Journal of Health Literacy

Health Literacy in Medical Curricula: A Framework Proposal Grounded in Qualitative Research

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Background and Objective: In the qualitative study conducted within the scope of the HELEM-EU project, which was planned and implemented to integrate the health literacy (HL) education program into medical school curricula, the opinions of medical educators were obtained regarding this education program. This article aims to present the program framework developed based on the findings of this qualitative research.

Material and Methods: This study used a qualitative research method. The data were collected online through semi-structured, in-depth interviews conducted via a video conferencing platform between May 4 and June 6, 2021, with 20 faculty members from 20 different departments. Content analysis was used to analyze the data.

Results: Faculty members' recommendations regarding the development and integration of HL education into medical curricula were organized into seven themes: competencies, content, teaching methods and techniques, assessment and evaluation, program structure and timing, faculty preparation, and program dissemination and motivation. Among the 88 competency-related codes, communication was the most frequently identified competency (n=24), followed by expert/scientifically competent (n=18), educator/knowledge sharer (n=12), and ethical practitioner (n=11). Regarding teaching methods, small-group activities were the most frequently identified approach (n=53), including case discussions, role play, simulation, movie discussions, and field practices.

Conclusion: The findings support a vertically integrated HL curriculum centered on communication competencies and reinforced through experiential, small-group learning and performance-based assessment. The proposed framework also highlights the importance of faculty preparation and the integration of HL education across preclinical and clinical training.

Keywords: Curriculum, Health literacy, Medical education, Qualitative study

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In Press

Journal of Health Literacy

Introduction

The concept of health literacy (HL) was initially introduced by Simond in a 1974 article entitled "Health Education as Social Policy" (1). In 1988, the World Health Organization (WHO) defined health literacy as *"the cognitive and social skills that determine the motivation and ability of individuals to access, understand, and use information in ways that promote and maintain good health"* (2). Subsequently, Sørensen et al. (2012) expanded this definition, describing HL as the ability to access, understand, appraise, and apply health-related information throughout life in order to make informed decisions, maintain and improve health, and enhance quality of life (3).

HL has become a public health priority in the 21st century, given its pivotal role in enabling individuals to manage their own health. Individuals with low HL experience difficulties in accessing and navigating healthcare services, understanding health information, and making appropriate health decisions, which can lead to poorer health outcomes and higher costs (4–7). A 2022 survey in the United States revealed that at least 88% of adults have insufficient HL to effectively benefit from the healthcare system and support their well-being (8). In Germany, a 2019–2020 survey of 2,151 adults showed that 58.8% had low HL, and many reported difficulties accessing (48.3%), understanding (47.7%), applying (53.5%), and evaluating (74.7%) health information (9). Similarly, a 2023 study in Spain found that 59% of participants had insufficient or problematic HL, with education, health status, and income being the strongest determinants (10). In Türkiye, surveys of 15,000 participants showed that 31.9% of participants had adequate HL in 2017. However, the implementation of the HL Action Plan 2022–2026 has led to notable improvements, with the proportion increasing to 46.1% in 2023. Additionally, improvements in disease prevention and health promotion were observed, with adequate HL levels in disease prevention rising from 28.4% to 45.7% (11).

Evidence suggests that providers equipped with strong communication skills and an HL-sensitive approach can improve healthcare quality and patient outcomes (12–14). However, studies indicate that many healthcare professionals lack sufficient HL-related competencies to effectively identify and respond to patients with limited HL (15,16). As healthcare systems become increasingly complex, strengthening HL competencies among providers has become

In Press

even more essential (17,18). Although most medical students will assume healthcare professional roles post-graduation, research on the HL levels of medical students remains limited. A study conducted in China with 1,275 participants found that third-year students scored the highest, while first-year students scored the lowest and socioeconomic status and parental education levels were associated with HL (19).

A considerable number of medical educators and researchers have suggested that HL education should be integrated into medical curricula. A study in the United States involved approximately 100 second-year medical students participating in a workshop which comprised a review, observation and practical element focusing on three HL communication techniques: teach-back, the avoidance of medical jargon, and effective questioning. Findings showed that employing HL communication practices increased students' confidence (20). A randomized controlled study in the Netherlands evaluated medical students' self-reported competencies before and after an 11-hour educational intervention, as well as at five- and ten-week follow-ups. The intervention group showed significantly improved HL skills, especially in clear communication, shared decision-making, and self-management (7). Despite these efforts, HL education has been integrated into only a limited number of undergraduate and continuing medical education programs (18,21–23). Moreover, clear and widely accepted guidance for developing and evaluating HL curricula across health professions education remains limited (24). In particular, there is limited guidance on how HL should be systematically integrated into undergraduate medical curricula in terms of competencies, content, teaching methods, assessment, and curricular structure.

