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Mild Cognitive Impairment-related Health Literacy (MCI-HL) in the Aging Process: A Conceptual Framework-directed Qualitative Explanation Based on Expert Insights

Maryam Farhadpour[1], Sakineh Rakhshanderou[2], Mohtasham Ghaffari[3,4*]

1- M.Sc. Student of Aging Health, School of Public Health & Safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
2- Associate Professor of Health Education and Health Promotion, School of Public Health & Safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
3- Professor of Health Education and Health Promotion, Environmental and Occupational Hazards Control Research Center, Research Institute for Health Sciences and Environment, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
4- Department of public health, school of public health and safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran. **(Corresponding Author)** MohtashamGhaffari@sbmu.ac.ir

Background and Objectives: Health literacy plays an important role in self-care, prevention, and management of mild cognitive impairment. Therefore, explaining the concept of mild cognitive impairment-related health literacy (MCI-HL) is an essential first step. This study aimed to explain the concept of MCI-HL in healthy people aged 45 years and older.

Material and Methods: This exploratory qualitative study used Qualitative directed - Content Analysis (QCA) based on the Hsieh and Shannon's approach to explain Mild Cognitive Impairment-related Health Literacy (MCI-HL). Twelve experts from the fields of gerontology, health education and promotion, psychology and elderly care, employed in various medical university of Iran were interviewed through purposeful and snowball sampling and interviewed using semi-structured interviews. The five dimensions of the existing MCI-HL framework were used as pre-determined main categories for extraction of codes and subcategories. Data were analyzed using MAXQDA 2020. The study ensured credibility through member checks and data review.

Results: The Analysis yielded 236 primary codes and 44 sub-categories. These were organized under five main dimensions of MCI-HL: function, knowledge, attitude, motivation, and practice. The number of subcategories within these dimensions was 12, 8, 8, 7, and 9, respectively.

Conclusion: The findings provide a deeper understanding of MCI-HL that can be used in the development of valid and reliable assessment tools for measurement purposes in the adult population.

Keywords: Aging, Aged, Mild Cognitive Impairment, Health Literacy, Middle-aged

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Introduction

Impairment in any cognitive domain, such as memory, is a common complaint among older people and covers a wide range of cognitive impairments, from mild to severe. The mild form, which is the border between normal aging and aging with dementia, is called Mild Cognitive Impairment (MCI) and occurs early (1). MCI is a syndrome associated with a decline in cognitive ability that is greater than expected during the normal aging process. However, the daily functioning of the elderly is relatively preserved (2), and it is not severe enough to need help from others. A person with MCI complains more about memory loss than their peers do, However, this impairment can also occur in non-memory cognitive domains (3). The symptoms of MCI are not as severe as those of Alzheimer's disease or dementia. As a result, people with MCI do not experience personality changes or other issues that are characteristic of Alzheimer's disease (4).

Numerous studies have reported different estimates of the incidence and prevalence of this disorder (1). According to a 2018 report from the American Academy of Neurology (AAN), the prevalence of this disorder is high in the older population and increases with age. The prevalence of MCI is estimated to be 6.7% for individuals aged 60--64 years, 8.4% for those aged 65--69 years, 10.1% for those aged 70-74 years, 14.8% for those aged 75-79 years, and 25.2% for those aged 80-84 years (5). Another study reported a prevalence of MCI of 10-20% in adults over 65 years of age (6). A study conducted in Iran also revealed that the prevalence of MCI among all participants, literate and illiterate, was 15.8%, 6.3%, and 36.4%, respectively (7). Studies have also shown that the annual conversion rate of MCI to dementia is approximately 10–15%, and individuals with MCI are 2.8 times more likely to develop Alzheimer's disease than their cognitively healthy peers are (5, 8).

Many studies have investigated ways to identify, manage, or even prevent MCI and dementia (4, 6). In general, to control and prevent MCI, awareness and literacy about this disorder should receive serious attention. Health literacy is defined as the ability to access, evaluate, and use health information in daily life to make judgments and decisions about health care, prevent diseases, and promote health to maintain or improve quality of life over time (9). According to Nutbeam's theory, health literacy is considered a bridge from health education to health promotion actions and refers to personal, cognitive, and social skills that determine an individual's ability to access information, understand it, and use it to promote and maintain health.

Many studies have shown that cognitive interventions can help improve and maintain the functioning of older people (10, 11). To ensure the success and effectiveness of these programs, it is essential to use valid and reliable tools to assess and implement the interventions. Given the importance of promoting health literacy as a way to self-care, prevent, and manage MCI in society, the first step is to explain the concept of Mild Cognitive Impairment-related Health Literacy (MCI-HL) so that long-term planning can be carried out in accordance with the local Iranian culture and local context. Previously, some studies have been conducted with the aim of validating instruments for assessing health literacy related to dementia (12), but no study has yet explained the concept of MCI-HL in the middle-aged and elderly population in Iran. At the global level, the only study on this concept was conducted by Han et al. in China in 2023, who aimed to develop an instrument to assess health literacy associated with mild cognitive impairment (MCI-HL) in middle-aged and older adults, that was without mentioning details or obtaining subcategories (13). Their framework included five dimensions of MCI-HL: function, knowledge, practice, attitude, and motivation. In the present study, these dimensions were used as the initial analytical framework for directed qualitative content analysis, while the subcategories and primary codes were developed and refined based on expert interviews within the Iranian cultural context.

Although previous studies have contributed to the measurement of dementia-related health literacy, the conceptual basis of MCI-HL remains insufficiently explored, particularly in culturally specific context. Health literacy is shaped by individual, social, cultural, and healthcare system factors; therefore, concept and tools developed in one context may not be fully applicable to another without prior conceptual classification. In Iran, no study has yet explained the concept of MCI-HL among middle-aged and older adults. Given this conceptual gap and the lack of context- specific evidence, a qualitative approach was considered appropriate to explore expert perspectives and provide and in-depth explanation of MCI-HL within the Iranian cultural and healthcare context. Therefore, this study aimed to explain the concept of MCI-HL in healthy people aged 45 years and older within the Iranian cultural context.

Materials and Methods

Study design and setting

The present qualitative research using Qualitative - directed Content Analysis (QCA) based on Hsieh and Shannon (2005)(14). The five dimensions of Han et al. MCI-HL conceptual framework as served predetermined main categories, while codes and subcategories were inductively derived from the interview data. This study aimed to explore and analyze the opinions of experts in relevant fields to explain the concept of MCI-HL in healthy individuals aged 45 years and older. In the present study, the framework of Han et al. (2023) was used (13), which includes five dimensions of MCI-HL. These dimensions are function, knowledge, attitude, and motivation and

practice, which developed based on Nutbeam's health literacy model (2000) were used as the predetermined main categories in the present study.

Participants

The key informants and participants in this study included 12 experts who had expertise in the fields of gerontology, health education and promotion, geriatric health, psychology, and elderly care training and who had sufficient experience and information in the fields of health literacy and mild cognitive impairment from various medical university of Iran. Efforts have been made to engage a wide range of experts with different perspectives in the fields of aging and cognitive health. The participants were identified and selected using purposive sampling method with maximum variety as well as a snowball approach. The inclusion criteria included willingness to participate in the study and having academic, clinical, educational, or research experience related to health literacy, MCI, aging, or older adult care.

