• Title:
A literature scoping review of eating practices and food environments in 1 and 2-
person households in the UK, Australia and USA.

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A literature scoping review of eating practices and food environments in 1 and 2-person households in the UK, Australia and USA.

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Keywords: eating practice; food behaviour; small households; commensality; health.

Declaration of interest:
Carol Anne Hartwick Pflaum is a Consumer Scientist at Mars Food Global C.V.

Abstract

The purpose of this article is to map the data currently available on the subject of eating practices and food environments in small (i.e. one- and two-person) households. Specifically, the enquiry is focused on commensality; the act of eating together. Research dates from the late 1980s, however, there are few recent publications on this subject. Searching Ovid MEDLINE, PsycINFO, CINAHL, Web of Science, Scopus, ProQuest and Google Scholar, 2,949 papers were found, but only 457 discussed any element of the research questions. These were further distilled to a count of 117, by abstract reading to 53 at which point, quality, location and study focus eliminated a further 34 articles leaving 19 articles. After full reading, it was clear that only seven of these focused on the research question in detail and these are marked as four-star articles by bold text. The 19 articles are analysed for quality and their aspects of relevance to the central research question is discussed.

Funding: This work was funded by Mars Food Global C.V., Benjamin Franklinstraat 19, 3261 LW Oud-Beijerland, The Netherlands.
Introduction

Background

Commensal units have been defined as groups of people who assemble at a particular time and specific place to consume meals (Sobal and Nelson 2003). Although the structure of commensal units could be potentially wide – work groups, social groups, leisure groups etc. – the family is regarded as the most fundamental commensal grouping.

Eating in company is regarded to be desirable for the associated benefits of social interaction and connection and a number of community studies have shown that this principle has broad support (see for example, Prättälä et al. 1993, Rodrigues and Almeida 1996). On the other hand, eating alone (termed dietary individualism) carries some stigma; it is believed to represent the effects of rootlessness and alienation in the post-industrial world, a form of ‘gastro-anomie’ (Fischler 1988). Further, eating alone is believed to be linked to unhealthy eating behaviours and diet-related diseases (Torres et al. 1992, Sidenvall et al. 2000).

While the literature is replete with studies and commentaries about groups eating together, most research has looked at family units that comprise children. That is to say, the presence of children, ipso facto, appears to define the existence of ‘families’. Left unexplored are the eating practices and food environments in 1 and 2-person households that at the moment comprise a substantial share of accommodation options.

In 2010, more than half of husband-wife households in the USA did not include children (Tumin and Anderson 2015). Between 1961 and 2001 the average household size in the UK has declined by one-third and now appears steady at around 2.4 persons (ONS 2012). Single-person households have increased from 12 per cent of households in 1961 to 29 per cent in the UK censuses of 2001 and 2011. More than two-thirds of British households do not have children (Yates and Warde 2017). In this context, the practice of eating together or alone is of growing significance.

Research question

How are the eating practices and food environments in 1 and 2-person households described and discussed in the extant literature, and what can we learn about social, economic and health implications of eating in smaller commensal units?

Aim and objectives

The aim of this scoping review was to explore the literature and integrate relevant research findings into a coherent description of the eating practices and food environments in 1 and 2-person households.
The following objectives were used to undertake the scoping review. The authors wished to establish a robust, systematic approach to searching the extant literature on food and eating in households. They undertook to systematically search the literature (relevant databases) to identify reported studies that have researched eating practices and food environments in 1 and 2-person households. They aimed to integrate findings of published research relevant to the eating practices and food environments in 1 and 2-person households so as to provide a description of social, economic and health implications, with particular attention to eating in company, termed here as commensality.

Methods

Protocol: The PRISMA protocol was used to direct all database searches as well as provide the overall structure for this systematic review (Peters et al. 2015).

Eligibility Criteria: Literature included in this systematic review had to meet the following criteria: a) English language publication, and b) primary literature (journal publication, or interim publication).

Information Sources: A three-step search strategy was utilized. The first step was an initial limited search of at least two online databases relevant to the topic. The databases MEDLINE and CINAHL are appropriate for a scoping review on eating practices and food environments. Search terms were identified by exploring MeSH subject terms. The following search terms were used, with asterisks denoting truncation: living alone, living arrangements, one-person household, singles or solos or couples or empty nester*, divorce, widowhood, food or meal* or eating or dining or dinner*, food environment, eating practice, food or diet*.

This initial search was followed by an analysis of the text contained in the title and abstract of retrieved papers, and of the index terms used to describe the articles. This search provided a list of keywords which could be excluded from subsequent searches in order to limit the search to the most relevant items. A second search using all identified keywords and index terms was then undertaken across all included databases. Thirdly, the reference list of all identified reports and articles were searched for additional studies. Databases searched were Ovid MEDLINE, PsycINFO, CINAHL, Scopus, and ProQuest (Health and Medicine and Social Sciences subsets). Searches were performed on August 14, 2017. A search of Google Scholar was performed on September 22, 2017. All references were downloaded into an Endnote X7 library.

Selection Process: Breen individually searched the papers returned from database searches and selected the ones that met eligibility criteria. Coveney checked the exclusions and confirmed the suitability of those articles selected for inclusion.

Results and findings

Search Results: Running the search through the databases, based on keywords “single person/widowhood/living alone/small household”, “eating practice” and
combinations of food environment terms, produced 2,949 hits, with 2,458 unique papers, and 457 duplicate papers which were immediately eliminated from the review (see Figure 1).

