# Metaphor Thematic Analysis of Health Literacy; A Systematic

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**ABSTRACT**

**Aims** Many concepts and messages related to health literacy are metaphorical. Conceptual metaphor perception in the field of health literacy can challenge people's minds more cognitively. Therefore, the purpose of this study was to investigate the metaphors of health literacy.

**Information & Methods** This paper, using a thematic analysis method, reviewed all review articles in the field of health literacy from different perspectives published between 2017 and 2022 in the PubMed, Scopus, Web of Science, ScienceDirect, ISI, and Persian databases, such as Magiran and SID. Due to the large amount of data and the reduction of qualitative data to the main and fundamental themes, Sterling's method was used. According to the theoretical saturation, ten review articles were purposefully selected. The inclusion criteria were review articles with available full text and peer review, written in English or Farsi.

**Findings** Conceptual metaphors were used in four prominent categories as health literacy source domains, including health literacy knowledge, health literacy services, health literacy strategies, and health literacy intervention. The most common source domains in all categories of health literacy were objected as "Health literacy is an object that needs to be worked on more", and force as "Health literacy is a strong determinant of preventive behaviors".

**Conclusion** Conceptual metaphors help to understand health and people's perceptions of health messages.

**Keywords** Health Literacy; Conceptual Metaphor; Qualitative Research; Thematic Apperception Test

**CITATION LINKS**

[1] Health literacy in people living with mental illness: ... [2] Understanding and responding to health literacy as ... [3] A concept analysis of ... [4] Evidence on the effectiveness of health literacy ... [5] The relationship between health literacy level and quality ... [6] Study of lifestyle and its relationship between health literacy ... [7] Association between health literacy and purpose in life and ... [8] Does pictorial health information improve health behaviors and ... [9] Pictorial and spatial metaphor in the drawings of a culturally ... [10] Mapping the brain's metaphor circuitry: Metaphorical ... [11] Meaning making. In: Where metaphors come from: Reconsidering ... [12] Perception and metaphor: The case ... [13] The contemporary theory of ... [14] Levels of ... [15] The neural theory of ... [16] Understanding of metaphorical time pattern among ... [17] Cognitive analysis of quality of life metaphors from the perspective of health ... [18] Linguistic strategies for improving informed consent in clinical trials ... [19] Moving from the margins: The role of narrative ... [20] Metaphors and problematic understanding ... [21] Cultural competence and metaphor in mental healthcare interactions: A ... [22] The evidence-based ... [23] Thematic analysis of qualitative data: AMEE ... [24] A thematic analysis investigating the impact of positive behavioral ... [25] Thematic analysis approach: A step-by-step guide ... [26] Thematic analysis of qualitative research data: ... [27] Learning to do qualitative data analysis: A ... [28] Thematic networks: An analytic tool for ... [29] A guide to abductive thematic ... [30] Building health literacy system capacity: A framework ... [31] Corporate application of health ... [32] Definitions and measurement of health literacy in health and ... [33] The analysis and review of the literature in ... [34] What is the meaning of health literacy? ... [35] Assessment of health literacy studies in Iran: ... [36] Health literacy in childhood and youth: A systematic ... [37] Seeking a deeper understanding of 'distributed ... [38] Effects of health literacy interventions on health-related outcomes ... [39] Shaping alcohol health literacy: A systematic concept ... [40] Unsupervised changes in core object recognition ...

# Introduction

One of the factors influencing the knowledge of health from all aspects, even mental health, is health literacy [1]. Health literacy is the ability to read and understand health-related information, the main purpose of which is to judge and make the right choice to improve health [2]. In other words, health literacy is a collection of knowledge and awareness that is necessary for all members of society, regardless of the level of education and socio-economic status [3]. This collection of knowledge helps the people of the society to experience a healthier life [4]. Increasing health literacy can improve people's quality of life and help both healthy people and those exposed to diseases [5]. Besides, providing and presenting knowledge in the field of health to increase the health literacy of society can lead to a change in lifestyle [6]. As a result of having developed health literacy, the purposes of life change and life satisfaction and expectancy increase [7]. The importance of health literacy in the current situation has led to the design of disease prevention programs and the consideration of short-, medium- and long-term programs for the health of society in all countries [2, 3].