To address this gap, an Erasmus+ Strategic Partnership in Higher Education project, "Development and Integration of Health Literacy Education with Innovative Methods in Medical Curricula Across Europe" (HELEM-EU), was conducted in collaboration with partners from Türkiye, the Netherlands, Spain, and Italy. The project aimed to develop, implement, evaluate, and integrate an HL program into medical curricula using a peer-learning methodology (25). As part of the project development process, a qualitative sub-study was conducted at one of the partner medical faculties in Türkiye. This study aimed to explore medical educators' experiences and perspectives regarding HL and to gather their

In Press

recommendations for the development and integration of HL education into medical curricula. Specifically, the research sought to answer two questions: (1) What competencies should be developed in relation to health literacy? and (2) What are educators' suggestions regarding the methodology, content, assessment, and evaluation of an HL program? The findings from this qualitative study are shared in this article, along with a framework for integrating HL education into medical curricula.

Material and Methods

Study Design and Participants

The study group consisted of faculty members from three different disciplines: internal sciences, surgical sciences, and basic sciences. Participants were initially recruited based on accessibility and willingness to participate. This process was supplemented by snowball recruitment, whereby faculty members recommended other potential participants. During recruitment, the distribution of participants across internal, surgical, and basic medical sciences was considered in relation to their representation within the faculty. Eligibility criteria included being a faculty member at the medical school where the study was conducted and volunteering to participate. No additional exclusion criteria were specified.

Data saturation was assessed during the concurrent review and analysis of the interviews. Saturation was considered to have been reached when subsequent interviews largely repeated previously identified information and provided no substantially new information. Although saturation was observed before all scheduled interviews had been completed, interviews with participants who had already been contacted and scheduled were conducted as planned.

A total of 20 faculty members were included in the study: 8 from internal sciences, 8 from surgical sciences, and 4 from basic sciences. Six participants were professors, five were associate professors, five were assistant professors, and four were lecturer doctors. The group included 12 women and 8 men, aged 32–62 years, with 16–34 years of work experience **(Table 1).**

Table 1. Gender and department distribution of the study group

Sex	Female	12
	Male	8

In Press

Internal Sciences Division	Internal Medicine	1
	Forensic Medicine	1
	Neurology	1
	Infectious Diseases and Clinical Microbiology	1
	Family Medicine	1
	Pediatrics	1
	Psychiatry	1
	Emergency Medicine	1
Surgical Sciences Division	Neurosurgery	1
	Anesthesiology and Reanimation	1
	Plastic, Reconstructive and Aesthetic Surgery	1
	Orthopedics and Traumatology	1
	Obstetrics and Gynecology	1
	Urology	1
	Pediatric Surgery	1
	Ophthalmology	1
Basic Sciences Division	Medical Education and Informatics	1
	Medical Biochemistry	1
	Medical Microbiology	1
	Physiology	1
Academic Title	Lecturer	4
	Assistant Professor	5
	Associate Professor	5
	Professor	6
Total		20

In Press

Data Collection and Analysis

The 12-question semi-structured interview guide was developed by the research team in line with the aims and research questions of the HELEM-EU project, while taking into account the context of medical education at the participating institution in Türkiye. The questions were designed to explore faculty members' perspectives on the competencies, content, teaching methods, assessment and evaluation, and curricular integration of HL education. The guide was pilot tested with two faculty members to assess the clarity and relevance of the questions. As no major revisions were required, the pilot interviews were included in the analysis.

The research team included experts in public health and medical education with experience in qualitative research. The interviews were conducted by four researchers (ST, HO, SU, and

BA). Before data collection, the interviewers discussed the interview process and agreed on a common approach to conducting the interviews. Recorded pilot interviews and the first interviews of each interviewer were discussed with the team. All of the first all interviewers used the same semi-structured interview guide to ensure consistency across interviews. Interviews lasted between 30 and 77 minutes.

Content analysis was used to analyze the verbatim transcripts. Transcripts were read independently and coded by multiple researchers. Coding differences were discussed until consensus was achieved. Following agreement on the coding framework, two researchers continued coding the remaining transcripts. Inter-coder agreement was high (0.89). Themes were refined through team discussions.

