CROSS-SECTIONAL STUDY

Prevalence, Sociodemographic and Clinical Determinants of Readiness for Enhanced Health Literacy Among Unaccompanied Adolescent Male Migrants

Claudia Fantuzzi[1,2], Giovanna Luccarelli[1], Lorenzo Sterle [2], Francesco Zanuttin[3], Stefano Bardari[2,3], Gianfranco Sanson[1]

[1] Department of Surgical, Medical and Health Science, University of Trieste, Trieste, Italy

[2] Giuliano Isontina University Health Authority, Trieste, Italy

[3] Donk Humanitarian Medicine odv

Findings:

Readiness for Enhanced Health Literacy was identified in 36.8% of unaccompanied adolescent male migrants, with significantly higher rates among those from Kosovo and those with English proficiency. Cultural background and language skills emerged as key determinants, and the desire to understand local health-related customs showed the highest diagnostic accuracy.

ABSTRACT

BACKGROUND:
Migration to Europe has surged due to recent crises, creating healthcare challenges for Unaccompanied Foreign Minors (UAFMs). The Balkan corridor, with Italy as a key entry point, highlights barriers like language and cultural differences that hinder healthcare access.

METHODS:
This study assessed the prevalence of "Readiness for Enhanced Health Literacy" (REHL) NANDA-I nursing diagnosis (code 00262) among 185 male UAFMs and explored its defining characteristics and predictors.

RESULTS:
A 36.8% prevalence of REHL was found, with higher rates among individuals from Kosovo and those with English proficiency. Specific defining characteristics, such as the desire to understand local customs for healthcare decisions, demonstrated the highest diagnostic accuracy. The analysis indicated that cultural background and language skills significantly influence HL readiness among UAFMs.

CONCLUSIONS:
Nurses must adopt culturally sensitive approaches and consider the unique needs of UAFMs when delivering healthcare. This involves enhancing their readiness for health literacy through customized interventions, thereby improving overall health outcomes for this vulnerable population. Culturally tailored healthcare is essential to improve HL among UAFMs. Nurses play a key role in addressing these needs, emphasizing the importance of targeted strategies and further research.

STUDIO TRASVERSALE

Prevalenza e determinanti sociodemografici e clinici della disponibilità a migliorare l'alfabetizzazione sulla salute tra migranti adolescenti non accompagnati di genere maschile

Claudia Fantuzzi[1,2], Giovanna Luccarelli[1], Lorenzo Sterle [2], Francesco Zanuttin[3], Stefano Bardari[2,3], Gianfranco Sanson[1]

[1] Dipartimento di Scienze Mediche, Chirurgiche e Sanitarie, Università degli studi di Trieste, Trieste
[2] Azienda Sanitaria Universitaria Giuliano Isontina Trieste
[3] Donk Humanitarian Medicine odv, Trieste

Riscontri:

La *Readiness for Enhanced Health Literacy* è stata riscontrata nel 36,8% dei minori stranieri non accompagnati di sesso maschile, con prevalenza significativamente maggiore nei soggetti provenienti dal Kosovo e in quelli con competenza in inglese. Il background culturale e le competenze linguistiche sono risultati determinanti principali, mentre il desiderio di comprendere le usanze sanitarie locali ha mostrato la più alta accuratezza diagnostica.

ABSTRACT

BACKGROUND: La migrazione verso l'Europa è aumentata a causa delle recenti crisi, creando sfide sanitarie per gli Minori Stranieri Non Accompagnati (UAFMs). Il corridoio balcanico, con l'Italia come punto di ingresso centrale, evidenzia le barriere, come le differenze linguistiche e culturali, che ostacolano l'accesso alle cure sanitarie.

METODI: Questo studio ha valutato la prevalenza della diagnosi infermieristica "Disponibilità a migliorare l'alfabetizzazione sulla salute " (REHL) della NANDA-I (codice 00262) tra 185 UAFMs maschi e ha esplorato le caratteristiche definenti e i predittori.