Data collection and technique

Initially, an interview guide was designed on the basis of the study's conceptual framework with five dimensions and was reviewed and approved by the research team **(table 1).** After the questions were finalized, data were collected through in-depth semi-structured interviews from June to September 2025. The interviews were conducted in people's workplaces, universities, and, in some cases, video calls. The interviews were conducted by a researcher trained by health literacy professors who had previous experience in conducting interviews and calibrating the qualitative data and who were unaware of the participants. Before starting the data collection process, the purpose of the study was explained to individuals to improve the quality of data collection. The permission to record the audio was obtained from each interview. In the first part, a brief definition of health literacy and mild cognitive impairment was given, and then the definition of each of the predetermined five dimensions was explained so that everyone would be familiar with what we meant according to the purpose of the interview. In the second part of the interviews, general questions such as age, education, and work experience were started, and then targeted questions were continued in 5 predetermined dimensions. When the interviewee did not understand the purpose of the question, the question was explained again, or an example was given as a guide for the individual. Each interview lasted between 45 and 80 minutes, and to ensure accuracy, all the interviews were re-listened to and transcribed verbatim on the same day. Data saturation was achieved after 9 interviews were conducted; however, 3 more interviews were conducted for further confirmation. Ultimately, no new data were obtained, which led to the termination of the interview process. The data were collected and analyzed concurrently and continuously.

Table 1. Interview Guide

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▪ In this interview, you are asked to provide your suggestions on the five key dimensions of health literacy as defined and as part of the study's purpose to explain the concept of health literacy related to mild cognitive impairment. Each dimension is explained below and specific questions are provided to elicit your feedback.	
Row	Questions
1	One of the dimensions discussed about health literacy related to mild cognitive impairment is the dimension of function, which is defined as the practical ability of an individual to understand, use, and communicate health information related to MCI. Now, according to the definition provided, in your opinion, as an expert in this field, what should an adult in the community be equipped with to have health literacy related to mild cognitive impairment in the functional dimension, meaning what abilities should they have and what skills should they be proficient in?
2	Another dimension of health literacy related to mild cognitive impairment is the Knowledge dimension, which is defined as the level of awareness of the individual of the basic concepts related to MCI. Now, according to the definition provided, in your opinion as an expert in this field, what kind of awareness, information, and knowledge should an adult in the community be proficient in order to have health literacy related to mild cognitive impairment in the knowledge dimension?
3	Another dimension that is considered in the health literacy related to mild cognitive impairment in the community is the Attitude dimension, which means the beliefs, perspectives, feelings, and beliefs of the community members toward MCI. Now, according to the definition provided, in your opinion as an expert in this field, if we want to say that a person in the community has good and sufficient health literacy related to mild cognitive impairment in the attitude dimension, what kind of views, feelings, perceptions, beliefs, and convictions should they have?
4	Another important dimension of health literacy related to mild cognitive impairment is Motivation dimension, which means the individual's willingness, tendency, intention, and drive to take preventive measures such as proper nutrition. Now, in your opinion as an expert in this field, if we want to say that an individual in the community has good and sufficient health literacy related to mild cognitive impairment in the motivation dimension, we should expect that before developing cognitive disorders such as MCI, what kind of behavioral intentions, desires, tendencies, and motivations should they have?
5	The last dimension of health literacy related to mild cognitive impairment that people are expected to have is the dimension of activity and behavior (Practice), which means the behaviors that means the behaviors that a person performs in order to maintain and promote cognitive health a person performs in order to maintain and promote cognitive health. Now, according to the definition provided, in your opinion as an expert in this field, what types of behaviors and activities should people have and follow in their lifestyle throughout their lives, before suffering from cognitive disorders such as mild cognitive impairment?

Data analysis and trustworthiness

The data were analyzed using directed qualitative content analysis based on Hsieh and Shannon (2005)(14) and supported by MAXQDA 2020. The main categories were formed by the five dimensions of Han et al.'s MCI-HL conceptual framework - function, knowledge, practice,

attitude, and motivation - that considered as pre-determined main categories to guide the analysis. We used three phases of preparation, organization, and reporting. All interviews were recorded, transcribed verbatim and carefully reviewed several times to immerse themselves in the data and gain a comprehensive understanding of the participants' experiences. The research team was familiarized with the data to ensure comprehensive understanding. Then, meaning units relevant to the conceptual framework dimensions identified, condensed, and labeled with initial codes. Similar codes were continuously compared for similarities, differences, and conceptual relationships. Each code represented a meaningful unit of data related to health literacy and MCI. Through this process, codes that sharing common meanings were grouped together and inductively transformed into subcategories. This allowed for the integration of empirical findings with the theoretical structure. The resulting subcategories were subsequently examined and assigned to the most appropriate predetermined main categories based on their conceptual meaning.

To increase the credibility of the data, various strategies were utilized, such as member checks, long-term contact with the subject, and data review by the research team. The reliability of the findings was confirmed by using measures such as applying coding and decoding methods during data analysis and recording all steps from start to finish. Methods such as maximum diversity sampling, detailed descriptions of findings and participants, time and place of data collection, and observer review were used. The transferability of findings was enhanced by recording all stages and decisions made during the study, as well as by reviewing the work report by colleagues and confirming its steps (15).

The analytical process of directed qualitative content analysis is summarized in **Figure 1**.

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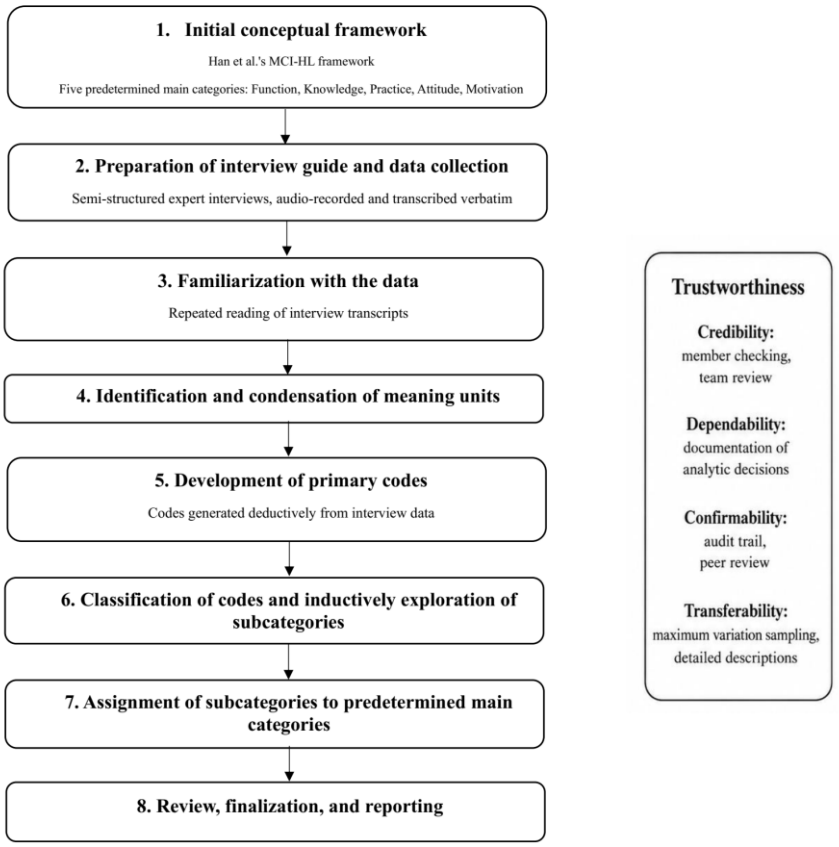

Note: The five dimensions of Han et al.'s MCI-HL framework were used as predetermined main categories. Primary codes and subcategories were developed from expert interview data.

Figure 1. Analytical process of data

Results

Participant characteristics

As shown in **Table 2**, the opinions of 12 participants, including 6 gerontologists (50%), 2 health education and health promotion specialists (16.6%), 2 geriatric psychologists (16.6%), and a geriatric trainer from a day care center for elderly individuals, were analyzed.

