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Health media literacy among digitally engaged residents of semi-rural Gran Canaria, Spain: A cross-sectional study

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Background and Objective: Media environments play a key role in shaping how individuals access, interpret, and use health information. Health media literacy (HML) refers to the cognitive and critical skills required to evaluate the credibility, intent, and meaning of health messages across media platforms. To assess the level of HML among digitally engaged adults living in semi-rural areas of Gran Canaria, Spain.

Material and Methods: A community-based cross-sectional study was conducted between November 2024 and March 2025 among adults aged ≥16 years living in semi-rural municipalities of Gran Canaria, Spain. Participants were recruited through non-probabilistic convenience sampling using digital dissemination via a web link and QR code. HML was assessed using the validated Spanish version of the Media Health Literacy Scale (MeH-Lit-SV), a 21-item instrument (total score: 0-84; higher scores indicate greater HML). Sociodemographic characteristics and media-use behaviors were also collected. Descriptive and non-parametric analyses were performed, and associations were examined using Spearman's rho.

Results: A total of 264 participants were included. The mean HML score was 52.73 (SD=15.8), indicating moderate literacy. Higher scores were observed among women ($p \leq 0.038$) and participants with higher educational levels ($p<0.001$). Individuals who sought health information through multiple media sources scored significantly higher ($p<0.001$). No significant association was found between time spent on social media and HML. Age showed weak positive correlations with goal appraisal ($r=0.130$; $p=0.034$) and implicit meaning appraisal ($r=0.173$; $p=0.005$).

Conclusion: Digitally engaged adults in semi-rural Gran Canaria show moderate HML levels, with differences related to gender, education, and information-seeking behaviour. These findings highlight the need for targeted community-based strategies to strengthen critical appraisal skills and promote equitable access to reliable health information. Results should be interpreted considering the digitally engaged nature of the sample.

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Keywords: Health Communication, Health Literacy, Information Seeking Behavior, Rural Population, Social Media
Received: 15 April 2026
Accepted: 23 August 2026
Doi: 10.22038/jhl.2026.92016.1881

Introduction

Mass media and digital platforms are key channels for the public dissemination of health information. These media—ranging from print, radio, and television to online and social networks—shape how communities access, interpret, and act on health messages (1,2). In recent years, social media have become a primary source of health-related information, used both for sharing personal experiences and for delivering public health campaigns, educational materials, and messages on disease prevention and healthy lifestyles. In the Spanish general population, all participants in a recent national study reported having been exposed to health information through social media, while 72.1% actively used these platforms to search for health information, highlighting the growing importance of digital media in contemporary health communication (3). Similarly, Internet use for health information has become widespread internationally, with between 70% and 90% of European Internet users seeking health information online, reinforcing the need for adequate digital and health media literacy (HML) skills (4).

However, access to vast amounts of information does not ensure its accurate interpretation or responsible use. Exposure to unverified or misleading content can hinder informed decision-making and exacerbate health inequalities. This highlights the importance of assessing HML—the ability to access, analyse, and critically evaluate health information distributed through media environments, particularly digital ones. The increasing volume of mixed-quality health messages disseminated through digital media has led to the development of specific instruments aimed at assessing HML and individuals' capacity to critically evaluate health information across media environments (3,5).

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Health literacy, broadly defined as the ability to obtain, process, and understand basic health information, has long been recognised as a key determinant of health outcomes at both individual and community levels. Over the past three decades, numerous tools have been designed to measure it in different populations and contexts. Tavousi et al. identified 162 original instruments and 199 cross-cultural adaptations developed between 1993 and 2021, although reporting inconsistencies often limit their comparability (6).