RISULTATI: La prevalenza della REHL tra i partecipanti è stata del 36,8%. Gli UAFMs provenienti dal Kosovo e quelli con capacità di parlare inglese hanno mostrato tassi più elevati di REHL. Le caratteristiche chiave legate a una maggiore accuratezza diagnostica includevano un forte desiderio di comprendere le usanze locali relative alle decisioni sanitarie. Lo studio ha anche rilevato che il background culturale e le competenze linguistiche giocano un ruolo fondamentale nel plasmare la disponibilità all'alfabetizzazione sulla salute di questi minori.

CONCLUSIONI: Gli infermieri devono adottare approcci culturalmente sensibili e considerare le esigenze uniche degli UAFMs quando forniscono assistenza sanitaria. Ciò implica migliorare la loro disponibilità all'alfabetizzazione sulla salute tramite interventi personalizzati, migliorando così gli outcome sanitari complessivi per una popolazione molto vulnerabile. Migliorare l'alfabetizzazione sanitaria tra gli UAFMs richiede interventi sanitari culturalmente adattati. Gli infermieri sono fondamentali nell'affrontare queste esigenze, utilizzando strategie che tengano conto delle barriere linguistiche e culturali. Questo studio evidenzia l'importanza di ulteriori ricerche in questo campo e lo sviluppo di pratiche sanitarie mirate per migliorare i risultati di salute dei minori migranti.

Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

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BACKGROUND

Several humanitarian, climatic and economic crises have led to an unprecedented increase in migrants and refugees from the Middle East, Africa and Ukraine, attempting to reach different European countries. As a result, in 2023 Europe faced a significant influx of people seeking protection, reminiscent of the refugee crisis of 2015-2016 (1–3). Beyond the 1.1 million asylum seekers, countries provided protection to an additional 4.4 million beneficiaries under temporary protection schemes (3). Indeed, States belonging to the European Union (EU) hold both a legal and moral obligation to safeguard people in need (4). [Blinded for reviewer] should be considered a "transit country", since many migrants avoid staying there due to limited work and living opportunities, as well as the fear of expulsion, seeking instead to move towards France, Germany or other EU countries (1,5). Among the many routes covered by migrants to reach Europe, the term "Balkan corridor" was first used by the media to refer to the migration route passing through various Balkan countries. This corridor began in Turkey as an entry point to Europe, and stretched through Greece, Macedonia, Serbia, Hungary, Croatia, Slovenia, and Austria, with its path changing over time (1). Along this corridor, since 2015 [blinded for reviewer], particularly the city of [blinded for reviewer], became a "country of first arrival" for asylum seekers in the EU.

In this context, Unaccompanied Foreign Minors (UAFMs) represent a distinct migratory phenomenon. According to EU laws, UAFMs are people "who arrives on the territory of the Member States without being accompanied by an adult responsible for him or her, by law or by the practice of the Member State concerned, and until he is actually taken into care by such a person; includes a minor who is left unaccompanied after entering the territory of the Member States" (6). In 2022, 39,500 UAFMs seeking asylum in the EU were documented, mostly from Afghanistan, Syria, and Somalia along the Balkan corridor. UAFMs are mainly males, traveling alone or in groups of peers, who flee low-income or at-war countries searching for better life conditions and opportunities. The journey is mostly undertaken with meager financial means, often relying on criminal organizations.This exposes young migrants to considerable health risks and the danger of violence and abuse (7). Protecting UAFMs from exploitation and abuse is paramount for their safety and for fostering community stability. The implementation of comprehensive guidelines ensures they receive the necessary support to integrate into society, thereby promoting their well-being and contributing positively to their host countries (4). Unfortunately, conditions such as the absence of health information and the cultural and linguistic barriers are among the main obstacles to provide them adequate, timely and appropriate health care (8). Consequently, this vulnerability underscores the critical need to promote health literacy among this population.

Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

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Health literacy in Nursing Diagnosis

Health literacy (HL), first defined in 1974, is the ability to obtain, process, and understand health information to make appropriate decisions (9). Research has shown that HL is a crucial social determinant of health, essential for addressing challenges like vaccination coverage, healthcare access or disease prevention. HL is improved when a society provides accurate health information and services that people can easily find, understand, and use to inform their decisions and actions (10,11), highlighting that HL should not be understood only as an individual skill but that its improvement should be a clear responsibility of a State, through both health and non-health services for which is responsible. The nursing discipline play a fundamental role in pursuing the improvement of citizens' HL, equipping individuals with the knowledge and skills to manage their health effectively, leading to better health outcomes and more effective self-care practices. This aspect of nursing care can be effectively documented by "Readiness for enhanced health literacy" (REHL) standardized nursing diagnosis (NANDA-I diagnosis Code 00262), synthesizing the nurses' clinical judgment regarding this specific human responses to health conditions or life processes (12,13). In this context, REHL is defined as the aim of developing or strengthening a set of skills and competencies (literacy, knowledge, motivation, culture and language) to find, comprehend, evaluate and use health information and concepts to make daily health decisions to promote and maintain health, decrease health risks and improve overall quality of life. At present, no study explored the readiness for enhancing one's HL in a population of UAFMs.

Purpose

Therefore, the main aim of the present study was to assess the prevalence of REHL in a population of UAFMs. Moreover, since diagnosing REHL might be a peculiar process in such a population, the diagnostic accuracy of the defining characteristics and the potential sociodemographic predictors of this diagnosis were explored as secondary aims.

METHODS

Design

This was a cross-sectional study conducted in [*blinded for review*], following the STROBE Checklist (14).

Study setting and recruitment

All UAFMs who reached the study setting by the Balkan corridor and who were conducted at dedicated reception facilities from June 1st, 2022 to October 1st, 2023 were considered for enrolment.

Eligibility criteria

UAFMs were included if they consented in participating to the study after agreeing with a multilanguage informed consent form, regarding the study aims and procedure were provided. No exclusion criteria were identified.

Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

Sample Size Consideration

No formal a priori sample size calculation was conducted for this study. The sample consisted of all eligible UAFMs who arrived at the reception facilities during the study period and consented to participate. Given the exploratory nature of the research and the limited availability of this specific population, a convenience sampling approach was adopted.

Participant Flow

During the study period, 228 UAFMs were admitted to the reception facilities and considered eligible for inclusion. However, 43 individuals left the facility before the scheduled nursing assessment and could not be evaluated. Therefore, the final sample consisted of 185 participants who completed the full assessment and were included in the analysis. No refusals or exclusions were recorded among those assessed.

Data collection

The UAFMs were assessed in the reception facilities shortly after their arrival to exclude any critical or urgent medical condition. A more in-deep assessment was conducted by two specifically trained nurses by the first 72 hours from arrival, aimed at collecting sociodemographic information and clinical data. Whenever possible, data were collected thanks to the cultural mediation of an interpreter. In other cases, translation was supported in English by a UAFM peer or, in the absence of other solutions, by typing questions and answers on Google Translator. Data collection included the dates of arrival and discharge from the reception center, as well as socio-demographic factors (e.g., reported date of birth—due to lack of documents, gender, country of origin, native language, other languages spoken, reading and writing abilities) and clinical factors (e.g., medical history, pain presence and intensity, visual and auditory function, dental health, body mass index [BMI], presence of wounds, psychological distress, medical consultations, and health interventions provided). Nursing assessment was conducted according to Gordon's Functional Health Patterns models (15), aiming at identifying the possible presence of nursing diagnoses, according to the NANDA-I taxonomy.

