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RESEARCH ARTICLE (ORIGINAL)

Critical Health Literacy Promotion in a Rural Community: Findings from a Participatory Approach

Promoção da Literacia Crítica em Saúde numa Comunidade Rural: Um Diagnóstico Participativo

Promoción de la Alfabetización Crítica en Salud en una Comunidad Rural: Un Diagnóstico Participativo

Odete Maria Azevedo Alves [1, 2, 3]
https://orcid.org/0000-0002-1294-3407

Alexandrina Marques Rodrigues [2]
https://orcid.org/0009-0009-5011-7980

Sara Rufo [2]
https://orcid.org/0009-0006-3651-1517

Bárbara Vilela [4]
https://orcid.org/0009-0004-7500-0934

Lídia Soares [1]
https://orcid.org/0000-0001-6156-7869

Carminda Morais [3, 5, 6]
https://orcid.org/0000-0001-8995-9012

Pedro Miguel de Almeida Melo [7]
https://orcid.org/0000-0002-0005-6384

[1] University of Porto, School of Medicine and Biomedical Sciences (ICBAS), Porto, Portugal

[2] Local Health Unit of Alto Minho, Community Care Unit of Ponte da Barca, Viana do Castelo, Portugal

[3] Polytechnic Institute of Viana do Castelo, School of Health, Viana do Castelo, Portugal

[4] São João de Deus Institute, *Casa de Saúde de S. José*, Gelfa Health Unit, Viana do Castelo, Portugal

[5] Nursing School of Coimbra, Health Sciences Research Unit: Nursing (UICISA: E), Coimbra, Portugal

[6] University of Coimbra, Center for Health Studies and Research of the University of Coimbra, Center for Innovative Biomedicine and Biotechnology (CEISUC/CIBB), Coimbra, Portugal

[7] University of Porto, Nursing School of Porto, RISE Health, MAIEC Lab, Porto, Portugal

Corresponding author
Odete Maria Azevedo Alves
E-mail: odete.alves@ulsam.min-saude.pt

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Abstract
Background: Health literacy is essential for empowering communities to adopt healthy behaviors and utilize health services effectively. In rural areas, however, limited access to information and healthcare can significantly affect health literacy levels due to sociodemographic and environmental factors.
Objective: To assess health literacy levels in a rural community and, using the PRECEDE dimension, identify determinants and priority areas for a participatory intervention.
Methodology: A mixed-methods study was conducted. The quantitative component included 381 participants and used the Portuguese version of the European Health Literacy Survey Questionnaire (HLS-EU-PT). The qualitative component comprised two focus groups and a Delphi panel with community representatives based on the PRECEDE-PROCEED model.
Results: A large proportion of participants (81.1%) demonstrated inadequate/problematic health literacy levels, which were significantly associated with age, education, and economic activity status. The qualitative analysis identified predisposing, reinforcing, and enabling factors and prioritized interventions focused on improving accessibility to information, strengthening digital skills, and engaging local partners.
Conclusion: Promoting health literacy requires contextualized, participatory strategies that foster empowerment, equity, and sustainability, as evidenced by the identification of low health literacy levels in this community.

Keywords: health literacy; community health nursing; community health services; community-based participatory research; health promotion

Resumo
Enquadramento: A literacia em saúde (LS) é essencial para capacitar comunidades na adoção de comportamentos saudáveis e utilizar serviços de saúde de forma informada. Em contextos rurais, fatores sociodemográficos e ambientais condicionam os níveis de LS, especialmente, dada a limitação no acesso à informação e cuidados.
Objetivo: Analisar os níveis de literacia numa comunidade rural e identificar, segundo o modelo PRECEDE, fatores determinantes e áreas prioritárias para intervenção participativa.
Metodologia: Estudo de abordagem mista. A componente quantitativa incluiu 381 participantes, com aplicação do Portuguese version of the European Health Literacy Survey Questionnaire (HLS-EU-PT). A qualitativa integrou dois grupos focais e um painel Delphi, com representantes comunitários, baseados no modelo PRECEDE-PROCEED.
Resultados: Verificou-se que 81,1% apresentaram níveis inadequados/problemáticos de LS, com associação significativa à idade, escolaridade e condição profissional. A análise qualitativa permitiu identificar fatores predisponentes, de reforço e facilitadores, priorizar intervenções centradas na acessibilidade à informação, capacitação digital e envolvimento dos parceiros locais.
Conclusão: Promoção da LS exige estratégias participativas contextualizadas, que favoreçam o empoderamento, equidade e sustentabilidade, demonstradas pela identificação de níveis baixos de LS.