Table 2. Characteristics of the participants

No.	Gender	Age	Expertise	Workplace	Work Experience (By Year)
1	Male	50	PhD in Health Education and Health Promotion	Medical Sciences University	**20**
2	Female	50	PhD in Health Education and Health Promotion	Medical Sciences University	**13**
3	Male	38	PhD in Gerontology	Medical Sciences University	**6**
4	Male	43	PhD in Gerontology	Medical Sciences University	**7**
5	Male	34	Master of in Geriatric Health	Medical Sciences University	**8**
6	Male	48	PhD in Gerontology	Medical Sciences University	**15**
7	Female	41	General Practitioner, PhD in Gerontology	Medical Sciences University	**4**

8	Male	48	PhD in Gerontology	Medical Sciences University	**22**
9	Female	31	PhD Student in Gerontology	Medical Sciences University	**3**
10	Female	46	Master of Geriatric Health/Researcher of Aging	Elderly Day Care Center	**20**
11	Male	40	PhD in Psychology	Hospital	**19**
12	Female	39	Master's Degree in Clinical Psychology	Elderly Care Center	**15**

Resulting themes

Finally, after the data analysis, 236 primary codes, 44 subcategories, and 5 main categories were extracted. The relevant information is summarized in **Table 3**.

The definition of health literacy related to mild cognitive impairment can be described in 5 dimensions: 1) function, 2) knowledge, 3) attitude, 4) motivation, and 5) practice **(Figure 2).** That is, a set of properties that a healthy person must have to make effective decisions and actions to prevent the occurrence of mild cognitive impairment in themselves and others. This type of health literacy enables individuals to understand and recognize the importance of a healthy lifestyle, adopt brain-protective behaviors, and identify and control risk factors in a timely manner.

Table 3. Codes, subcategories and categories extracted from interviews *

Categories	Subcategories	Sample Open Codes
Function	ADL/IADL	Ability to perform personal tasks such as bathing, dressing, etc.
	Decision-making ability	The skill of getting help from someone according to need
	Reading ability	Ability to read a brochure or medicine label
	Writing ability	Ability to write important information about your health (such as when to take your medication)
	Health-oriented digital skills	The ability to work with educational or health-related applications on a mobile phone
	Ability to communicate and transfer information	Ability to communicate individual concerns and needs to healthcare providers
	Understanding and interpreting health information	Fully understanding the recommendations and instructions of health care providers
	Ability to manage medications and treatments adherence	Ability to adhere to medication treatments and collaborate with the treatment team to optimize treatment outcomes
	Ability to perform mental exercises	Ability to perform mental activities and games such as tables or writing down memories
	Memory and concentration	Ability to recall learned information
	Information evaluation skills	Ability to identify true information from false (media literacy)
	Time management and prioritization	Ability to organize and prioritize daily tasks based on importance and appropriate timing
Knowledge	Basic knowledge	Awareness of the different symptoms of MCI and dementia

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	Awareness of key symptoms	Knowledge of the main symptoms of MCI (main MCI such as unusual forgetfulness, decreased concentration or difficulty in decision-making)
	Awareness of risk factors	Awareness of risk factors for MCI (inactivity, unhealthy diet, smoking)
	Awareness of the consequences of MCI	Awareness of the consequences of not follow-up the MCI
	Knowledge of screening and early detection	Knowing the importance of periodic check-ups to assess cognitive status
	Knowledge of treatment and rehabilitation options	Awareness of nonpharmacological treatments for MCI (such as social and volunteer activity)
	Knowledge of prevention	Knowing the impact of good nutrition, regular exercise, and adequate sleep on preventing MCI (lifestyle)
	Knowledge of caring and supportive practices	Knowledge of the impact of family and caregiver support and awareness in managing MCI
Attitude	Correct beliefs	Belief that MCI is an intermediate stage and it's not certain to turn into dementia
	Behavioral beliefs	Belief in the value of prevention at any age
	Attitude toward the caring and supportive role	Belief in the supportive role of family and society in managing the disorder
	Perceived stigma	Not having a negative view of the abilities of the elderly (being incapacitated)
	Positive attitude toward aging	Attitude toward aging as a period of new opportunities
	Spirituality and MCI	Belief in the effect of spiritual beliefs on concentration and memory
	Perceived susceptibility	Belief in being at risk and acceptance of risk factors in oneself
	Perceived intensity	Understanding the severity of the problem and the consequences of MCI
Motivation	Motivation for regular medical monitoring	Willingness to visit regularly for cognitive status check-ups
	Motivation for preventive behaviors	Desire to take daily walks or participate in group sports
	Motivation for mental activities and learning	Motivation to learn new skills (language, art and etc.)
	Motivation for stress management	Motivation to control anxiety and depression as risk factors for MCI
	Motivation for cessation of high-risk behaviors	Interest in quitting sedentary activities such as prolonged sitting to improve cognitive health
	Motivation for participation and social interactions	Desire to maintain family and friendship relationships to avoid isolation as a risk factor
	Observational arousal	Desire to change lifestyle by comparing one's own behaviors with those of infected people

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Practice	Medical follow-up	Regularly taking blood pressure, diabetes, or thyroid medications
	Mental activities and learning	Playing mind games like crosswords or puzzles
	Social participation and Interaction	Participating in family and friend gatherings
	Feeding behaviors	Having a healthy diet such as the Mediterranean diet or similar
	Regular physical activity	Doing regular aerobic exercise (walking three days a week for at least 20 minutes)
	Stress management	Use relaxation techniques such as prayer or meditation
	Healthy sleep patterns	Avoid caffeine or excessive use of your cell phone before bed
	High risk behaviors	Cut out unhealthy eating behaviors such as overeating and high-fat foods
	Use of health technologies	Working with simple medical devices such as a digital blood pressure monitor or blood sugar meter

* See supplementary material 1 for detailed information.

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Figure 2. Pentagon explanation of MCI-HL and the proposed definition

Mild Cognitive Impairment-related Health Literacy (MCI-HL) can be defined as; *a specific branch of individual health literacy and includes the five dimensions of function, knowledge, attitude, motivation, and practice - consisting a set of functional skills and abilities, various types of awareness, beliefs, attitudes, perceptions, motivations, behavioral intentions, activities and behaviors - that helps individuals to obtain, maintain, and promote cognitive health throughout the aging process for own and others.*

Dimensions

Function

The first dimension that is discussed regarding MCI-HL is the function dimension, which is defined as the individual's practical ability to understand, use, and communicate health information related to MCI.

Activities of Daily Living (ADL)/Instrumental Activities of Daily Living (IADL): This subcategory refers to an individual's ability to perform activities of daily living (ADL/IADL), that is, the level of skill and efficiency in performing tasks that are necessary for independence and effective functioning in daily life, such as using the telephone, household management, managing finance,

transferring and performing personal and social tasks. For instance, one of the participants stated:

"Activities of daily living include abilities and skills that every person with adequate health literacy related to mild cognitive impairment should strive to maintain, as every person may experience a decline in these skills with aging." (P_3, PhD of gerontology)

Decision-making ability: This subcategory refers to a person's ability to make informed and rational decisions in various life situations, that is, their ability to evaluate options, predict consequences, and choose the best solution to maintain optimal health and cognitive function. As an example, one participant mentioned:

"To say that a person with mild cognitive impairment has acceptable health literacy, they must be able to make the best decision appropriate to the situation; that is, they must have the ability to control situations." (P6, PhD of gerontology)

Reading ability: This subcategory refers to a person's ability to read and comprehend health-related texts, including educational brochures, medication instructions, and prescriptions, that is, the skill through which a person can accurately read written information about health care and healthy lifestyles. This ability is important for preventing mild cognitive impairment. As highlighted by one participant:

