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Nutrition Professionals' Cooking Skills and Their Relevance in the Transmission of Health Messages

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Abstract

Non-communicable diseases (NCDs), or chronic diseases, result from diverse factors like genetics, environment, and behavior, contributing to 41 million deaths annually, per 2023 WHO data. The rising prevalence of NCD strains public health systems and necessitates innovative strategies. Working on modifiable risk factors, such as inadequate diets, is essential. However, limited guidance on cooking methods and practical dietary counseling often hinders effectiveness. This research seeks to explore how nutritionists perceive culinary skills (CSs) and their role in communicating healthy eating messages. This study carries out a qualitative study, using the focus group technique, with students and professionals in nutrition, an area that is little explored. For participant recruitment, institutional emails were sent via the national Professional Order of Nutritionists and Nutrition Association. Snowball sampling was also used to effectively facilitate recruitment. The sessions were recorded in audio and video, and, later, transcribed. Adobe Premiere Pro was used for transcriptions, followed by two checks to ensure accuracy and to note participant reactions. Qualitative data were analyzed using manual coding analysis due to the small number of participants (n = 19). In July 2024, three different focus groups were conducted and the study involved exploring their CS and its relevance for dietary guidance, perceptions of cooking media, and the adequacy of nutrition training. The participants reported having insufficient CS, as they were covered in a very basic way and had little depth during academic training. They highlighted the importance of integrating culinary training into nutrition curricula, emphasizing the need for practical skills to better promote healthy eating. This research underscores the critical role of CS in nutrition practice and the need for improved educational frameworks.

Keywords

Learning, Cooking Skills, Health Professionals, Food Preparation, Qualitative Research, Food Literacy

1. Introduction

Non-communicable diseases (NCDs), or chronic diseases, are long-term conditions arising from genetic, physiological, environmental, and behavioral factors. According to 2023 data from the World Health Organization (WHO), NCDs are responsible for an estimated 41 million deaths annually, representing 74% of global mortality. Key risk factors, including suboptimal dietary patterns, significantly increase the risk of mortality associated with these diseases [1].

Overweight and obesity rates, along with associated diseases, have steadily risen, straining public health systems [2] [3]. Despite the growth of multidisciplinary teams and health recommendations for improved dietary habits and physical activity, tackling NCDs remains a global challenge, demanding innovative strategies [4].

In this context, this study investigates a topic that has been relatively unexplored among health professionals: cooking skills (CSs). Cooking skills are linked to better diet quality, reflected in higher fruit and vegetable intake and greater awareness of healthy food choices [5] [6]. CSs include physical abilities, cooking knowledge, food safety practices, and the influence of environmental factors on cooking behaviors [6] [7]. For example, meal planning for families often falls on one person, requiring time management and skills [3] [7].

Since the Industrial Revolution, societal shifts—such as women entering the workforce—have significantly altered family food consumption. Cooking, traditionally a domestic skill passed down through generations, has declined, while fast food and ready-to-eat meals have gained popularity [7]. These options, often high in fats, sugars, and salts, simplify daily life but are nutritionally inadequate and constitute risk factors for several NCDs [1] [6]-[8].

Numerous cooking programs have emerged as educational tools [9]-[12], teaching culinary techniques through magazines, internet channels, and social media. However, individuals lacking basic CS, necessary equipment, or ingredient knowledge may find these insufficient [3] [7]. Moreover, intervention programs promoting healthy habits rarely incorporate practical culinary training, likely due to logistical challenges such as inadequate physical spaces [7] [9]-[11].

Healthcare professionals are rarely the focus of CS training, despite their critical role in addressing patients' barriers to healthy eating. Limited guidance on cooking methods and practical dietary counseling often hinders their effectiveness [13]-[16]. Nutrition professionals, in particular, are presumed to possess adequate CS, not only due to their academic background but also due to their duties in disseminating dietary recommendations and changing inadequate food habits. Yet, there

is minimal research examining their culinary competencies. This gap is notable given the emergence of culinary medicine, which emphasizes the integration of cooking knowledge into healthcare practice [17] [18].

The lack of evidence raises questions about whether nutritionists truly have the CS expected and whether they encounter difficulties in effectively transmitting this knowledge to the public. This research seeks to answer the following question: how do nutritionists perceive culinary skills and their role in communicating healthy eating messages to patients and communities? Through focus groups, this study examines how nutrition students and professionals view cooking skills, exploring their perceptions in the context of dietary guidance and academic training.