Although health literacy includes visual and verbal information, the role of language is prominent in it [8]. Therefore, metaphorical expression can be effective in conveying messages related to health and increasing the level of health of people in society [9]. Cognitive functional conceptual metaphors are interdisciplinary concepts that are a kind of universal language that, because rooted in our brain [10], can facilitate the understanding of many abstract concepts [11]. In addition to the fact that metaphors are rooted in the human cognitive system, they are also based on the empirical issues that enter the real world through words [12]. The importance of this issue in cognitive linguistics was raised by Lakoff [13]. In his opinion, conceptual metaphors have a cognitive capacity that consists of two conceptual domains source and target [14]. The source domain is based on our physical characteristics and is related to the experiential world. However, the target domain is considered the abstract dimension of the conceptual and semantic field [15]. Conceptual metaphors evolve based on age and level of education because this process is completed as a result of completing education and cognitive development [16].

Recently, the study of conceptual metaphors has been introduced in many specialties related to the treatment and diagnosis of mental and physical diseases and health. For example, a study indicated that quality of life metaphorical perception has eight source domains, including object, place, way, direction, product, power, human, and money [17]. When standard and universal metaphors are used for health literacy, people's attention is more drawn to health literacy messages [18].

A systematic review indicated that one of the ways to increase health literacy is to use metaphorical language; for example, when people state that the state of health in society is decreasing, they use directional metaphors to express their ideas [19]. Metaphors can even be helpful in self-care in patients [20] who are involved in mental healthcare interactions [21], including increasing the capacity of healthcare, which includes both directional and container metaphors [22]. In these conceptual metaphors, a mental connection or mapping is established between the objective source domains, such as object, container, direction, etc., with the abstract concept of health literacy as the target domain, and it cognitively produces a mental circuit in people's minds. This flow can produce a cognitive challenge that ultimately facilitates the understanding of health concepts.

Thematic analysis is the most widely used qualitative research method for analyzing health literacy metaphors and related metaphorical messages and strategies. Comprehensive themes are one of the most important and the core of the researcher's work in qualitative research. Thematic analysis is a process that is used to analyze textual data and transform scattered and distinct data into rich and balanced data [23]. It is a method used for awareness, analysis, and reporting of models in qualitative data, which is used both to present the reality and justify it [24]. The thematic network is a suitable analysis method, and what the theme network offers are web-like roles, such as the organizing principle and display method [25]. The network of themes systematizes the basic themes (codes and basic themes of the text), organizing themes (themes obtained by combining and summarizing the basic themes), and overarching themes (superior themes including the structures that dominate the text as a whole) based on a specific pattern [26]. Then, these themes are depicted as a web network and the key themes of each of these three levels are evident along with the relationships between them [27]. However, the interdisciplinary studies of metaphors and health literacy have so far focused on specific metaphors in this field.

Due to the broad nature of health literacy and its related fields, the qualitative method of thematic analysis was inevitably used in this study. Considering that qualitative research is considered a kind of fundamental research in the field of conceptual metaphors, it can be considered a new step in studies related to health literacy metaphors. There are a few studies in this interdisciplinary field, which are often old. On the other hand, these types of studies can pave the way for new applied studies that improve health literacy among different people. Accordingly, the current research aimed at finding basic source domains of health literacy metaphors and how the network of themes is organized as metaphorical health literacy.

## Information and Methods

This paper, using a thematic analysis method, reviewed all review articles in the field of health literacy from different perspectives published between 2017 and 2022 based on an inductive approach. Due to the large amount of data and the reduction of qualitative data to the main and fundamental themes, Sterling's method was used [28]. According to theoretical saturation, ten review articles were purposefully selected.

The articles were searched in PubMed, Scopus, Web of Science, ScienceDirect, ISI, and Persian databases, such as Magiran and SID. The inclusion criteria were full-text and peer-reviewed literature reviews, scoping reviews, and systematic reviews, written in English or Farsi, with the title including the word "health literacy".