"Reading skill is one of the essential abilities for individuals with health literacy related to mild cognitive impairment; for example, a person should be able to read a health brochure or even a prescription for their medication." (P_1, PhD of health education and promotion)

Writing ability: This subcategory refers to a person's ability to write and record health-related information, such as writing medication notes, recording symptoms, or completing medical forms. This skill helps a person communicate more effectively with the health system and take a more active role in managing their health condition and preventing mild cognitive impairment. For instance, one of the participants stated:

"Writing skill is one of the important abilities for individuals with health literacy related to mild cognitive impairment, for example, being able to complete a form related to their information or correctly answer cognitive tests." (P1, PhD of health education and promotion)

Health-oriented digital skills refer to an individual's digital skills in using health-related technologies, including the ability to search for and evaluate health information on the internet

and use apps and smart devices to monitor physical and cognitive status. These skills play important roles in promoting awareness and self-care and preventing mild cognitive impairment. To illustrate, one participant expressed the following:

"A woman or man should be able to correctly search for the information they want on the internet and virtual networks. In this case, we say that they have sufficient health literacy related to mild cognitive impairment." (P11, PhD of psychology)

Ability to communicate and transfer information: This subcategory refers to a person's ability to communicate effectively and accurately convey health-related information, including the ability to describe symptoms, ask questions of healthcare professionals, and convey and exchange information with family or caregivers. This ability leads to a better understanding of medical advice, more informed decision-making, and more active participation in the prevention of mild cognitive impairment. For instance, one of the participants stated:

"To indicate that an individual has an acceptable level of health literacy related to mild cognitive impairment, they must be able to communicate information accurately in both written and oral forms, that is, convey the message in a way that the other person correctly receives their meaning." (P12, Master's degree in clinical psychology)

Understanding and interpreting health information: This subcategory refers to a person's ability to understand and interpret health-related information, that is, his or her ability to understand medical concepts, interpret test results, and understand treatment or educational recommendations. This ability helps a person correctly analyze the information received and apply it to decisions and behaviors related to the prevention of mild cognitive impairment. One of the participants noted:

"Individuals with adequate health literacy related to mild cognitive impairment should be able to understand and comprehend all the recommendations and instructions they receive so that they can enable them to apply these in their daily lives." (P11, PhD of psychology)

Ability to manage medication and treatment adherence: This refers to a person's ability to properly manage medications and adhere to treatment, including the ability to understand medication instructions, follow dosing schedules, identify potential side effects, and follow physician recommendations. This ability plays an important role in maintaining cognitive health, preventing medication side effects, and reducing the risk of mild cognitive impairment. As an example, one participant mentioned:

"The ability to take medications at the right time and in the right order is an essential skill for individuals with adequate health literacy related to mild cognitive impairment. Meaning they should take the right medication and at the right time." (P7, PhD of gerontology)

Ability to perform mental exercises: This refers to a person's ability to perform mental exercises and activities that enhance memory, concentration, and cognitive function, such as writing memories, solving puzzles, studying, learning new skills, or engaging in regular intellectual activities. This ability plays an important role in maintaining brain function and preventing mild cognitive impairment. For instance, one of the participants stated:

"How much do we do to keep our minds active? Anyone with sufficient health literacy related to mild cognitive impairment should be able to perform intellectual and mental activities such as writing their daily diary or solving puzzles." (P6, PhD of gerontology)

Memory and concentration: This subcategory refers to a person's ability to retain and retrieve information and to focus on performing various activities. Memory and concentration are essential components of cognitive function that enable a person to process, store, and retrieve new information in necessary situations. Strengthening these abilities plays an important role in preventing mild cognitive impairment. For instance, one of the participants stated:

"Remembering the important task means that any person with sufficient health literacy related to mild cognitive impairment should be able to remember the tasks they have." (P9, PhD of gerontology)

Information evaluation skill: This refers to a person's ability to evaluate the accuracy, validity, and applicability of health information, including the ability to distinguish true from false information in the media and social networks. This skill, which is part of media literacy, enables a person to distinguish between reliable and misleading sources, analyze the content of the information received, and make informed, evidence-based decisions. This ability effectively prevents mild cognitive impairment. For example, one of the participants remarked:

"I think, persons with sufficient health literacy related to mild cognitive impairment should be able to identify true information from false. For example, they should have the skill to recognize false information on social media." (P4, PhD of gerontology)

Time management and prioritization: This subcategory refers to a person's ability to effectively manage time and prioritize activities, that is, the skill through which a person can properly plan for daily tasks, rest, and meet friends. This ability plays an important role in preventing mild cognitive impairment by reducing stress, increasing cognitive efficiency, and maintaining a balanced lifestyle. As highlighted by one participant:

"Which task should we do first? That is, the principle of prioritization. Every person with sufficient health literacy related to mild cognitive impairment should be able to prioritize their tasks on the basis of importance and appropriate timing and know which ones to do first." (P12, Master's degree in clinical psychology)

Knowledge

The second dimension of health literacy related to mild cognitive impairment is the knowledge dimension, which is defined as an individual's level of awareness of basic concepts related to MCI.

Basic knowledge: refers to the individual's level of basic knowledge about general health concepts and mild cognitive impairment, including the awareness that mild cognitive impairment is not a disease and that individuals still maintain their independence and functional ability. Such knowledge helps individuals gain a better understanding of the nature of the disorder and develop a more realistic attitude toward its prevention and management. To illustrate, one participant expressed the following:

"Having basic knowledge, that is, a general but sufficient set of information about mild cognitive impairment, is essential for having health literacy related to mild cognitive impairment. For example, a person must know the prevalence of this disorder." (P6, PhD of gerontology)

Awareness of key symptoms: This subcategory refers to a person's awareness of the early and key symptoms of mild cognitive impairment, including a gradual decline in short-term memory, difficulty concentrating or making decisions, and a decreased ability to multitask. Recognizing these symptoms helps a person recognize cognitive changes in their early stages and initiate timely assessment and intervention. For instance, one of the participants stated:

"Every person with sufficient MCI health literacy should have sufficient knowledge about the main symptoms of MCI, such as unusual forgetfulness, decreased concentration, or difficulty making decisions." (P4, PhD of gerontology)

Awareness of risk factors: This subcategory refers to a person's awareness of risk factors associated with the development of mild cognitive impairment, including factors such as advanced age, a sedentary lifestyle, unhealthy diet, tobacco and alcohol use, chronic stress, and underlying diseases such as diabetes and high blood pressure. Understanding these factors can help people adopt more preventive behaviors and maintain their cognitive health. One participant noted, for example:

"Many people do not know about the risk factors for cognitive decline. Every person with sufficient health literacy related to mild cognitive impairment should have sufficient information about the

risk factors for this disorder, for example, knowing that having an unhealthy lifestyle may lead to developing mild cognitive impairment" (P2, PhD of health education and promotion).