Objectives

The objective was to understand the cooking skills difficulties of nutrition professionals and how these impact the transmission of health messages to the population.

2. Methodology

2.1. Study Design and Sample

To pursue the objective, a qualitative study using the focus group methodology was designed, targeting nutrition professionals and students. Participants were recruited through the Portuguese Professional Order of Nutritionists (ON) and the Portuguese Nutrition Association (APN), who sent invitations and a form for interested individuals. Due to the low response rate, an alternative strategy was considered, and new invitations were distributed via institutional email by the University of Porto (UP) resources; ON and APN were also asked to resend the invitations. When responses remained insufficient, the snowball sampling technique [19] was employed via social media groups to boost recruitment, a method involving the identification of key participants who met the study criteria and subsequently requesting them to refer similar individuals within their networks.

Participants (n = 26) completed a form and were later asked to sign a Free Informed Consent Form (FICF). Four individuals who did not complete the FICF were excluded, leaving 22 participants. After three dropouts, the final sample included 19 participants. Three focus groups were conducted, with varying numbers of participants (8, 7, and 4). These were guided by the main researcher and a research assistant, with no prior contact established to minimize bias.

2.2. Participant Reception and Interaction

The reception of participants in focus groups should not be underestimated, as participants may experience nervousness due to being observed and unfamiliarity with other participants. Providing a thoughtful and attentive reception facilitates more relaxed interaction between participants and the research team and encour-

ages disinhibition. Additionally, it is crucial to ensure a quiet environment with minimal external interference during participants' speeches, to avoid compromising the recording quality and to enable participants to listen to each other clearly [20] [21].

In this study, given the virtual environment, where physical contact was absent, special efforts were made to facilitate participants' introductions and help them become comfortable with being observed. The group dynamics technique, as cited by Vieira *et al.* (2013) [20], proved effective in encouraging participants to share their personal and professional experiences. During the focus groups, the topic of culinary aptitude and skills was addressed, encompassing definitions and experiences in predefined scenarios.

2.3. Implementation and Development of Focus Groups

The focus group is a data collection strategy that involves group discussions centered on a specific topic, facilitated by a moderator using an interview guide (**Supplementary Material**). Sessions of focus groups can be conducted in an unstructured and natural way and can be conducted either in person or online. The rise of digital tools, accelerated by the Coronavirus Disease 2019 pandemic, has made virtual focus groups a popular choice in health research [21]-[23]. In this study, the virtual approach was chosen due to the nationwide scope and to avoid participant travel. Google Meet [24] technology was used to carry out the focus groups, held on the 17th, 18th, and 30th of July 2024, each one lasting between 70 and 90 minutes.

The primary aim was to explore participants' challenges with cooking skills and their impact on communicating health messages. Each session began with participants defining culinary aptitude and expressing their interest in the topic, followed by the moderator presenting a standardized definition. Discussions included scenarios involving digital media, cooking programs, and the professional roles of nutritionists. Ethical considerations and participant feedback were addressed before concluding with gratitude for their involvement.

2.4. Data Collection

During the three focus groups, the interviewers approached the sessions without prior assumptions or biases, ensuring only participants and the interviewer were present. Field notes were taken to support reflexivity, enabling the research team to reflect on potential biases. Participants were informed and consented to group recordings. Sessions were recorded in audio and video, using the Open Broadcaster Software [25], allowing, later, the literal transcription and a more detailed analysis of the participants' emotions and reactions.

2.5. Data Extraction and Analysis

Adobe Premiere Pro [26] was used for transcriptions, followed by two checks to ensure accuracy and note participant reactions. Qualitative data were analyzed

using manual coding analysis due to the small number of participants (n = 19). Transcripts were generated using Adobe Premiere Pro to facilitate data extraction, but all subsequent coding and thematic categorization were conducted by two independent researchers to enhance analytical rigor and reliability. Researchers trained in qualitative methods independently analyzed the focus group data in July and August 2024, using conventional content analysis to inductively identify themes. The conventional content analysis was conducted in four steps: 1) skimming of the transcribed data; 2) line-by-line open coding; 3) grouping of emerging categories by thematic similarity; and 4) peer review to ensure reliability [19] [21].

