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Research report

Does food planning mediate the association between living arrangements and fruit and vegetable consumption among women aged 40 years and older?☆

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ABSTRACT

The objective of this paper was to investigate whether food planning strategies mediate the association between living arrangements and fruit and vegetable consumption amongst women aged 40 years and over. A community sample of 473 women aged 40 years and over from metropolitan Melbourne, Australia, provided survey data on their living arrangements, education, fruit and vegetable consumption and the amount of food planning they undertake. Fruit and vegetable consumption was significantly higher amongst women who lived with others compared to those living alone. Food planning was found to mediate the association between living arrangements and fruit consumption by 8% and vegetable consumption by 13%. This study provides evidence of a mediating effect of food planning on the relationship between living arrangements and fruit and vegetable consumption. With the ageing of the population increasing the potential for a rise in the number of single-occupant households, identifying ways of helping individuals to plan their food purchasing and preparation may increase fruit and vegetable intake.

Introduction

Low intakes of fruits and vegetables are key risk factors for a range of chronic diseases (NHMRC, 2005; World Cancer Research, 2007). In many countries – for example, France, Denmark, the US as well as Australia – older people generally consume healthier diets than their younger counterparts (Guenther, Dodd, Reedy, & Krebs-Smith, 2006; Lau et al., 2004; Magarey, McKean, & Daniels, 2006; Perrin et al., 2002; Serdula et al., 2004), but they still tend to have low intakes of fruit and vegetables (Ball, Crawford, & Mishra, 2006; Greene et al., 2008). The most recent National nutrition survey shows that only around one-third of Australian adults aged between 41 and 50 years and 35% of those aged between 51 and 64 years reported consuming the recommended 2 or more serves of fruit per day, whilst the percentage of people in these age groups who consumed the recommended 5 or more serves of vegetables per day was approximately 30–35% (Magarey et al., 2006). Furthermore only 11% of the adults were meeting the recommendations for both fruit and vegetables (Magarey et al., 2006). Since these data were collected, other studies have found similarly low intakes and the pattern is similar in other western countries (Block & Morwitz, 1999; DHS, 2005; Loughrey, Basiotis, Zizza, & Dinkins, 2001).

One factor that has been found to influence dietary quality is the living arrangements of individuals, particularly whether people live in single- or multiple-member households. Population ageing is more prevalent in developed countries such as Australia (Australian Bureau of Statistics, 2006) and this may result in a considerable change in household structure in the future. The effect this may have on an individual's dietary intake is still unclear, but on the whole, the literature appears to suggest that living arrangements do influence diet, with those who live with others having better diets than those who live alone, but it does not give much insight into how or why this is so (Bae et al., 2007; Gustafsson & Sidenvall, 2002; Locher, Robinson, Roth, Ritchie, & Burgio, 2005; Quine & Morrell, 2006).

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There is some evidence to suggest that consumers who utilise food planning strategies have a better diet quality than those who buy or prepare food on impulse or with little planning (Abdel-Chany & Schrimper, 1978; Hersey et al., 2001). There are numerous planning strategies that can be employed to facilitate food shopping and food preparation. Crawford, Ball, Mishra, Salmon, and Timperio (2007) reported that women who wrote shopping lists were more inclined to eat 2 or more serves of vegetables per day. They also found that women who used other planning strategies, such as planning meals ahead of time or cooking dishes ahead of time, were twice as likely to consume more serves of vegetables (Crawford et al., 2007).

Socially constructed gender roles have resulted in women traditionally undertaking domestic duties including the planning, procurement and preparation of meals to be consumed by the family and while it has been found that men spend more hours doing domestic duties if their spouses are in the workforce, women are still more likely to be involved in the provision of food for the family (Bittman, England, Sayer, Folbre, & Matheson, 2003; Lake et al., 2006). Therefore, the aim of this paper is to investigate whether food planning strategies mediate the association between living arrangements and fruit and vegetable consumption amongst women aged 40 years and over. It was hypothesized that, compared with women living alone, women who live with others would be more likely to employ food planning strategies and this would explain their greater fruit and vegetable consumption.