Diagnostic methodology

Given the specific nature of the population identified (UAFMs housed in public reception facilities), to establish the presence of the nursing diagnosis REHL, a selection of the defining characteristics to be considered during the assessment process was done. The characteristic indicating a desire to improve basic literacy skills for everyday health needs (labeled DC1 for the study aim), was considered essential due to the high prevalence of illiteracy within the study population, which exceeded rates expected among European peers. The desire to understand local customs and beliefs to make informed healthcare decisions (DC2) was assessed due to the population's significant linguistic and cultural differences from caregivers, stemming from being in

Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

a foreign country with distinct cultural norms. Similarly, the desire to improve communication with healthcare providers (DC3) was also included, as the reference population did not share a common language with their caregivers, creating barriers to effective health communication. Finally, the assessment also considered whether UAFM expressed the desire to enhance understanding of health information to make health care choices (DC4) or the desire to obtain sufficient information to navigate the health care system (DC5), based on the fact that the reference population, often consisting of minors, had been self-reliant for long periods without access to healthcare and social services. These individuals frequently needed to manage their health autonomously, emphasizing the importance of health literacy and system navigation.

Conversely, other defining characteristics were not considered by the assessment procedure. In detail, the UAFM's interest in understanding civic or governmental processes impacting public health, as well as his knowledge of social and environmental health determinants, were not considered due to the participants' uncertain intentions regarding permanent residency in the country. Moreover, the desire to make independent healthcare decisions was omitted as the minors were under the responsibility of legal guardians and lacked language skills to make informed choices autonomously. Finally, the desire to enhance social support for health was also not assessed since all possible support systems had already been activated for this group. Moreover, since

no defined number of DCs whose presence indicates the existence of an ND has been definitively been established (13), the diagnosis was assigned in presence of at least two DCs.

Data analysis

All analyses were conducted using the Jamovi statistical software (version 2.3.21.0). Normality of distributions was assessed using the Shapiro-Wilk test, and homogeneity of variance between groups was tested with the Levene test. Sociodemographic variables were presented using medians, interquartile ranges (IQR) and range. Categorical variables were presented as numbers and percentages, and differences between proportions were assessed using the χ^2 test or Fisher's exact test, as appropriate.

The diagnostic accuracy of each included DCs—considered alone on in any reciprocal combination—was tested.

A binomial logistic regression model was run to test the independent predictors on REHL, considering all variables showing a statistically significant association with the diagnosis in bivariate analyses. Polychotomous variables (i.e., Country, BMI categories) were converted into dichotomous variables to compare the category with the higher prevalence of REHL with the remaining population. Variance inflation factors (VIFs) and tolerance indexes (TIs) were computed to examine the degree of interrelationship of individual predictors with other explanatory variables.

Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

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For all tests, the level of statistical significance was set at p < 0.05.

Missing Data Management

For some variables, data were not available for all participants due to incomplete assessments or communication barriers. These missing values were handled using listwise deletion in the statistical analyses. The number of valid cases for each variable is reported in the corresponding tables.

Ethical considerations

This study belongs to the MIGRATION (MultidImensional nursinG Rapid heAlth assessmenT for foreIgn unaccOmpanied miNors) project, having as its primary objective to describe the sociodemographic characteristics and health problems of UAFMs. The MIGRATION study was approved by the Ethics Committee of [*blinded for review*] (protocol 122, 23/5/2022).

RESULTS

A total of 185 UAFMs, were included. They were all males, with a median age of 17 years (IQR: 16.5–17; range: 10–17). The median duration of the journey was 364 days (IQR: 36.3–750; range 1–2878). Table 1 shows the participants' sociodemographic and clinical profile.

UAFMs coming from Pakistan (n=58; 31.4%), Afghanistan (n=57; 30.8%) and Kosovo (n= 56; 30.1%) constituted the largest ethnic groups.

According to their native language, the most UAFMs spoke Pashto (n=72; 38.9%), followed by Albanian (n=57; 30.8%), Urdu (n=28; 15.1%) and Farsi (n=13; 7.0%). Forty-one UAFMs (22.2%) were illiterate, while 60 (32.4%) were able to speak English, although with different levels of fluency.

The prevalence of REHL was 36.8% (n=68). The diagnosis was significantly associated with the country of origin, with the highest prevalence among individuals from Kosovo ($p<0.001$). Additionally, English proficiency was significantly higher among those with REHL ($p=0.001$). BMI categories also showed significant differences, being more individuals with REHL overweight ($p=0.005$). A statistically significant association ($p=0.014$) between REHL and sleep disorders was documented as well (Table 1).