2.6. Ethics

The study was approved by the Ethics Committee of the Faculty of Nutrition and Food Sciences at the University of Porto in December 2023 (n° 154/2023/CEFCNAUP).

3. Results and Discussion

3.1. Characteristics of Participants

Table 1 summarizes participant characteristics. Of the 19 participants, nine were nutrition students, and ten were nutrition professionals. Among the students, two were pursuing bachelor's degrees, four were in master's programs, and three were enrolled in specialization courses. Only one master's student and one specialization student were simultaneously studying and working.

Professional experience varied: one participant had under 5 years, one had 5 - 10 years, five had 11 - 15 years, one had 16 - 20 years, and four had over 20 years of experience. Professional activities included Clinical Nutrition (9 participants: 2 in hospitals, 1 in primary healthcare, and 6 in private practice focusing on maternal care, women's health, oncology, obesity, and allergies), Community Nutrition/Public Health (1), and Food Technology/Science (1).

Participants were geographically distributed across four of mainland Portugal's five regions (9 from the North, 4 from the Center, 4 from Lisbon and Vale do Tejo, and 1 from Alentejo) and one autonomous region (Azores). The participation of foreigners can greatly demonstrate the current situation that Portugal is experiencing, with its immigrant population growing [27]. The sample included 9 Portuguese, 8 Brazilians, and 2 Angolans, aged 22 - 56 years, with an average age of 36 (±8.62) years.

Table 1. Summary of the characteristics of the participants. Health professionals' cooking skills and their relevance in the transmission of health messages, 2024.

Characteristics of the participants	
Self-identified gender	
Female	18
Male	1

Continued

Age range (years)	
≥20 - 30	4
>30 - 40	10
>40 - 50	4
≥51	1
Occupational category	
Bachelor student	2
Master's degree student	4
Specialization student	3
Professional	10
Experience in the profession (years)	
Less than 5	1
Between 6 and 10	1
Between 11 and 15	5
Between 16 and 19	1
More than 20	3
Areas of professional activity	
Clinical nutrition	9
Community nutrition and public health	1
Food technology/food science	1
Geographic region	
North	9
Center	4
Lisbon and Vale do Tejo	4
Alentejo	1
Algarve	0
Azores	1
Madeira	0
Nationality of participants	
Portugal	9
Brazil	8
Angola	2
Cooking course taken	
Yes	4
No	15
Need for cooking classes (in addition to graduation)	
Yes	16
No	3

3.2. Analysis of Focus Groups

Content analysis revealed three themes: "Culinary Aptitude and Skill: Definition and Interest", "Cooking Media and Programs: Perception and Influence", and "Training and Perceptions as Nutrition Students and Professionals." To better illustrate some of the expressed ideas without revealing participants' names, their quotes are identified by codes (e.g., P1 meaning Participant 1).

3.3. Culinary Aptitude and Skill: Definition and Interest

Participants' definitions highlighted diverse perspectives on CS, emphasizing their practical and technical aspects. Many stressed the importance of these skills, particularly for children, in shaping taste preferences and lifelong dietary habits. As one participant noted, "The skills, this issue of cooking, of making, are very related. It helps a lot, especially for children, to help them develop their tastes" (P2).

CS, especially when acquired at an early age [5] [28], involves transforming food to meet nutritional needs and preferences, alongside technical knowledge for handling, preparing, and preserving food to support healthy eating [3] [7]. Another participant remarked, "…cooking has a lot to do with health, and health has to do with cooking…" (P1).

Community settings often utilize cooking demonstrations, emphasizing simple, practical methods for applying skills in daily life [29]. One participant shared: "The tools they used most, especially in community work, were usually culinary prediction tools" (P5). Acquiring cooking skills not only enhances personal experience but also facilitates the transfer of knowledge to others [30].

Participants emphasized the emotional and cultural dimensions of cooking, noting the impact of growing up in a family that values culinary practices. As one participant shared, "Food, there's this thing about affective memory, it's a demonstration of affection, of affection… And, I always saw my mother, my grandmothers cooking..." (P3). Another added, "...if you were exposed to a family that really cooked and cooked with love, a family member or anyone else, I think you end up absorbing that and then reproducing it" (P16).