With the rise of digital technologies, the concept of digital health literacy (eHealth literacy) has gained prominence, encompassing the competencies required to search for, understand, and apply online health information. Lee et al. (4) systematically reviewed eHealth literacy measures and their properties and found that none of the available instruments demonstrated evidence for all measurement properties. Within this field, the eHealth Literacy Scale (eHEALS) (7)—validated in Spain (8)—has been widely used; however, as it predates the dominance of social media and mobile technologies, its content has limitations in today's interactive media landscape. These findings highlight the need for the continued development of instruments capable of assessing the broader competencies required in current digital environments. Newer tools, such as the Transactional eHealth Literacy Instrument (TeHLI), offer broader frameworks but remain unavailable in Spanish (9).

While eHealth literacy focuses primarily on the ability to search for and understand online health information, HML places greater emphasis on the critical appraisal of content, including its intent, implicit meaning, and visual framing across diverse media environments. This broader conceptual scope makes HML particularly relevant in contemporary digital ecosystems, where individuals are required not only to access information but also to critically interpret and evaluate its credibility and underlying meaning.

To address the critical dimension of health information appraisal in media settings, Nazarnia et al. developed the Media Health Literacy Scale (MeH-Lit) (10), a 21-item instrument comprising five dimensions: goal appraisal, content appraisal, implicit meaning appraisal, visual comprehension, and audience appraisal. The instrument has demonstrated strong psychometric properties and has subsequently been cross-culturally adapted for use in China (5,10) and Spain (11). These adaptations confirmed the stability of its five-dimensional structure across different cultural contexts, supporting its applicability for assessing HML

beyond the population in which it was originally developed. Moreover, the Chinese version demonstrated good internal consistency (Cronbach's α = 0.859) (5), while the Spanish adaptation demonstrated excellent content validity index (CVI = 0.90) and high internal consistency (α = 0.936), supporting its use for assessing HML in Spanish-speaking populations (11). Although initially validated in academic populations, its multidimensional structure and successful cross-cultural adaptation support its application in broader community-based settings.

This Spanish adaptation provides a contextually appropriate tool for assessing HML in community populations beyond academic settings.

Despite increasing international interest in HML, no studies have assessed it among the general population in the Canary Islands. Semi-rural populations may face specific challenges related to digital access, educational opportunities, and exposure to diverse sources of health information. These contextual factors can influence both access to media and the ability to critically evaluate health messages, potentially increasing vulnerability to misinformation and contributing to health inequalities.

Therefore, this study aimed to assess the level of HML and its associated sociodemographic and behavioural factors among adults living in the mid-altitude, semi-rural areas of Gran Canaria, Spain.

Material and Method

Design

A cross-sectional, descriptive, and observational study with an analytical component was conducted between November 2024 and March 2025 with a community setting. The results report was prepared following the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for cross-sectional studies (12).

Study Setting and Sampling

The study population consisted of residents of the mid-altitude municipalities of Gran Canaria Island: Santa Brígida, Valsequillo, San Mateo, and Tejeda, arranged in ascending altitude. The mid-altitude population refers to that sector of the island located between 600 and 1,500 meters above sea level, predominantly semi-rural or rural areas that frame the local community context. A non-probabilistic convenience sampling method was used. This approach was selected due to the community-based design of the study and the use of digital

data collection methods, which facilitated access to participants across geographically dispersed semi-rural areas. Additionally, this strategy allowed efficient recruitment of individuals actively engaged with media environments, which is relevant for assessing HML. A sample size of n=381 was calculated as necessary to estimate, with a 95% confidence level and a precision of ±0.05 units, a population mean assuming a common standard deviation of 0.5. This standard deviation was assumed based on previous studies using similar health literacy scales. No attrition rate was assumed due to the cross-sectional and anonymous nature of the digital data collection; the final number of completed responses is reported in the Results section.

Inclusion and Exclusion Criteria

Inclusion criteria were: community-dwelling individuals over 16 years old, residents of the municipalities of San Mateo, Santa Brígida, Tejeda, and Valsequillo, who spoke and understood Spanish and used social networks. This criterion was established to ensure participants had prior exposure to media environments relevant to the assessment of HML.