Articles in English and Persian were searched in the mentioned databases with the main keywords and their synonyms using the MESH controlled vocabulary system. The keywords for searching the databases were: ("conceptual metaphors" OR "Metaphors") AND ("Health literacy" OR "Health" OR "Health education"). The purpose of these analyses should be health literacy assessment including its main concepts. The exclusion criteria were old articles and qualitative or quantitative articles and under-reviewed or unpublished studies. Eventually, 10 out of 94 primary articles met the requirement to be included in the study (Figure1).
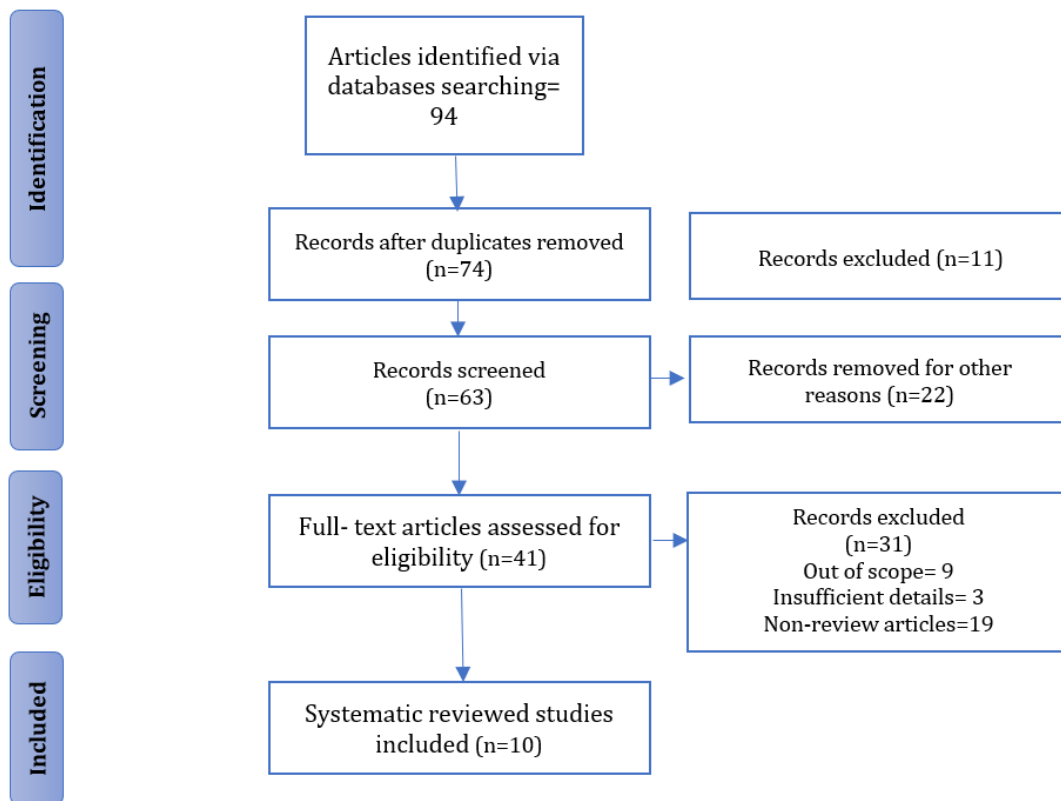


**Figure 1)** Included and excluded data flowchart

To find out the meanings and messages hidden in the texts and articles related to mental health literacy, after identifying and extracting authentic published articles, the researchers used scientific literature note-taking. Note-taking and coding are two complementary practices for data analysis in qualitative research [29]. At this stage, after identifying the review articles related to health literacy, the researchers started to analyze and collect metaphorical sentences related to the research question. To analyze the data, the thematic coding method was used, and finally, repetitive basic themes were removed and contradictory themes were merged. The basic themes that have semantic affinity were placed in a category. Each category was named according to the basic themes included in that category. Before starting the study, the researcher had been involved with this issue for about ten months and obtained the opinion of experts in the field of health to conduct this interdisciplinary study. Each stage of the study, from sampling to the step-by-step analysis of the articles, was conducted under the supervision of a group of experts (consisting of two physicians, two health psychologists, and four health experts). Finally, two online sessions were held and after scientific and specialized challenges, a general agreement was reached with the experts on the main themes and the organizer. To determine the internal validity of the findings, the data were carefully selected and validated through a study of the theoretical framework, research literature, and alignment with the research question. The accuracy

and correctness of the data were verified within the study's validity framework by utilizing a member-checking approach. To establish the credibility of the findings, after analyzing the theoretical framework, coding was designed, and a network of metaphorical themes was formed.