The most prevalent defining characteristic was DC2 (n=77; 41.4%), followed by DC5 (n=55; 29.6%), DC3 (n=50; 26.9%) and DC4 (37; 19.9%), while DC1 (n=4; 2.2%) was only seldom assessed. The highest diagnostic accuracy (89.7%) was shown by DC2 and the lowest by DC5 (58.4%), both when considered in any combination with the other DCs (Figure 1).

The multivariable logistic regression model explained about 17.8% of the variance in REHL. The model shows good fit with low collinearity (VIF: 1.01–1.01) and good tolerance (0.936–0.993) among predictors. Individuals from Kosovo and those with English proficiency have a statistically significant higher odds of having REHL (Table 2).
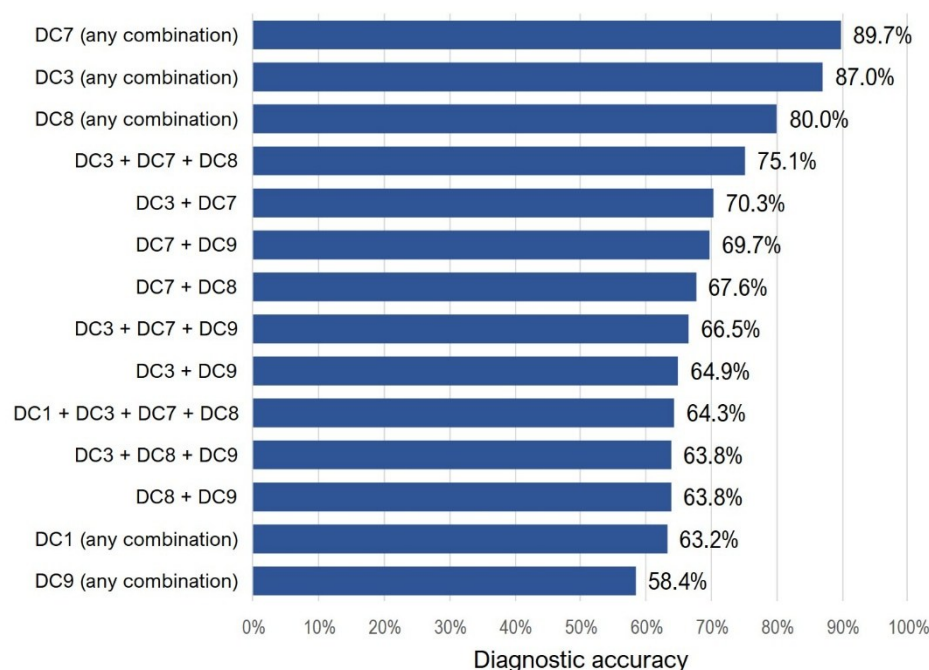
Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

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Table 1. Association of REHL with sociodemographic and clinical characteristics of the study population

Characteristic	All UFAMs	REHL: yes	REHL: no	p-value
Country of origin				< 0.001
Pakistan	58 (31.4%)	21 (36.2%)	37 (63.8%)	
Afghanistan	57 (30.8%)	4 (7.0%)	53 (93.0%)	
Kosovo	56 (30.3%)	39 (69.6%)	17 (30.4%)	
Other	14 (7.6%)	4 (28.6%)	10 (71.4 %)	
English proficiency (yes)	60 (32.4%)	32 (53.3%)	28 (46.7%)	0.001
Illiteracy (yes)	41 (22.2%)	12 (29.3%)	29 (70.7%)	0.26
Body mass index*				0.005
Underweight	33 (21.3%)	7 (21.2%)	26 (78.8%)	
Healthy weight	107 (69.0%)	50 (46.7%)	57 (53.3%)	
Overweight	15 (21.3%)	10 (66.7%)	5 (33.3%)	
Poor oral health (yes)	107 (57.8%)	42 (39.2%)	65 (60.8%)	0.41
Violence experience** (yes)	76 (76.8%)	2 (2.6%)	74 (97.4%)	0.432
Sleep disorders*** (yes)	45 (25.1%)	24 (53.3%)	21 (46.7%)	0.014
Actual pain (yes)	63 (34.2%)	20 (31.7%)	43 (68.3%)	0.31
Wounds and injuries** (yes)	47 (25.4%)	11 (23.4%)	36 (76.6%)	0.028
Scabby** (yes)	46 (24.9%)	8 (17.4%)	38 (82.6%)	0.002
Medical consultation** (yes)	27 (14.6%)	5 (18.5%)	22 (81.5%)	0.033