A first pass of the literature resulted in 117 papers with a combination of keywords. A second pass was then done to assess the literature for suitability. Being conducted prior to 2007 or outside the specified geographical locations eliminated 33 papers; 17 were solely concerned with nutrition and diet quality; 16 papers focused on couples but were concerned with weight gain and physical activity within romantic relationships and so did not address eating practices; eight explored eating behaviour; six considered food preparation; three each focussed on alcohol intake and diet quality, the use of luncheon clubs or diet at certain life transition phases but did not focus specifically on small households and two each looked at the diet of parents, of college students and family meals and BMI. A single paper was devoted to family meals and school-age children and to attitudes to food and one other was eliminated due to its small sample. Within the 19 papers included in the scoping study, eight themes emerged. These were: socio-economic aspects of food behaviour; living alone and diet; meal preparation; expenditure on commercially-prepared food; life transition and diet; food planning and fruit and vegetable intake; cooking skills; and commensality.
<table>
<thead>
<tr>
<th>Author/ Year/ Country</th>
<th>Study Design</th>
<th>Participants</th>
<th>Results</th>
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</table>
- Around 90% reported being able to cook convenience foods, a complete meal from ready-made ingredient, and a main dish from basic ingredients without help.  
- Socio-demographic differences in all markers of cooking skills were scattered and inconsistent. Where these were found, women and main food providers were most likely to report confidence with foods, techniques or dishes, and respondents in the youngest age (19-34 years) and lowest socio-economic group least likely. |
| Kroshus, E. 2008. USA | Prospective cohort study, data collected by the United States Bureau of Labor Statistics 2004 Consumer Expenditure Survey | Randomly selected nationally representative sample of 5,744 US citizens | - Proportionate per capita household expenditure on commercially prepared food was found to vary by marital status and gender.  
- Households headed by unmarried men (both divorced/separated and never married) spent a significantly greater proportion of their food budget on commercially prepared food than their married male peers (38% and 60% higher, respectively).  
- Regardless of marital status, households headed by women were found to spend approximately one-third of their total food budget on commercially prepared foods outside the home.  
- Households headed by never married men spent 63% more per capita than those headed by never married women and households headed by divorced or separated men spent 37% more than those headed by divorced or separated women. |
| Conklin, A. I., N. G. Forouhi, P. Surtees, K. T. Khaw, N. J. Wareham and P. Monsivais. 2014. UK | Date from the European Prospective Investigation of Cancer-Norfolk (EPIC-Norfolk) study (1996-2002) were analysed with multivariable linear regression models for gender-specific and interaction associations. Specifically, this study examined six economic | 20,274 over-50s | - Being single or widowed was associated with a lower variety score, particularly vegetable variety, and associations were enhanced when combined with male gender, living alone or infrequent friend contact.  
- Lower variety scores for lone-living were also observed, especially for men. Infrequent friend contact interacted with living arrangement |
factors (education, social class, home-ownership, money for needs, frequency of insufficient money for food/clothing, paying bills) and three social relationships (marital status, living arrangement and friend contact), independently and in combination, in relation to fruit variety and vegetable variety.

- Lower levels of friend contact were associated with reduced variety of fruits and vegetables in a graded trend for both genders; the trend was more pronounced among men.
- Family contact appeared to have limited association with vegetable variety in men; among women, weekly contact was significantly and positively associated with vegetable variety compared to daily family contact.