Exclusion criteria were: individuals with cognitive impairment that prevented or hindered comprehension and completion of the questionnaire.

Withdrawal criteria were: participants who did not complete the questionnaire in its entirety.

Instrument

For data collection, the Spanish version of the MeH-Lit-SV instrument was used (11). This instrument was originally developed by Nazarnia et al. (10) and subsequently adapted and validated for the Spanish population, demonstrating strong psychometric properties. The instrument assesses individuals' ability to access, understand, critically appraise, and use health-related information disseminated through media and social networks. It consists of 21 items organized into five dimensions: (D1) goal appraisal skill, (D2) content appraisal skill, (D3) implicit meaning appraisal skill, (D4) visual comprehension skill and (D5) audience appraisal skill. The items are positively worded and answered using a 5-point Likert scale (0=never, 1=rarely, 2=sometimes, 3=most of the time, 4=always). Possible scores range from 0 to 84, with higher scores indicating greater health media literacy. A score of 42 corresponds to the midpoint of the scale and is used as a reference value for descriptive interpretation; however, it should not be considered a clinically validated threshold of adequacy. Accordingly, MeH-Lit-SV scores were analysed as continuous variables throughout the study, and no categorical

classification of HML levels was applied because no validated cut-off values are currently available. The primary variable was the level of health media literacy, measured through the score obtained on the MeH-Lit-SV instrument. Additionally, sociodemographic and media-use behavior variables were collected, including: Age (in years), Gender (male, female, prefer not to answer), Municipality of residence (San Mateo, Santa Brígida, Tejeda, Valsequillo), Educational level completed (no education, primary, secondary, university), Use of social networks (yes, no), Number of daily hours spent on social networks (numeric value), Consultation of health information through media other than social networks (yes, no).

Data collection

The instrument was implemented as a digital questionnaire using Microsoft Forms, the official tool of the University of Las Palmas de Gran Canaria. The questionnaire was distributed digitally through a web link and QR code to facilitate access across the community. This approach may have favored participation among individuals with higher levels of digital access and engagement, which should be considered when interpreting the findings. Before completing it, participants received a brief explanation of the study's context and objectives. Participation was voluntary, no incentives were provided, and responses were automatically recorded in a secure institutional database during the study period.

Data Analysis

A descriptive analysis was conducted: qualitative variables were summarized with absolute frequencies and percentages, while quantitative variables were expressed as means and standard deviations. The reliability of the MeH-Lit-SV in the present sample was assessed by estimating internal consistency using Cronbach's α and McDonald's ω coefficients. These analyses were performed to confirm the reliability of the instrument when applied to the study population, complementing the psychometric evidence reported in the original Spanish validation study. For inferential analyses, after assessing normality using the Kolmogorov–Smirnov test, appropriate non-parametric tests were applied: the Mann–Whitney U test for two-group comparisons, the Kruskal–Wallis test for comparisons involving more than two groups, and the Dwass–Steel–Critchlow–Fligner (DSCF) post-hoc test where appropriate. Effect sizes were estimated using epsilon-squared effect size (ε^2) and rank-biserial correlation. Associations between quantitative variables were examined with Spearman's rho. Statistical

significance was established at $p < 0.05$. All analyses were performed using Jamovi software, version 2.4.12.

Results

A total of N=264 completed questionnaires were included in the analysis, representing a response rate of 69.29% of the estimated sample size. The sample consisted mainly of women (70.5%) and residents of San Mateo (43.6%). The mean age was M=29.78 years (SD=13.29), and 54.9% had completed secondary education. Almost all participants (98.9%) reported using social networks, spending a mean of M=3.37 hours per day (SD=1.82). In addition, 72% reported using other media sources to seek health information. These characteristics indicate a sample predominantly composed of younger, female, and digitally active individuals, which should be considered when interpreting the generalizability of the findings. Sociodemographic characteristics of the participants are presented in **Table 1.**

