Digital Humanities and Cognitive Perspectives of Gender Nutritional Decision-Making

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Abstract. This project aims to investigate the impact of gender on nutritional decision-making through the lenses of digital humanities and cognitive science. No extensive research has previously integrated digital humanities, cognitive science, gender, and nutritional decision-making. This study employs a scoping review methodology utilizing the Arksey and O'Malley framework and adheres to the PRISMA ScR as the standard for research transparency. A total of twelve articles fulfilled the inclusion and exclusion criteria. This research includes articles written in English published between 2015 and 2025, which are original, fully accessible, and address gender-influenced nutritional decision-making from digital humanities and cognitive perspectives. The study's findings revealed three primary themes: computational humanities, cognitive frameworks, and food consumption analysis. Each area possesses distinct characteristics, exemplified by computational humanities, which encompasses cultural representation and technological influence. The cognitive framework theme encompasses decision-making processes and multi-attribute risk assessment. The issue of food consumption analysis encompasses access to food security and household decision-making processes. These three principles are interrelated and mutually influence one another. Computational humanities supply data, which are subsequently analyzed within a cognitive framework. The outcomes are reflected in food consumption.

1 Introduction

Nutrition has been an important issue for governments globally as it has significant influence on public health, economic efficiency, and social well-being. When dietary requirements are unmet, negative outcomes may occur across different areas. The seriousness of the situation is encapsulated in SDG 2, 'Zero Hunger,' which seeks to eliminate hunger, attain food security, enhance nutrition, and foster sustainable agriculture. The aim is to ensure that all individuals have access to adequate, safe, and nutritious food. Nutritional concerns are often complex, shaped by various influences such as social, economic, and cultural factors. In Indonesia, the interconnected domains of nutrition and culture can create issues, frequently stemming from misconceptions about nutrition. Traditional cultural traditions in Indonesia, such as patriarchy, foster the prevalence of societal fallacies. Patriarchy is defined as the cultural exaltation of men over women, reinforcing notions of male superiority and power.

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This cultural dynamic frequently leads to the granting of numerous privileges to men, creating a societal environment marked by inequality, which is often regarded as normative. This patriarchal society is intricately linked to nutritional disparities, as it is perceived that men should be prioritized and provided with a more diverse and healthier diet than women [1]. This concept significantly influences decisions related to food choices and nutritional requirements, often resulting in health issues, particularly among pregnant women and children [2]. The 2023 Indonesian Health Survey [3] indicates that the prevalence of diabetes mellitus (2%), heart disease (0.91%), cancer (2%), overweight (15.1%), and obesity (31.2%) is greater among women than men. Additional studies indicate that women are biologically more susceptible to malnutrition due to elevated requirements for specific micronutrients, including iron, calcium, and folate [4].

Existing research indicates that the gender perspective necessitates additional investigation to attain equality in nutrient consumption [5]. A possible method for attaining this goal is the diffusion of digital information, a concept within the realm of digital humanities (DH). Digital Humanities (DH) embodies the convergence of computer disciplines and the humanities, significantly influencing gender-specific nutritional decision-making through technology that offers tailored, inclusive, and accessible solutions. The incorporation of digital tools and gender-sensitive methodologies in digital humanities can enhance a more thorough and inclusive nutritional decision-making process, thus tackling the discrepancies across various gender identities. Nonetheless, despite its potential, DH faces considerable obstacles in effectively tackling social concerns including gender and nutritional decision-making. Digital humanities initiatives have demonstrated the tendency to mirror prevailing biases, especially on finance and representation. Gender roles and financial inclusion profoundly impact dietary choices and outcomes, as demonstrated by several research. The empowerment of women and their decision-making authority within homes are critical determinants that influence nutritional investments and outcomes, especially for children. Numerous treatments and programs are gender-blind, neglecting to confront the fundamental gender norms and biases that shape decision-making processes. To enhance nutritional outcomes, it is imperative to integrate gender analysis into health planning and program development, ensuring the involvement of both men and women in decision-making and addressing gender-specific requirements. Initiatives emphasizing different ethnic, gender, and cultural backgrounds may face obstacles about inequitable access and representation in digital environments. The cognitive approach could significantly benefit the digital humanities by addressing nutrition issues associated with gender, utilizing sophisticated insights into how gender influences nutritional disparities in digital platforms and research methodologies. This combination may yield more inclusive and effective programs that address varied gender identities and their specific dietary requirements. The aim of this project is to find the evidence that synthesizes these four elements into a cohesive entity before undertaking field research in the community. This study was conducted to fill a gap in the literature, posing the research question: “In what ways has gender influenced nutritional decision-making from digital humanities and cognitive perspectives?”