Palavras-chave: literacia em saúde; enfermagem em saúde comunitária; serviços de saúde comunitária; pesquisa participativa baseada na comunidade; promoção da saúde

Resumen
Marco contextual: La alfabetización en salud (LS) es esencial para capacitar a las comunidades en la adopción de comportamientos saludables y el uso informado de los servicios de salud. En los contextos rurales, los factores sociodemográficos y ambientales condicionan los niveles de LS, especialmente debido a las limitaciones en el acceso a la información y la atención sanitaria.
Objetivo: Analizar los niveles de alfabetización en una comunidad rural e identificar, según el modelo PRECEDE, los factores determinantes y las áreas prioritarias para la intervención participativa.
Metodología: Estudio de enfoque mixto. El componente cuantitativo incluyó a 381 participantes, con la aplicación del cuestionario HLS-EU-PT. La investigación cualitativa integró dos grupos focales y un panel Delphi, con representantes comunitarios, basados en el modelo PRECEDE-PROCEED.
Resultados: Se observó que el 81,1 % presentaba niveles inadecuados/problemáticos de LS, con una asociación significativa con la edad, el nivel educativo y la condición profesional. El análisis cualitativo permitió identificar factores de predisposición, refuerzo y facilitación, y priorizar intervenciones centradas en la accesibilidad a la información, la capacitación digital y la participación de los colaboradores locales.
Conclusión: La promoción de la LS exige estrategias participativas contextualizadas que favorezcan el empoderamiento, la equidad y la sostenibilidad, demostradas mediante la identificación de niveles bajos de LS.

Palabras clave: alfabetización en salud; enfermería comunitaria; servicios de salud comunitarios; investigación participativa basada en la comunidad; promoción de la salud.

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Introduction

Health literacy (HL) is recognized as one of the fundamental pillars of health promotion (HP), with a direct impact on quality of life and the reduction of health inequalities (Nutbeam, 2000; Sørensen, 2023). According to the World Health Organization (WHO), promoting HL requires not only the development of individual skills but also the strengthening of policies, health systems, and community partnerships that address population needs (WHO, 1986; Sørensen, 2023). In Portugal, the National Plan for Health and Behavioral Sciences Literacy 2023–2030 reinforces this commitment by prioritizing scientific evidence-based interventions with vulnerable groups (Arriaga et al., 2023). In rural communities, socioeconomic challenges and limited access to health services exacerbate inequalities (Alves et al., 2019), making the strengthening of HL essential for empowering populations and promoting healthy behaviors (Alves et al., 2019; Espanha et al., 2016; Madeira, 2016). Evidence indicates that HL is influenced by social, demographic, cultural, and environmental factors, which require integrated and contextualized approaches (Madeira, 2016; Nutbeam, 2000). This study uses the PRECEDE–PROCEED model (Gielen et al., 2022) and mixed-methods research to investigate HL levels in a rural community in Alto Minho, Portugal, and to analyze the relationship between HL and sociodemographic factors, as well as to inform participatory HP strategies. The study's objective is to evaluate literacy levels in a rural community and, using the PRECEDE dimension, identify the primary determinants and priority areas for participatory interventions.