Table 1. Sociodemographic characteristics of participants

Variables		M (SD)	Min-Max	N (%)
Age		29.78 (13.29)	16.0-67.0	
Hours using social networks		3.37 (1.82)	0.0-12.0	
Gender	Female			186 (70.5)
	Male			78 (29.5)
Municipality	Santa Brígida			53 (20.1)
	Valsequillo			64 (24.2)
	San Mateo			115 (43.6)
	Tejeda			32 (12.1)
Educational Level	Primary			15 (5.7)
	Secondary			145 (54.9)
	University			100 (37.9)
	None			4 (1.5)
Use of social networks	Yes			261 (98.9)
	No			3 (1.1)
Use of other media for health information	Yes			190 (72.0)
	No			74 (28.0)

The reliability of the scale in the studied population showed excellent internal consistency (α=0.941; ω=0.942). The MeH–Lit-SV instrument showed a mean total score of 52.73 (SD=15.8; 95% CI: 50.81–54.64). Mean scores by dimensions were: D1 M=14.94 (SD=4.90; CI95%: 14.34 – 15.53); D2 M=14.39 (SD=5.30; CI95%: 13.74 – 15.03); D3 M=7.23 (S=2.74; CI95%: 6.89 – 7.56); D4 M=4.81 (SD=2.88; CI95%: 4.59 – 5.04); y D5 M=11.36 (SD=3.35; CI95%: 10.96 – 11.77). The lowest scoring item was item 10 (“When I read, watch, or listen to a

health-related message, I wonder if everyone will understand it in the same way"), M=2.09 (SD=1.23; 95% CI: 1.94–2.24). This item belongs to the content appraisal dimension (D2) and reflects limited consideration of audience diversity and potential variation in message interpretation, a key component of advanced media literacy. In contrast, the highest scoring item was item 21 ("When I read, watch, or listen to a health-related message, I assess whether it is beneficial for me or not"), M=3.16 (SD=0.92; 95% CI: 3.04–3.27). All scores are presented in **Table 2**. This value should be interpreted in light of the sample composition, as it may overestimate the level of HML in the broader semi-rural population.

When comparing two groups, statistically significant differences by gender were observed in all dimensions of the MeH-Lit-SV and in the total score, with women scoring higher than men ($p \leq 0.038$ in all cases; effect size rank biserial correlation between 0.161 and 0.258).

Similarly, participants who reported using other media in addition to social networks to seek health information obtained higher scores in all dimensions and the total scale, with stronger effect sizes ($p \leq 0.010$; rank biserial correlation between 0.202 and 0.485).

By municipality, significant differences were identified in dimensions D1, D3, D4, D5, and in the total score (ε^2 between 0.039 and 0.061). Post hoc analysis indicated that participants from Valsequillo scored significantly higher than those from San Mateo, Santa Brígida, and Tejeda, with the latter showing the lowest values. These differences suggest that local contextual factors, such as geographic isolation or access to resources, may influence HML levels within semi-rural settings.

Educational level also showed a consistent association with health media literacy, with significant differences in all dimensions and the total MeH-Lit-SV score (ε^2 between 0.052 and 0.078). The highest scores corresponded to university-educated participants, while the lowest were observed in individuals without formal education.

By contrast, social network use was not significantly related to any of the dimensions or the total scale score ($p > 0.05$ in all cases). This finding suggests that mere exposure to or time spent on social media does not necessarily translate into higher health media literacy, highlighting a distinction between digital engagement and critical media competence. Full results can be consulted in **Table 3.**

Finally, correlations were calculated between age and the number of hours dedicated to social networks with each of the scale's dimensions. A weak but significant correlation was observed between age and dimension D1 ($r=0.130$; $p=0.034$), as well as with dimension D3 ($r=0.173$; $p=0.005$). No significant correlations were found between age and dimensions D2 ($r=0.101$; $p=0.100$), D4 ($r=0.020$; $p=0.742$), or D5 ($r=0.059$; $p=0.342$).

