). Two participants consumed all of their daily intake from external sources on the day of observation.

Only 8–50% of participants completed their menu each day, resulting in the majority of participants receiving a default meal. This was due to several factors including patients reporting they were not aware that they could choose meals, and patients forgetting to complete the menu order.

The Acute Care Hospital Foodservice Satisfaction Questionnaire and Meal Assessment Tool satisfaction surveys were completed in full by 63 of 77 (82%) participants. Four participants did not complete the Acute Care Hospital Foodservice Satisfaction Questionnaire survey at all, and responses to single items were missing for up to 10 participants. Two participants did not eat any component of their meal, and a further three did not eat the meat component and therefore were unable to provide responses for these sections of the Meal Assessment Tool.

Satisfaction with the foodservice overall received an average rating of 2.9 out of 5 (correlating to "good"), where 5 indicates higher satisfaction. This was derived from ratings of very good ($n = 25$, 34%), good ($n = 26$, 36%), average ($n = 15$, 21%), poor ($n = 4$, 5%) and very poor ($n = 3$, 4%). Acute Care Hospital Foodservice Satisfaction Questionnaire data demonstrated participants were least satisfied with the food quality, and most satisfied with staff/service and the physical environment (Table 2).

TABLE 2 Satisfaction of people receiving specialist inpatient mental health services with items and domains of foodservice assessed using the Acute Care Hospital Foodservice Patient Satisfaction Questionnaire.[22]

Aspect of foodservice[a]		Rating (mean ± SD)
Food quality domain ($n = 64$)		2.6 ± 1.0
Q.1 ($n = 73$)	The hospital food has been as good as I expected	2.8 ± 1.2
Q.5 ($n = 71$)	I am able to choose a healthy meal in hospital	2.9 ± 1.3
Q.8 ($n = 72$)	I like the way the vegetables are cooked	2.5 ± 1.3
Q.9 ($n = 73$)	The meals taste nice	2.7 ± 1.1
Q.13 ($n = 73$)	The menu has enough variety for me to choose meals that I want to eat	2.6 ± 1.4
Q.16 ($n = 73$)	The meals have excellent and distinct flavours	2.4 ± 1.2
Q.18 ($n = 68$)	The meat is not tough and dry[b]	2.5 ± 1.3
Meal service quality domain ($n = 64$)		3.3 ± 0.7
Q.7 ($n = 69$)	The cold drinks are just the right temperature	3.4 ± 1.0
Q.10 ($n = 68$)	The hot drinks are just the right temperature	2.9 ± 1.3
Q.14 ($n = 69$)	The cold foods are the right temperature	3.6 ± 0.8
Staff/service issues domain ($n = 68$)		3.7 ± 0.5
Q.3 ($n = 73$)	The staff who deliver my meals are neat and clean	3.8 ± 0.7
Q.11 ($n = 71$)	The staff who take away my finished meal tray are friendly and polite	3.7 ± 0.7
Q.15 ($n = 70$)	The staff who deliver my meals are helpful	3.6 ± 0.8
Physical environment domain ($n = 71$)		3.4 ± 0.8
Q.2 ($n = 72$)	The crockery and cutlery are not chipped and/or stained[b]	3.5 ± 1.0
Q.4 ($n = 73$)	The hospital smells do not stop me from enjoying my meals[b]	3.3 ± 1.2
Q.6 ($n = 72$)	I am not disturbed by the noise of finished meal trays being removed[b]	3.4 ± 1.1
Statements not belonging to a domain		
Q.12 ($n = 63$)	I like to be able to choose different sized meals	2.8 ± 1.4
Q.17 ($n = 73$)	The hot foods are just the right temperature	3.2 ± 1.1
Overall satisfaction ($n = 73$)		2.9 ± 1.1

[a]Responses coded from 5 to 1 (always/often/sometimes/rarely/never); higher satisfaction denoted by ratings closer to 5.
[b]Questions and responses were reverse-coded according to tool guidelines.

TABLE 3 Satisfaction with components of the lunch meal assessed using the meal assessment tool.[23]

Meal component[a]	Poor (1, 2), *n* (%)	Average (3–5), *n* (%)	Good (6, 7), *n* (%)	Rating (mean ± SD)
Meat/meat alternatives ($n = 68$)				
Flavour and taste	5 (7%)	28 (41%)	35 (52%)	5.2 ± 1.6
Appearance	6 (9%)	31 (46%)	31 (45%)	5.0 ± 1.7
Quality	4 (6%)	32 (47%)	32 (47%)	5.1 ± 1.6
Starch (potato, rice, pasta, cous cous) ($n = 70$)				
Flavour and taste	5 (7%)	32 (46%)	33 (47%)	5.1 ± 1.6
Appearance	7 (10%)	26 (37%)	37 (53%)	5.1 ± 1.7
Quality	8 (11%)	27 (39%)	35 (50%)	5.1 ± 1.7
Other vegetables ($n = 71$)				
Flavour and taste	12 (17%)	29 (41%)	29 (41%)	4.7 ± 1.9
Appearance	13 (18%)	27 (38%)	31 (44%)	4.7 ± 1.9
Quality	12 (17%)	26 (37%)	32 (46%)	4.7 ± 1.9

[a]Higher satisfaction denoted by ratings closer to 7.

Satisfaction with the components of the lunch meal, assessed using the Meal Assessment Tool, are presented in Table 3. Vegetables were the meal component that rated the poorest. When asked to compare the overall lunch meal to their expectations, 11% ($n = 8$) rated it as poor, 89% ($n = 62$) rated it as average, whilst no participants rated it as good.