2 Methods

This study uses bibliometrics with a scoping review approach that produces a mapping of topics related to digital humanities, cognitive approaches, gender bias, and nutritional decision-making. It aims to examine previous research and elucidate the concepts presented through research questions [6,7]. This study utilized Scopus to search all publications, as it is regarded as the optimal resource for doing a literature review due to its extensive coverage, wide array of fields, and powerful analytical tools. The formula for searching was TITLE-ABS-KEY (("gender" or "sex" or "female" or "male") and ("nutrition" or "diet" or "food"

or "eating") and ("decision-making" or "choices" or "preferences" or "behavior") and ("influence" or "impact" or "effect" or "role") and ("social-media" or "media-social" or "digital")) and PUBYEAR > 2014 and PUBYEAR < 2026 and (LIMIT-TO (OA , "repository")) and (LIMIT-TO (PUBSTAGE , "final")) and (LIMIT-TO (subjarea , "soci") or LIMIT-TO (subjarea , "mult") or LIMIT-TO (subjarea , "neur") or LIMIT-TO (subjarea , "arts") or LIMIT-TO (subjarea , "deci")) and (LIMIT-TO (DOCTYPE , "ar") or LIMIT-TO (DOCTYPE , "cp")) and (LIMIT-TO (LANGUAGE , "english")) and (LIMIT-TO (EXACTKEYWORD , "nutrition") or LIMIT-TO (EXACTKEYWORD , "female") or LIMIT-TO (EXACTKEYWORD , "male") or LIMIT-TO (EXACTKEYWORD , "humans") or LIMIT-TO (EXACTKEYWORD , "social media") or LIMIT-TO (EXACTKEYWORD , "psychology") or LIMIT-TO (EXACTKEYWORD , "child") or LIMIT-TO (EXACTKEYWORD , "diet") or LIMIT-TO (EXACTKEYWORD , "health behavior") or LIMIT-TO (EXACTKEYWORD , "anxiety") or LIMIT-TO (EXACTKEYWORD , "food preference") or LIMIT-TO (EXACTKEYWORD , "decision making") or LIMIT-TO (EXACTKEYWORD , "cognition") or LIMIT-TO (EXACTKEYWORD , "knowledge")). A scoping review was selected due to the absence of comprehensive research on the four issues addressed in this study. This study employs the Arksey and O'Malley framework [8], which encompasses a) the formulation of the research question, 'In what ways has gender influenced nutritional decision-making from digital humanities and cognitive perspectives?'; b) the identification of relevant articles; the researcher established inclusion and exclusion criteria based on year, language, and access; c) the selection of relevant studies, during which the researcher reviewed the articles based on the predetermined eligibility criteria (refer to Table 1 for additional details); d) data charting, wherein the researcher extracted information by pinpointing discrepancies and substantiating evidence within each piece; and e) data compilation, synthesis, and presentation of results, wherein the researcher presented the findings. The researcher employed the PRISMA-ScR standards to provide transparency in the study.

Table 1. Eligibility Criteria

Eligibility Criteria	Inclusion Criteria	Exclusion Criteria
Title	- Published between 2015 and 2025 - Articles written in English - Title reflecting gender influenced nutritional decision-making from digital humanities and cognitive perspectives	- Articles written in other languages
Abstract	- Original article - Provides study design (qualitative, quantitative, or mixed method)	- Review articles, books, conference proceedings
Full Text	- The article is available as a full-text article - The article uses a well-designed research methodology and/or intervention - Related to digital humanities, cognitive perspectives, gender nutritional	- Full text not available - Not related to digital humanities, cognitive perspectives, gender nutritional

