

Perceptions about home cooking: an integrative review of qualitative studies

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Abstract *This study aimed to review qualitative studies on perceptions of home cooking. A systematic search was conducted in Scopus and SciELO databases using English and Portuguese terms related to home cooking, without date or language restrictions. Twenty-six articles, published between 2004 and 2017, investigated, whether as a primary objective or as a secondary finding, the perceptions of individuals on home cooking. More than half of the studies were conducted in English-speaking countries. Study participants included women and men, adults and seniors as well as residents of urban and rural areas, Eastern and Western countries, and developing and developed nations. Thematic analysis showed that home cooking has different interpretations and meanings in diverse contexts and revealed differences in how individuals plan and cook their meals at home. Cognitive, practical, affective, and emotional factors are the major motivators to home meal preparation. Having a cooking role model in the family, cooking confidence and skills, and living alone were reported as facilitators of home cooking. A better understanding of the heterogeneity of perceptions and meanings of home cooking can contribute to the development of effective and culturally appropriate interventions for stimulating healthy cooking habits.*

Key words *Meal, Qualitative research, Review, Cooking*

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Introduction

The eating habits of Western urban societies have been constantly changing. Since the mid-20th century, individuals have devoted less time to home meal preparation¹⁻⁴. This reduction in home cooking is believed to be associated with the increasing unhealthy food choices made by modern society⁵⁻⁸.

Strategies aimed at encouraging home cooking and increasing the nutritional quality of diets are gaining visibility. In Brazil, two important guidelines were published to encourage healthy eating habits. The Food and Nutrition Education Guidelines for Public Policies states that “home cooking promotes personal emancipation, develops autonomy, and contributes to sensory, cognitive, and social growth”⁹(p.68). The Food Guide for the Brazilian Population is a comprehensive guide on healthy eating. It recommends the use of “raw and minimally processed foods as opposed to ultra-processed foods”. Minimally processed foods are raw foods that have undergone industrial processes, but do not involve the addition of salt, sugar, oils, fats or other substances. Ultra-processed foods are products subjected to different processing steps and techniques and with many ingredients, such as salt, sugar, fats and substances for exclusively industrial use^{10,11}.

Generally, raw and minimally processed foods need to be selected, pre-prepared, seasoned, cooked, and/or combined with other foods¹². To follow these important health recommendations, individuals must resort to cooking. Schools and communities around the world have taken to strategies aimed at teaching cooking skills and promoting cooking habits^{13,14}.

Research on cooking (and all its complexities), however, is still incipient¹⁵⁻¹⁸. Short^{15,16} highlighted that there is no clear relationship between knowing how to cook and cooking at home. Meah and Watson¹⁷ argued that it is necessary to understand the processes involved in meal preparation and the dynamics of developing the habit of cooking. In addition, Halkier¹⁸ argues that the act of cooking must be understood as a phenomenon composed of variability and subtleties and that without this understanding there is a risk that researchers and policy-makers may act in a simplistic way, conducting normative and unrealistic initiatives, underestimating the complexity of cooking.

The qualitative approach is recommended to understand a given phenomenon and the perception of individuals about the topic, including

their feelings, thoughts, and experiences¹⁹. Thus, the aim of this study was to perform a systematic review of qualitative studies on home cooking.

Methods

The qualitative systematic review was conducted in the following steps: formulation of the guiding question, identification of inclusion criteria, data collection and treatment, data analysis, discussion of results, and critical review²⁰.

The guiding question was: “What do qualitative studies reveal about individuals’ perceptions of home cooking?”. Search terms were derived from Medical Subject Headings (MeSH), Health Sciences Descriptors (DeCS), and articles identified in a preliminary search of the literature. Additionally, before the final definition of the search terms, exploratory searches were carried out in order to identify key words used in the articles and thus compose the groups of terms as shown in Chart 1.

The search in English and Portuguese was carried out on January 9, 2017, and updated on May 18, 2018, using Scopus and SciELO, without date or language restrictions. Scopus was chosen because it is the largest abstract and citation database of peer-reviewed literature. SciELO was used to increase coverage of Brazilian studies. The Scopus database was searched for terms in English within the fields title, abstract, and key words using two categories of search terms, one related to home cooking and the other to qualitative research. Terms related to cooking equipment and environmental sustainability were excluded using the Boolean operator AND NOT.