Awareness of the consequences of MCI refers to an individual's awareness of the potential consequences of mild cognitive impairment (MCI), including the possibility of progression to dementia, reduced quality of life, increased dependence on others for daily activities, the development of emotional problems such as anxiety and depression, and a tendency toward isolation and social withdrawal. Recognition of these consequences increases an individual's sensitivity to the importance of prevention, early intervention, and maintaining social interactions. One of the participants noted:

"A person with sufficient health literacy related to mild cognitive impairment should know about the impact of mild cognitive impairment on various aspects of a person's life, that is, know the consequences of this disorder." (P9, PhD of gerontology)

Knowledge of screening and early detection: This subcategory refers to an individual's knowledge of the importance of screening and early detection of mild cognitive impairment, including awareness of early cognitive tests and assessments, regular visits to health centers, and the role of early detection in controlling and slowing the progression of the disorder. Such knowledge encourages individuals to take preventive measures and follow up on cognitive changes at an early stage. One participant, who was an expert in the field of aging, said:

"We need to know how much a person with adequate health literacy related to mild cognitive impairment knows about the importance of periodic checkups? How much does he/she know about the importance of cognitive tests?" (P4, PhD of gerontology)

Knowledge of treatment and rehabilitation options: This subcategory refers to an individual's knowledge of treatment and rehabilitation methods related to mild cognitive impairment, including awareness of non-pharmacological interventions, cognitive and physical exercises, participation in support groups, and mental activities such as brain games or memory exercises. Such knowledge helps individuals participate in the treatment process and improve their cognitive function with a more informed and active perspective. For instance, one of the participants stated:

"There are places that aim to support people with MCI and provide rehabilitation, even healthy people, with a focus on prevention; thus, every person with adequate health literacy related to mild cognitive impairment should have sufficient information about the existence of associations and support groups for people with cognitive impairment." (P4, PhD of gerontology)

Knowledge of prevention: This subcategory refers to a person's knowledge of strategies for preventing mild cognitive impairment, including awareness of the importance of healthy nutrition, regular physical activity, adequate sleep, managing chronic diseases, maintaining social interactions, and engaging in mental exercise. Such knowledge leads a person to adopt behaviors that help maintain brain health and reduce the risk of developing mild cognitive impairment. For instance, one of the participants stated:

"Having sufficient knowledge about methods of prevention and management of mild cognitive impairment is essential for having health literacy related to mild cognitive impairment." (P7, PhD of gerontology)

Knowledge of caring and supportive practices: This subcategory refers to an individual's knowledge of care and support measures related to mild cognitive impairment, including awareness of how to appropriately interact with a family member or friends who has symptoms of MCI and understanding the critical role of family support in preventing and managing the disorder. Such knowledge helps promote human interactions, strengthen emotional bonds, and increase the effectiveness of care for individuals at risk of or with mild cognitive impairment. One participant, an expert in the field of health education, said:

"Knowledge of how to treat people suffering from MCI is also an issue that receives less attention. Therefore, to have sufficient health literacy related to mild cognitive impairment, each person must know how to behave with a person with mild cognitive impairment in their family or friends. This means that the level of awareness people have about this disorder affects their approach." (P1, PhD of health education and promotion)

Attitude

The third dimension that is considered in the context of health literacy related to mild cognitive impairment in the community is the Attitude dimension, which refers to the beliefs, views, feelings, and beliefs of individuals regarding MCI.

Correct belief: This subcategory refers to the individual's correct beliefs and assumptions about mild cognitive impairment, including the understanding that people with this disorder are not sick, are independent individuals, and that the condition is largely preventable. Such beliefs lead to a realistic and positive attitude toward the disorder and increase the individual's motivation to maintain cognitive health and engage in preventive behaviors. As an example, one participant mentioned:

"To have health literacy related to mild cognitive impairment, each person must have a correct perspective on this disorder. For example, they should not consider it a disease and think that the affected person is going to die." (P6, PhD of gerontology)

Behavioral beliefs: This subcategory refers to an individual's beliefs about the impact of personal behaviors and habits on cognitive health, including the belief in the role of a healthy lifestyle, proper nutrition, physical activity, and mental training in preventing mild cognitive impairment. Such beliefs lead to the formation of a positive attitude toward health-oriented behaviors and an increased tendency to perform them. One participant, an expert in the field of health education, said:

"The one thing I remember is now about our view of prevention at younger ages than old age. We say that individuals have health literacy related to mild cognitive impairment if they believe that this disorder can be prevented by adhering to a healthy lifestyle at an earlier age, especially in middle age. If we pay attention to physical and mental health from that age, we can prevent many later problems." (P1, PhD of health education and promotion)

Attitude toward the caring and supportive role: This subcategory refers to the individual's attitude toward the supportive and caring role of oneself and others in relation to mild cognitive impairment, including the belief that people with MCI are not a burden to their families or society, the understanding of the importance of the supportive role of the physician, and the ability of family members to improve their condition and quality of life. Such an attitude leads to increased empathy, increased social interaction, and more effective support for sufferers. For instance, one of the participants stated:

''When we say that someone has health literacy related to mild cognitive impairment, we mean that their perspective is that educating families is essential to address the challenges associated with cognitive impairment. This education can help Families better cope with the problems caused by these disorders and maintain the person's expression and quality of life." (P5, Master's degree in geriatric health)

Perceived stigma: This subcategory refers to the extent to which an individual perceives the stigma or social stigma associated with mild cognitive impairment, including concerns about social rejection if diagnosed, a negative view of the disorder, and fatalistic beliefs about its inevitability. Such perceptions can be a barrier to acceptance, timely referral for assessment, and utilization of treatment and support services, ultimately negatively impacting an individual's quality of life. One participant noted, for example:

"Every health-literate woman or man on this subject has an attitude that people with this disorder should not be considered a burden on society and should not be labeled disabled. Instead of a negative view, attention should be given to the capabilities and potential of these people, and the necessary support should be used to improve their quality of life." (P11, PhD of psychology)

Positive attitude toward aging: This subcategory refers to a person's positive attitude toward the aging process, including valuing healthy aging with a high quality of life, having a positive view of the abilities and valuable experiences of this period of life, viewing aging as a stage with new opportunities, and accepting it as a period of personal growth. Such an attitude leads to increased life satisfaction, motivation to maintain cognitive health, and an active and hopeful outlook on the future. To illustrate, one participant expressed the following:

"A person with health literacy related to mild cognitive impairment should have a positive view of the abilities and valuable experiences of this period of aging. Rather than focusing on limitations, they should pay attention to the value of the knowledge and skills that come with aging and consider opportunities for growth and participation." (P9, PhD of gerontology)

Spirituality and MCI: This subcategory refers to the role of spiritual beliefs and attitudes in relation to mild cognitive impairment, including belief in the effect of spiritual beliefs in improving concentration and memory, belief in the role of faith and spiritual beliefs in coping with this disorder, and belief in the protective effect of spirituality in preventing cognitive decline. Such an attitude increases psychological peace, hope, and the ability of the individual to adapt to cognitive changes. For instance, one of the participants stated:

"The person in question should believe in the impact of spiritual beliefs on coping with MCI. He or she should understand that spiritual beliefs and practices can enhance resilience and help cope with the challenges associated with cognitive decline." (P2, PhD of health education and promotion)

Perceived susceptibility: This subcategory refers to the extent to which an individual perceives their likelihood of developing mild cognitive impairment, including perceived sensitivity to the possibility of developing it, acceptance of the possibility of developing the disorder with age, belief in being at risk owing to the presence of risk factors, and lack of resistance or unrealistic denial of the possibility. Such an understanding leads to increased awareness, realistic acceptance of the cognitive health status, and a greater willingness to take preventive measures. For example, one of the participants remarked:

"If a person has health literacy related to mild cognitive impairment, they should accept that the likelihood of developing mild cognitive impairment increases with age. They should believe that cognitive problems become more likely as getting old and be better prepared to deal with them." (P1, PhD of health education and promotion)

Perceived intensity: This subcategory refers to the extent to which an individual perceives the severity and seriousness of MCI and its consequences, including understanding the severity of the problem at the personal and social levels, awareness of its impact on quality of life, and

understanding the economic consequences and potential costs associated with having MCI. Such an understanding can increase an individual's attitudes toward prevention, early detection, and treatment adherence. As highlighted by one participant:

"Every person with health literacy related to mild cognitive impairment should understand the consequences of having this disorder, for example, how their quality of life will change if they have it." (P1, PhD of health education and promotion)

Motivation

The fourth important dimension in health literacy related to mild cognitive impairment that experts have raised is the motivation dimension, which refers to the individual's desire, tendency, intention, and motivation to take preventive measures such as proper nutrition.