Hours spent on social networks showed no significant correlation with any of the evaluated dimensions ($p > 0.05$).

Regarding correlations among dimensions, a consistent pattern of positive and statistically significant associations was identified: D2 with D1 ($r=0.744$; $p<0.001$) and with D3 ($r=0.694$; p

<0.001); D4 with D3 (r=0.582; p<0.001) and with D5 (r=0.606; p<0.001); and last, D2 with D5 (r=0.612; p<0.001). All correlations are presented in **Table 4.**

Table 2. Statistical results of the items, dimensions, and total MeH-Lit-SV instrument

Dimension/item	Mean (SD)	CI 95%
D1. Goal appraisal skill	14.94 (4.90)	(14.34 – 15.53)
Item 1. When I read, watch, or listen to a health-related message, I try to find out what its purpose is	2.38 (1.06)	(2.25 – 2.51)
Item 2. When I read, watch, or listen to a health-related message, I consider its educational purpose	2.12 (1.18)	(1.97 – 2.26)
Item 3. When I read, watch, or listen to a health-related message, I am able to identify and comprehend its explicit and direct meaning	2.68 (0.99)	(2.56 – 2.80)
Item 4. When I read, watch, or listen to a health-related message, I reflect on its meaning for me	2.83 (0.95)	(2.71 – 2.94)
Item 5. When I read, watch, or listen to a health-related message, I analyze it from various aspects such as its potential application, usefulness, or effectiveness	2.45 (1.07)	(2.28 – 2.58)
Item 6. When I read, watch, or listen to a health-related message, I consider the possibility of deleting it, keeping it, or sharing it with others	2.48 (1.14)	(2.34 – 2.62)
Item 7. When I read, watch, or listen to a health-related message, I assess the thoughts and ideas it promotes	2.46 (1.06)	(2.33 – 2.59)
D2. Content appraisal skill	14.39 (5.30)	(13.74 – 15.03)
Item 8. When I read, watch, or listen to a health-related message, I am interested in knowing its original source	2.34 (1.21)	(2.19 – 2.49)
Item 9. When I read, watch, or listen to a health-related message, I consider the publisher	2.81 (1.16)	(2.67 – 2.95)
Item 10. When I read, watch, or listen to a health-related message, I wonder if everyone will understand it in the same way	2.09 (1.23)	(1.94 – 2.24)
Item 11. When I read, watch, or listen to a health-related message, I verify its accuracy	2.32 (1.19)	(2.17 – 2.46)
Item 12. When I read, watch, or listen to a health-related message, I critically analyze it	2.37 (1.13)	(2.23 – 2.50)
D3. Implicit meaning appraisal skill	7.23 (2.74)	(6.89 – 7.56)
Item 13. When I read, watch, or listen to a health-related message, I assess the negative and positive consequences of spreading it	2.55 (1.24)	(2.39 – 2.70)
Item 14. When I read, watch, or listen to a health-related message, I consider who may benefit from its dissemination (economic, health, social benefits, etc.)	2.46 (1.19)	(2.32 – 2.61)
Item 15. When I read, watch, or listen to a health-related message, I am able to identify its implicit and hidden meaning	2.22 (0.95)	(2.11 – 2.33)
Item 16. When I read, watch, or listen to a health-related message, I assess who or what supports that message	2.32 (1.05)	(2.36 – 2.62)
D4. Visual comprehension skill	4.81 (1.88)	(4.59 – 5.04)
Item 17. When I read, watch, or listen to a health-related message, I am able to identify the techniques used to capture the public's attention (special effects such as color, light, sound, etc.)	2.32 (1.16)	(2.18 – 2.46)
Item 18. When I read, watch, or listen to a health-related message, I consider through which medium it has been disseminated (social media, traditional media, etc.)	2.75 (1.13)	(2.61 – 2.88)
Item 19. When I read, watch, or listen to a health-related message, I pay attention to the date of publication of the message	2.87 (1.15)	(2.73 – 3.01)
D5. Audience appraisal skill	11.36 (3.35)	(10.96 – 11.77)
Item 20. When I read, watch, or listen to a health-related message, I analyze the target audience	2.59 (1.08)	(2.46 – 2.73)
Item 21. When I read, watch, or listen to a health-related message, I assess whether it is beneficial for me or not	3.16 (0.92)	(3.04 – 3.27)
Total MeH-Lit-SV	52.73 (15.8)	(50.81 – 54.64)

