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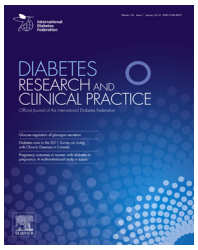

Review

Systematic review of the evidence for a liberalized diet in the management of diabetes mellitus in older adults residing in aged care facilities

Olivia Farrer [a,1], *Alison Yaxley* [a,2], *Karen Walton* [b,3], *Erin Healy* [a,4], *Michelle Miller* [a,*]

[a] *Nutrition and Dietetics, Flinders University, GPO Box 2100, Adelaide 5001, SA, Australia*
[b] *School of Medicine, University of Wollongong, Northfields Avenue, Wollongong 2522, NSW, Australia*

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ABSTRACT

A systematic review of the literature was conducted to review and evaluate the evidence supporting a liberalized diet for the management of diabetes mellitus in aged care homes and examine the effect of this on glycaemia, nutritional status and diabetes comorbidity risk factors. A 3 step search of eight databases followed by independent data extraction and quality assessment by two authors was undertaken. Studies which compared therapeutic diets to a liberalized diet or observation studies reviewing the effects of therapeutic diets on glycaemia and nutritional status were included. Of the 546 studies identified, six met the inclusion criteria. Methodological quality of the studies was rated poor and the majority concluded no statistically significant change in diabetes management outcomes with a liberalized diet, but modest increases in glycaemia were observed. Inadequate data was available to determine effects of diet change on nutritional status or diabetes risk factors. Overall studies were in support of a liberalized diet but due to the low quality of the evidence and a lack of significant findings it may not be appropriate to extrapolate these conclusions to inform dietetic practice.

Contents

* *Corresponding author*. Tel.: +61 8 8204 5328; fax: +61 8 8204 6406.
E-mail addresses: Olivia.farrer@flinders.edu.au (O. Farrer), Alison.Yaxley@flinders.edu.au (A. Yaxley), kwalton@uow.edu.au (K. Walton), Erin.healy@flinders.edu.au (E. Healy), Michelle.miller@flinders.edu.au (M. Miller).
[1] Tel.: +61 8 8204 7074; fax +61 8 8204 6406.
[2] Tel.: +61 8 8204 4645; fax +61 8 8204 6406.
[3] Tel.: +61 2 4221 5197; fax +61 2 4221 3151.
[4] Tel.: +61 8204 4715; fax +61 8 8204 6406.

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1. Background

Approximately 25% of patients in aged care homes have diabetes, and it is the primary reason for 12% of admissions to supported living institutions among adults 45 to 75 years of age; with admission in adults 45–64 yrs often relating to diabetes complications [1]. More commonly older adults, defined as ≥65 years, are diagnosed with type 2 diabetes although lifestyle goals for management remain the same for type 1 diabetes. The prevalence of diabetes in aged care homes is twice as common as in the general population [2] and residents with diabetes frequently have higher rates of complications and as a result require 31% more hospitalizations [3]. The goals for management of diabetes in older adults are broad and not specific to institutionalized older adults, as summarised in the American Diabetes Association (ADA) review of clinical practice recommendations [4]. The recommendations do include comments that 'Older adults who are functional, cognitively intact, and have significant life expectancy should receive diabetes care with goals similar to those developed for younger adults and that 'Glycaemic goals for some older adults might reasonably be relaxed, using individual criteria, but hyperglycaemia leading to symptoms or risk of acute hyperglycaemic complications should be avoided in all patients' [4]. This is further emphasised in the International Diabetes Federation (IDF) 'Global Guideline for Managing Older People with Type 2 Diabetes' [5].

Management of type 2 diabetes mellitus in adults and functionally independent older adults is primarily through lifestyle changes, such as regular physical activity, maintaining a healthy weight and consuming a nutritious varied diet [5]. The diet would ideally be consistent in volumes of carbohydrate at each mealtime with a preference for low glycemic index (GI) choices [4] to help avoid food related post prandial hyperglycaemia. Lifestyle factors such as exercise and modest weight loss of 5–10% if required, have well documented benefits in improving insulin sensitivity and glucose uptake. But for older adults, particularly those residing in aged care homes, it may be impractical to expect regular exercise; and weight loss of >5% can actually have a negative impact on mortality [6], which realistically leaves diet and drug therapy to manage glycaemia.

Historically, nutritional management of residents with diabetes in institutions has been a prescribed therapeutic or 'diabetic' diet generally comprising of the following restrictions; no concentrated sweets and restricted calories and/or fat, sometimes known as a 'No concentrated sweets diet [7] or ''ADA diet'' [8]. Although with literature reporting that as many as 50% institutionalized older adults are malnourished [9] and limited data to demonstrate effectiveness of restrictive diets [6] in achieving optimal glycaemia (HbA1c < 8%, 64 mmol/mol), the therapeutic 'diabetic' diet is no longer recommended by the ADA and a move to liberalize diet prescriptions for older adults in aged care has occurred [10] albeit inconsistently, with many facilities still offering a version of a diabetic therapeutic menu. There are limited studies that inform current menu standards and facilities may now opt for a generic liberalized menu incorporating less restriction on calories, fat and carbohydrate from refined sugar, which is offered to all residents, loosely based on the ADA [4] and IDF guidelines [5], some with particular emphasis on high energy foods to reduce risk of malnutrition and a consensus from existing literature that such a diet will not impact on diabetes management [2,11].

However, at 65 years of age, adults still have at least an estimated 16–20 years of life expectancy (for men and women, respectively), with 46% aged care home residents aged 65–84 years [12] and risk factors for chronic disease complications remaining influential and modifiable even in older age. Ageing combined with hyperglycaemia, appears to accelerate the onset of complications and prolonged suboptimal glycaemia has known effects on increased cognitive decline, poor wound healing, increased likelihood of developing pressure ulcers, and most notably macro vascular complications (risk of heart disease and stroke is 2–4 times higher in people with diabetes) [13]. Hyperglycaemia is also an independent risk factor for falls in aged care residents [14]. Studies have found that improved glycaemic control benefits people with diabetes and in general every percentage point drop in HbA1c blood test results (e.g., from 8.0%, 64 mmol/mol to 7.0%, 53 mmol/mol) can reduce the risk of micro-vascular complications (eye, kidney, and nerve diseases) by 40% [13]. The economic cost savings and improved quality of life for optimal glycaemic management in older adults with diabetes has also been stated as a benefit. It is clear that there is some benefit in adoption of health promoting behaviours, including a diet that may prevent or postpone complications but that is of high nutritional value and does not precipitate weight or muscle loss often observed in older adults [15].

In summary, the care of older adults with diabetes is complicated by their diverse clinical and functional presentation [4]. There is limited data available on how to manage this growing population group particularly in an aged care setting but the limitation of implementing lifestyle changes other than diet modification has prompted this systematic review of the literature to review the evidence for dietary management of diabetes in aged care homes and reviewing the effects of a therapeutic diet versus a liberalized diet on glycaemia, nutritional status and comorbidities.

2. Methods

A systematic review of the literature studying the effects of either a therapeutic diet or liberalized diet on diabetes