<table>
<thead>
<tr>
<th>Vinther, J. L., A. I. Conklin, N. J. Wareham and P. Monsivais. 2016. UK.</th>
<th>Longitudinal study of middle-age and older adults, 39-78y in EPIC-Norfolk, a population-based cohort, who completed food frequency questionnaires in 1993-97 and 1998-2002. Multivariable linear regression analyses assessed gender-specific associations between five categories of marital transitions and changes in quantity (g/d), and variety (no/month) of fruits or vegetables.</th>
<th>11,557 adults</th>
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<td>- In 3.6 years of follow-up and relative to men who stayed married, widowed men showed significant declines (mean difference, 95% CI) in all four indicators of healthy eating including fruit quantity (-47.7, -80.6 to -14.9 g/d), fruit variety (-0.6, -1.1 to -0.2 no/month), vegetable quantity (-27.7, -50.5 to -4.9 g/d), and vegetable variety (-1.6, -2.2 to -0.9 no/month).</td>
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<td>- Men who were separated or divorced or who remained single also showed significant declines in three of the indicators.</td>
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<td>- Among women, only those who became separated/divorced or stayed single showed declines in one indicator, vegetable variety.</td>
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<th>Dunn, R. A. 2015. USA.</th>
<th>Used information on time use and household expenditures from the Consumption and Activities Mail Survey (CAMS) supplement to the Health and Retirement Survey (HRS). Researcher used a fixed-effects tobit specification to estimate the effect of hours worked, labor income, non-labor income and assets on meal production decisions for respondents between 45 and 75 years of age who either live alone or with their spouse/partner.</th>
<th>1,226 adults aged 45 to 75 years</th>
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<td>- Among single males, increasing labor supply by 10 h per week was associated with 33.8 fewer minutes per week allocated to at-home meal preparation, 39.5 fewer minutes per month eating at restaurants, and $6.73 more per week spent on groceries.</td>
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<td>- In contrast, the time and expenditure allocations of single females did not respond to changes in hours worked.</td>
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<td>- Within dual-member households, increasing own-labor supply by 10 h per week was associated with a decrease in time allocated to preparing meals for both the male (30.4 min per week) and female member (30.5 min per week) with only weak evidence that the</td>
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<td>Authors</td>
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| Wolfson, J. A. and S. N. Bleich. 2015. USA. | Analysis of cross-sectional 24-hour dietary recall data obtained from the National Health and Nutrition Examination Survey 2007-2010 | 9,560 adults | - A lower percentage of SNAP participants consumed fruit and vegetables than those ineligible for SNAP.  
- Among SNAP participants, cooking >6times/week was associated with greater vegetable consumption compared to cooking <2times/week.  
- SNAP-eligible individuals who cooked >=2times/week were more likely to report price, ease of preparation and how long food keeps as important compared to SNAP-ineligible individuals.  
- Fruit and vegetable consumption in the United States is low regardless of cooking frequency.  
- Efforts to improve diet quality should consider values on which food purchases are based. |
| Burton, M., M. Reid, A. Worsley and F. Mavondo. 2017. AUS. | Online survey distributed through the Global Market Insite (GMI) research database. Two-step cluster analysis was used to identify groups based on confidence regarding food skills and nutrition knowledge. Chi-square tests and one-way ANOVAs were used to compare the groups on the dependent variables. | 1,059 adults | - Three groups were identified: low confidence, moderate confidence and high confidence.  
- Gatekeepers in the highest confidence group were significantly more likely to report lower body mass index (BMI), and indicate higher importance of fresh food products, vegetable prominence in meals, product information use, meal planning, perceived behavioural control and overall diet satisfaction.  
- Gatekeepers in the lowest confidence group were significantly more likely to indicate more perceived barriers to healthy eating, report more time constraints and more impulse purchasing practices, and higher convenience ingredient use. Other smaller associations were also found.  
- Household food gatekeepers with high food skills confidence were more likely to engage in several healthy food practices, while those with low food skills confidence were more likely to engage in unhealthy food practices.  
- Food education strategies aimed at building food-skills and nutrition knowledge will enable current and future gatekeepers to make healthier food decisions for |
<table>
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<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Study Details</th>
<th>Findings</th>
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<tr>
<td>Flagg, L. A., B. Sen, M. Kilgore and J. L. Locher. 2014. USA</td>
<td>2007-2008 US National Health and Nutrition Examination Survey. Sub-sample of 3,195 adults at least 20 years old who had a spouse or partner.</td>
<td>- Analyses revealed that the majority of women and men reported they shared in both meal planning/preparing and food shopping activities (meal planning/preparation: women 54 % and men 56 %; food shopping: women 60 % and men 57 %). - Results from multinomial logistic regression analyses indicated that, compared with men, women were more likely to take primary responsibility than to share this responsibility and less likely to report having no responsibility for these tasks. - Gender differences were observed for age/cohort, education and household size.</td>
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<td>Conklin, A. I., N. G. Forouhi, P. Surtees, N. J. Wareham and P. Monsivais. 2015. UK.</td>
<td>Using data from the EPIC-Norfolk cohort study, the authors examined six economic factors (education, social class, home-ownership, money for needs, frequency of insufficient money for food/clothing, paying bills) and three social relationships (marital status, living arrangement and friend contact), independently and in combination, in relation to fruit variety and vegetable variety. Gender-specific associations were analysed using multivariable linear regression with interaction terms. 9,580 adults aged over-50</td>
<td>- Lower social class, lower education, and difficulty paying bills were associated with lower fruit and vegetable variety in both genders, independent of social relationships. - All social relationships were independently associated with fruit variety in men and with vegetable variety in both genders. - Substantially lower variety was found for all combinations of low economic resources and lack of social relationship than for either measure alone, with men faring worse in the majority of combined disadvantages. - Variety was also lower among men with high economic resources but non-married or lone-living. - A double burden of low economic resources and lack of social relationships suggested they are unique joint determinants, particularly in older men.</td>
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<td>Worsley, A., W. C. Wang, P. Wijeratne, S. Ismail and S. Ridley. 2015. AUS.</td>
<td>National online survey of 1,023 Australian meal preparers was conducted by Clever Stuff Pty Ltd in May 2012 from an online survey panel. 1,023 domestic food providers (50% were male – men were oversampled)</td>
<td>- Three quarters of the sample reported they often or always “cooked from scratch” (CFS). - More women than men always CFS; fewer 18-29 year olds did so often or always but more of the over 50s always did so; fewer single people CFS than cohabiting people. - No statistically significant ethnic, educational background or household income differences were found.</td>
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- High levels of cooking from scratch were associated with interest in learning more about cooking, greater use of most cooking techniques (except microwaves), meat and legume preparation techniques, and the use of broader ranges of herbs, spice, liquids/sauces, other ingredients and cooking utensils.
- The findings suggest that cooking from scratch is common among Australian family food providers and signifies interest in learning about cooking and involvement in a wide range of cooking techniques.


Qualitative interview and fieldnote data were transcribed and data were coded and thematically analysed (using NVivo 7™), Quantitative analysis of the food diary data and recipes used to prepare food at the lunch group (Using Dietplan 6.2™) was used to explore the nutritional contribution of the food eaten at the lunch group during the study week

17 individual interviews; one focus group of nine participants; and five 7-day food diaries with people aged over 65. Participants were recruited using convenience sampling from a local volunteer run, community luncheon club.

- Analysis of the food diaries showed that nutrient intake on the day they ate at the lunch group was higher than their median intakes for other days of the week for iron, calcium and folate, though intake of Vitamin D did not reach the daily recommended intake.
- Qualitative analysis found that eating in a community setting played an important role in providing a space for social interaction and support.
- Perceived nutritional benefits included the provision of a ‘proper’, ‘home-cooked’ meal, increasing the range of food eaten and the affordable price.


A diet quality index was obtained from the United Kingdom Low Income Diet and Nutrition Survey (2003-2005). The association between diet quality and social and physical factors was investigated by logistic regression analysis.