Table 3. Statistical results of bivariate analyses

Variable	D1 Goal appraisal skill M (SD)	D2 Content appraisal skill M (SD)	D3 Implicit meaning appraisal skill M (SD)	D4 Visual comprehension skill M (SD)	D5 Audience appraisal skill M (SD)	Total MeH-Lit-SV M (SD)
Gender						
Male (n=78)	13.51 (4.70)	13.29 (5.41)	6.31 (2.66)	4.42 (1.85)	10.32 (3.44)	47.86 (15.72)
Female (n=186)	15.53 (4.87)	14.84 (5.20)	7.61 (2.69)	4.98 (1.88)	11.80 (3.23)	57.44 (15.43)
p-value *	p=0.002	p=0.038	p<0.001	p=0.024	p=0.002	p<0.001
Rank biserial correlation	0.244	0.161	0.247	0.173	0.243	0.258
Use of social networks						
Yes (n=261)	14.95 (4.90)	14.40 (5.31)	7.23 (2.74)	4.82 (1.88)	11.37 (3.36)	52.77 (15.79)
No (n=3)	14 (5.29)	13.33 (5.13)	6.67 (3.79)	4.33 (2.31)	11.00 (4.36)	49.33 (19.86)
p-value *	p=0.810	p=0.686	p=0.693	p=0.579	p=0.739	p=0.670
Rank biserial correlation	0.082	0.137	0.133	0.185	0.112	0.144
Use of other media for health information						
Yes (n=190)	16.11 (4.32)	15.17 (4.94)	7.61 (2.64)	5.03 (1.79)	11.84 (3.06)	55.76 (14.37)
No (n=74)	11.92 (5.03)	12.36 (5.69)	6.26 (2.78)	4.26 (2.01)	10.14 (3.77)	44.93 (16.70)
p-value *	p<0.001	p<0.001	p<0.001	p=0.010	p<0.001	p<0.001
Rank biserial correlation	0.485	0.283	0.266	0.202	0.259	0.366
Municipality						
San Mateo (a) (n=115)	14.76 (4.74)	14.43 (4.94)	7.37 (2.71)	4.82 (1.83)	11.42 (3.21)	52.78 (15.02)
Santa Brígida (b) (n=53)	14.25 (4.86)	14.13 (4.98)	7.02 (2.52)	4.58 (1.89)	10.96 (3.32)	50.94 (15.04)
Valsequillo (c) (n=64)	16.84 (4.77)	15.48 (6.00)	7.83 (2.88)	5.39 (1.96)	12.23 (3.32)	57.78 (16.40)
Tejeda (d) (n=32)	12.91 (4.70)	12.47 (5.21)	5.88 (2.57)	4.03 (1.62)	10.09 (3.60)	45.38 (15.78)
p-value †	p=0.001	p=0.058	p=0.005	p=0.004	p=0.017	p=0.002
ε^2	0.061	0.029	0.049	0.050	0.039	0.056
DSCF	(a)-(c) p=0.015 (b)-(c) p=0.034 (c)-(d) p=0.003		(a)-(d) p=0.026 (c)-(d) p=0.006	(c)-(d) p=0.005	(c)-(d) p=0.023	(c)-(d) p=0.003
Educational Level						
University (e) (n=100)	16.19 (4.33)	15.65 (4.99)	7.94 (2.53)	5.22 (1.73)	12.11 (2.97)	57.11 (14.16)
Secondary (f) (n=145)	14.34 (4.97)	13.96 (5.20)	6.90 (2.75)	4.73 (1.88)	11.23 (3.28)	51.16 (15.50)
Primary (g) (n=15)	13.80 (5.47)	11.93 (6.11)	6.53 (3.18)	3.53 (2.13)	9.53 (4.09)	45.33 (19.30)