The SciELO database was searched for terms in Portuguese and English. Because of the small number of records identified, it was not necessary to use two categories of search words, and only terms related to home cooking were used.

The articles were selected based on the following inclusion criteria: article published in a peer-reviewed journal; full-text for access; study with a qualitative approach; results related to the act of cooking in the domestic environment.

In total, 476 articles were identified through database searching and imported into a reference manager. Of these, 50 were selected based on titles and abstracts. After reading the articles in full, 24 were excluded: 10 for adopting a quantitative approach although they used terms that referred to qualitative research such as *perception* or *meanings*, 10 for focusing on foods and nu-

Chart 1. Search strategy used in the study.

Category	Search strategy
Home cooking	MeSH descriptors: cooking, food handling, meal
	MeSH keywords: cook* behav*; cook* from scratch; cook* practices; cook* habits; cook* experience; cook* skills; domestic cook*; home cook*; home food prep*; domestic food; homemade food; food skills; homemade meal; home meal prep*; home prepared meal; home prod* meal; kitchen practices; foodwork; food agency; culinary
	DeCS (Portuguese): Culinária
	DeCS keywords (Portuguese): cozinhar; refeição; comida caseira
Qualitative research	MeSH descriptors: qualitative research; focus group; health knowledge, attitudes, practice
	MeSH keywords: qualitative; semi-structured interview; in depth interview; narrative interview; life course perspective; life course interview; open ended interview; ethnography; focus groups; perception; meaning; belief; motivat*; benefit; barrier; enjoyment; involvement; pleasure; emotion; identit*

Source: the authors.

trients rather than on home cooking, 3 for being theoretical studies, and 1 for focusing solely on hygiene and sanitation during home meal preparation. The remaining 26 articles reported qualitative data on home cooking and were therefore selected for review. The article selection process is illustrated in Figure 1. Collected data were transferred to a Microsoft Word 2016® document. An inductive thematic analysis was carried out according to the six steps proposed by Braun and Clark²¹: familiarization with data, systematic coding of data, grouping of codes into themes, review and grouping of themes, definition of themes, production of results. The thematic analysis was conducted by one author and reviewed by another.

Results

The 26 articles included in this review were published between 2004 and 2017. Studies were conducted in 12 different countries, most of which (n = 17) have English as one of the official languages. Of the 26 articles, 14 had the main objective related directly to the act of cooking. On the other hand, this was not the main objective of the other articles. However, they presented in the results, albeit briefly, the participants' perceptions about the act of cooking (Chart 2).

Home cooking was the main topic of research in 14 studies and a secondary finding in 12 studies.

We identified three major themes in cooking perception research: Meanings and interpretations of the act of cooking; Motivations for cooking; Facilitators and barriers to cooking.

Meanings and interpretations of the act of cooking

Four studies analyzed the different interpretations of cooking^{18,22-24}. Two assessed participants' understanding of the terms "home cooking"²⁴ and "cooking from scratch"^{23,25}. And the other two highlighted differences in planning, organizing, and carrying out cooking tasks^{18,22}.

In United States, Wolfson et al.²⁴ explored how individuals define home cooking. Definitions varied from "everything from scratch" to "anything prepared at home" (including ready-to-eat foods, frozen meals, etc.).

Lavelle et al.²³, in a study carried out in Northern Ireland and the Republic of Ireland, identified the different meanings of cooking from scratch. Participants' views ranged from a more traditional definition (using raw ingredients) to a more inclusive meaning (using pre-prepared, frozen foods like frozen fish fillets)²³. Thus, in both studies there is a variety in the understand-