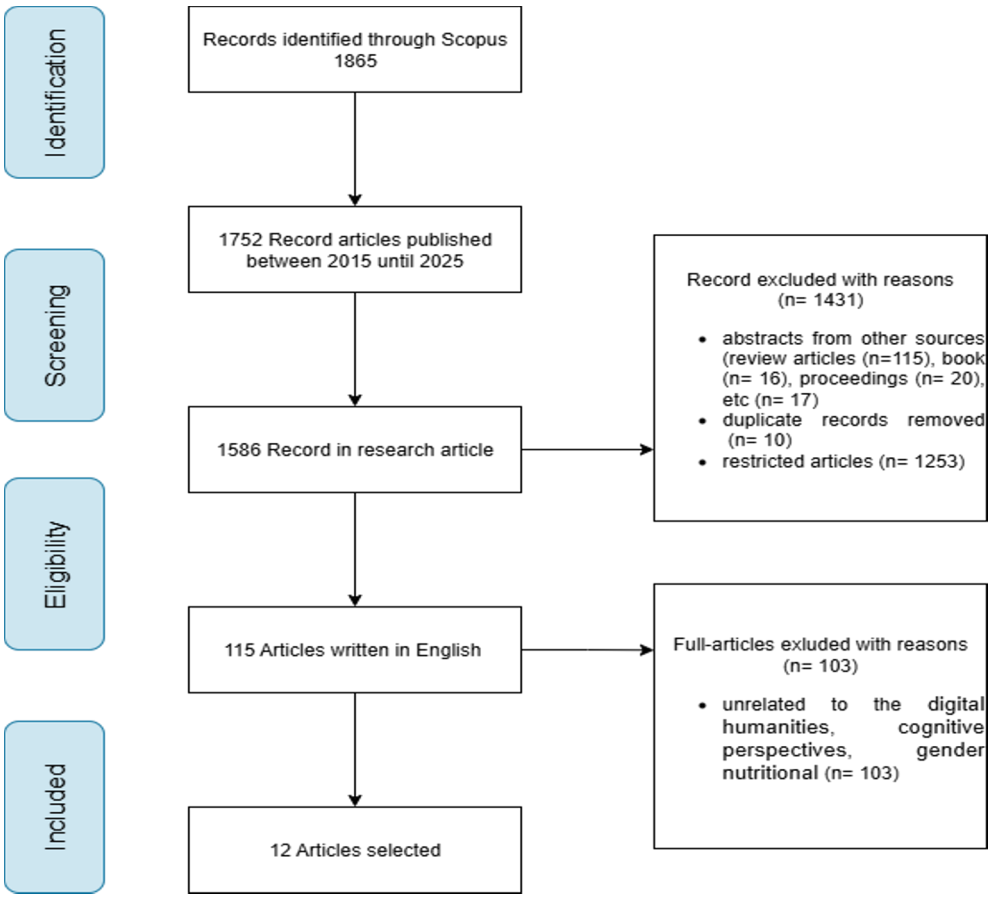

Figure 1. Article selection

3 Results and Discussions

A total of 12 articles met the established inclusion criteria. The three primary parts of nutritional decision-making are computational humanities, cognitive framework, and food consumption analysis.

Table 2. Theme identified

Themes	Focus	Sources
Computational Humanities	Cultural Representation	Rambaree et al. 2020, Samari et al. 2022, Gavaravarapu et al. 2022, Sayas-Barberá et al. 2022, Hefler et al. 2018
	Influence of Technology	Samari et al. 2022, Gavaravarapu et al. 2022, Norwood 2021, Ismail et al. 2024, Branley & Covey 2017, Hefler et al. 2018
Cognitive Framework	Choice Process	Hammad & Kay 2023, Norwood 2021, Charry & Tessitore 2020, Ismail et al. 2024, Hefler et al. 2018

	Risk Multi-Attribute	Lombardo 2025, Rambaree et al. 2020, Samari et al. 2022, Gavaravarapu et al. 2022, Hefler et al. 2018
Food Consumption Analysis	Food Security and Access	Hammad & Kay 2023, Charry & Tessitore 2020, Sayas-Barberá et al. 2022, Bailey et al. 2018
	Household Decision-making	Rambaree et al. 2020, Lombardo 2025, Hammad & Kay 2023, Ismail et al. 2024, Bailey et al. 2018

3.1 Computational Humanities

In the area of computational humanities, the emphasis on nutritional decision-making and digital humanities can be categorized into two domains: cultural representation and technological influence. Computational humanities serve as a manifestation of cultural representation derived from information. Individuals employ social media and cellphones to access diverse dietary applications and digital educational materials that inform the community about nutrition. Social media is considered a significant medium influencing the transformation of cultural representation of health, particularly nutrition [9]. Research indicates that women frequently express concerns regarding their health, but men exhibit greater engagement with social media and are more likely to adhere to poor dietary practices [9]. According to a previous study, women had a higher concern for health issues, a stronger interest in dietary pattern, and better nutrition knowledge, such as how to understand nutrition label in packaging [9].