*: n=155. **: n=99 ***: n.=179

Figure 1. Diagnostic accuracy of each DC or combination of DCs

Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

Table 2. Multiple logistic regression of the REHL (dependent variable) on UAFMs characteristics

Predictor	OR (95% CI)	p-value
Kosovo citizen*	6.20 (2.84–13.54)	< 0.001
English proficency: yes	3.10 (1.43–6.71)	0.004
Overweight individual*	0.65 (0.18–2.31)	0.508
Sleep disorders: yes	0.64 (0.29–1.43)	0.276

*: compared to the whole remaining population

DISCUSSION

In a population of male adolescents UAFMs, REHL was documented in more than one in three subjects. After adjusting for sociodemographic and clinical factors, REHL was found as significantly associated to the country of origin and English proficiency. Viewed in hindsight, this finding seems totally logical. Indeed, to manifest the readiness to enhance health literacy, individuals should be aware that increasing knowledge on prevention and treatment procedures can lead to a better state of health. Before that, however, it would be necessary to know what "good health" is for each individual, as this concept has not a universally recognized definition for different cultures worldwide. Nurses, who deal with health at a professional level, are mostly involved in caring for people of their own culture, which usually shares some fundamental principles on the meaning of health. Within this context, despite some important exceptions such as different "ideologies" on vaccination policies, improving health literacy can be considered an expected ambition of every citizen. Furthermore, the different possibilities of access to care—linked to a State level of wealth and to the more or less universalistic models for free access to care—makes the expectations of different ethnic and national groups extremely different.

According to our findings, individuals from Kosovo demonstrating higher health literacy. The presence of this population among UAFMs is surprising. Indeed, although not belonging to the EU, Kosovo is geographically a European country, which neither have a low standard of living nor is at war. However, despite Kosovo is a fully-fledged "Western" country, migration from Kosovo has been driven in the last decades by a combination of economic and socio-political factors. Historically, emigration surged due to ethnic discrimination, human rights violations, and extreme poverty during the 1990s. In recent years, high unemployment, particularly among youth, low wages, political instability, and poor infrastructure have continued to push Kosovars to seek better opportunities abroad. Additionally, family reunification and the aspiration to align with EU standards have further fueled migration (16). This observation supports that cultural and educational backgrounds play a crucial role in shaping health literacy (17). Refugee youths often bring different cultural and educational experiences that influence their understanding of health concepts. The variations in REHL based on country of origin suggest that cultural competence and tailored education are necessary to address these disparities effectively.

The 22.2% illiteracy rate among UAFMs documented in the present investigation was notably higher compared to the 0.67% rate reported in the general

Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

European population (18), highlighting significant educational disparities. In Afghanistan, Kosovo, and Pakistan, the education systems face significant challenges in both access and quality. In Afghanistan, ongoing conflict and traditional norms severely limit access to education, with many children, especially girls, unable to attend school due to systemic misogyny within the government, safety concerns and a shortage of qualified teachers (19). The situation is similar in Pakistan, where socio-cultural barriers and inadequate infrastructure particularly hinder girls' education, leading to low literacy rates and widespread educational inequality (20). Conversely, despite also Kosovo struggles with early childhood education, where marginalized communities face limited access and poor-quality learning environments (21), in our sample Kosovar people showed higher literacy rates compared to other groups. This could be explained by Kosovo's strong sense of European identity, which is shaped by its close ties to the EU and its aspirations for EU membership. The EU has been a major supporter of Kosovo's development, providing significant political and financial aid aimed at institution-building, socio-economic progress, and alignment with European standards. These efforts are part of the broader pre-accession process, which fosters both structural and cultural affinities with Europe (22)