To maintain the study's validity, participants were chosen from a range of disciplines and fields, enabling a comprehensive exploration of the research question. This approach ensured that diverse experiences and viewpoints were represented. The interview forms were collaboratively designed by the entire research team, all of whom possessed relevant expertise. During the data collection phase, care was taken to create a positive and natural interview environment to ensure the collection of high-quality data. At each stage of the research and data analysis process, the team continually reviewed and discussed the progress. The Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist was used to report this study (27).

Ethical Considerations

The Gazi University Ethics Commission approved the study on 23.3.2021 (Number: E-77082166-604.01.02-59610). Faculty members were contacted by e-mail and telephone, informed about the research, and provided consent via e-mail. Permission for audio and video recording during interviews was obtained, and confidentiality of recordings and analysis was maintained. The report excludes any identifying information about interviewees.

Results

Faculty members' opinions and recommendations regarding the development and integration of health literacy (HL) programs into medical education curricula were categorized into seven themes, as detailed below. Table 2 presents representative participant quotations for each of the seven themes, illustrating how faculty members described their expectations

In Press

and recommendations for HL education. Across the themes, participants emphasized the need to address not only HL-related competencies and content but also teaching and assessment methods, curricular integration, and faculty preparation.

As shown in Table 3, competencies (n=88) and teaching methods and techniques (n=73) were the most frequently coded themes. Within the competencies theme, communication was the most frequently identified competency (n=24), followed by expert/scientifically competent (n=18), educator/knowledge sharer (n=12), and ethical practitioner (n=11). Among teaching methods and techniques, small-group activities were most frequently suggested (n=53).

Structural Components of HL Programs

Competencies

Participants identified a range of competencies required for physicians to effectively address HL in clinical practice. The role of "communicator" was among the most frequently mentioned competencies. Participants emphasized the need for physicians to manage difficult communication situations, adapt their communication strategies to different patient contexts, and adjust explanations according to patients' characteristics.

Field-specific expertise and the ability to apply up-to-date evidence-based practices were also frequently mentioned. Participants referred to the importance of conveying accurate and understandable information to individuals and communities by considering their needs and expectations. Ethical principles, integrity, and honesty were described as essential elements of professional practice. Additional competencies included teamwork, leadership, self-reflection, community awareness, health advocacy, time management, and the ability to assess patients' HL levels **(Table 2).**

Program Content

Participants proposed that HL-related training should include communication skills, communication in difficult situations, crisis management, and the conceptual foundations and importance of HL. Assessing patients' HL levels was also mentioned as a content area. Other suggestions included medical sociology, psychology, social accountability, management of misinformation, stress management, time management, common health problems, informed consent, patient engagement, and health prevention **(Table 2).**

In Press

Journal of Health Literacy

Table 2. Views on components of medical education programs in the context of health literacy