Health and sustainability aspects were also highlighted, with participants discussing the balance between skill, necessity, and environmental considerations, such as minimizing waste and using all parts of food. One participant noted, "Knowing what happens afterwards also helps, such as how to dispose of it, how you can use other parts of the food that are considered unimportant, such as the skin, the sprout..." (P10).

The discussions revealed the multifaceted nature of cooking, integrating technical, emotional, cultural, and environmental dimensions. This diversity of opinions underscores the complexity of cooking, encompassing technical, physical, and behavioral skills [30]. Participants expressed interest in mastering international cuisines and emphasized cooking as essential for promoting health and better eating practices. As one participant stated, "having a meal plan that is appealing and diverse makes a huge difference to patient adherence" (P3). Another added,

"It is very important that we teach people to cook and enjoy their cuisine and see cooking as an act, as a vehicle for promoting health" (P5).

As Garcia *et al.* (2016) [29] suggest, cooking programs can be effective in increasing confidence in performing CS, such as meal preparation. There is also recognition in this sample that the ability to cook is becoming increasingly rare in the general population, highlighting the importance for professionals in the field to effectively transmit them. Teaching culinary techniques and promoting the comprehensive use of food are deemed essential, especially in the context of contemporary sustainability discussions [31].

Concerns were raised about the declining prevalence of cooking skills, underlining the need for professionals to master and teach these skills effectively. Culinary education was recognized as an emerging trend, with participants highlighting its potential to empower individuals and support sustainable practices. Despite challenges, teaching cooking was viewed as a critical and rewarding aspect of the nutrition profession.

3.4. Cooking Media and Programs: Perception and Influence

Participants shared diverse perspectives on the influence of media and cooking programs. Some express concerns regarding superficiality and the pressure for perfection, while others recognize the inspirational potential of media, provided it is grounded in solid and accessible foundations. Many noted that the abundance of recipes and information can overwhelm individuals lacking basic cooking knowledge, leading to frustration when expectations are unmet. One participant observed, "…recipes looking like they're just an image…with a little mask of being healthy" (P5), aligning with findings that socioeconomic and cultural factors heavily influence cooking practices.

This frustration aligns with the findings of van Kesteren *et al.* (2020) [32], who argued that cooking is not simply a matter of rational choice or intention, but is instead a practice shaped by a network of interconnected elements, including knowledge acquisition influenced by socioeconomic factors. It was highlighted that the ways in which media and socioeconomic factors interact can shape culinary practices, affecting individuals' capabilities and expectations in distinct manners.

Media can inspire healthier eating habits, but often lacks the context and depth needed to guide individuals with specific health conditions effectively. One participant noted, "…they generalize everything…and they don't have all the basic knowledge..." (P6). The rise of celebrity chefs and cooking shows has introduced diverse techniques but also created challenges due to variability in equipment, ingredients, and methods. This was highlighted by a participant: "…sometimes, when handling food, you don't have the same equipment…there are so many different factors that will influence" (P19).

Despite the challenges, social media and videos that detail the cooking process can motivate individuals to experiment in the kitchen, as one participant noted:

"…it really influences people to take the first step, to at least have the desire to do so" (P18). However, the risk of misinformation remains significant, emphasizing the need for professionals to guide patients in critically evaluating content and tailoring recipes to individual needs. Limited consultation time adds to the difficulty, with one participant remarking that "Social networks are full of information, often contradictory...and we don't have time to explain everything..." (P15).

Another concern is that while social networks and videos can be useful for motivation and teaching techniques, they can also contribute to food fads, with many people replicating the same recipes and neglecting local foods. In Burlingame *et al.*'s (2012) study [31], it was seen that this oversight about diets with little environmental preoccupation can affect sustainability and increase greenhouse gas emissions due to the transportation of food produced far from its consumption point.

Professionals often adapt recipes for patients to ensure feasibility and alignment with their needs, highlighting the balance among motivation, education, and sustainability in culinary media.

3.5. Training and Perceptions as Nutrition Students and Professionals

Many nutrition professionals highlighted a gap in their academic training, noting insufficient coverage of gastrotechnics and dietary techniques. While universities often provide a solid theoretical foundation, practical application is frequently limited, leaving graduates underprepared for real-world demands. This gap is problematic, as CS are essential for imparting nutritional knowledge and tailoring diets to specific needs [17].