Experimental methods

Sample

This analysis used data provided by participants in the Socio-economic Status and Activity in Women (or SESAW) study, full methods of SESAW are described in detail elsewhere (Ball et al., 2006; Crawford et al., 2007). Briefly, in the SESAW study a random sample of 2400 women aged 18–75 was selected from the electoral roll using a stratified random sampling procedure to recruit all participants from 45 neighbourhoods of different socio-economic status (SES) within approximately 30 km of Melbourne's central business district. The suburbs were ranked according to their SEIFA (Socio-economic Index for Areas) scores which are based on the proportion of residents who are considered disadvantaged (Australian Bureau of Statistics, 2003). The suburbs were grouped from the lowest to highest septile of socio-economic disadvantage and 15 suburbs from each septile were then randomly selected, ensuring that participants from a range of SES backgrounds were included in the sample. As voting is compulsory in Australia, the electoral roll provides a good sampling framework. One thousand one hundred and thirty-six completed dietary surveys were received (response rate 50%). An independent sample of a further 2400 women was also selected using these methods, and mailed a separate survey on physical activity. In order to boost sample numbers, respondents to that survey were asked if they were also interested in completing the nutrition survey, which yielded a further 444 (42%) responses (1580 responses in total). A $1.00 (AUD) instant lotto 'scratchy' card was sent with each survey.

Data from 856 women aged 40 years and over was reviewed for the present analysis; however 383 responses had to be excluded due to incomplete data. This paper reports on the data from the remaining 473 women in this age group who participated in the main study. The demographics of these women were found to be no different from 383 women who were excluded due to incomplete data. This age group was selected because of the projected growth in lone-person households due to the combination of longer life expectancy of women, increased rates of separation and divorce and the ageing of the population (Households and Families, 2008).

Procedures

The study was approved by the Deakin University Ethics Committee. Nutrition surveys were mailed to the 2400 women according to methods described by Dillman (1978). This included an initial letter notifying the women they had been selected to take part in the study, with a self-completion dietary questionnaire sent 1 week later. Non-responders were sent a postcard reminder within 3 weeks and a second survey replacement pack was sent out after a further 3 weeks to those who had still not responded.

Measures

Predictor variable—living arrangements

Women were asked to report whether they lived alone, with a partner or spouse, or whether they had children and other adults living with them. Because of the small sample size, it was decided to recode these into a single variable indicating whether or not women lived alone.

Mediating variables

Food planning strategies

Eight items were developed to assess food planning strategies (a four-point response was used: 'Never/rarely', 'Sometime', 'Most of the time', 'Always'), from these a food planning score was constructed. A scale reliability test was conducted on all eight items; however one was not included as it reduced the internal consistency of the scale. The remaining seven items showed good internal consistency with a Cronbach's alpha coefficient of 0.67. These were: "I usually plan meals for the week before I go shopping"; "I usually write a shopping list to take with me when I shop for food"; "I am easily tempted to buy things not on my shopping list"; "I know/plan in the morning what I will eat for dinner that night"; "I know/plan the day/night before what I will eat for lunch the next day"; "I prepare or cook dishes ahead of time" and "I decide on the night what I will eat each night".

Responses to the individual planning items were follows: 'never' (1); 'sometimes' (2); 'most of the time' (3); and 'always' (4). The scores were summed to give each participant a total planning score (up to a possible 28), which was used as a continuous variable.

Outcome variables

Fruit and vegetable intakes

Two questions were used to assess the participants' intakes of fruit and vegetables: "How many servings of fruit/vegetables do you usually eat each day?" Response options were none, 1 serve, 2 serves, 3–4 serves or 5 serves or more. These questions were adapted from the 1995 Australian National Nutrition Survey which have been evaluated and shown to be valid measures of fruit and vegetable intake (Riley, Rutishauser, & Webb, 2001; Rutishauser, Webb, Abraham, & Allsopp, 2001). A serving of fruit was defined as 1 medium piece or 2 small pieces of fruit or 1 cup of diced pieces; a serving of vegetables was defined as 1/2 cup of cooked vegetables, or 1 cup of salad vegetables (Australian Bureau of Statistics, 1998).

Based on national guidelines (NHMRC, 2005) participants were categorized according to fruit and vegetable intake guidelines. With respect to fruit, those who ate 2 or more serves per day were categorized as high intake, and those who ate less than 2 serves per day were categorized as low intake. According to national guidelines (NHMRC, 2005) adults should consume 5 or more serves of vegetables per day. However, because too few