Theme	Sub-Theme	Code	Quotation
Health Literacy (HL) and Its Integration into Medical Education Programs	**Competencies**	Communication	*"People need to have the empathy to understand their pain, worries and expectations. I think every doctor should be equipped to deal with even the most difficult patients." (Male, Lecturer, K1).* *"S(He) needs to look at her face and observe her, not hesitate to talk, approach her without prejudice, approach her level of education without prejudice or make an assessment according to her socioeconomic level, but he needs to use this for correct communication, not for judgment." (Female, Lecturer, K19)*
		Expert/Scientifically Competent	*"So, from the very beginning, there should be physicians whose knowledge can be trusted so that they can distinguish right from wrong. Technically, s(he) must have achieved sufficient confidence in himself/herself, first of all." (Female, Lecturer, K17).* *"It is necessary to have access to up-to-date and accurate resources on the subject in order for the physician to convey accurate information to both himself/herself and his/her patients." (Female, Assistant Professor, K14)*
		Educator/Knowledge Sharer	*"I believe that a medical school graduate should be a communicator, a health advocate, and also an educator. Because no matter what the area of expertise is, s(he) can actually structure education." (Male, Professor, K10)* *"Look, how will s(he) explain it to a ten-year-old patient, how will s(he) explain it to a ten-year-old child, how will s(he) explain it to a fifty-year-old, simulation can do this, how will s(he) explain it to an eighty-year-old person who has no knowledge of technology? It is a creation based on the health literacy level of different age groups and different education levels."(Female, Lecturer, K19).*
		Ethical Practitioner	*"I think s(he) should adopt an approach that is open-minded, honest, transparent and of course in accordance with ethical values." (Male, Professor, K12)*
		Team Member	*"I may be older in terms of age and status, but we are equal. I must be able to coordinate with nurses, operating room technicians, etc. (Female, Associate Professor, K4)*
		Self-Reflective and Open to Development	*"First of all, a person needs to go back and evaluate themselves, at the end of that day, at the end of that session, at the end of that meeting, you need to think about what you might have done wrong or missing. When we are people who can accept our mistakes, we can easily make up for them, our irreversible mistakes are few, much less than we think. Mistakes related to communication can be made up for right away when we communicate again, first of all, we need to learn to look at ourselves with a more critical perspective." (Female, Assistant Professor, K18)*
		Culturally Competent and Community-Oriented	*Students may come from different family backgrounds, and understanding society can be very challenging for them." (Female, Associate Professor, K2)*
		Health Advocator	*"It's not about doctors who follow the 'this is how it's always been' mindset, but about students striving to make a difference. I believe those involved in such efforts won't stand alone. Whether politicians or healthcare organizers, we are dealing with an unsustainable healthcare system." (Male, Professor, K10)*
		Professional	*"I believe one must first love people. Physicians need to love people; once they do, everything they do becomes exceptional. From what I've observed in good doctors, they are excellent at questioning, enjoy, so plan the next steps meticulously, and explain the situation to patients in detail and in a language they can understand. This is what I see in good doctors." (Female, Professor, K11)*
		Efficient Time Manager	*"We are unable to teach medical students the time management skills needed to handle 150 patients a day. We also fail to instill in the physician candidates the ability to manage time effectively for building trust, communicating with patients, listening to their concerns, and addressing their issues." (Male, Lecturer, K20)*
		Health Literacy Assessor	*"I believe a physician should possess the ability to assess a patient's health literacy; this should be an acquired skill. Moreover, it is essential to ensure that the answers they provide are perceived and understood by the patient." (Male, Associate Professor, K8)*
		Leader	*"When we talk about the essential qualities a doctor should have, leadership stands out. There's also collaboration, the ability to work in harmony and support one another effectively." (Male, Lecturer, K20)*

IP Press

Journal of Health Literacy

	Program Content	Communication in Difficult Situations	*"Our patient group (neurology) is a very challenging one; they will spend their lives on those medications or in a wheelchair. Being able to explain this and manage the process is crucial. For example, how to communicate a treatment plan to the patient is very important." (Female, Associate Professor, K9)*
		Effective Communication Skills	*"Feedback and reflection are crucial. Communication skills should include the ability to reflect what we receive from the patient back to them, as well as ensuring the patient understands what we convey to them." (Female, Assistant Professor, K18)* *"The first thing they need to learn as doctors is not to keep talking and explaining but to focus on understanding what the person in front of them is saying. You know, when you talk for an hour, the patient might leave the room with a blank stare." (Female, Associate Professor, K2)*
		Medical Sociology	*"One of my biggest challenges was when I moved from Ankara to another city and heard organ names being used differently. I hadn't heard these terms in my family or in school but encountered them in the field, and I didn't understand. I even asked, 'Where is that?' Could there be a course on this?" (Male, Assistant Professor, K15)*
		Importance of Health Literacy	*"I think we need to start by explaining the importance of health literacy—why it matters." (Female, Professor, K3)*
		Health Literacy Assessment Methods	*"First of all, it's important to improve our skills in determining patients' health literacy levels. What are the methods to assess this? What do we understand by health literacy? A foundational course on this is necessary." (Female, Assistant Professor, K18)*
		Psychology	*"Life itself is about understanding human psychology. Medical school already involves intense learning about diseases and treatments, but even medications change over time. What truly needs to be taught is the essence of understanding humanity." (Female, Associate Professor, K2)*
		Crisis Management	*"When faced with violence or before it happens, how to de-escalate a situation, manage the process, and handle patients and their relatives in emergency departments—these are critical. These students might work in emergency services or during compulsory service, yet they are unprepared. They rely solely on their personal skills and traits to cope." (Female, Associate Professor, K2)*
		Time management	*"Let me list them in order of importance: communication, methods of accessing the right information source, time management and collaboration management." (Male, Lecturer, K20)*
		Common Health Problems	*"What are the priorities in healthcare? Which diseases affect society the most? What are the most common illnesses?" (Female, Professor, K11)*
		Stress Management	*"We know that in practical applications, especially in surgery, most errors are related to non-technical skills such as stress management, time management, teamwork adaptability, and emotional state." (Male, Professor, K12)*
		Health Literacy Assessor	*"Sometimes I receive messages like, 'This product is said to be effective against cancer. Can we use this pill?' These things happen frequently. In the age of social media and the internet, how should a physician deal with such situations? Strategies need to be developed for managing these issues both at an individual patient level and at a societal level." (Male, Lecturer, K1)*
		Informed Consent	*"The importance of patient education can be emphasized. Informed consent is another critical topic, and it should be highlighted as an essential goal in improving health literacy." (Female, Professor, K3)*
		Facilitating Patient Engagement	*"Patient-centered care, which involves engaging patients in the process, is very important. It's often mentioned briefly, but it needs to be communicated effectively. The main factor here is communication, but the second is involving patients in the process, which is a skill that requires specific training." (Female, Assistant Professor, K14)*
		Health Prevention	*"We are primarily trained to avoid harm, but we lack education focused on preserving and maintaining what is already good." (Female, Assistant Professor, K18)*
		Social Accountability/Responsibility	*"Health advocacy is closely tied to the concept of accountability. This has been a significant topic in recent years, one to which we have tried to contribute. While this concept is institutionally defined for medical schools, I believe accountability is incredibly important. A transparent medical school program, with clear outcomes and involvement in social responsibility projects that prioritize public benefit, is crucial for medical education." (Male, Professor, K10)*