None (h) (n=4)	9.25 (6.50)	7.50 (3.70)	4.00 (1.16)	2.50 (0.58)	4.50 (1.29)	27.75 (12.09)
p-value †	p=0.004	p<0.001	p=0.001	p<0.001	p<0.001	p<0.001
ε^2	0.052	0.063	0.059	0.068	0.071	0.078
DSCF	(e)-(f) p=0.017	(e)-(h) p=0.026	(e)-(f) p=0.017 (e)-(h) p=0.028	(e)-(g) p=0.015 (e)-(h) p=0.025 (f)-(h) p=0.049	(e)-(h) p=0.005 (f)-(h) p=0.009	(e)-(f) p=0.013 (e)-(h) p=0.016 (f)-(h) p=0.040

D: Dimension; M: Median; SD: Standard deviation; ε^2: epsilon-squared effect size; DSCF: Dwass-Steel-Critchlow-Fligner effect size; * Statistically significant value $p \leq 0.05$ (Mann–Whitney U test); † Statistically significant value $p \leq 0.05$ (Kruskall-Wallis test)

Table 4. Correlation matrix

Variable	Statistics	Age	D1 Goal appraisal skill	D2 Content appraisal skill	D3 Implicit meaning appraisal skill	D4 Visual comprehension skill	D5 Audience appraisal skill	Total MeH-Lit-SV
Age	Spearman's rho	-						
	p-value	-						
D1 Goal appraisal skill	Spearman's rho	0.130*	-					
	p-value	0.034	-					
D2 Content appraisal skill	Spearman's rho	0.101	0.744***	-				
	p-value	0.100	< 0.001	-				
D3 Implicit meaning appraisal skill	Spearman's rho	0.173**	0.641***	0.694***	-			
	p-value	0.005	< 0.001	< 0.001	-			
D4 Visual comprehension skill	Spearman's rho	-0.020	0.520***	0.573***	0.582***	-		
	p-value	0.742	< 0.001	< 0.001	< 0.001	-		
D5 Audience appraisal skill	Spearman's rho	-0.059	0.601***	0.640***	0.612***	0.606***	-	
	p-value	0.342	< 0.001	< 0.001	< 0.001	< 0.001	-	
Total MeH-Lit-SV	Spearman's rho	0.115	0.877***	0.904***	0.822***	0.696***	0.790***	-
	p-value	0.062	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Discussion

This study assessed HML among digitally engaged adults living in semi-rural municipalities of Gran Canaria and explored its association with sociodemographic characteristics and media-use behaviours. Overall, participants demonstrated a moderate level of HML. Higher HML scores were observed among women, individuals with higher educational attainment, and those who sought health information through multiple media sources. In contrast, no association was found between time spent on social media and HML. These findings provide novel evidence on HML in a community-based semi-rural population and highlight the importance of strengthening critical media appraisal skills beyond simply promoting access to digital information. The findings reveal that digitally engaged adults living in the mid-altitude, semi-rural areas of Gran Canaria demonstrate a moderate level of HML. Therefore, this outcome should not be interpreted as representative of the overall semi-rural population. Although this outcome aligns with expectations given the sociodemographic characteristics of the sample, it provides relevant insights when compared with previous research and highlights implications for community health strategies.

These findings are consistent with previous studies conducted in different cultural contexts, which have also reported moderate levels of HML when assessed using the MeH-Lit framework. However, lower levels have been described in more vulnerable or less digitally engaged populations, suggesting that contextual and socioeconomic factors play a critical role in shaping HML.