Background

Community Health and Public Health Nursing competencies are regulated by Portuguese legislation (Regulamento n. º 428/2018 da Ordem dos Enfermeiros., 2018), which provides Community Health and Public Health nurses with a competency framework for differentiated clinical decision-making in health planning, group and community empowerment, epidemiological surveillance, and coordination of community programs. In 1986, the Ottawa Charter recognized HP as a process aimed at enhancing the capacity of individuals and communities to control and improve their health. For this purpose, it outlined five guiding principles: building healthy policies, creating supportive environments, strengthening community action for health, developing personal skills, and re-orienting health services (WHO, 1986). These principles connect individuals, groups, and communities to their socio-political environments in order to foster their development. In 2009, the Nairobi Conference reaffirmed the importance of HP and emphasized the value of community empowerment and HL as essential tools grounded in social and health determinants (WHO, 2009). One of the first models adopted by the WHO was Nutbeam's (2000) model, which focuses on social and cognitive skills that enable individuals to access, understand, and use information to promote and maintain health throughout their lives. To support progressive empowerment, Nutbeam identifies three levels of HL: basic/functional literacy, communicative/interactive literacy, and critical literacy (Nutbeam, 2000). In 2013, the WHO adopted the model proposed by Sørensen et al. (2012), which expands the HL concept by considering the influence of personal determinants (e.g., age, gender, race, socioeconomic status, education, occupation, employment, income, and literacy, among others), societal and environmental determinants (e.g., demographic situation, culture, language, political forces, and health and societal systems), and situational determinants (e.g., family support, family and peer influences, media use, and physical environment). In Portugal, the application of the Portuguese version of the European Health Literacy Survey Questionnaire (HLS-EU-PT) revealed concerning HL levels and significant disparities among sociodemographic groups (Pedro et al., 2016), reinforcing the need for locally tailored strategies. The HL concept has been incorporated into various Portuguese public policy instruments, such as the Action Plan for Health Literacy 2019–2021, the National Health Plan 2021–2030, and the National Plan for Health and Behavioral Sciences Literacy 2023–2030. These documents identify HL as a strategic priority for improving well-being and quality of life across the lifespan and for ensuring the sustainability of the healthcare system (Arriaga et al., 2023; Direção-Geral da Saúde, 2022; Arriaga et al., 2019). The PRECEDE–PROCEED model (Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation; and Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development) is widely used in HP, being grounded in participatory methodologies (Gielen et al., 2022). This model comprises two dimensions — Planning (PRECEDE) and Evaluation (PROCEED).

The PRECEDE dimension involves participatory assessment through community engagement, enabling participants to understand problems and identify the resources to solve them. It also allows identifying people's goals from social, economic, cultural, and environmental perspectives. This dimension includes five assessment stages: (1) Social assessment: Engages the community in identifying needs and defining the desired quality of life; (2) Epidemiological assessment: Characterizes health problems and identifies associated behaviors and environmental determinants; (3) Behavioral and environmental assessment: Prioritizes behavioral and environmental risk factors that affect health: (4) Educational and ecological assessment: Analyzes predisposing, reinforcing, and enabling determinants that influence behaviors and living conditions; (5) Administrative and policy assessment: Identifies available resources and policies necessary for program implementation.

The PROCEED dimension builds on these findings, focusing on implementing actions and strategies and evaluating their outcomes (Gielen et al., 2022). Participatory approaches, such as those advocated by the International Collaboration for Participatory Health Research (ICPHR) (Wright, 2015), engage communi-

ties, leaders, and stakeholders from project inception to evaluation, fostering collaborative problem-solving. This practice encourages critical reflection on social and environmental health determinants and strengthens community empowerment (Freire, 2018). Nurse specialists in Community Health and Public Health Nursing play a crucial role in these processes due to their close relationship with communities and their technical and interpersonal competencies (Enriquez et al., 2018; Melo & Alves, 2019). Applying participatory approaches such as the PRECEDE–PROCEED model has proven effective in addressing complex health challenges and promoting social and political change, particularly when adapted to community contexts (Araújo et al., 2023; Gielen et al., 2022; Laverack, 2006). These initiatives align with the United Nations Sustainable Development Goals ([SDGs]; United Nations, 2023) and Portugal's National Health Plan 2021–2030 (Direção-Geral da Saúde, 2022). Thus, HP, HL, and participatory strategies represent essential pillars for improving health outcomes, reducing inequalities, and ensuring the sustainability of healthcare systems.

Research questions

What HL levels were identified in the rural community studied? How do sociodemographic determinants influence HL levels? Based on the PRECEDE dimension, what findings emerged from the rural community under study? After the assessments were made, what were the priority areas for participatory interventions to promote HL in this community?

Methodology

This study adopted a mixed-methods approach (quantitative and qualitative). The quantitative component was exploratory, descriptive-analytical, correlational, and cross-sectional, while the qualitative component was explanatory, focusing on the understanding of the community in its natural context and emphasizing meanings, experiences, and practices.