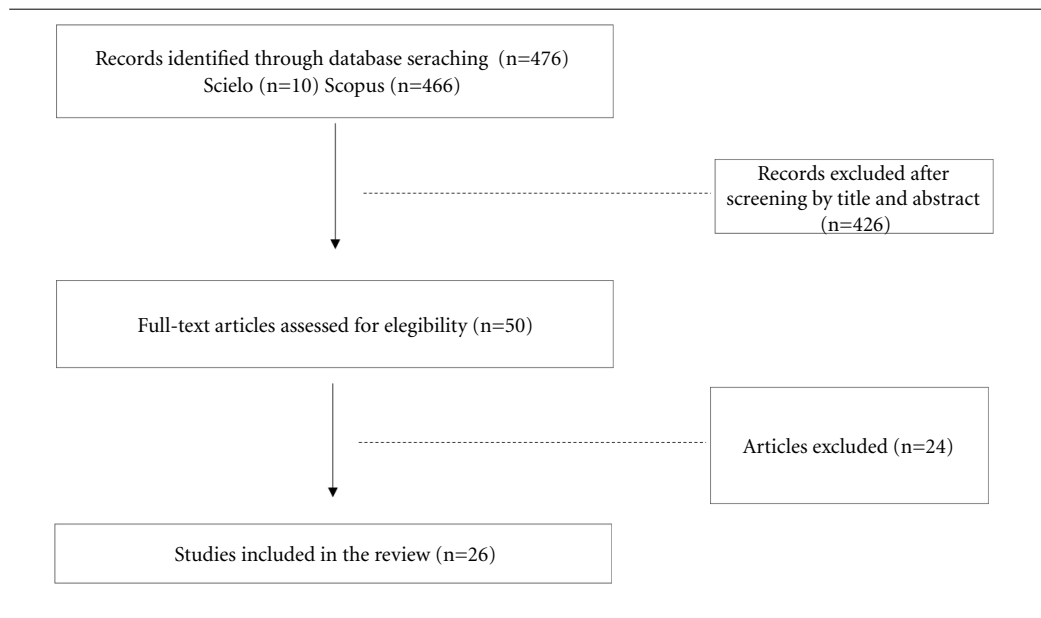


Figure 1. Flow diagram of the study selection process.

Source: the authors.

ing and definition of terms related to cooking, ranging from more restrictive versions to more comprehensive versions^{23,24}.

The great variety of perceptions about cooking identified in both studies mentioned above is corroborated by the results of Gatley²². According to the author, a person's understanding of cooking depends largely on the context in which she or he is inserted. The author assessed the cooking behavior and experiences of women and men in France and Great Britain. Respondents were asked to report what types of foods they prepared at home. Almost half of the British respondents reported to use convenience or ready-to-eat foods, whereas French participants reported using pre-prepared items for quick meal preparation; none, however, reported to use convenience foods, with the exception of pizza for children²².

Halkier¹⁸ showed that individuals have different ways of planning and preparing meals. The author assessed the cooking practices of six women, aged 25 to 50 years, living in six different regions of Denmark, and with different family structures and levels of education. Different cooking styles were observed. Cooking required extensive planning for some women but came naturally to others. Ingredients were purchased

based on predefined recipes or without planning, for improvisation. Knowledge of cooking was gained as a child/adolescent or later in life out of necessity. For some women, written recipes were considered essential for meal preparation, and, for others, recipes were sources of inspiration that could be adapted according to personal preferences or availability of ingredients¹⁸.

Motivations for cooking

Figure 2 shows the main motivators to home cooking identified in this review.

According to reports from the United States^{24,26,27}, United Kingdom^{22,28}, and North Ireland and Republic of Ireland²³, cooking allows people to have control over their and their families' eating habits. For instance, Canadian parents that cook at home can control the type of foods that their children eat, fulfilling their role as "gatekeepers" of family nutrition²⁹.

For Brazilian³⁰, Canadian^{29,31}, American^{24,26,27,32}, and British³³ individuals, home cooking can be used as a strategy to reduce food costs even with scarce food and financial resources, allowing greater control of the domestic budget.

Chart 2. Description of studies included in the qualitative systematic review of home cooking, ordered by year of publication.