Motivation for regular medical monitoring: This subcategory refers to a person's desire and motivation to regularly monitor their cognitive health. People with this trait are usually sensitive to possible changes in cognitive function, such as memory and concentration, and tend to monitor their cognitive health through periodic screenings and assessments. One of the participants noted:

"A person with health literacy related to mild cognitive impairment should be willing to perform cognitive screenings. He or she should be willing to know and do periodic screenings because they help in early identification of cognitive problems and provide an opportunity for preventive and therapeutic measures." (P4, PhD of gerontology)

Motivation for preventive behaviors: This subcategory refers to the individual's desire and motivation to engage in behaviors that are aimed at preventing cognitive decline and promoting overall health. Individuals with this attitude are usually aware of the importance of healthy nutrition, regular physical activity, and purposeful planning to maintain cognitive health and achieve healthy aging, and this awareness leads to the development of preventive behaviors. One participant noted, for example:

"If you ask anyone this question, the first thing they will say is that people should exercise, so every person with health literacy related to mild cognitive impairment should have an interest and desire to do aerobic and resistance exercises. That is, they should like to do regular physical activities, especially aerobic and resistance exercises, because they know that they can help improve cognitive function and prevent cognitive decline and promote overall health of the body." (P8, PhD of gerontology)

Motivation for mental activities and learning: This subcategory refers to a person's desire and motivation to engage in mental activities and learn with the goal of maintaining and enhancing

cognitive function. People with this motivation are often interested in keeping up with the latest scientific findings in the field of cognitive health and using new technologies, such as brain-boosting apps or mental games such as puzzles and word games, to improve their cognitive skills. As highlighted by one participant:

"A person with health literacy related to mild cognitive impairment should be motivated to learn new skills, such as language or art. They should believe that continuing to learn these skills can help enhance cognitive function, increase mental flexibility, and prevent cognitive decline." (P3, PhD of gerontology)

Motivation for stress management: This subcategory refers to the desire and motivation of an individual to control and manage stress and negative emotions with the aim of maintaining mental health and preventing cognitive decline. Individuals with this motivation tend to use relaxation techniques such as prayer, meditation, or mindfulness exercises and try to control anxiety and depression, which are risk factors for mild cognitive impairment. These individuals are also interested in strengthening their mental and emotional skills to cope adaptively with life challenges. To illustrate, one participant expressed the following:

"Every person with health literacy related to mild cognitive impairment should be motivated to manage anxiety and depression as risk factors for MCI. He or she should believe that managing these psychological issues can help prevent cognitive problems and improve quality of life." (P12, Master's degree in clinical psychology)

Motivation for cessation of high-risk behaviors: This subcategory refers to the desire and motivation of an individual to abandon behaviors that can threaten cognitive health. People with this motivation are usually willing to quit smoking and alcohol consumption to reduce the risk of cognitive impairment, avoid self-medication with medications that may impair memory, and abandon unhealthy eating patterns such as overeating or consuming high-fat foods. For instance, one of the participants stated:

"A person with health literacy related to mild cognitive impairment should be interested in quitting sedentary, such as prolonged sitting, to improve cognitive health. He or she should believe that being active and performing regular physical activity can help enhance cognitive function, reduce the risk of cognitive problems, and improve overall health." (P7, PhD of gerontology)

Motivation for participation and social interactions: This subcategory refers to the desire and motivation of an individual to maintain and expand social relationships as an effective factor in preventing cognitive decline. Individuals with this motivation usually tend to maintain their family and friendship relationships and avoid isolation as a risk factor. Additionally, awareness of

the positive impact of social interactions on cognitive health encourages them to participate in community, cultural, or volunteer activities. As an example, one participant mentioned:

''If a person wants to have health literacy related to mild cognitive impairment, they must be motivated to establish new social relationships and expand their social network. They must believe that more social interactions can help strengthen cognitive health, increase social support, and improve quality of life." (P2, PhD of health education and promotion)

Observational arousal: This subcategory refers to the impact of observing the behaviors, experiences, or health outcomes of others on an individual's motivation to engage in healthy behaviors. Observing positive or negative changes in the cognitive health of those around them can increase an individual's awareness and motivation to take care of their own health, undergo screenings, and adopt preventive behaviors. For instance, one of the participants stated:

"To have health literacy related to mild cognitive impairment, an individual should observe their own behaviors, and comparing them with the behaviors of people with mild cognitive impairment should make them want to have a healthier lifestyle. In other words, they are inspired by the patterns and motivated to make changes in their lives." (P1, PhD of health education and promotion)

Practice

The fifth and final dimension discussed regarding health literacy related to mild cognitive impairment that individuals are expected to have is the practice dimension, which refers to the behaviors that an individual performs to maintain and promote cognitive health.

Medical follow-up: This subcategory refers to individuals' behaviors related to regularly monitoring their physical and cognitive health status. Those with this characteristic often assess their blood pressure through check-ups, monitoring vital signs such as blood pressure at home, or visiting medical centers. Additionally, regularly taking medications related to diseases such as blood pressure, diabetes, or thyroid disease and following healthy eating patterns are signs of their adherence to medical follow-up. One of the participants, an expert in the field of aging, said:

"If a person has health literacy related to mild cognitive impairment, they should regularly monitor their health status, such as checking their blood pressure. This monitoring can be performed both at home via medical devices and by visiting health centers. The person should believe that these measures can help identify health problems early and prevent the progression of cognitive impairment." (P8, PhD of gerontology)

Mental activities and learning: This subcategory refers to engaging in activities that stimulate the mind and enhance cognitive function. People with this characteristic are often interested in

learning new skills, such as languages or music, and keep their minds active by engaging in activities such as solving puzzles, playing brain games, or reading to prevent cognitive decline. As highlighted by one participant:

''Keeping the brain active is very important, so if a person has health literacy related to mild cognitive impairment, they should play mental games such as crosswords or puzzles. These activities can help strengthen cognitive skills, maintain focus, and prevent cognitive decline. The person should believe that these exercises can help their mental health in the long term and improve their cognitive function." (P12, Master's degree in clinical psychology)

Social participation and interaction: This subcategory refers to the extent to which an individual participates in social activities and interactions, which can play an important role in maintaining cognitive and mental health. Individuals with this trait are usually active in family and friendship groups, and by participating in volunteer, religious, or cultural activities, they strengthen their social networks and prevent isolation and its negative consequences. One of the participants noted:

"It is one of the characteristics of any health literacy related to mild cognitive impairment to be interested in participating in volunteer or religious activities. These activities can help strengthen social relationships, improve mental health, and reduce stress. The health-literate person must believe that these contributions help maintain cognitive health and improve their quality of life." (P2, PhD of health education and promotion)

Feeding behaviors: This subcategory refers to a person's dietary patterns and habits that can affect cognitive and physical health. People with healthy eating behaviors typically focus on eating a balanced diet, reducing their intake of fats and simple sugars and increasing their intake of fruits, vegetables, and antioxidant-rich foods. This approach is effective in maintaining brain health and preventing cognitive impairment. For example, one of the participants remarked:

"A person with good health literacy related to mild cognitive impairment should replace fatty foods and fast foods with healthy foods because they know that healthy eating can help promote cognitive health and prevent future brain problems." (P5, Master's degree of geriatric health)