The quantitative research was conducted in a rural community in Alto Minho, northern Portugal. The sample was non-probabilistic, comprising 381 individuals aged 15–90 years, stratified by gender and age according to the community's population distribution in the 2021 Census. The sample was defined based on minimum representativeness by age strata and population size (in that geographical area) to ensure adequate coverage for an exploratory analysis of HL in the rural context. Individuals with a clinical diagnosis of disabling mental illness or profound communication disorders were excluded, based on assessments by the local health team during recruitment. For participants aged 15–17, informed consent was obtained from their parents or guardians. Recruitment was facilitated by the Community Care Unit (UCC) in collaboration with community institutions. There were no significant losses or refusals after initial recruitment. Quantitative data were collected using the HLS-EU-PT (Pedro et al., 2016; Nunes et al., 2014), comprising 47 questions grouped into three dimensions and four levels of processing. HL was classified into four levels: inadequate (≤25 points), problematic (25–33 points), sufficient (33–42 points), and excellent (42–50 points). For analytical purposes, these were further grouped into two categories: inadequate/problematic (inadequate + problematic) and sufficient/excellent (sufficient + excellent). The questionnaire was administered in person through individual interviews conducted by the researchers. Support from local facilitators in parish councils, who assisted in identifying and contacting participants, promoted access to various population segments. This strategy facilitated questionnaire completeness and accessibility and item comprehension, particularly among individuals with low education or limited digital literacy. A maximum sampling error of 1% and a significance level of 5% were defined. Missing data were analyzed for frequency and pattern. As the omitted values were minimal (<5%) and randomly distributed, cases with incomplete data were excluded only from the specific analyses in which they occurred (by variable). This approach explains slight variations in totals for sociodemographic variables relative to the overall sample size (n = 381). Statistical imputation was not used. Descriptive statistics, including absolute and relative frequencies, the mean, and the standard deviation (represented as mean ± SD), and the association between sociodemographic variables (age, gender, education level, and economic activity status) and HL were examined to describe the sample. Variables were recoded for greater analytical consistency. The qualitative component involved seven members of the multidisciplinary team from the UCC and 11 community representatives and partners. Participants were selected based on representativeness, knowledge of the territory, community health status, Local Health Plan priorities, access to services, motivation, and willingness to engage in participatory processes. The group was diverse in terms of education level, gender, and social roles. Two focus groups were conducted to explore experiences, practices, and perceptions, complemented by documentary sources, such as the municipality's Social Diagnosis, and data from Statistics Portugal and the Local Health Plan. A semi-structured script based on the domains of the PRECEDE dimension was used to lead the focus groups, containing open questions on health perceptions, barriers to access, self-care practices, and local priorities. The script was pretested with UCC professionals to ensure appropriateness regarding language and local context. Qualitative data from the focus groups were analyzed using Bardin's content analysis, with inductive thematic coding. Two researchers independently coded the data and then discussed their results to reach a consensus. Data saturation was considered achieved when no new categories emerged. To strengthen credibility, triangulation with secondary data was performed, and results were shared with key participants. Although participants' statements are not included in this article, they were integral to category development. The team continuously reflected on potential biases throughout the research process. Focus group sessions were held in familiar environments to encourage

comfort and spontaneity. They were facilitated by two researchers experienced in qualitative research and specialized in Community Health and Public Health Nursing. Both were familiar with the territory but maintained no personal or hierarchical relationship with participants, thus ensuring neutrality. The team's experience with participatory methodologies supported an ethical and sensitive approach, minimizing potential biases. Researchers' training in Community Health and Public Health Nursing was also particularly relevant in facilitating focus groups, mediating with community partners, and conducting the participatory assessment process in coordination with the UCC. The PRECEDE phase was conducted in close collaboration with the community and local partners, using the Delphi panel method and involving 21 experts. The panel was conducted in two rounds, with content analysis of experts' responses on the priority areas for intervention. The thematic systematization of the information enabled the maximization of experts' consensus on priorities based on the frequency, convergence, and relevance of contributions. The study adhered to ethical and legal principles, ensuring informed consent, confidentiality, and subsequent data destruction. The protocol was approved by the Ethics Committee of the Local Health Unit (Opinion No. 19-2018) and complied with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) recommendations for reporting observational studies.