For those who experienced more hands-on training during their studies, the impact was significant. As one participant remarked, "…there was a gastronomy course, and it literally took us into a kitchen. So those who didn't know how to cook still had to learn" (P16). Others shared similar experiences, such as integrating cooking with specific topics like oncology: "… at least one class in the kitchen, making things, preparations, recipes, using some of… some supplements…" (P2).

General training as nutritionists does not fully prepare them for the demands of professional practice, highlighting the need for continuous and specialized learning post-graduation [17]. Despite slight improvements in curricula over time, participants observed that the integration of CS remains insufficient in both depth and frequency. "Dietary techniques end up being one or two semesters, whereas it should always be all subjects, linked to dietary techniques" (P11). A participant critiqued the lack of focus on culinary techniques: "…this part of culinary techniques was very, very, very forgotten… very little covered" (P13).

This gap is compounded by mixed attitudes among students. Some undervalue CS during their studies, reflecting sentiments such as, "I'm here to do nutrition and not to be in a kitchen..." (P14). Yet, this perspective often shifts post-gradua-

tion as they recognize the necessity of CS in professional practice. As one participant argued, "Our main source of work is food. We have to know how to use it and how it behaves in the kitchen" (P8).

Participants emphasized the value of personal cooking experience, which often surpasses the benefits of university training alone. They noted that practical knowledge empowers nutritionists to better support patients, particularly by providing personalized recipes and effective dietary interventions. This approach also minimizes the spread of misinformation, which can be harmful to patients' health. Tailoring nutritional guidance to individual needs is a critical skill that requires both culinary and theoretical knowledge [17].

"It needs to be considered from all parts of our training process…of knowing what you can do with that food, of knowing how to work with that, how to pass on this information" (P10). The ability to adapt recommendations to patients' routines aligns with the literature, which underscores the importance of equipping nutritionists to inspire and motivate patients to adopt healthy eating habits through practical training [17] [33].

As emphasized in the study by Aboueid *et al.* (2019) [18], improving dietary habits at the population level requires more than individual changes—it requires actions involving public policies, education, and health systems. Increasing and improving CS among health professionals, especially nutrition professionals, can increase confidence in nutritional advice from these professionals and result in greater adherence to a healthier diet by patients [34].

Participants agreed on the necessity of integrating culinary practice throughout academic training and beyond. This consensus highlights the importance of a robust educational framework that combines theory and practice, as well as opportunities for ongoing professional development. Such comprehensive training equips nutritionists to meet the evolving demands of their field, ultimately enhancing patient care and promoting sustainable health outcomes.

3.6. Limitations and Strengths

A limitation of the study was the sample selection, which could introduce bias, as participants may possess cooking knowledge acquired during their academic training or have a predisposition toward CS and interests. However, it successfully engaged participants from diverse geographical locations, experiences, cultures, and nationalities, thereby providing a more comprehensive perspective on the subject.

It is crucial to emphasize the significance of this research given the insufficient focus on CS among nutrition students and professionals, with a scarcity of related scientific literature. CS are fundamental tools for nutrition professionals, enabling them to effectively transmit, teach, and help the general population to acquire these skills, and, consequently, improve health issues.

Although this qualitative study explored self-reported perceptions, further research should consider objective measures of the impact of professionals' CS on

patients' eating behaviors, such as dietary changes and adherence to eating plans, involving both nutrition health professionals and target audiences in clinical and community settings.

4. Conclusion

The participants in the study reported having insufficient CS, as they were covered in a very basic way and had little depth during academic training. In post-graduation, these professionals still face limited access to specializations, courses, or workshops that could further develop these essential skills. This study highlights this critical gap, demonstrating significant potential for improvement in nutrition education, as better culinary training for nutrition professionals is crucial to improving the quality of health messages and promoting healthier eating behaviors in the population.