4 | DISCUSSION

In this study of 74 adults receiving inpatient services for mental health conditions, almost half of the participants met their estimated energy recommendations and three-quarters met their estimated protein recommendations. Results identified variability and inconsistencies among participants in their satisfaction with meals and the foodservice system. This disconnect between intake, estimated nutritional requirements and expectations is likely to occur because patients in specialist mental health inpatient facilities are recipients of meals and foodservice not designed for them. When health services are collocated at the same hospital, and in the absence of Nutrition Standards for patients in mental health facilities in Victoria, the menu and foodservice is oriented to an older patient demographic where issues of taste preferences, malnutrition, and dysphagia are prevalent.

This study serves as a baseline for exploring the consumer perspective on the meals, eating experience, and nutrition intake of hospitalised adults receiving specialist mental health services. With increasing prevalence and funding[6] to support people with mental health conditions, it is important that the food and nutrition needs of this cohort are understood, that this information is acted on to put appropriate nutrition care strategies in place and that the dietetic profession is shaping this future. There is evidence that individualised dietetic intervention can provide cost-effective nutrition care for people with mental health conditions,[20] but the foodservice system is a platform offering greater reach and delivery of nutrition care to all inpatients.

Literature indicates the foodservice system is a significant determinant of patient satisfaction, and the choice, timing and delivery of food are the most important factors in determining younger patients' satisfaction.[21] A review of strategies to reduce plate waste in hospital recommended foodservice systems that give patients choice, allow selections to be made as close to the mealtime as possible, and promote social interaction at mealtimes.[22] Therefore, making changes to the systems for ordering, plating and distribution of food for patients with mental health conditions, and the settings where meals are consumed, have the potential to increase satisfaction and intake. Such strategies include spoken menu systems,[23] the use of dining rooms,[24] room service,[25] a la carte style menus and electronic bedside meal ordering.[26] Although not previously reported as being implemented for patients receiving inpatient specialist mental health services, aspects of these models may better align with the younger adult population.

Regrettably, little research has been reported internationally of the nutritional intake and satisfaction of inpatients admitted to units providing specialist mental health services. A study of nutritional intake and foodservice satisfaction undertaken within collocated acute physical and mental health services simultaneously is recommended to enable comparisons and a broader understanding of the food-related issues facing each of these patient groups. Consideration of nutrients beyond energy and protein was beyond the scope of this study, however this is likely to be of clinical interest in this patient cohort and should be undertaken in the future.

This study provides useful lessons for designing future studies in collecting food related information from adults admitted to inpatient mental health facilities. There was a level of inconsistency between the results received (where many patients were satisfied) compared with the observation of half the participants sourcing at least some food from external sources in the observation day. This brings into question the relevance and understanding of foodservice satisfaction surveys more generally. The value of quantitative surveys in the literature whereby the concept that patients think and evaluate in a continuum of satisfaction has been challenged.[27] Some authors have indicated that patients display a more critical nature when they are given an opportunity through open ended questions or other qualitative approaches, and hence uncover greater dissatisfaction.[27] Therefore, further exploration of the foodservice satisfaction of this patient group through qualitative approaches may be valuable. Observation of the meal, through approaches such as ethnography,[28] may also provide valuable insights.

Challenges in collecting intake data in hospitalised patients are also acknowledged. This study used the validated one quarter method, with data collected on hard copy forms and manually collated. Recent innovations such as electronic measurement of plate waste (e.g., Mobile Intake system) have been validated[29] and may provide some efficiencies to this process. Despite not providing the accuracy of weighed food data, time is saved through the use of such systems because recording of food intake occurs once at the bedside which is automatically synchronised to the menu and food composition data.

There are several limitations associated with the methods utilised for determining nutrient requirements, intake and food composition. It is acknowledged that

1 day of observation may not represent usual intake, but it provides a useful snapshot and has been utilised in other point prevalence studies.[30] The use of hospital ready reckoners to estimate some nutrient analyses and the convenience sampling method within this study are also acknowledged as limitations. The absence of more detailed anthropometric data and any biochemical change data limits the strength of conclusions able to be drawn from the study findings. Also, we were unable to report physical and mental health diagnoses due to ethics restrictions placed on the research.

This is one of the first studies to explore food service for hospitalised adults with mental health conditions. We advocate for greater consideration of how the dietetics profession can meet the food and nutrition needs and promote a positive foodservice experience for this patient group. This requires a well-planned menu, careful selection of systems for production, ordering, plating, and distribution of food, and adequate investment in foodservice systems and workforce. We also encourage nursing staff and other members of the mental health team to advocate for improved foodservice provision in healthcare. Their presence and influence within their units is vital to improve food and nutrition for this vulnerable group.

AUTHOR CONTRIBUTIONS

JP and JC conceived and co-ordinated the study, ran the statistical analysis and wrote the manuscript. Both authors have approved submission of this version of the manuscript.

CONFLICT OF INTEREST

Judi Porter is the Editor-in-Chief of Nutrition & Dietetics and was excluded from the peer review process and all decision-making regarding this article. This manuscript has been managed throughout the review process by the Journal's Editor. The Journal operates a blinded peer review process and the peer reviewers for this manuscript were unaware of the authors of the manuscript. This process prevents authors who also hold an editorial role to influence the editorial decisions made. Jorja Collins has no conflict to disclose.

DATA AVAILABILITY STATEMENT

The data reported in this paper are not publicly available due to privacy or ethical restrictions.

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