Regular physical activity: This subcategory refers to consistent engagement in physical activities aimed at maintaining general health, especially cognitive health. People with this characteristic are usually interested in regular exercise, such as walking, swimming, yoga or other physical activities. Maintaining daily mobility helps improve cerebral blood flow, reduce stress and enhance mental health. To illustrate, one participant expressed the following:

"A person who has health literacy related to mild cognitive impairment has regular aerobic exercise, such as walking three days a week for at least 20 minutes, in their daily routine. They are not sedentary and force themselves to be physically active." (P10, Master's degree of geriatric health)

Stress management: This subcategory refers to the strategies and behaviors that a person uses to control and reduce psychological stress in everyday life. People with stress management skills often use methods such as meditation, deep breathing, praying, or relaxation activities to maintain their mental balance and prevent the negative effects of stress on their cognitive health. For instance, one of the participants stated:

"A person with health literacy related to mild cognitive impairment should consult a psychologist or counselor to manage symptoms of depression or stress." (P11, PhD of psychology)

Healthy sleep patterns: This subcategory refers to a person's sleep habits and patterns, which play important roles in rebuilding the mind and maintaining cognitive function. People with healthy sleep patterns typically follow a regular sleep and wake schedule, avoid stimulants before bed, and create a calm and restful environment. These patterns improve concentration, memory, and mental health. One expert in the field of elderly health stated the following:

"For example, avoiding caffeine before bed or excessive use of mobile phones at bedtime is one of the important things that a person should do. That is, a person should take steps to improve sleep quality, reduce stress, and increase cognitive health." (P10, Master's degree in geriatric health)

High-risk behaviors: This subcategory refers to behaviors that can threaten cognitive and physical health and require modification or cessation. Health-conscious individuals usually try to abandon risky behaviors such as tobacco and alcohol use, inactivity, or unhealthy lifestyles and replace them with healthy habits to prevent cognitive and physical disorders. For instance, one of the participants stated:

"An individual with health literacy related to mild cognitive impairment should try to reduce smoking and gradually quit smoking because they know the risk factors for cognitive decline." (P9, PhD student of gerontology)

Use of health technologies: This subcategory refers to individuals' use of new tools and technologies to monitor and improve their health. Individuals with this characteristic typically use digital devices such as blood pressure monitors or glucometers, as well as health apps, to monitor vital signs, record physical condition data, and receive recommendations related to a

healthy lifestyle. This behavior indicates their awareness of and willingness to actively manage their health. As an example, one participant mentioned:

"A person with health literacy related to mild cognitive impairment should learn to use memory-enhancing apps or software and brain games to be considered literate." (P11, PhD of psychology)

In general, if this research aims to provide a description of health literacy related to mild cognitive impairment based on the findings obtained, it could be said that; Mild Cognitive Impairment-related Health Literacy (MCI-HL) can be defined as *"a specific branch of individual health literacy and includes the five dimensions of function, knowledge, attitude, motivation, and practice - consisting a set of functional skills and abilities, various types of awareness, beliefs, attitudes, perceptions, motivations, behavioral intentions, activities and behaviors - that helps individuals to obtain, maintain, and promote cognitive health throughout the aging process for own and others".*

Discussion

The aim of present study was to explain the concept of MCI-HL in healthy adults aged 45 years and older. This study demonstrated that MCI-HL is a multidimensional concept consisting of the dimensions included: function, knowledge, attitude, motivation, and practice. These dimensions provide a conceptual basis for promoting cognitive health as well as developing future assessment tools and interventions.

Given the directed approach in this attempt, the health literacy issue related to MCI can be explained in five dimensions: function, knowledge, attitude, motivation, and practice. Each dimension represents an important part of this disorder. Although few studies have addressed the concept of MCI-HL, some relatively similar studies have pointed out different dimensions of this issue. Yong B. Liu et al. considered basic health knowledge and mind, basic skills, and health lifestyle and behavior as dimensions of MCI-HL in elderly individuals(16). In another study that evaluated health literacy only in elderly people with MCI, healthcare, disease prevention, and health promotion were considered dimensions of health literacy(17). In line with the findings of the present study, Fengping Han also considered the five dimensions as explanatory parts of MCI-HL(13). However, present study is different in that the subcategories related to the 5 dimensions of MCIHL were extracted through an exploration approach, which has not been done before in another research.

In this study, the function dimension is defined as the individual's practical ability to understand, use, and communicate health information related to MCI and in line with Nutbeam health literacy theory(18); the subcategories extracted from this study also explain this function. Rebecca M.

reported that dimensions such as performing daily activities, decision-making power, and the ability to maintain health as health-related functions are significantly related to MCI-HL, which is consistent with our findings(19). In this study, most of the relationship between cognitive impairment, health literacy, self-management skills, and functional status was examined; that is, its view was more relational and outcome-oriented. In contrast, the present study provides a qualitative conceptual explanation of MCI-HL and shows how precisely these functional abilities can be part of the concept of health literacy related to MCI. Huang et al. also reported that reading, writing, and communication skills are related to health literacy(20). In this study, the skills mentioned were examined in general terms in relation to health literacy or MCI prediction, rather than as a specific concept called MCI-related Health Literacy. In our study, these skills have specific meaning in the context of MCI-related prevention, recognition, management, and care. Another study emphasized that given that the physical activity and daily living functions of the elderly may partially mediate the association between health literacy and MCI, improving health literacy in older adults could increase physical activity participation and functional skills, which in turn could act as a protective factor against MCI(21). The findings of this study also focused more on the statistical relationship between health literacy, physical activity, daily living function, and MCI. In contrast, the present study shows that these elements are not just variables associated with MCI, but are part of the conceptual structure of MCI-HL.

In the present study, the knowledge dimension in MCI-HL included awareness of basic concepts related to mild cognitive impairment, key symptoms, risk factors, consequences, screening and early diagnosis, treatment and rehabilitation options, prevention, and care and support measures. This finding suggests that knowledge in MCI-HL is not limited to general awareness of the disorder, but also includes practical information required for prevention, early diagnosis, and appropriate response. Previous studies have also confirmed the importance of knowledge in relation to cognitive health. The study by Jun-Young Lee et al. are consistent with findings, showing that increasing knowledge can be effective in protecting against MCI(22). The main difference of the present study is that it explains these skills not only as factors related to MCI, but also as subcategories of the Function dimension in the conceptual structure of MCI-HL. In addition, the present study, with a qualitative approach, examines the concept of MCI-HL beyond functional skills and identifies and explains other dimensions such as knowledge, attitude, motivation, and behavior in the cultural context of Iran. It seems that, increasing public knowledge about mild cognitive impairment has been shown to be essential for accurately recognizing the symptoms of MCI, early screening, and preventive measures, thereby slowing the progression of the disease and minimizing its impact on one's quality of life(23). Older adults with MCI may have difficulty remembering and processing information related to their health. This can affect their ability to understand and use health and care information, resulting in reduced

health literacy. It is essential to be aware of this impairment and identify appropriate ways to support them in understanding health information. Since knowledge refers to the ability to understand information and concepts related to one's health status, health literacy refers to the ability of an individual to understand and use this information to improve or maintain their health status(24, 25). As a result, having sufficient knowledge about the dimensions of MCI can play an important role in the outcomes associated with this disorder.