222 men and 440 women aged 65 and over, living alone or with other adults of retirement age

- Analysis revealed several barriers to an adequate diet in the older low-income population.
- For both men and women, having the best quality diet was inversely associated with usually eating meals on one's lap as opposed to at the table.
- For men, difficulty chewing was inversely associated with the best quality diet, whereas for women, current smoking and being 75 years or over were inversely associated with the best quality diet; P value for all associations was <0.05.
- Results suggest that the social setting is an important determinant of diet quality in this group and future studies should collect details on where and with whom meals are taken to fully investigate the extent of this influence.
| **Yates, L. and A. Warde. 2017. UK.** | Online survey in the format of a food diary administered to members of a supermarket consumer panel. | 2,784 participants | - Findings show that eating alone is associated with simpler, quicker meals, and that it takes place most commonly in the morning and midday.  
- Those living alone eat alone more often, but at similar meal times, and they take longer over their lone meals.  
- Comparison with a similar study in 1955-6 suggests some fragmentation or relaxation in collective schedules. The implications are not straightforward, and the causes probably lie more in institutional shifts than personal preferences.  
- Declining levels of commensality are, however, associated with a reduction in household size and, especially in households with children, difficulties of coordinating family members’ schedules. |
| **Hanna, K. L. and P. F. Collins. 2015. N/A** | Eight electronic databases were searched | 41 papers met the inclusion criteria | - Results varied but suggested that, compared with persons who do not live alone, persons who live alone have a lower diversity of food intake, a lower consumption of some core foods groups (fruits, vegetables, and fish), and a higher likelihood of having an unhealthy dietary pattern.  
- Associations between living alone and nutrient intake were unclear.  
- Men living alone were more often observed to be at greater risk of undesirable intakes than women.  
- The findings of this review suggest that living alone could negatively affect some aspects of food intake and contribute to the relationship between living alone and poor health outcomes, although associations could vary among socioeconomic groups. |
| **Wolfson, J. A., S. N. Bleich, K. C. Smith and S. Frattaroli. 2016. USA.** | Participants were recruited from two neighborhoods; one with higher median income and access to healthy food and the other with lower income and low access to healthy food. Focus groups were audio recorded, transcribed verbatim and analyzed using a grounded theory approach. | Seven focus groups (N = 53; 39 female; 35 Black, 16 White, 2 Asian) were conducted. | - Participants’ perceptions of cooking varied considerably, regardless of neighborhood income or food access, and spanned a continuum from all scratch cooking to anything made at home.  
- Perceptions of cooking incorporated considerations of whether or how food was heated, and the degree of time, effort and love involved if convenience foods were used.  
- Key barriers to cooking included |
affordability, lack of time, and lack of enjoyment. Key facilitators of frequent cooking included extensive organization and time management to enable participants to incorporate cooking into their daily lives.

- Cooking is a complex concept and not uniformly understood.
- Efforts to encourage healthy cooking at home should consider the broad spectrum of activities Americans recognize as cooking as well as the barriers and facilitators to preparing food at home.
- Public health messages to encourage more frequent cooking should account for the heterogeneity in perspectives about cooking.

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<thead>
<tr>
<th>Author(s)</th>
<th>Study Title and Details</th>
<th>Sample Description</th>
<th>Findings</th>
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| McKinnon, L. 2014. AUS. | Brisbane Food Study, a cross-sectional study of household food purchasers in 2000. | 529 couples (with or without children) | - Household income differed significantly according to household size (χ²< 0.001).
- As household size increased grocery purchasing behaviour was observed to be less consistent with dietary guideline recommendations, as reflected by lower grocery purchasing index scores (p<0.001).
- As household size increased respondents were; less likely to express that nutrition concerns influenced their food choices, and more likely to prefer the taste of regular grocery choices, to indicate that general food cost concerns influenced their food choices, and to believe that ‘healthy’ food was expensive. |
| Hunter, W., S. McNaughton, D. Crawford and K. Ball. 2010. AUS. | Data provided by participants in the SECSAW (Socio-economic Status Activity in Women) study (n=2,400; aged 18-75) | A community sample of 473 women aged 40 years and over from Melbourne, Australia | - 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%.
- 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. |
<table>
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<tr>
<th>Vesnaver, E. and H. H. Keller. 2011. N/A</th>
<th>Literature review</th>
<th>N/A</th>
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<td>The purpose of this review is two-fold: (1) to identify and, where possible, clarify the social concepts used in older adult nutrition research over the past two decades, specifically, the concepts of social integration, social support, companionship and commensality; and (2) to provide a review and summary of the empirical literature on social factors and diet among cognitively well older adults living in the community.</td>
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- The impact of social facilitation on diet behaviors may provide an important opportunity to improve food intake and diet quality among community-living older adults.
- Eating alone has consistently been found to be associated with increased nutritional risk.
- Marital status and living arrangements do not appear to be related to diet behaviors among older adults.
- Instrumental social support is key to the food security of older adults. Older adults requiring this type of support who do not receive it informally would benefit from community services.
- Both social factors and eating behaviors may be altered with health decline.
- More research is needed to clarify each of these results. |

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<tr>
<th>Tumin, R. and S. E. Anderson. 2015. USA.</th>
<th>The cross-sectional 2012 Ohio Medicaid Assessment Survey is representative of Ohio adults and included questions on their socio-demographic characteristics and the frequency with which they eat family meals at home. Trained interviewers administered landline and cell phone surveys to adults sampled from Ohio’s non-institutionalized population.</th>
<th>5,766 adults living with minor children and 8,291 adults not living alone or with children.</th>
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| The prevalence of family meals was similar for adults who did and did not live with minor children: 47 % of adults living with and 51 % of adults living without children reported eating family meals on most (six or seven) days of the week.
- Family meal frequency varied by race/ethnicity, marital and employment status in both groups.
- Non-Hispanic African-American adults, those who were not married and those who were employed ate family meals less often.
- Adults in Ohio frequently shared meals with their family and family meal frequency was not strongly related to living with children.
- Broadening the scope of future studies to include adults who are not parents could enhance our |
Table 1: Scholarly articles retrieved from a comprehensive database search for inclusion in this scoping review of eating practices and food environments in 1 and 2-person households in the UK, Australia and USA.