Results

Relevant data were identified through both quantitative and qualitative methods. The quantitative study involved a sample of 381 individuals from a rural community, aged 15 to 90 years (X = 49.93 ± 1.03 years). Of these, 43.8% (n = 167) were aged 35–64 years, 28.1% (n = 107) were aged 15–34 years, and 28.1% (n = 107) were aged ≥65 years. In total, 52.2% (n = 199) were women and 47.8% (n = 182) were men, with the majority living in co-residence (92.4%). In terms of education, 42.1% (n = 159) of participants had completed the first cycle of basic education, 45.5% (n = 172) had completed the second or third cycle of basic education or upper secondary education, and 12.4% (n = 47) had completed higher education (i.e., a bachelor's degree or higher). Regarding economic activity status, 50.7% (n = 190) were economically active, while 49.3% (n = 185) were economically inactive.

According to the HLS-EU-PT (Pedro et al., 2016) results, in the General HL Index, 81.1% of participants (n = 339) had inadequate/problematic levels of general HL, while 18.9% had sufficient/excellent levels. In the Health Care domain, 75.5% (n = 322) had inadequate/problematic HL, and 24.5% had sufficient/excellent HL. In the Disease Prevention domain, 79% (n = 290) had inadequate/problematic HL, and 21% had sufficient/excellent HL. In the Health Promotion domain, 84.8% (n = 323) had inadequate/problematic HL, and 15.2% had sufficient/excellent HL.

Across the General HL Index and all three domains (Health Care, Disease Prevention, and Health Promotion) of the HLS-EU-PT, the majority of participants exhibited inadequate/problematic HL, a pattern particularly pronounced in the Health Promotion domain.

Statistically significant differences were found between HL and all sociodemographic variables studied, as presented in Table 1.

Table 1

Health literacy levels by sociodemographic variables (n = 381)

Variables	*Inadequate/ Problematic* % (*n*)	*Sufficient/ Excellent* % (*n*)	X^2	*gl*	*p*
Age group (*n* = 381)			17.554	2	< 0.001
15-34 years (107)	33.0 (*n* = 35)	67.0 (*n* = 72)			
35-64 years (167)	37.7 (*n* = 63)	62.3 (*n* = 104)			
> = 65 years (107)	60.4 (*n* = 65)	39.6 (*n* = 42)			
Gender (*n* = 381)			4.423	1	0.035
Male (182)	37.0 (*n* = 67)	63.0 (*n* = 115)			
Female (199)	48.3 (*n* = 96)	51.7 (*n* = 103)			
Education level (*n* = 378)			11.863	2	0.003
Low (159)	52.8 (*n* = 84)	47.2 (*n* = 75)			
Medium (172)	32.9 (*n* = 57)	67.1 (*n* = 115)			
High (47)	41.9 (*n* = 20)	58.1 (*n* = 27)			
Economic activity status (*n* = 375)			7.399	1	0.007
Active (190)	35.5 (*n* = 67)	64.5 (*n* = 123)			
Inactive (185)	50.3 (*n* = 93)	49.7 (*n* = 92)			

Note. % = Percentage; n = Sample; gl = Degrees of freedom; X^2 = Chi-square; *p* = significance; df = Degrees of freedom; level; Low = First cycle of basic education; Medium = second or third cycle of basic education or upper secondary education; High = Higher education.
*Totals per variable may be less than *n* = 381 due to missing values in responses regarding education level (*n* = 378) and economic activity status (*n* = 375), with a significance level of $p < 0.05$.

In terms of age, participants aged ≤64 years more frequently demonstrated sufficient/excellent HL levels, while among those aged ≥65, 60.4% had inadequate/problematic HL. Regarding gender, both men and women predominantly presented sufficient/excellent HL levels, although a higher proportion of women (48.3%) were in the inadequate/problematic category. Concerning education, participants with low educational attainment (up to the first cycle of basic education) exhibited higher rates of inadequate/problematic HL (52.8%). In contrast, those who had completed medium (second or third cycles of basic education or upper secondary education) or higher (i.e., a bachelor's degree or higher) levels of education showed greater proportions of sufficient/excellent HL (67.1% and 58.1%, respectively). In relation to economic activity status, economically active participants more often had sufficient/excellent HL (64.5%), while economically inactive participants predominated in the inadequate/problematic category (50.3%). All associations between sociodemographic variables (age, gender, education, and economic activity status) and HL levels were statistically significant.