Subsequently, the researcher solicited feedback from experts in the fields of health and health psychology regarding the findings. After consolidating these opinions, the final themes were established. To enhance reliability, the researchers meticulously reviewed and analyzed the findings from the articles used in the thematic analysis, extracting the main findings that were conceptualized metaphorically.

## Findings

10 out of 94 articles met the requirements to be included in the study (Table 1). The obtained findings, after filtering out redundant and duplicate themes, culminated in four comprehensive themes. These themes represent common metaphorical source domains across various aspects of health literacy. Following the categorization of the comprehensive themes, organizing themes were derived based on the foundational themes (Table 2).

The first comprehensive category was the source domains of health literacy services. This category predominantly included metaphorical source domains, such as object, container, human, product, and force. Basic themes derived from these source domains included access to health services,

empowerment through health literacy, production of health literacy information, health findings, guidance for both healthy and ill individuals [30], health thinking container, enhancement of health service quality, health literacy as a life-giving force [31], design of health literacy scales, expansion of health services, reduction of treatment costs, and utilization of effective health services [32].

The second comprehensive category was the health literacy knowledge source domains. In this category, most of the metaphorical source domains included object, path, force, and direction. Basic themes according to source domains were extracted and included health path, increasing health knowledge and information, high or low health literacy knowledge, promoting, culture in the field of health [33], self-care object and information, increasing people's cognitive understanding of concepts related to health literacy [34], and increasing health literacy information sources, creating new fields of study in health, people's health literacy information [35].

The third comprehensive category was the health literacy strategies source domains. In this category, most of the metaphorical source domains included object, force, and product. Basic themes according to source domains were extracted and included health-oriented methods, health training strategies, appropriateness of health information, intervention in health [36], to improve the quality of health, applying types of prevention programs, use of health-oriented strategies, and health-oriented strategies based on health theories [37].

**Table 1.** Data extracted from articles

| Articles | Year | Location | Main Aims | Research Type |
|---|---|---|---|---|
| Sørensen et al. [30] | 2021 | Denmark | Health literacy system capacity | Literature Review |
| Hochmuth & Sørensen [31] | 2021 | Denmark | Applications of health literacy | Literature Review |
| Urstad et al. [32] | 2022 | Norway | Definitions and measurement of health literacy in health and medicine research | Systematic Review |
| Mohamadlo et al. [33] | 2020 | Iran | Health literacy definition | Literature Review |
| Liu et al. [34] | 2020 | China | Meaning of health literacy | Systematic review and qualitative synthesis |
| Robatsarpooshi et al. [35] | 2018 | Iran | Assessment of health literacy studies | Systematic review |
| Bröder et al. [36] | 2017 | Germany | Definitions and models of health literacy in childhood and youth | Systematic review |
| Muscat et al. [37] | 2022 | Australia | Seeking a deeper understanding of distributed health literacy | Systematic review |
| Stormacq et al. [38] | 2020 | Belgium | Effects of health literacy interventions on health-related outcomes in socioeconomically disadvantaged adults living in the community | Systematic review |
| Okan et al. [39] | 2020 | Cape Coast Ghana | Health literacy components of alcohol | Systematic concept analysis and review |

Forth comprehensive category was the health literacy interventional source domains. In this category, most of the metaphorical source domains included object, cause, product, human, and force. Basic themes according to source domains were extracted and included reducing health anxiety and stress, perceived behavioral control, change in

functional, communicative, and critical health literacy [38], determinants of health literacy and health care, health self-efficacy, health self-monitoring, and improving quality of life due to increasing health literacy components [39]. Eventually, the final model and theme network was prepared.