In Press

Journal of Health Literacy

	Teaching Methods	Small Group Activities	*"I think we need to include more real-life experiences because they are highly motivating. Difficult patient scenarios can be diversified, perhaps through role-playing, theatrical enactments, or simulations." (Male, Lecturer, K1)* *"Case-based learning, but with high-quality feedback that doesn't hinder creativity, offers flexible options, and avoids standardizing everyone. It should also provide opportunities for diversity and richness." (Male, Professor, K10)*
		Clinical Practices	*"The most effective experience comes from being directly in the field. I believe the most valuable learning happens this way… increasing patient interaction and contact." (Female, Assistant Professor, K17)*
		Community Education	*"Students can contribute to their communities in this regard (health literacy), right? They can provide information about how often one should visit a doctor, starting with family physicians, and the importance of regular health check-ups." (Female, Professor, K11)*
		Extracurricular Activities	*"There are interest groups… If there are students interested in health communication, it would be beneficial to establish an interest group and continue working on it." (Male, Associate Professor, K7)*
		Large Group Activities	*"Theoretical knowledge is essential, and the definition and required actions should be presented theoretically, but there must also be patient practice." (Female, Assistant Professor, K14)*
	Assessment and Evaluation	Performance Assessment/Direct Observation	*"Perhaps this is the hardest question—what can truly be done? Observing in practical processes, especially bedside evaluations, is undoubtedly important." (Male, Associate Professor, K8)*
		-Process/Formative Assessment	*"High-quality feedback… Peer evaluations of situations are much more valuable." (Male, Professor, K10)* *"Patients and their relatives, as well as those they will interact with, can be determined in advance. Questions can be asked to assess health literacy, and others can write their thoughts, such as 'If I were in this situation, I would say this or that.' This could be an assignment." (Female, Lecturer, K16)*
		Simulation	*"I think the best approach is training through simulation and conducting exams via simulation as well." (Female, Associate Professor, K4)*
		Peer Assessment	*"Peers should also be included in this process. By peers, I don't just mean fourth-year interns with other fourth-year interns, but also interns working with senior students, like final-year clerks." (Male, Professor, K10)*
		Practical Skill Examinations	*"One idea that comes to mind is confronting students with challenging real-life scenarios or examples of situations that are difficult in daily life and observing how they manage or resolve them. This could be similar to what we do in OSCE exams, but how to standardize or score their responses? It's challenging because there's no single correct answer." (Female, Assistant Professor, K17)*
		Self-Assessment	*"We could ask for self-assessment. If we want to teach a skill, that skill must truly be internalized and adopted. For this kind of assessment, either they need to have self-critique skills, or they need to be open to receiving feedback from others. This isn't about competition or outperforming others; it's about elevating oneself." (Male, Professor, K7)*
		Theoretical Examination	*"Theoretical knowledge is essential, but there should also be a practical exam after theory." (Female, Associate Professor, K4)*
	Program Structure and Timing	Structured Curriculum	*"In my student years, learning was based on the master-apprentice relationship. You would take a role model as your guide since there wasn't a standardized system. For example, how to obtain patient consent, greet a patient, bid farewell, conduct an examination, suture, or wash hands. Showing standardized and correct examples in this regard is essential." (Female, Lecturer, K19)*
		Vertically Integrated Curriculum	*"Perhaps introducing students to hospital life at an early stage… There are students who do this with intrinsic interest, participating in summer internships. Their presence shouldn't be seen as a burden for education, and they shouldn't be made to feel like an unnecessary addition." (Female, Associate Professor, K2)* *"This could be achieved with a role model or at least experienced in the field. In our education, under the internship program, we ensure that all fourth-year students experience an internship process alongside us." (Male, Associate Professor, K8)*