| Study Characteristics: Study Characteristics: Study Characteristics: Study Characteristics: The majority of research articles in this area were quantitative studies which were conducted using national survey data, community survey data or a combination of survey and food frequency questionnaire (FFQ). Qualitative studies unsurprisingly, were mostly based on in-depth interviews or a combination of interview and food diaries. |
| Bias: One individual selected the papers for inclusion in this paper and another checked the excluded and included papers. A better method to avoid bias would have been to have two researchers scan the databases and each compile an individual list. A third researcher, who is blind to other two then performs a final database search. |
| The scoping review was undertaken on behalf of a food company whose interest lay in research regarding food environments and eating practices in small households with a view to the provision of fresh or ambient convenience food products to a specific market. The researchers envisaged ‘small households’ to encompass the widowed, empty nesters, new couples, university students living away from home and divorced or separated men and women. Food environment related to shopping practices, cooking behaviours and food access in terms of both physical availability and affordability while eating practices related to commensality, ‘secondary eating’, such as eating in front of the television (Senia et al. 2017), and dining in places other than the home. |
| In terms of findings, the 19 articles perused for the scoping review provided a number of themes as outlined above in the results section. The articles were ranked by Breen as to their relevance to the question at the centre of the scoping review, namely, an exploration of the eating practices and food environments in one and two-person households in the UK, Australia and USA. A scale of one to five stars was used where one star was borderline relevant and five stars was highly relevant to the understanding of the potential health benefits of sharing meals. |
research question. The lower-ranked studies made mention of a peripheral aspect of this question while highest ranked articles dealt directly with the elements of eating practice or food environments in small households. Six studies were ranked one-star; three each were rated two- and three-star; seven were four-star (noted in bold text) but no article addressed all elements of the research question to gain a five-star rating. The following section outlines the literature in terms of the themes identified previously.

Socio-economic aspects of food

Four authors dealt with socio-economic aspects of food related to both family meal frequency and to dietary quality and one each of these papers was rated one, two, three and four-star. The aim of Wolfson and Bleich’s (2015) study was to examine patterns of fruit and vegetable consumption and food values among adults in the USA by participation in a food assistance programme and household cooking frequency. Although it did not focus specifically on small households, its value lay in its exploration of fruit and vegetable consumption amongst low-income families and in its conclusion that income may not be a primary barrier to fruit and vegetable consumption since positive correlation between home cooking and diet quality is not as strong or consistent among lower-income populations as it is amongst those with higher incomes. Wolfson and Bleich’s research on food purchase decisions suggested that price, perishability, and ease of preparation are particularly important to those eligible for food programs. They concluded that the identification of strategies to increase fruit and vegetable consumption should consider a reduced emphasis on fresh produce and an increased emphasis on non-fresh alternatives (e.g., canned, frozen, dried) which may be less perishable, cheaper and easier to use.

Conklin et al. (2015) also researched fruit and vegetable intake in a sample of 9,580 British adults aged over-50. They examined six economic factors (education, social class, home-ownership, money for needs, frequency of insufficient money for food/clothing, paying bills) and three social relationships (marital status, living arrangement and friend contact), independently and in combination, to gauge the fruit and vegetable intake of their sample and concluded that lower social class, lower education, and difficulty paying bills, independent of social relationships, were associated with lower fruit and vegetable variety in both genders. In terms of this review, the important finding in this article is that when different living arrangements were combined with education, social class and ability to pay bills, the researchers observed disproportionately lower variety of fruit or vegetable intakes among those reporting both low economic resources and lone-living, particularly in lone-living men reporting low education or difficulty paying bills and in lone-living women reporting difficulty paying bills. The paper highlights the importance of considering gender and the combination of economic and social disadvantages when proposing fresh food convenience products for small households.

Holmes and Roberts (2011) also investigated socio-economic factors and diet quality in their sample of 222 men and 440 women aged 65 and over who were British, had low income and were living alone or with other adults of retirement age. They concluded that the social setting is an important determinant of diet quality in this
group since ‘having the best quality diet was inversely associated with usually eating meals on one’s lap as opposed to at the table’ (Holmes and Roberts 2011 p.538).

Being 75 years or older and a smoker worsened results for women while, for men, difficulty chewing was inversely associated with the best quality diet. Holmes and Roberts’ article paid attention to eating behaviour as well as diet quality and results showed that eating meals at the table was an independent predictor of better diet quality for both men and women. Those who dined at the table had higher intakes of protein and iron than those who ate meals on their lap or on the go due to eating more meat and meat dishes. Most of the sample dined at the table regardless of the presence of dining companions as 57 per cent of those who ate alone and 70 per cent of those who ate with others sat at the table to eat. Eating practices were seen to affect intake as ‘women who ate at the table generally had higher intakes of fruit and vegetables and consequently had higher intakes of vitamin A, C and potassium than women who ate on their lap or on the go. Lower intakes of sugar, preserves and confectionery were also seen in these women’ (Holmes and Roberts 2011 p.541).

The final paper to consider socio-economic factors and food behaviour was that by Tumin and Anderson (2015). This research investigated the prevalence of family meals amongst adults in Ohio, USA, whose families did and did not include minor children and described how it varied by sociodemographic characteristics. Interestingly, the differences were small: 47 per cent of adults living with and 51 per cent of adults living without children reported eating family meals on most (six or seven) days of the week. Demographic characteristics such as marital status, employment and race/ethnicity affected family meal frequency and family meals were lower amongst those who were not married, who were employed and amongst non-Hispanic African-American adults. The authors point out that in 2010, more than half of husband-wife households in the USA did not include children. In this sample of 14,057 respondents, the results suggest that there are underlying disparities in family meal frequency that are unrelated to having children in the household since ‘differences in social norms and cultural practices can influence the types of food eaten and the timing, social setting and location of eating occasions’ (Tumin and Anderson 2015 p.1479).