**Table 2.** Dimensions and themes of health literacy metaphors

| Comprehensive themes (source domains) | Organizing themes | Basic themes |
| --- | --- | --- |
| **Health literacy service** | Object Container Human Product Force | Access to health services, empowering people through health literacy, production of health knowledge, health findings, guidance of healthy and sick people, and health thinking container |
| **Health literacy knowledge** | Object Path Force Direction | Health path, increasing health knowledge, self-care object, and high or low health literacy knowledge |
| **Health literacy strategies** | Object Force Product | Health-oriented methods, health training strategies, appropriateness of health information, and intervention on health |
| **Health literacy intervention** | Object Cause Product Human Force | Reducing health anxiety and stress, perceived behavioral control, change in functional, communicative, and critical health literacy, determinants of health literacy and healthcare, and health self-efficacy |

## Discussion

The findings of this research, conducted to investigate metaphorical source domains across different categories of health literacy in original articles, reveal that conceptual metaphors are prevalent in four significant categories: health literacy knowledge, health literacy services, health literacy strategies, and health literacy intervention. Conceptual metaphors contribute to the evolution of the concept of health literacy. The results of this study align with those found in the research conducted by Raiisi [17], Krieger et al. [18], Macagno and Rossi [20], and Magaña [21].

Regarding the findings, the source domains of object and force are common across all categories. These results are consistent with those of Raiisi [17]. The study conceptualizes health literacy metaphorically as an object to be changed, improved, promoted, and worked on. Similarly, health literacy is seen as a force used to persuade others through health information, news, and messages or to raise awareness about health laws, as exemplified by the enforced quarantines during the Coronavirus pandemic.

Conceptual or cognitive metaphors facilitate the understanding of both embodied and non-embodied health information. According to Lakoff's theory of conceptual metaphor, metaphors are ingrained in our minds and cognitive systems [15], allowing for easy manipulation of thoughts through metaphors. Thus, cognitive metaphors are particularly useful in fields related to health, especially health literacy. By employing conceptual metaphors in these fields, we utilize more tangible and structured metaphors to enhance health concepts and their significance to individuals, informing them consciously [14]. Conceptual metaphors can advance health concepts through verbal, pictorial, and musical expressions. Currently, a variety of musical and pictorial metaphors are used in advertisements promoting health behaviors. Research indicates that musical and visual metaphors are more impactful than verbal ones in conveying health messages [2].

From a cognitive perspective, since conceptual metaphors rely on our physical traits, object, and force are the most frequently utilized source domains. These domains are neurologically based in the human brain. An algorithm in the perirhinal cortex aids in object recognition and understanding. This brain circuit continuously interacts with synapses throughout the brain, underscoring the significance of the object in all metaphorical conceptual domains. The concept of force is so fundamental that it even describes the interactions between neurons in the brain [40], highlighting its foundational role in our understanding of brain functions, including the metaphor of power used to describe brain activities.

The primary limitation of this study is that the sample is confined to 10 review articles. Due to the nature of our research, which aimed to develop a conceptual model, we restricted our focus to reviewing articles within the field of health literacy. Thus, it is recommended that future studies explore correlational and interventional studies through qualitative methods and text mining. Interdisciplinary researchers are encouraged to examine specific metaphors of health literacy and their effects on multilingual individuals in subsequent studies, given the distinct ways multilingual understand metaphors. It is also advised that researchers explore specific Persian language metaphors for health literacy in their work.

This study approached health literacy from a unique cognitive-verbal perspective, potentially paving the way for further research in this area. Researchers in health should consider aspects beyond just health discussions in educational and promotional materials related to health. Language and cognition are critical factors that deserve significant attention in this field, as they are pivotal in influencing behavior. If healthy behavior is desired, both verbal components and cognitive networks should be taken into account, with conceptual metaphors serving as a bridge between these two processes.

# Conclusion

Conceptual metaphors are used in four prominent categories as health literacy source domains, including health literacy knowledge, health literacy services, health literacy strategies, and health literacy intervention. The most common source domains across all health literacy categories are objects and forces. Conceptual metaphors enhance understanding of health and how people perceive health messages, and health researchers can utilize these findings in their applied studies.

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