Authors (year), Country	Sample	Objectives
Studies aimed at investigating participant's perceptions of cooking (n = 14)		
Halkier (2009) ¹⁸ , Denmark	Six women aged 25-50 years from diverse sociodemographic backgrounds	Discuss how women position themselves in relation to homemade meals
Engler-Stringer (2010) ³¹ , Canada	22 low-income women aged 18-35 years	Elucidate social practices related to food preparation among women living in Montreal through analysis of their domestic foodscape
Meah and Watson (2011) ¹⁷ , United Kingdom	Two generations of two families	Make visible memories of cooking and the meanings behind individual's practices as they interact with foods and objects
Simmons and Chapman (2012) ²⁹ , Canada	22 socioeconomically diverse families	Explore parents' and teens' perspectives on the importance of being able to cook
Sharif et al. (2014) ⁴⁴ , Malaysia	Individuals participating in meal preparation during festive celebrations	Identify and recognize the means of cooking knowledge transfer to younger generations in Malaysia
Gatley et al. (2014) ³⁵ , France and United Kingdom	27 individuals aged 23-73 years	Explore cooking attitudes and behaviors in France and Great Britain
Jones et al. (2014) ²⁶ , United States	239 students from two universities, mostly women	Identify motivators and barriers to home meal preparation versus purchase of pre-prepared foods and eating out
Gram et al. (2015) ⁴³ , Denmark	75 students aged 18-25 years, mostly women	Examine how relational family identity is experienced by young university students in a period of transition from the family home
Neuman et al. (2015) ³⁸ , Sweden	31 Swedish men aged 22-88 years	Explore stories of Swedish men about cooking and foodwork as part of their everyday lives and how these relate to broader notions of food and gender equality
Gatley (2016) ²² , France and United Kingdom	13 French and 14 British individuals	Explore the routine, daily experiences, and attitudes of people toward cooking and eating and compare the significance of culinary cultures in France and Great Britain
Lavelle et al. (2016) ²³ , Northern Ireland and Republic of Ireland	27 participants aged 18-58 years	Qualitatively investigate how individuals define "cooking from scratch" and the barriers and facilitators to cooking with basic ingredients
Wolfson et al. (2016) ²⁴ , United States	53 participants (mostly women) from medium/high- and low-income communities	Examine adults' perceptions of cooking
Bostic and McClain (2017) ²⁷ , United States	17 adults aged 60 and older	Explore the cooking experiences of older adults living in the USA
Mills et al. (2017) ²⁸ , United Kingdom	18 adults, mostly women	Study home cooking perceptions, experiences, and practices among adults in England
Studies reporting findings on cooking perception (n = 12)		
Moisio et al. (2004) ³² , United States	65 individuals aged 36-60 years	Examine the role of homemade food in the construction of family identity
Johnson et al. (2010) ³⁹ , United States	Seven women (26-42 years of age) with at least one child under the age of 18 living in the same household	Understand the matrilineal influence on family food choices

it continues

Chart 2. Description of studies included in the qualitative systematic review of home cooking, ordered by year of publication.

Authors (year), Country	Sample	Objectives
Diez-García and Castro (2011) ³⁰ , Brazil	30 medium- and low-income families with at least one case of hypertension	Understand the impacts of dietary restriction on family food habits and self-care
Meah and Jackson (2013) ⁴⁰ , United Kingdom	Eight families (men and women, 17-92 years of age)	Explore the extent to which changes in cooking practices have led to a democratization of domesticity and signal greater gender equality
Szabo (2014) ³⁴ , Canada	30 men (26-58 years of age) who do about half or more of the cooking in the household	Investigate gender dichotomies through the experiences of men with cooking responsibilities
Szabo (2014) ³⁶ , Canada		Understand through qualitative investigations with men who have significant household cooking responsibilities how masculinities might be affected by changing gender roles around food
Liu (2016) ³⁷ , China	Three couples	Examine spousal relationships through the analysis of daily foodwork
Machin <i>et al.</i> (2017) ⁴⁵ , Uruguay	91 participants, mostly women	Identify barriers and facilitators to implementing the Uruguayan dietary guidelines
Lane <i>et al.</i> (2014) ⁴⁷ , United Kingdom	40 women aged 65 years and older who reduced their contact with food-related tasks in later life	Understand the impact of reduced contact with foodwork on the meanings of food, social engagement, and well-being among older women
Parsons (2016) ³³ , United Kingdom	75 respondents (27-85 years of age), mostly middle-income women	Demonstrate how everyday foodways are still influenced by the intersectionalities of gender and class
Bailey (2017) ⁴² , Holland	30 Indian immigrants living in Holland (25-50 years), mostly men	Examine eating practices and the relationships between food, belonging, commensality, and care
Hertz and Halkier (2017) ⁴⁶ , Denmark	13 families with at least one child, most respondents were female	Understand how Danish families use meal box schemes in their everyday lives

Source: the authors.

Canadian individuals reported that cooking is a skill that can increase self-sufficiency²⁹ and everyone should possess³⁴. Knowing how to cook is perceived as a sign of independence and responsibility for personal food habits²⁹.

Men and women from Canada, United States, United Kingdom, France and China^{26,28,29,32,33,35-37} believe that cooking allows individuals to connect with others, strengthen relationships, and express love and care.