Although English has been considered worldwide the international language for communication for decades (23), in the present investigation we documented only 32.4% of varying degrees of English proficiency among UAFMs, with no significant differences based on geographical origin. It should be noted that English is mandatory in Europe's compulsory education system, which extends up to the age of 16 (24). The lack of English proficiency among UAFMs can be attributed to their low levels of formal education prior to migration. However, many UAFMs learned some English during their journey, acquiring basic skills through interactions and the necessity of communication as they move across different countries. This highlights the crucial role of language skills in accessing and understanding health information. The association between REHL and English proficiency underscores the importance of effective communication, which aligns with the definition itself of HL involving the ability to obtain, process, and understand health information (25).

Limitations

This study has several limitations. First, the findings are based on data collected exclusively from unaccompanied adolescent males residing in specific reception facilities. As such, the generalizability of the results to UAFMs in other regions, those outside formal reception systems, or female minors remains uncertain. Second, although efforts were made to ensure accurate communication during data collection through the support of interpreters or English-speaking peers, language barriers persisted. In some cases, informal digital translation tools such as Google Translate were used. These methods, while

Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

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necessary in the absence of formal mediation, were not formally validated and may have led to inaccuracies or misunderstandings, potentially affecting the reliability of participants' responses. Third, the study did not extensively explore cultural norms, health beliefs or pre-migration experiences of participants, all of which may significantly influence health literacy levels and readiness. These unmeasured variables could help explain the variability observed across different subgroups and should be considered in future research. Finally, the diverse cultural and linguistic backgrounds of the participants may have influenced their interpretation of health-related concepts and their responses during the assessment. Although cultural mediators were involved when possible, the absence of structured and standardized mediation strategies limits the ability to fully control for cultural and linguistic bias. Future studies should consider the use of culturally validated instruments and more robust mediation protocols to enhance data accuracy and interpretability.

Implications for nursing practice

As discussed above, limited English proficiency and illiteracy posed a significant barrier for UAFMs in navigating the health system effectively. This result underscores the need for targeted interventions to improve health literacy among UAFMs, that address the specific needs of different subgroups within the UAFMs population. Effective strategies should incorporate language support, cultural sensitivity, and

tailored health education programs. Addressing the specific needs of UAFMs through culturally sensitive and linguistically appropriate health interventions is essential for promoting health literacy and improving integration into healthcare systems.

Nurses, in particular, play a critical role in bridging these gaps by recognizing the cultural and linguistic challenges and implementing targeted interventions aimed at enhancing UAFMs' health literacy. For nurses caring for young migrants, assessing health literacy is crucial in daily practice. Health literacy goes beyond merely lacking health knowledge; it encompasses a distinct dimension that can be interpreted differently depending on cultural background. Understanding these cultural variations is essential for providing effective and appropriate care. Moreover, identifying predictive factors can enhance the accuracy of diagnosing REHL evaluating, in particular, the interconnections between different DCs.

CONCLUSIONS

Nursing diagnosis of REHL was not yet been studied in UAFMs. This study offers valuable insights into the prevalence and predictors of REHL among UAFMs in a particular European setting. The findings highlight the significant role of cultural background in shaping health literacy within this vulnerable population. The study also revealed variability in the accuracy of different DCs used to assess REHL, suggesting a need to refine diagnostic tools and

Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

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strategies. Future research should focus on further exploring the interconnections between the defining characteristics of REHL and identifying the most effective strategies to enhance health literacy among migrant youth. By improving the accuracy of REHL diagnoses and tailoring health education programs, nurses can contribute significantly to the well-being of UAFMs, fostering their successful integration and long-term health outcomes.

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Conflict of Interest

The Authors declare no conflict of interest

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Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste

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Corresponding author:
Claudia Fantuzzi: cfantuzzi@units.it
Corso di Laurea in Infermieristica, Università degli studi di Trieste, Via Valmura 16/10, 34148, Trieste