In Press

Journal of Health Literacy

		Postgraduate Education	*"I think we could also provide this to residents, too. Because this is a gap that needs addressing." (Female, Associate Professor, K9)*
	Preparation of Faculty Members	Experience	*"Let me give an example about communication: if you don't have a qualified instructor in communication or the necessary infrastructure—since these aspects have an economic dimension too, such as rooms, recordings, cameras, and instructors who can analyze these properly—sometimes bad examples can discourage and alienate people." (Male, Professor, K10)*
		Role Modeling/ Mentoring	*"Some things your professors or mentors say leave lasting impressions. Certain sentences get etched into your mind, and what a professor you respect says can even become your life motto." (Female, Associate Professor, K2)*
		Adaptation to the Program	*"I think we could start with concepts, beginning with health literacy. While not everyone has to fully agree, we need a common understanding of the concept—one that nearly everyone interprets in the same way. Starting with deans in all pre-graduate medical education programs could be a good approach." (Male, Professor, K10)*
	Dissemination of Educational Programs	Accreditation	*"In educational programs, as you know, the core curriculum is currently a benchmark for faculties seeking accreditation. I believe TEPDAD (Medical Education Programs Evaluation and Accreditation Association), the accreditation institution, can play a significant role here. When a topic such as health literacy is included under accreditation standards—emphasizing its importance and raising awareness among graduates, schools, and students under TEPDAD's framework (provided it is practical and not just for the sake of inclusion)—I know that many medical faculties would align themselves accordingly. So, starting from there could also be effective." (Male, Professor, K10)*

In Press

Journal of Health Literacy

Table 3. Health literacy program framework for medical schools

Competencies (88)	Content (47)	Teaching methods and techniques (73)	Assessment and Evaluation (45)	The place and timing of HL in medical education programs (28)	Preparation of faculty members (14)	Program dissemination and motivation (1)
-Communication (24) -Expert/Scientifically Competent(18) -Educator/Knowledge Sharer (12) -Ethical Practitioner (11) -Team member (6) -Self-reflective/Open to development (4) -Culturally Competent and Community-Oriented(3) -Health Advocator (3) -Professional(2) -Efficient Time Manager(2) -Health Literacy Assessor(1) -Leader (1)	-Communication in difficult situations (11) -Effective communication (8) -Medical sociology (6) -Importance of HL (4) -HL assessment methods (3) -Psychology (3) -Crisis management (3) -Time management (3) -Common health problems (2) -Stress management (1) -Management of misinformation (1) -Informed consent (1) -Facilitating Patient Engagement(1) -Health Prevention(1) -Social accountability/responsibility (1)	-Small group activities (53) •Case discussions • Role play • Simulation • Movie discussions • Field practices -Clinical Practices (15) -Community education (2) -Extracurricular activities (2) -Large group activities (1)	-Performance assessment/direct observation (14) -Process/formative assessment (12) -Simulation (11) -Peer assessment (4) -Practical skills exams (2) -Self-assessment (1) -Theoretical exam (1)	-Structured curriculum (7) -Vertically integrated curriculum (7) -Postgraduate (11)	-Experience (7) -Role modeling/ mentoring (5) -Adapting to the program (2)	-Accreditation (1)

In Press

Teaching Methods

Learner-centered and interactive approaches were frequently mentioned. Small-group activities such as case discussions, role play, simulation, movie discussions, and field practices were emphasized. Clinical practices were described as important opportunities for applying HL-related skills in real patient settings. Community education activities and extracurricular initiatives were also suggested as ways to support students' engagement with society. Large-group theoretical sessions were mentioned, particularly for presenting foundational concepts **(Table 2).**