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Authors' Contributions

Letícia Mucci da Conceição: Conceptualization, methodology, project administration, software, validation, formal analysis, writing—original draft, and writing—review & editing. Sara Simões Pereira Rodrigues: Conceptualization, validation, writing—review & editing, and supervision.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] WHO (2024) Noncommunicable Diseases. Fact Sheets 2023. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

[2] Lang, R.D., Jennings, M.C., Lam, C., Yeh, H., Zhu, C. and Kumra, T. (2019) Community Culinary Workshops as a Nutrition Curriculum in a Preventive Medicine Residency Program. *MedEdPORTAL*, **15**, Article No. 10859. https://doi.org/10.15766/mep_2374-8265.10859

[3] McGowan, L., Caraher, M., Raats, M., Lavelle, F., Hollywood, L., McDowell, D., *et al.* (2015) Domestic Cooking and Food Skills: A Review. *Critical Reviews in Food Science and Nutrition*, **57**, 2412-2431. https://doi.org/10.1080/10408398.2015.1072495

[4] Tiwari, A. and Balasundaram, P. (2024) Public Health Considerations Regarding Obesity. StatPearls Publishing.

[5] Lavelle, F., Spence, M., Hollywood, L., McGowan, L., Surgenor, D., McCloat, A., *et al.* (2016) Learning Cooking Skills at Different Ages: A Cross-Sectional Study. *International*

Journal of Behavioral Nutrition and Physical Activity, **13**, Article No. 119. https://doi.org/10.1186/s12966-016-0446-y

[6] Jomori, M.M., Vasconcelos, F.d.A.G.d., Bernardo, G.L., Uggioni, P.L. and Proença, R.P.d.C. (2018) The Concept of Cooking Skills: A Review with Contributions to the Scientific Debate. *Revista de Nutrição*, **31**, 119-135. https://doi.org/10.1590/1678-98652018000100010

[7] Michaud, P., Condrasky, M. and Griffin, S.F. (2007) Review and Application of Current Literature Related to Culinary Programs for Nutrition Educators. *Topics in Clinical Nutrition*, **22**, 336-348. https://doi.org/10.1097/01.tin.0000308470.95060.06

[8] Horning, M.L., Fulkerson, J.A., Friend, S.E. and Story, M. (2017) Reasons Parents Buy Prepackaged, Processed Meals: It Is More Complicated than "I Don't Have Time". *Journal of Nutrition Education and Behavior*, **49**, 60-66.e1. https://doi.org/10.1016/j.jneb.2016.08.012

[9] Condrasky, M., Quinn, A. and Cason, K. (2007) Cooking Camp Provides Hands-On Nutrition Education Opportunity. *Journal of Culinary Science & Technology*, **5**, 37-52. https://doi.org/10.1300/j385v05n04_03

[10] Chavez-Martinez, A., Cason, K.L., Mayo, R., Nieto-Montenegro, S., Williams, J.E. and Haley-Zitin, V. (2010) Assessment of Predisposing, Enabling, and Reinforcing Factors toward Food Choices and Healthy Eating among Hispanics in South Carolina. *Topics in Clinical Nutrition*, **25**, 47-59. https://doi.org/10.1097/tin.0b013e3181d109a0

[11] Condrasky, M.D., Corr, A.Q., Sharp, J., Hegler, M. and Warmin, A. (2010) Culinary Nutrition Camp for Adolescents Assisted by Dietetic Student Counselors. *Topics in Clinical Nutrition*, **25**, 362-370. https://doi.org/10.1097/tin.0b013e3181faba64

[12] Utter, J., Fay, A.P. and Denny, S. (2016) Child and Youth Cooking Programs: More than Good Nutrition? *Journal of Hunger & Environmental Nutrition*, **12**, 554-580. https://doi.org/10.1080/19320248.2015.1112758

[13] Tan, J., Atamanchuk, L., Rao, T., Sato, K., Crowley, J. and Ball, L. (2022) Exploring Culinary Medicine as a Promising Method of Nutritional Education in Medical School: A Scoping Review. *BMC Medical Education*, **22**, Article No. 441. https://doi.org/10.1186/s12909-022-03449-w

[14] Kowalkowska, J., Poínhos, R. and Rodrigues, S. (2018) Cooking Skills and Socio-Demographics among Portuguese University Students. *British Food Journal*, **120**, 563-577. https://doi.org/10.1108/bfj-06-2017-0345

[15] Teixeira, A.R., Camanho, J.S.P., Miguel, F.d.S., Mega, H.C. and Slater, B. (2022) Instrumento para mensurar habilidades culinárias domésticas na atenção primária à saúde. *Revista de Saúde Pública*, **56**, Article No. 78. https://doi.org/10.11606/s1518-8787.2022056003473

[16] Kapur, K., *et al.* (2008) Barriers to Changing Dietary Behavior. *Journal of the Association of Physicians of India*, **56**, 27-32.