British people often feel pleasure²⁸ in cooking and enjoy the social aspect of the activity^{28,35}. It is considered a recreational activity that involves friends and family, especially on weekends³⁵. Americans reported that home cooking is motivated by the pleasure of devoting oneself to the activity^{26,27,32}. For men in Sweden and Canada,

cooking is a leisure activity that allows for experimentation and expression of creativity^{33,34,36,38}.

American²⁴, British and French³⁵ individuals defined the act of cooking as a priority activity²⁴ and incorporated into the daily routine³⁵. Swedish men reported that cooking was essential to meet daily needs³⁸. British individuals, especially mothers, identified responsibility for providing their children with food as an important motivation for cooking²⁸.

Cooking is seen as a means of maintaining family and cultural traditions as well as creating new ones^{17,27,29,39-42}. In United States, some women maintained the cooking habits of their mothers, whereas others resented their heritage and sought new cooking experiences³⁹. American seniors reported that they took pride in prepar-

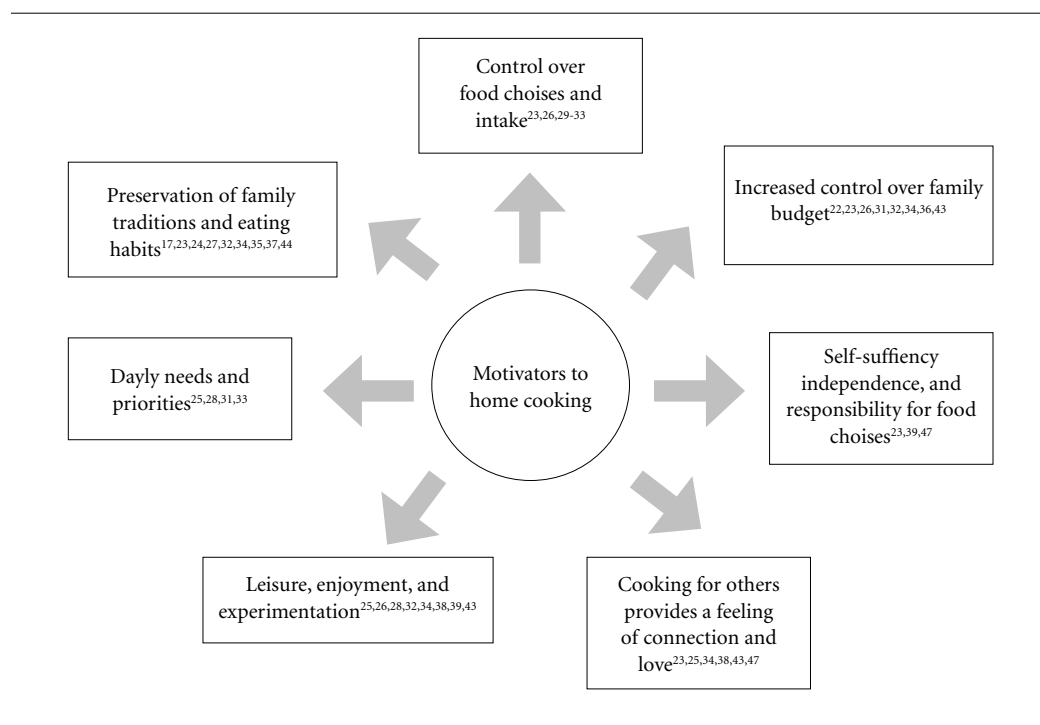


Figure 2. Motivators to home cooking identified through thematic analysis of selected studies.

Source: the authors.

ing dishes that had been passed down through generations²⁷. Danish young adults changed their eating habits and tried to influence those of their parents after developing cooking skills⁴³. In an observational study carried out in Malaysia found that cooking with family members, especially the mother, strengthens family bonds and allows gaining knowledge about cooking⁴⁴. In the Netherlands, Indian immigrants reported that cooking is a central part of the sense of belonging and helps to deal with being away from home. The use of traditional family ingredients and utensils increased their ties to the family⁴².

Cooking facilitators and barriers

The facilitators and barriers to cooking reported in the selected studies are summarized in Figure 3. American^{26,27}, Canadian²⁹, Danish^{18,43}, and Irish²³ individuals highlighted the importance of having a family member as a cooking role model. Halkier¹⁸ observed that some Danish women who had learned to cook in their child-

hood considered cooking to be a natural and simple task¹⁸. In another study in Denmark, participants considered their parents as positive role models regarding meal planning and the use of vegetables and spices⁴³. On the other hand, young adults in the United States attributed their lack of confidence in cooking to the small number of meals prepared at home by their parents during their childhood²⁶.