In the present study, attitude and motivation were identified as two important dimensions of MCI-HL. The attitude dimension included true beliefs about MCI, behavioral beliefs, attitudes toward the caregiving and supportive role, perceived stigma, positive attitudes toward aging, spirituality, perceived sensitivity, and perceived severity. The motivation dimension included motivation for regular medical monitoring, preventive behaviors, mental activities and learning, stress management, quitting risky behaviors, social participation, and observational arousal. These findings indicate that in the MCI-HL concept, attitude and motivation are not just general psychological factors, but also key components in the formation of cognitive health-protective decisions and behaviors. The findings of previous studies partially support the results of the present study. In a study by Naughton showed that positive attitudes and strong motivation can be associated with healthier choices, especially in the areas of nutrition and physical activity(26). This finding is consistent with the results of the present study, as our study also identified positive attitudes and motivation for preventive behaviors, physical activity, healthy nutrition, stress management, and quitting risky behaviors as components of MCI-HL. However, the difference of the present study is that it explains these components not only in the context of a healthy lifestyle, but also in their specific relationship to the prevention and management of mild cognitive impairment. Dennis et al. have also emphasized the need to pay attention to attitude and motivation in assessing health literacy and changing health-related behaviors(27). This finding is also consistent with the present study, as attitude and motivation in our study were associated with decision-making, acceptance of education, timely referral, screening, and cognitive protective behaviors. However, beyond a general emphasis on the role of attitude and motivation in health behavior change, the present study introduces these two components as specific dimensions in the conceptual structure of the MCI-HL. Individuals with mild cognitive impairment may have different attitudes toward their condition, which can influence how they pursue treatment and manage their condition (28). Positive or negative attitudes toward treatment and health care can lead to a person actively seeking appropriate treatment options or, conversely, avoiding necessary care(29). Attitude and motivation are two related variables that interact. A positive attitude can strengthen an individual's motivation; conversely, intrinsic motivation can lead to the formation of a positive attitude toward education and treatment (30). Attitude and motivation are crucial in the health literacy of individuals with mild cognitive

impairment and influence their health and treatment decisions. Strengthening these factors through targeted education, social support, and technology can enhance health literacy and improve quality of life.

The last dimension discussed about MCI-HL is practice, which, in explaining the concept, refers to the behaviors that an individual engages in to maintain and promote cognitive health and prevent mild cognitive impairment. This dimension included medical follow-up, mental and learning activities, social participation, nutritional behaviors, regular physical activity, stress management, healthy sleep patterns, reduction of high-risk behaviors, and use of health technologies. Therefore, Practice in the MCI-HL concept is not limited to following health recommendations alone, but encompasses a set of cognitively protective behaviors. According to a study by Petrova et al., survivors of acute coronary syndrome who had higher health literacy than other survivors were approximately four times more likely to seek medical care immediately after experiencing symptoms and to pursue prevention and follow-up of their health (31). This finding is consistent with the results of the present study, as medical follow-up, timely referral, and health status monitoring were important components of the Practice dimension in MCI-HL. However, the difference of the present study is that it explains these behaviors in the specific context of prevention, early detection, and management of MCI. Additionally, a study by Turkoglu et al. showed that health literacy is associated with better adherence to treatment protocols, meaning that each person with higher health literacy is more committed to following health guidelines and behaviors related to themselves and those around them (32). In contrast to these findings, the present study shows that behaviors associated with MCI-HL go beyond treatment adherence and include behaviors such as mental activity, physical activity, stress management, healthy sleep, proper nutrition, social participation, and use of health technologies. A study by Lee et al. showed that older adults with higher health literacy are more likely to undergo annual checkups, so the higher their health literacy is, the more preventive behaviors are observed(33). People with higher health literacy are generally more effective at identifying early signs of MCI(34). They are able to recognize mild symptoms and seek medical attention for a more accurate diagnosis and appropriate treatment(35). These people use a variety of avenues, including online resources, medical consultations, and educational books, to increase their awareness of MCI. Overall, previous studies have shown that health literacy can enhance behaviors such as timely visits, treatment adherence, and check-ups. However, the present qualitative study shows that in the context of MCI-HL, the dimension of Practice has a broader meaning and includes a range of everyday and health-oriented behaviors that can help maintain cognitive health, reduce risk factors, and prevent mild cognitive impairment.

The findings have practical implications for clinicians, policymakers, and health systems. Clinicians can use the identified dimensions of the MCI-HL for patient education, counseling, and

early identification of low health literacy levels associated with MCI. Policymakers can also use these findings to design community-based educational programs and culturally appropriate health literacy campaigns specifically for adults 45 years of age and older. At the health system level, these findings could help integrate MCI-HL assessment into routine primary care examinations, educate health care providers and community health workers, and design referral pathways for cognitive health assessment and follow-up.

Study Limitations and Strengths: The present study also has several limitations. Given the novelty of the subject, it was difficult to interact with the participants. On the other hand, given the overlap of MCI with other similar disorders, there was also the possibility of misinterpretation of the subject, which was constantly remembered by the researcher. Since this concept is very new in our country, another limitation of our study was finding experts who have sufficient experience and knowledge about the concept of health literacy related to mild cognitive impairment. One theoretical limitation of this study is that MCI-HL is still an emerging concept and its conceptual boundaries are not fully established. Although Han et al.'s framework was used only as an initial analytical framework and subcategories were developed inductively, the interpretation of the findings may have been influenced to some extent by this previous framework. Furthermore, the concept was explained based on the perspective of experts, not on the direct experience of middle-aged and older adults, family members, or caregivers. Therefore, it is suggested that future studies further refine, complete, and validate the concept of MCI-HL in different populations and cultural contexts.

In this study, there is also, limited cultural and professional diversity of expert participants. Although experts from relevant fields were included in the study, not all participants were selected within the Iranian cultural context and health system, and some stakeholder groups were not directly represented. Therefore, it is suggested that future studies be conducted with the participation of more diverse cultural, professional, and health system perspectives to further refine and validate the MCI-HL concept.

These limitations may affect the transferability of findings to other cultural, professional, and health system contexts. Since participants were selected within the Iranian context and some stakeholder groups were not directly involved in the study, the application of the findings to other populations or health systems should be done with caution. Future studies in more diverse contexts are necessary to investigate the broader applicability of the MCI-HL concept.

A methodological limitation of this study was the lack of empirical validation. The dimensions and subscales identified have not yet been quantitatively tested or psychometrically validated. In addition, it is possible that interpretive bias may have influenced the qualitative analysis;

however, strategies such as participant review, review by the research team, and recording of analytic decisions were used to increase the robustness of the study.

However, in terms of the strengths of the research, this study is the first to explain the concept of MCI-HL in Iranian society, an explanation that can facilitate further research and effective interventions. These findings will probably be useful for long-term planning to improve the quality of life of older adults, reduce the progression from mild cognitive impairment to dementia, and decrease the incidence of cognitive impairment.

Conclusion

In this study, we explained the concept of MCI-HL in Iranian society for first time. Increasing awareness of MCI, strengthening positive attitudes and motivation, and encouraging healthy behaviors are important strategies for improving quality of life and functional outcomes for individuals at risk of or with MCI. Furthermore, the findings of our study provide a deeper understanding of the concept of MCI-HL that can be used in the development of valid and reliable assessment tools for measurement purposes in adult population. The subcategories obtained in detail in this study can be used as a roadmap for future interventions considering each of the five dimensions. The results provide a clear basis for planning, implementing, and evaluating interventions aimed at promoting health literacy related to mild cognitive impairment in community settings. [Figure 2 near here]

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Ethics approval and consent to participate: This paper was extracted from a master's thesis in the field of aging health, which was confirmed by the Ethics Committee of Shahid Beheshti University of Medical Sciences (Code: IR.SBMU.PHNS.REC.1404.164/ Pajoohan Code: 43018256). All stages of the study were conducted in accordance withthe Declaration of Helsinki and its subsequent amendments. Basic information such as the objective, interview method, confidentiality of information, right to participate or withdraw, and preservation of the audio file was given to the participants. They also provided oral informed consent to participate and to be audio-recorded at the beginning of the interview.

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