Data from the qualitative research were organized into five assessment stages according to the PRECEDE dimension. Within each assessment stage, thematic categories were identified through the analysis of participants' focus group discussions.

The social assessment stage revealed thematic categories such as difficulties in accessing health information (e.g., how to act in emergencies), low adherence to healthy practices, and the persistence of myths and cultural beliefs. Chronic diseases — such as malignant tumors, stroke, and respiratory illnesses — were linked to behaviors including excessive alcohol use, poor diet, and physical inactivity. Social isolation and the vulnerability of older adults, particularly those with psychocognitive conditions, emerged as recurring themes. Adverse housing conditions, inadequate sanitation, socioeconomic inequalities, high unemployment rates, and weak support networks were also identified as critical factors. Limited accessibility and caregiver burden were associated with the lack of effective local policies for HP and community engagement.

The epidemiological assessment stage highlighted thematic categories such as cardiovascular diseases, malignant tumors, and respiratory diseases, associated with determinants such as aging, excessive alcohol use, and unhealthy lifestyles. Aging emerged as a cross-cutting factor, increasing dependency among older adults and caregiver burden. Excessive alcohol use was also considered problematic, with significant impacts on mortality. This scenario underscores the need for an integrated, multisectoral approach addressing not only the symptoms but also the underlying social and behavioral causes. The behavioral and environmental assessment stage identified risk behaviors such as excessive alcohol use, low vaccination coverage, and misconceptions about health. Environmental determinants included exposure to smoke from prescribed burnings, lack of infrastructures, inadequate sanitation, and poor road networks. Easy access to harmful products near schools was also seen as a reflection

of insufficient legislation. The educational and ecological assessment stage pointed out predisposing factors such as low educational levels, illiteracy, and cultural myths that hinder behavioral changes. Reduced participation in health education programs, particularly among older adults and vulnerable groups, reflected weak reinforcing factors such as lack of motivation and social support for adopting healthy behaviors. Limiting factors, including lack of adequate infrastructures, insufficient community-adapted programs, and underutilized local resources, were also mentioned. Some participants identified potential facilitators that could be strengthened, including existing local networks and the availability of health professionals. The administrative and policy assessment stage revealed weak implementation of local policies, inadequate regulations, and fragmented initiatives. Administrative limitations, including excessive centralization and insufficient funding, were considered structural obstacles. However, the presence of political structures with potential for mobilization in favor of HP and stronger interinstitutional coordination was also recognized. Based on these assessments, the following priorities were defined for participatory intervention: (1) improving accessibility to information, (2) strengthening digital skills, and (3) enhancing coordination between health services and local structures. These priorities were established using criteria of urgency, impact, feasibility, and available resources, in collaboration with the Delphi panel, the community group, and the UCC. The resulting intervention plan will be designed to address the identified needs in order to promote HL and improve the community's quality of life.

Discussion

This study employed a mixed-methods design aligned with the PRECEDE-PROCEED model, which supported a participatory analysis (from needs assessment to intervention prioritization) aimed at promoting sustainable change in complex contexts (Kim & Utz, 2018; Laverack, 2006). The exploratory-descriptive approach enabled a comprehensive understanding of HL levels and their determinants (Sørensen, 2023). Methodological triangulation, involving both the HLS-EU-PT and focus groups, strengthened validity and reliability (Nunes et al., 2014; Sørensen, 2023), consistent with best practices in public health research (Hawe et al., 1990). The quantitative results revealed high levels of inadequate/problematic HL, particularly regarding HP —values higher than national averages (Arriaga et al., 2019). Low HL is associated with reduced healthcare system navigation and a higher risk of adverse behaviors, underscoring the need to invest in HL to improve quality of life and health system efficiency (Arriaga et al., 2019) Vulnerable groups — such as older adults, individuals with low low educational attainment and those not professionally active — had the lowest HL levels, consistent with previous studies (Arriaga et al., 2019; Espanha et al., 2016; Kim & Utz, 2018). The high proportion of individuals with low educational attainment reflects this group's vulnerability, a common feature in rural areas (Alves et al., 2019; Espanha et al., 2016; MacLeod et al., 2017).