Knowing how to cook and having confidence in this ability was reported as an important factor for home cooking in the United Kingdom³⁵, Ireland²³, United States²⁶, and Uruguay⁴⁵ and, when lacking, as a barrier to cooking^{26,45}. Additionally, individuals pointed out that the ability to organize and plan meals, which includes planning what will be prepared, organizing time, buying food, preparing food and cleaning the environment also facilitate and favor the effective act of home cooking^{23,24,26}. As a strategy to optimize time, American individuals cook meals in large quantities, use leftovers, and prepare or process ingredients in advance²⁴. In Denmark, individu-

Facilitators	Barriers
Cooking role model and contact with home meal preparation during childhood <small>18,23,26,27,30,32</small>	Lack of a cooking role model in the family ²⁶
Confidence and familiarity with cooking skills ^{25,26,30,41}	Lack of confidence or cooking skills ^{26,41}
Availability of pre-prepared foods and household utensils ^{25,33,37}	Availability of away-from-home food establishments ^{26,30}
Organization and planning capacity ^{26,30,31}	Price of fresh foods ^{30,31}
Creative inspiration ³⁰	Lack of time ^{25,26,30,31,45,48} and interest ^{25,30,32,41}
Living alone ^{25,33}	Living alone ^{31,33,42}

Figure 3. Facilitators and barriers to home cooking identified through thematic analysis of selected studies.

Source: the authors.

als chose to outsource the responsibility of planning and purchasing ingredients by acquiring “meal boxes”. Boxes containing the necessary ingredients for a certain dish are delivered at home. Thus, users still cook at home, but with reduced efforts⁴⁶.

Irish individuals reported the importance of creative inspiration, which may stem from recipes, experiences at restaurants, and grocery shopping²³. Among British adults of different income groups, the availability of pre-prepared foods (e.g., frozen fish and vegetables, canned beans, and bagged greens), utensils, and equipment facilitate home cooking^{28,35,40}. Because of the lack of time to cook, participants are becoming increasingly dependent on the use of pre-prepared foods to cook at home^{28,35}.

Lack of time is one of the major barriers to cooking. Family and work commitments and leisure opportunities significantly influence the decision to (not) cook. The accelerated pace of life and other personal demands often do not allow individuals to partake in this activity^{23,24,26,28,35}.

In studies carried out in Ireland²³ and Unites States²⁶, the availability and proximity of places to buy convenience foods or eat out were associated with the choice of not cooking at home. American young adults often choose to purchase foods or meals at university canteens and restaurants rather than eating at home because of the

practicality and low cost²⁶. In other studies, for some individuals cooking is not seen as a priority or necessity^{23,24,27,35,45}. In Uruguay, individuals reported that they did not like to cook and, therefore, invested little time on cooking from scratch. Some reported that, although they enjoyed cooking, they felt overwhelmed by having to cook every day⁴⁵.

The high costs of raw foods, such as fruits, vegetables, and meat, is a barrier to preparing meals at home. Irish and American individuals prefer buying cheaper, processed foods as opposed to raw foods^{23,24}.

Living arrangements influence the choice of cooking at home. Elderly British women⁴⁷ and British²⁸ and American²⁴ adults reported that living alone discouraged home cooking. On the other hand, living alone was considered a stimulus to develop the habit of cooking by young British individuals^{28,35}.

Discussion and final considerations

This qualitative review presents the point of view of individuals from different backgrounds about aspects related to cooking at home. We observed a multiplicity of perceptions about home cooking and meal planning. For some individuals, home cooking includes the use of raw and/or mini-

mally processed ingredients, whereas, for others, cooking can be carried out using highly- or ultra-processed foods⁴⁸. These results indicate that individuals have different understandings about what it means to cook. The distinction between high-complexity and low-complexity cooking tasks and cooking from raw and pre-prepared foods is not always clear^{15,49}.

Cognitive, practical, social, and emotional factors were among the main motivators to cooking. Therefore, strategies aimed at encouraging home cooking should take into account not only economic and cognitive motivations but also the affective components of cooking, for instance, by promoting cooking as a form of leisure and creativity expression.