Living alone and diet

Two literature reviews focussed on the second theme of living alone and diet. Vesnaver and Keller (2011) conducted a literature review of social influences and eating behaviour in later life. The main point from this research is that is difficult to disentangle cause from consequence when investigating social support and its effect on diet quality amongst older people despite the fact that the literature, using cross-sectional studies, provides ‘strong evidence to suggest that eating alone increases risk of poor intake. Marital status and living arrangements may provide natural opportunities for eating with others but do not guarantee it, and the findings to date on these factors have not been conclusive’ (Vesnaver and Keller 2011 p.17). Eating alone has consistently been found to be associated with increased nutritional risk. Hanna and Collins (2015) conducted a literature review to assess whether there was a difference in food and nutrient intake between adults living alone and those living with others. Although associations between living alone and nutrient intake were
unclear, the results suggested that those who live alone consume a lower variety of food and are more likely to have an unhealthy diet since they consume fewer core food group foods. Like other studies, this review found gender differences in dietary risk of those living alone with lone-living males more susceptible to the likelihood of poor dietary intake than lone-living females.

Food preparation

Food preparation emerged as a theme in the review since some studies investigated the use of commercially prepared foods as well as the density of fruit and vegetables in respondents’ diets. Meal preparation was the focus of research for two quantitative papers and the analyses varied from an exploration of the roles of food preparer to the allocation of time and money to meal production. Flagg et al. (2014) used a subsample (n = 3,195) of the 2007-2008 US National Health and Nutrition Examination Survey to determine that the majority of women and men reported they shared in both meal planning/preparing and food shopping activities (meal planning/preparation: women 54 per cent and men 56 per cent; food shopping: women 60 per cent and men 57 per cent) yet women were more likely to take primary responsibility than to share this responsibility and less likely to report having no responsibility for these tasks. They observed gender differences for age/cohort, education and household size. Dunn’s (2015) article examined the allocation of temporal and financial resources to meal production by working adults near retirement age and concluded that while an increase in labour hours for single males did result in a decrease in time and money spent on at-home meal production and an increase in grocery cost, the same was not true of single females. Dunn reported that single males in his study spent less time on at-home meal preparation and eating at restaurants and spent more money on weekly groceries when they increased labour time by ten hours per week but single females reported no change in time or money allocation. Increased spending on groceries ‘is consistent with a shift toward pre-packaged meals that require less preparation time at a higher cost, precisely the shift from time-intensive to goods-intensive production one would expect’ (Dunn 2015 p.454). Males in dual-headed households did not exhibit a decline in time spent eating at restaurants when their labour supply increased but did spend less time on at-home meal preparation. Single females with increased labour hours were unable to reduce the cost of their grocery bill or the time spent cooking while females in dual-headed households who worked more hours reduced the time allocated to meal production.

Commercially prepared food

Kroshus’ (2008) study also considered expenditure on commercially prepared food by marital status of the householder and concluded that it is important that nutrition educators learn more about the dietary patterns of households headed by males outside the institution of marriage since proportionate per capita household expenditure on commercially prepared food was found to vary by marital status and gender. While households headed by women, regardless of marital status, spent one-third of the food budget on commercially-prepared food, those headed by never married men spent 63 per cent more per capita than those headed by never married
women while households headed by divorced or separated men spent 37 per cent more than those headed by divorced or separated women.

**Life transition and diet**

Life transition and diet was a feature of Vinther et al.’s (2016) paper which concluded that men more than women may be impacted by the unhealthy changes to diet which accompany divorce, separation and becoming widowed. They suggest, therefore, that future health promotion campaigns need to recognise these social determinants of diet and consider prioritising people who live alone and, in particular, men who have recently left relationships or who have been widowed since women showed less inclination to suffer a decline in fruit and vegetable quantity and variety following a change in relationship status. Only those who became separated/divorced or stayed single showed declines in one indicator and that was vegetable variety.

**Food planning**

Food planning was the theme of several articles chosen for this scoping review. McKinnon (2014) explored household size and food purchases while Hunter et al. (2010), Conklin et al. (2013) and Burton et al. (2017) considered food planning and fruit and vegetable intake.

In order to focus on household size differences rather than household composition, McKinnon’s sample was 529 couples only (with or without children). Results showed that as household size increased grocery purchasing behaviour was less consistent with dietary guideline recommendations. Additionally, as household size increased respondents were ‘less likely to express that nutrition concerns influenced their food choices, and more likely to prefer the taste of regular grocery choices, to indicate that general food cost concerns influenced their food choices, and to believe that ‘healthy’ food was expensive’ (McKinnon 2014 p.196). Thus, food planners in smaller households may be more mindful of nutrition guidelines when purchasing groceries and less restricted by cost concerns.

Hunter et al. (2010) used a community sample of 473 women aged 40 years and over from metropolitan Melbourne, Australia who provided survey data on their living arrangements, education, fruit and vegetable consumption and the amount of food planning they undertake. Women who lived with others consumed significantly higher amounts of fruit and vegetables compared to those who lived alone. Food planning is important as it was found to mediate the association between living arrangements and fruit and vegetable consumption by 8 per cent and vegetable consumption by 13 per cent. Hunter et al. concluded that identifying ways to help those who live alone to plan their food purchasing and preparation may increase fruit and vegetable consumption and state that this is important given the increased potential for more single-occupant households with the ageing of the population. Given the widespread agreement that many older, single-living people have nutrient deficient dietary intake, this is an important finding.
Conklin et al. (2013) aimed to add to the concept that social relationships have a protective mechanism against a wide range of chronic conditions and can facilitate recovery from disease. An individual’s social environment influences type, variety and amount of food consumed and therefore has an impact on health. They examined marital status, living arrangement and social isolation of over-50s in the EPIC-Norfolk cohort (n = 9,580) in relation to scores for variety of fruit and vegetable intake as a marker of diet quality associated with adverse health outcomes. Their results confirmed hypotheses that shared living arrangements and frequent social contact mitigated the negative associations of being single or widowed. The associations between marital status and both fruit and vegetable intake differed by gender. Men had statistically significant scores for negative dietary associations amongst the non-partnered. Women and men with decreasing friend contact and lower frequencies of family contact had lower fruit variety scores. A number of factors such as absence of economies of scale in food purchasing, particularly in fresh food purchases, and in motivation to cook for one, influence food planning in older, lone-living persons. Conklin et al conclude that their study confirms ‘gender-specific associations of social relationships with variety of intake of fruits and vegetables in a UK population, and contributes new evidence on the combined influence of structural components of relationships’ (Conklin et al. 2013 p.174).