Assessment and Evaluation

Assessment approaches were predominantly performance-based. Suggested methods included direct observation, simulation-based assessment, and practical skills examinations such as OSCEs. Peer assessment and self-assessment were also mentioned. Formative assessment, including ongoing feedback and reflection throughout the process, was frequently emphasized. Only one participant suggested the inclusion of a theoretical examination to assess knowledge level **(Table 2).**

Program Structure and Timing

Participants referred to the need for a structured and vertically integrated curriculum, introducing HL-related training in the early years of medical education and reinforcing it throughout clinical training. Postgraduate education and continuing professional development were also emphasized as relevant stages for HL training **(Table 2).**

Faculty Preparation

Participants highlighted the importance of faculty members' experience, role modeling, and mentoring in the implementation of HL programs. Adaptation to the program and the development of a shared understanding of HL concepts among faculty were also cited **(Table 2).**

Program Dissemination

Program dissemination was primarily discussed in relation to accreditation processes, with accreditation standards viewed as a potential mechanism for promoting the adoption and sustainability of HL programs **(Table 2).**

In Press

Discussion

The findings of this study provide a framework for integrating HL education into medical curricula, encompassing competencies, content, teaching methods and techniques, assessment and evaluation, curricular structure, faculty preparation, and program dissemination. These findings define a framework for how health literacy can be incorporated into health professions education as part of efforts to improve the quality of healthcare and contribute to public health (29).

Communication was the most prominent competency identified in this study, consistent with existing guidelines and literature emphasizing patient–physician communication as a core component of medical education (28, 29). Participants also emphasized the ability to recognize individual, social, and cultural differences and to consider their influence on communication and health outcomes. This is consistent with literature highlighting cultural and social awareness as an important component of medical education and patient-centered care (29–32).

Related competencies, including recognition of the community, health advocacy, and leadership, further reflect the expectation that physicians should understand and respond to the broader social context of health. These findings are consistent with competency frameworks that describe physicians as agents of change, advocates, leaders, and role models (33).

Scientific competence, lifelong learning, and ethical practice were also emphasized by participants. Maintaining up-to-date knowledge and adopting an inquisitive and critical approach to practice are particularly relevant to HL, as physicians need to access current information, apply it in practice, and communicate it effectively to patients. This is consistent with the Institute of Medicine report, which highlights lifelong learning as an important component of efforts to improve population HL (21). Participants also emphasized ethical values and respect for the profession, which are fundamental to protecting patient rights, respecting human dignity, and building trust in patient–physician communication (34).

In Press

The competencies identified in this study largely overlap with national and international physician competency frameworks, particularly in relation to expertise, communication, leadership, collaboration, professionalism, and health advocacy (31–37). However, participants also emphasized competencies that are less explicitly represented in existing frameworks, including identifying patients' HL levels, adapting communication to social and cultural differences, and strengthening the physician's role as an educator. Similar gaps have been noted in the literature; for example, Barnabe et al. highlighted limitations in CanMEDS 2015 regarding equity, cultural safety, diversity, inclusion, and social justice (38). Although the National Medical Education Competencies in Türkiye (UÇEP, 2020) incorporates social accountability and sociodemographic and sociocultural characteristics, related competencies remain dispersed across the framework (37).

These findings are also consistent with the broader perspective of the WHO-ASPHER competency framework, which includes health promotion, community participation, health literacy, empowerment, health-needs assessment, and prevention among competencies relevant to the public health workforce and, in some areas, to health professionals more broadly (39). Taken together, these comparisons suggest that HL education may provide a useful context for bringing communication, cultural responsiveness, patient education, and health advocacy competencies together within medical curricula.

Regarding curriculum content, participants emphasized communication, particularly communication in difficult situations, as well as sociology and psychology, HL assessment, and the management of misinformation. The emphasis on communication is consistent with its established role as a fundamental non-technical skill in medical education (28). The inclusion of sociology and psychology reflects the need for physicians to understand patients and communities within their social contexts and to develop social accountability (40). Participants' emphasis on misinformation also highlights an increasingly relevant dimension of HL, requiring physicians to guide individuals and communities toward reliable sources of health information (31).

Participants strongly favored interactive, small-group and experiential learning approaches. Small-group activities can promote active participation, communication skills, motivation,

In Press

and retention (41), while the emphasis on learning through experience is consistent with Kolb's Experiential Learning Theory (42). Simulation provides opportunities to practice communication and crisis management through reflection and feedback in a safe environment (43,44), whereas role play, case discussions, and movie discussions may support learners in recognizing social and cultural contexts, developing ethical attitudes, and building empathy (45). The effectiveness of these approaches also depends on faculty members' understanding of the curriculum and their ability to create a supportive learning environment (46,47).