Six facilitators and six barriers to cooking were identified, some of which were considered ambivalent, such as the presence or absence of a cooking role model in the family, confidence, and cooking skills. The results demonstrate the importance of having contact with people who cook and developing confidence and cooking skills. Further studies should seek to understand how cooking skills are acquired and how other factors, such as creative inspiration for cooking and meal planning, influence the choice of cooking at home. Broader concepts of cooking skills that go beyond technical and mechanical skills may need to be adopted^{49,50}.

Living alone was considered both a barrier and a facilitator to cooking. More information is needed to understand the motivations for (not) cooking of individuals who live alone.

Lack of time and interest were major barriers. The feeling of time pressure leads individuals to dedicate less time to preparing and consuming meals^{4,51} and may affect their interest in cooking. Author identified that individuals who enjoy cooking do not perceive lack of time as a barrier but spend more time cooking⁴⁸.

The cost of fresh food was identified as an important barrier to cooking in the domestic environment, reiterating the role of income and financial access as important determinants for food choices^{52,53}.

The different barriers identified confirm the understanding that the determinants related to the habit of cooking in the domestic environment are more complex than the presence of culinary skills⁵⁴.

The availability of pre-prepared foods contributes to home cooking. Pre-prepared foods can be classified as either minimally processed foods (e.g., canned peeled tomatoes) or ultra-processed

foods (e.g., tomato sauce containing corn starch and food additives). The Food Guide for the Brazilian Population¹² states that raw and minimally processed foods are part of a healthy diet but ultra-processed foods should be avoided. The degree of processing can only be determined by analyzing the ingredients list. Therefore, it is of utmost importance that consumers be able to understand food labels and have access to clear and reliable information, thereby allowing them to make informed food choices^{12,48}.

Because the availability of places to eat out and purchase convenience foods affects the choice of cooking at home, meal nutritional quality should be constantly monitored in food establishments. Consumers must have access to qualitative food information to aid in their away-from-home food choices⁵⁵⁻⁵⁷.

This review included studies carried out at different times and regions of the globe and with diverse populations (for example: men and women; young and elderly adults; eastern and western countries; developed and developing countries; rural and urban area; etc). Thus, the results are influenced by cultural, social, and historical factors. It was not the objective to analyze such differences, which may be regarded as a limitation of this review. However, the compilation allowed to demonstrate different perceptions related to the act of cooking, contributing to deepen the discussion on the theme.

Most studies were conducted in English-speaking countries that share historical, political, and cultural characteristics attributed to the influence of the United Kingdom. More information is needed on other populations, as the act of cooking²⁴ is defined as a cultural^{22,54} practice and is influenced by the presence of multinational food industries and fast-food chains⁵⁸.

The predominance of articles published in English-speaking countries may be related to the importance of the English language to the dissemination of scientific research. As the terms used to search the databases were in Portuguese or English, it is likely that studies published in French, Italian, or Spanish without an English or Portuguese abstract were not identified.

The use of different terms helped to broaden the literature search. Qualitative research typically adopts a variety of concepts and terms to refer to a given topic. The goal was to include studies with different objectives and gain a global view of cooking perceptions. In many studies, home cooking was not the primary focus. Articles were read in full to identify, even when pre-

sented as secondary findings, aspects related to perceptions of cooking. This approach allowed to broaden the understanding of the act of cooking, discussing the motivations, influences and the way individuals relate to this practice.

The analysis of the selected articles led to reflections on possible issues that can be explored in new studies, in order to understand how the habit of cooking develops over the course of life, or even what motivations lead individuals who live alone to cook (or not). It would also be interesting to know the motivations and behavior of individuals who overcome time constraints and develop the habit of cooking.

This review indicates that interventions and strategies aimed at promoting home cooking can address not only cognitive and practical factors but also affective and emotional ones. A broader view of home cooking should be adopted, taking into account the importance of planning meals and cooking skills, the combined use of raw and pre-prepared foods, and the need for creative inspiration for cooking. Strategies that consider the cost of raw foods, lack of time and interest, and meal planning may be effective in stimulating participants to develop healthy cooking habits.

Collaborations

AC Mazzone contributed to the conception and design of the study, collected and analyzed the data, and wrote the manuscript. M Dean contributed to the study conception and design. GMR Fiates contributed to the study design, selection of articles, data collection and analysis, and critical review of the manuscript.

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