The aim of Burton et al.’s (2017) study was to determine the role of gatekeepers' confidence in food-related skills and nutrition knowledge on food practices in the home. Participants (n = 1,059) responded to questions about food purchase and preparation behaviours, the home eating environment, perceptions and attitudes towards food, and demographics. The study concluded that gatekeepers in the lowest confidence group were significantly more likely to report higher convenience ingredient use, more time constraints and more impulse purchasing and to indicate more perceived barriers to healthy eating. By contrast, those rated as high confidence gatekeepers were significantly more likely to rate fresh food products as important, consider vegetables an integral part of a meal, and indicate the importance of product information, meal planning, perceived behavioural control and overall diet satisfaction as well as report lower body mass index (BMI). For the purposes of this review, it could be considered that nutrient-dense and affordable convenience fresh food products may improve the food practices in homes where the gatekeeper has low confidence given that time constraints and higher convenience ingredient use is part of the food purchasing and planning strategy in these homes.

Cooking skills

Work by Wolfson et al. (2016), Adams et al. (2015) and Worsley et al. (2015) explores cooking skills and a level of consensus is apparent with regard to the relative unimportance of socio-economic factors in relation to time spent cooking in the latter two papers. Almost two-thirds of Adams et al.’s 509 respondents reported cooking a main meal at least five times per week while around 90 per cent reported being able to cook convenience foods, a complete meal from ready-made ingredients, and a main dish from basic ingredients without help. Most respondents
reported high confidence in using most cooking techniques and preparing most foods.

Worsley et al. (2015) recruited 1,023 Australians who were domestic food providers to answer a survey comprised of five broad sections related to current cooking practices, the preparation of various types of evening meals, the use of ingredients and utensils, food preparers’ interest in learning more about evening meal preparation, and, demographic information. This article however focussed on demographic information and one question, ‘Do you cook from scratch?’ and examined the activities associated with different levels of cooking from scratch with a variety of other items included in the questionnaire such as specific cooking techniques, the main meal ingredient, the cook’s modification of recipes and the frequency of use of 23 cooking utensils. Since almost two-thirds were married or cohabitating and the majority did not have children, the respondents fit the small household example required for this review well. Three-quarters of the sample reported they often or always “cooked from scratch” (CFS). More women than men always CFS; fewer 18-29 year olds did so often or always but more of the over 50s always did so; fewer single people CFS than cohabiting people. Those who cook from scratch show a ‘broader use of cooking techniques, herbs, spices and sauces, and greater use of meats and legumes’ (Worsley et al. 2015 p.673), it is unclear from these findings whether this “non-convenience” approach is restricted to the main evening meal or even whether it applies to all the days of the week.

Wolfson et al’s study was conducted amongst seven focus groups from two neighbourhoods; one with higher median income and access to healthy food and the other with lower income and low access to healthy food. Key barriers to cooking included affordability, lack of time, and lack of enjoyment in cooking while facilitators of frequent cooking included extensive organization and time management. The article raises the important point that cooking is not a well-understood concept – ‘Participants’ perceptions of cooking varied considerably, regardless of neighborhood income or food access, and spanned a continuum from all scratch cooking to anything made at home’ (Wolfson et al. 2016 p.148). Cooking from scratch was considered “the best” and there was consensus that if a person used scratch or fresh ingredients to make a meal, that person had cooked’. Cooking meals in bulk and using leftovers was a helpful strategy for participants from both neighbourhoods who cooked frequently and were trying to eat well. Participants from the lower-income area used slow cookers or crockpots to help them maintain the practice of cooking meals at home on a budget whilst leading busy lives.

Although other articles concerned with cooking practices generally agreed that cost was not a major factor in cooking at home, Wolfson et al. state that “the need to balance time, cost and health became a dominant theme throughout the groups. Participants in both neighbourhoods felt that one of these three always had to give, or if they had more time or if food was more affordable (either due to lowering prices or increasing income) they would be able to eat more healthfully than they do’ (Wolfson et al. 2016 p.150). Those from the higher-income neighbourhood spoke of food affordability in in the context of deciding between high-cost items such as
organic produce or hormone free red meat while those in the lower-income area felt
they had access to food but often could not afford items such as fresh produce.