[17] McWhorter, J.W., LaRue, D.M., Almohamad, M., Danho, M.P., Misra, S., Tseng, K.C., *et al.* (2022) Training of Registered Dietitian Nutritionists to Improve Culinary Skills and Food Literacy. *Journal of Nutrition Education and Behavior*, **54**, 784-793. https://doi.org/10.1016/j.jneb.2022.04.001

[18] Aboueid, S., Pouliot, C., Nur, T., Bourgeault, I. and Giroux, I. (2019) Dietitians' Perspectives on Patient Barriers and Enablers to Weight Management: An Application of the Social-Ecological Model. *Nutrition & Dietetics*, **76**, 353-362. https://doi.org/10.1111/1747-0080.12510

[19] Patton, M.Q. (1990) Qualitative Evaluation and Research Methods. Sage Publications, Inc.

[20] Vieira, C.M., Santiago, L.S., Tavare, P.C.W., Brandt, A., Negri, F. and Oliveira, M.R.M.d. (2013) Aplicação da técnica de grupo focal em pesquisa da Rede-SANS sobre as ações de alimentação e nutrição na atenção básica em saúde. *Cadernos Saúde Coletiva*, **21**, 407-413. https://doi.org/10.1590/s1414-462x2013000400008

[21] Trad, L.A.B. (2009) Grupos focais: Conceitos, procedimentos e reflexões baseadas em experiências com o uso da técnica em pesquisas de saúde. *Physis*: *Revista de Saúde Coletiva*, **19**, 777-796. https://doi.org/10.1590/s0103-73312009000300013

[22] Alves, J.G., Braga, L.P., Souza, C.d.S., Pereira, E.V., Mendonça, G.U.G., Oliveira, C.A.N.d., *et al*. (2023) Grupo focal on-line para a coleta de dados de pesquisas qualitativas: Relato de experiência. *Escola Anna Nery*, **27**, e20220447. https://doi.org/10.1590/2177-9465-ean-2022-0447pt

[23] Duarte, A.B.S. (2007) Grupo focal online e offline como técnica de coleta de dados. *Informação & Sociedade*: *Estudos*, **17**, 75-85.

[24] Google Meet. https://meet.google.com/landing

[25] OBS Studio—Open Broadcaster Software. https://obsproject.com/

[26] Adobe Premiere Pro. https://www.adobe.com/pt/products/premiere.html

[27] Observador (2024) Portugal tem mais de um milhão de estrangeiros, aumento em 2023 foi de um terço. https://observador.pt/2024/09/17/portugal-tem-mais-de-um-milhao-de-estrangeiros-aumento-em-2023-foi-de-um-terco/

[28] Bennett, A.E., Mockler, D., Cunningham, C., Glennon-Slattery, C. and Johnston Molloy, C. (2021) A Review of Experiential School-Based Culinary Interventions for 5 - 12-Year-Old Children. *Children*, **8**, Article No. 1080. https://doi.org/10.3390/children8121080

[29] Garcia, A.L., Reardon, R., McDonald, M. and Vargas-Garcia, E.J. (2016) Community Interventions to Improve Cooking Skills and Their Effects on Confidence and Eating Behaviour. *Current Nutrition Reports*, **5**, 315-322. https://doi.org/10.1007/s13668-016-0185-3

[30] Gordillo, P. and Prescott, M.P. (2023) Assessing the Use of Social Cognitive Theory Components in Cooking and Food Skills Interventions. *Nutrients*, **15**, Article No. 1287. https://doi.org/10.3390/nu15051287

[31] Burlingame, B.A., *et al*. (2012) Sustainable Diets and Biodiversity: Directions and Solutions for Policy, Research and Action. FAO.