These findings align with studies conducted in European rural settings that, using participatory approaches, define proximity to health services, accessibility to information, and the role of community networks as priorities for strengthening HL (Alves et al., 2019; MacLeod et al., 2017). They also support the use of the PRECEDE dimension as a diagnostic framework in vulnerable contexts and highlight the value of qualitative research in revealing critical determinants not captured by quantitative methods alone. The engagement of local facilitators and the use of mixed methods proved effective in fostering trust, adherence, and the identification of priorities in terms that reflected the community's own perspectives. Environmental determinants — such as inadequate sanitation and exposure to pollution — increase the risks of respiratory and cardiovascular diseases, as noted by the WHO (Prüss-Üstün et al., 2016) and confirmed by focus group findings. Applying the PRECEDE-PROCEED model enabled the identification of priority intervention areas across different domains, while the participatory approach helped address myths, misconceptions, and maladaptive behaviors, in line with strategies recommended by national and international organizations (Arriaga et al., 2019; Marmot & Wilkinson, 2003). The Delphi method proved effective for the collaborative prioritization of interventions, enhancing cohesion among community stakeholders (Freire, 2018; Laverack, 2006). The results underscore the need for intersectoral strategies addressing the social and environmental determinants of health. Public policies should promote HL (Nutbeam, 2000) as a pathway to health equity, aligned with the SDGs (United Nations, 2023) and the Portuguese National Health Plan (Arriaga et al., 2023; Direção-Geral da Saúde, 2022). Nurse specialists in Community Health and Public Health Nursing play a central role in implementing participatory programs that empower groups and communities, consistent with their professional competencies (República Portuguesa, 2018). This study contributes practical evidence on the applicability of the PRECEDE dimension in rural communities and demonstrates how mixed-method approaches can generate assessments grounded in community perceptions. Despite providing significant contributions, the study presents methodological limitations, including the convenience sampling method used and its focus on a single community, which limit generalizability. The dichotomous classification of the variable economic activity status (economically active/inactive) required including participants aged 15–17 years in the economically inactive category to enable association tests. Although statistically logical, this may introduce interpretative limitations, as these participants — still in compulsory education — differ structurally from other economically inactive individuals. Moreover, analyzing age and education separately did not capture their structural interdependence, which may have influenced some of the associations found. Future research should employ probability sampling methods and include multiple communities, as well as adopt longitudinal designs. It is recommended that the PRECEDE-PROCEED model be applied in other community contexts to assess

the replicability of these strategies. Although the sample is not representative, the participatory approach and methodological structure described can serve as a framework for similar interventions in vulnerable territories with comparable dynamics.

Conclusion

This study revealed low levels of HL in the rural community analyzed, associated with various sociodemographic factors. Qualitative analysis through focus groups identified predisposing, reinforcing, and enabling factors. The Delphi panel validated three priority areas for intervention: improving accessibility to information, strengthening digital skills, and enhancing coordination between health services and local structures. Quantitative and qualitative data converged to address the research questions and support context-specific strategies. The findings confirm the usefulness of the PRECEDE dimension in rural contexts and emphasize the pivotal role of Community Health and Public Health Nursing in participatory analysis and community mediation. These results provide a foundation for the development of future community-based actions, and the methods described can be adapted and replicated in other rural contexts with similar characteristics.

Author contributions

Conceptualization: Alves, O. M., Rufo, S., Vilela, B., Soares, L., Morais, C.
Data curation: Alves, O. M., Rufo, S., Vilela, B., Soares, L., Morais, C.
Formal analysis: Alves, O. M., Rufo, S., Vilela, B., Soares, L.
Investigation: Alves, O. M., Rufo, S., Vilela, B., Soares, L., Morais, C.
Methodology: Alves, O. M., Rufo, S., Vilela, B., Soares, L., Morais, C.
Project administration: Alves, O. M.
Resources: Alves, O. M.
Software: Alves, O. M.
Supervision: Alves, O. M., Morais, C., Melo, P. M.
Validation: Alves, O. M., Morais, C., Melo, P. M.
Visualization: Alves, O. M., Morais, C., Melo, P. M.
Writing – original draft: Alves, O. M., Rufo, S., Vilela, B., Soares, L., Morais, C.
Writing – review & editing: Alves, O. M., Rufo, S., Vilela, B., Soares, L., Morais, C., Melo, P. M.

Thesis/Dissertation

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