Commensality

The final theme of the literature was commensality. Burke et al. (2011) investigated
the community lunch setting with a view to revealing the effects on nutritional
intake for those who used luncheon clubs. Qualitative analysis found that eating in a
community setting played an important role in providing a space for social
interaction and support. Perceived nutritional benefits included the provision of a
‘proper’, ‘home-cooked’ meal, increasing the range of food eaten and the affordable
price of luncheon clubs. Yates and Warde (2017) examined meal arrangements in
British homes in 2012 to investigate the concern that the meal was being subverted.
Overlapping a concern about the ‘increase and diversification in eating out, the
decline in food preparation times and in time spent eating with household
members’, are worries about ‘the commodification and convenience food; hurried,
unplanned and desynchronized eating; and lone, lonely or anomic eating’ (Yates and
Warde 2017 p.98). The authors provide concrete foundations for study in the area of
eating practices and food environments in small households with the following
statistics: between 1961 and 2001 the average household size in the UK has declined
by one-third and now appears steady at around 2.4 persons (ONS 2012). Single-
person households have increased from 12 per cent of households in 1961 to 29 per
cent in the UK censuses of 2001 and 2011 and more than two-thirds of British
households do not have children. Almost three-quarters of Yates and Warde’s
sample were adult-only households (15 per cent were lone-living). Around 40 per
cent of weekday meals and 25 per cent of weekend meals taken by this sample were
eaten alone but nearly three-quarters of all the meals reported by people living
alone were eaten alone, compared to just over a quarter of those reported by
people living with others. Dining companions were most likely to be present for
evening meals with fewer than ten per cent of people living with others eating their
weekday evening, or weekend afternoon or evening meals alone. Those who live
alone most often eat weekday lunches with companions from their workplace.
Around half of breakfasts were eaten alone but less than one-fifth of dinners were
and Yates and Warde found that roast dinners, curry and fry-ups were
disproportionately shared meals. While there were no significant differences in what
people who live alone ate, when lone-living people ‘eat alone they are less likely to
have sandwiches or snacks and more likely to have substantial dishes than those
who live with others but are eating alone’ (Yates and Warde 2017 p.103). Those who
live alone and eat alone are more than twice as likely to have a home-cooked meal
as those who eat alone but live with others. Lone-living people cook between 58 and
71 per cent of these lone meals compared with 45 to 61 per cent of respondents
who live with others. Lone-living people eat alone more often and take longer over
their lone meals, but they eat at similar meal times to those who live with others.
Yates and Warde (2017 p.97) conclude that ‘declining levels of commensality are
associated with a reduction in household size and, especially in households with
children, difficulties of coordinating family members’ schedules’.
Discussion

The objectives were firstly to systematically search the literature (relevant databases) to identify reported studies that have researched eating practices and food environments in 1 and 2-person households. The second objective was to integrate findings of published research relevant to the eating practices and food environments in 1 and 2-person households so as to provide a description of social, economic and health implications, with particular attention to eating in company, or commensality. The literature reviewed in this scoping study leads us to believe that there is widespread agreement on the barriers and facilitators to healthy eating practices and food environments in small households. Cost and time constraints inhibit optimal nutrient intake in a range of living arrangements. Older, single-living people, particularly the widowed, spend less time on meal preparation in general than do those who live in couples although those who live alone are less likely to eat a snack-type meal, such as a sandwich, than those who live with others but eat alone. Couples can moderate each other’s intake and fruit and vegetable consumption is generally higher in a dual household than in a single one however gender differences are apparent since single women consume generally better diets than single men. Consumption of meat and meat dishes was shown to be higher for people who eat at the table regardless of whether or not they dine alone, compared with those who take meals on their lap or eat on the go. Eating with others is commonly thought to improve appetite and, therefore, nutrient intake. Affordable, fresh, convenience food products could offer a solution to many of the food planning and eating practices barriers identified in this review. These findings take on further significance knowing that a sizable number of commensal units now exist in the US, where, as stated earlier, more than half of husband-wife households did not include children Tumin and Anderson 2015). Similarly in the UK average household size has declined by one-third and now appears steady at around 2.4 persons from 1961 to 2001 (ONS 2012 and more than two-thirds of British households do not have children Yates and Warde 2017). Thus eating together in smaller commensal units or alone may be becoming the norm and thus knowing more about this topic becomes increasingly important for social, health and wellbeing reasons and for economic reasons.

As mentioned earlier two literature reviews have focused on living alone and diet. Vesnaver and Keller (2011) conducted a literature review of social influences and eating behaviour in later life. The main point from this research is that is difficult to disentangle cause from consequence when investigating social support and its effect on diet quality amongst older people despite the fact that the literature, using cross-sectional studies, provides ‘strong evidence to suggest that eating alone increases risk of poor intake’. The review continues, ‘Marital status and living arrangements may provide natural opportunities for eating with others but do not guarantee it, and the findings to date on these factors have not been conclusive’ (Vesnaver and Keller 2011 p.17). Eating alone has consistently been found to be associated with increased nutritional risk. Hanna and Collins (2015 p.594) conducted a literature review to assess whether there was a difference in food and nutrient intake between adults living alone and those living with others and concluded that ‘persons who live
alone have a lower diversity of food intake, a lower consumption of some core foods groups (fruits, vegetables, and fish), and a higher likelihood of having an unhealthy dietary pattern’.

Limitations

The results of this review may have been affected by a language bias since non-English-language publications were excluded because of a lack of resources for translation. The review is strengthened by the number of large, national studies included despite the reliance on cross-sectional data in this research area. A comparison of the studies included is difficult since study designs and analysis methods varied considerably. The lack of qualitative research in this field limits insights into the reasons why people who live alone exhibit the eating practices and dietary behaviours that they do.

Conclusion

The data gathered for this review indicates that more qualitative work could be undertaken on the food environments and eating practices of small, one or two-person households in order to gain a more in-depth understanding of which factors most affect the production of healthy meals and the adoption of best practice eating behaviours and cooking methods in small households. Furthermore, there is a significant and uncritical acceptance in the studies reviewed here, and in commentaries on commensality more broadly (see for example, Weinstein 2006) that a cause-effect relationship exists between commensality and a range of psychosocial-economic factors. In other words, that commensality leads to a range of better psychosocial outcomes for individuals and groups. In fact, the studies addressing this issue demonstrate only an association or a link between these factors. There is a need therefore for research which attempts to overcome these methodological issues using, for example, controlled interventions and hypothesis-testing approaches.

References


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