Participants differed in whether HL education should be mandatory or offered through electives and interest clubs, suggesting that curricular implementation may need to remain flexible. Elective courses may support in-depth and self-directed learning in areas of individual interest (48), while voluntary extracurricular activities can enhance motivation, social engagement, and professional development, including awareness of the social determinants of health and health promotion (49,50). These findings suggest that different approaches may be combined according to the needs and resources of individual medical schools.

Participants favored process-oriented and performance-based assessment methods, including self-assessment, peer assessment, simulation, and OSCEs. This is consistent with competency-based approaches that assess communication, clinical decision-making, and problem-solving while supporting learning through feedback (51). Self- and peer-assessment may further encourage learners to take responsibility for their learning and recognize their strengths and areas for improvement (52,53). Simulation-based assessments and OSCEs can provide structured opportunities to assess clinical and communication skills in realistic and safe settings (51). Overall, these findings suggest that assessment of HL competencies should extend beyond knowledge-based examinations and include applied methods that provide feedback throughout the learning process.

Participants favored a vertically integrated approach to HL education, beginning early in undergraduate training and continuing through clinical and postgraduate education. This is consistent with the Institute of Medicine report, which recommends reinforcing HL-related

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skills during clinical training (21). Similarly, a longitudinal HL training program for family medicine residents improved knowledge, but also demonstrated the challenge of translating newly acquired knowledge into clinical practice (22). These findings support repeated exposure to HL education across different stages of medical training rather than limiting it to a single course or period.

Participants also emphasized that faculty and institutional preparedness are important for the successful implementation and sustainability of HL education. Faculty members were expected not only to understand the curriculum but also to support learning through their experience, communication practices, mentoring, and role modeling. These findings suggest that faculty preparation and institutional engagement should accompany curriculum development rather than be considered separately from it. Participants also proposed linking HL education with accreditation processes, which may support program quality and continuous improvement (54).

Study Limitations and Strengths: This study has several limitations. The findings are based on participants' self-reported views obtained through semi-structured interviews. Although representation from internal, surgical, and basic medical sciences was considered during recruitment, the study was conducted at a single medical school in Türkiye and therefore may not reflect the perspectives or contexts of other institutions. In addition, participation was based on accessibility and willingness to participate, which may have introduced selection bias. As expected in qualitative research, the findings are context-specific and are intended to provide an in-depth understanding of participants' perspectives rather than statistical generalizability.

Conclusion

This study proposes a framework for integrating HL education into medical curricula based on faculty members' perspectives and qualitative findings (Table 3). The findings emphasize communication as a central competency and support experiential and small-group learning, performance-based assessment, and vertical integration of HL education across preclinical and clinical training. The framework also highlights the importance of considering patients' social and cultural contexts and preparing faculty members to support the implementation of

In Press

HL education. These findings may inform the development of context-sensitive HL curricula in medical education.

The following practical recommendations can be derived from the findings for integrating HL into medical education:

- Strengthen the vertical integration of HL education throughout the curriculum.
- Develop essential communication skills.
- Use active learning and practical experience.
- Use performance-based assessment.
- Address misinformation in the digital age.
- Strengthen the physician's role as an educator and health advocate.
- Use accreditation processes to support program quality and sustainability.

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Availability of Data and Materials: The data that support the findings of this study are not openly available due to participant privacy reasons. However, they are available from the corresponding author upon reasonable request and with the permission of the Development and Integration of Health Literacy Education with Innovative Methods in Medical Curricula Across Europe (HELEM-EU) Project. The data are located at Hacettepe University.

Conflicts of interest: We have no declarations of interest to report.

Consent for publication: Not applicable.

Ethics Approval and Consent to Participate: The study was examined at the meeting of the Gazi University Ethics Commission held on 23.3.2021 (Number: E-77082166-604.01.02-59610) and found ethically appropriate. Faculty members were contacted by e-mail and telephone and informed about the study.They were asked for their informed consent to participate,and the informed consent form was shared via e-mail. The participants' permission was also obtained for audio and video recording during the interviews. Confidentiality was ensured for recordings and analysis. The research report does not contain information directly indicating the identity of the interviewees. The study was conducted in accordance with the Declaration of Helsinki.

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