[32] van Kesteren, R. and Evans, A. (2020) Cooking without Thinking: How Understanding Cooking as a Practice Can Shed New Light on Inequalities in Healthy Eating. *Appetite*, **147**, Article ID: 104503. https://doi.org/10.1016/j.appet.2019.104503

[33] Brennan, B.R., Beals, K.A., Burns, R.D., Chow, C.J., Locke, A.B., Petzold, M.P., *et al*. (2023) Impact of Culinary Medicine Course on Confidence and Competence in Diet and Lifestyle Counseling, Interprofessional Communication, and Health Behaviors and Advocacy. *Nutrients*, **15**, Article No. 4157. https://doi.org/10.3390/nu15194157

[34] Shafto, K., Vandenburgh, N., Wang, Q. and Breen, J. (2023) Experiential Culinary, Nutrition and Food Systems Education Improves Knowledge and Confidence in Future Health Professionals. *Nutrients*, **15**, Article No. 3994. https://doi.org/10.3390/nu15183994

Supplementary Material: Discussion Guide for Focus Groups

"I would like to welcome everyone and thank you for agreeing to participate in this research, and my role is to guide the discussion and take some notes.

During this discussion, I would like to talk to you about cooking skills. During this discussion, we want to hear your opinions, there are no right or wrong answers; we just want to know what you think. We would like to remind you that your participation is voluntary and that the discussions will be audio recorded, but all details will be kept anonymous. I would like to ask that you respect each other by allowing everyone to express their opinion and not speaking at the same time as someone else.

Finally, I hope you all enjoy participating in this discussion. Let us start by introducing ourselves to the group with just our first names..."

Introduction

1) To start the discussion, I would like to know how interested you are in preparing food.

2) I would also like to know how much you think cooking skills can impact people's health.

Cooking Skills: Knowledge and Understanding

1) I would now like to discuss culinary skills. Has anyone heard of this subject?

- *If so, where did you hear about it*?
- *If so, have you had any personal experience of culinary skills*? *Ask participants to give examples*.

2) In this investigation, we are interested in knowing what they understand by the term "culinary skills". Give participants time to communicate their understanding, and then clarify: "Let me give you a definition of cooking skills: Cooking skills, also known as culinary skills, encompass physical and behavioral skills for preparing food" (*Visual clue 1*).

- *Can you think of examples of cooking skills*?
- *Where could people access a service that provides them with tools to acquire cooking skills*?
- *How could this happen*?

Culinary Aptitude Scenarios

Now I would like to discuss three different scenarios on this topic.

First, I would like you to imagine the relevance of changing your diet to improve your quality of life and health. (*Visual clue 2*). To do this, people can turn to the internet, television or health professionals. What information could these people receive?

- *What information or feedback would these locations provide*?
- *Who would you expect to be providing these services*?
- *Who would you prefer to be providing these services*? *Why*?

Scenario 1: (*Visual clue 3*) Imagine that in the digital media scenario, such as the internet, it is possible to find a variety of information about recipes, diets, on websites or with digital influencers. What would you think of this?

- *What do you hope people will get out of these services*?
- *Do you think people are interested in seeking out this medium*?
- *Who do you think should provide this content*?

Scenario 2: (*Visual clue 4*) Imagine the scenario of cooking shows. What do you think about the influence of these programs on people's diets?

- *Do you think it is possible to change eating habits*?
- *Do you believe that people can learn or improve their cooking skills*?
- *If so, how is this possible*?

Scenario 3: (*Visual clue 5*) Now imagine a person who seeks out a health professional. How much do you think these professionals can influence the change of habits?

- *What information would the places be willing to provide*?
- *Who provides and who could provide this information*?
- *Thinking about nutritionists, how do they approach the change of habits*?
- *Who thinks it would be important to address how food can be prepared*?
- *Do you feel confident in making these recommendations*?
- *Are the culinary skills acquired during your undergraduate studies sufficient*?
- *If so, how do you guide users*?
- *Do you believe that your culinary skills can somehow influence the change of users' habits*?
- *How is this possible*?

Ethical Issues

1) We are interested in hearing if you have any questions or concerns about how the information from the previous scenarios might be used and stored.

2) We are interested in hearing if you have any questions or concerns about how personal feedback would be given or delivered to you.

3) We are interested in hearing if you have any questions or concerns about how the feedback information might be used.

Preparation for Closing

1) Do you think cooking skills could be a successful topic for improving eating habits? Why?

2) What would make it successful?

3) Is there anything else you would like to add?

Clarifications, Closing, and Acknowledgements

1) Inform participants that the discussion is coming to an end, e.g., "We are coming to the end of the discussion".

2) Ask how participants are feeling, e.g., "I would like to ask you how you feel about the discussion and its contents".

3) Thank participants for their time and contribution.