Moreover, information disseminated through social media or the internet might alter individuals' habits, particularly after the epidemic [10]. Research has demonstrated that digital tools facilitate the documentation of data analysis in nutrition [11]. The growing utilization of technology has enabled the effective documentation of interventions aimed at altering nutritional behavior, thereby illustrating the evolution of cultural representations of nutrition within a nation [12]. Social media is considered to significantly influence the transformation of cultural representation about nutrition. Nonetheless, it can serve as a double-edged sword for its users, as noted by Samari et al. [13], wherein assessments reflecting cultural representation in collectivist societies are often swayed by social comparison, particularly regarding nutrition and lifestyle. Branley and Covey [14] assert that exposure to content on social media and online platforms affects eating behaviors and may exacerbate eating disorders, particularly in women. Hefler et al. [15] discovered that social media material can have practical functions in enhancing dietary patterns by taking into account cultural, identity-related, and societal perspectives on health and eating behaviors.

3.2 Cognitive Framework

Cognitive framework is a review from a cognitive perspective which comprises choice process and risk multi-attribute. Nutritional decision-making entails cognitive processes by which an individual makes health-related choices, particularly those about nutrition, influenced by health state, response efficacy, and the preferences and values attributed [9,11–13]. Numerous publications reveal compelling facts about the choosing procedure, wherein patients will undoubtedly engage specialists in this domain, while the general populace exhibits interest in children's choices [16]. This discourse highlights multi-attribute decision-making (MADM) as the predominant approach for identifying the optimal meal choice. This method considers several factors, including nutritional risk analysis (e.g., age, gender, knowledge, availability, and product label information) and evaluations of the risks and benefits associated with food consumption or dietary choices [10,13,17]. Lombardo's

research [18] indicates that this technique is a contributing component to decision-making in sustainability indices. Hammad and Kay [16] elucidate that the accessibility of food ingredients in the marketplace and obstacles associated with the limited sizes of food labels affect Multi-Attribute Decision Making (MADM). Further, Hefler et al. [15] indicated that health issues continue to be affected by societal stigma and norms as obstacles.

3.3 Food Consumption Analysis

Gender influences eating preferences; women generally prefer plant-based foods, such as fruits and vegetables, while men tend to favor meat-based and processed foods[9,19]. In developing countries, gender is seen as significantly affecting household food security [9,20]. The participation of women in food security initiatives might enhance the accuracy of food security forecasts, hence influencing food purchasing choices [17,20]. Food security is a crucial aspect of the issue of gender influence, originating from micro-communities, particularly within households [16]. This discussion ultimately introduces a secondary focus, household decision-making. Households exhibit variations in nutritional decision-making [18]. In families with children, nutritional choices are significantly influenced by the children's age, preferences, and developmental needs, as well as the caregivers [16]. Conversely, in families without children, nutritional decisions primarily reflect the preferences of other household members, particularly husbands, which are also heavily shaped by patriarchal culture [9,12,19]. Prioritizing the needs of other household members over one's own exemplifies the nurturing roles undertaken by mothers inside the home.

4 Conclusion

Digital humanities and cognitive science demonstrate a significant cooperation in gender-specific dietary decision-making, suggesting that culture, gender, and cognitive capacities influence individual food-related choices. The impact of gender on nutritional decision-making, viewed through the perspectives of digital humanities and cognitive science, is categorized into three primary themes: computational humanities, cognitive framework, and food consumption analysis. These three concepts are intricately interconnected and mutually impact one other. Computational humanities provide information input, which is subsequently processed within a cognitive framework, resulting in output manifested in food consumption. This study is constrained in scope, especially for database, language, and temporal factors. Subsequent research could investigate real-world circumstances to attain a more precise understanding of the underlying dynamics.

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