In Spain, Navas-Echazarreta et al. (11) reported a mean score of 48.73 among nursing students, slightly lower than in our sample. However, this comparison should be interpreted with caution, as nursing students represent a highly specific population with elevated levels of health knowledge and motivation. Differences between studies may therefore reflect underlying sample characteristics rather than true population-level variation in HML. This difference is likely attributable to contextual factors, as our participants represented a broader age range and diverse educational backgrounds. Internationally, Nazarnia et al. (10) in Iran and Li et al. (13) in China reported comparable mean scores, suggesting cross-cultural consistency in the construct of HML when measured with conceptually equivalent instruments.

The internal reliability of the MeH-Lit-SV was excellent, confirming its psychometric robustness and supporting its use for cross-cultural and community comparisons. Its

multidimensional structure—covering goal, content, and audience appraisal as well as implicit and visual comprehension—captures not only technical information-processing skills but also critical and contextual thinking. These dimensions are directly actionable in community-based health education (14). At the item level, the lowest-scoring statement concerned recognising that health messages can be interpreted differently by different audiences, revealing limited communicative empathy and perspective-taking. Conversely, the highest-scoring item reflected a focus on the personal usefulness of health information, indicating an individualistic orientation that may reduce the collective interpretation of public health messages (15).

When analysing the different dimensions of the MeH-Lit-SV, distinct patterns emerge. Goal and content appraisal skills showed relatively higher scores, suggesting that participants are capable of identifying the purpose and basic reliability of health messages. In contrast, lower scores in implicit meaning and audience appraisal dimensions indicate more limited ability to interpret underlying intentions and consider diverse audience perspectives. This pattern highlights a gap between functional and critical media literacy skills, as described in previous research.

From a sociodemographic perspective, women achieved higher scores across all dimensions (54.21 vs. 48.39), consistent with previous evidence (11,16). This pattern has been attributed to women's greater engagement in family health management and caregiving roles, which historically foster functional and media health literacy in community contexts.

Differences among municipalities—particularly the lower scores in Tejeda—suggest that local factors such as internet connectivity, education quality, and opportunities for digital training play a role. This pattern supports the "double perspective" of the digital divide, which distinguishes inequalities in both access and skills (17). Consequently, improving community digital infrastructure and educational support is essential to strengthen media appraisal skills in rural and semi-rural areas.

Educational attainment showed a strong positive association with HML, particularly among participants who combined traditional and digital sources when seeking health information (18). Age correlated positively with goal and implicit meaning appraisal, but not with visual comprehension, possibly reflecting lower familiarity among older adults with the visual language of social platforms (17). Tailored visual literacy initiatives could therefore benefit older populations.

These findings may be explained by the increasing exposure to health information through digital platforms, which facilitates familiarity with content but does not necessarily promote deeper critical analysis. In semi-rural contexts, this may be further influenced by differences in educational opportunities and access to digital training resources.

Consistent with Fry et al. (19), ageing does not necessarily imply a decline in health literacy. Older adults with chronic conditions often show greater confidence in navigating the health system and communicating with providers. Nonetheless, factors such as linguistic barriers or psychological distress can reduce literacy levels, indicating that age interacts with social and health factors in complex ways.

A key finding was the absence of a relationship between time spent on social media and HML, aligning with evidence that passive media exposure does not foster critical thinking and may even increase susceptibility to misinformation (20). Promoting active, reflective, and evaluative engagement with media is therefore crucial in health communication programmes. Recent studies have emphasized the growing importance of critical media literacy skills in navigating complex digital health environments, particularly given the increasing exposure to both reliable and misleading information and the challenges individuals face in evaluating credibility and meaning (21-24). These findings are further supported by recent international evidence showing that trust in credible health information sources, rather than the mere frequency of digital media use, is associated with higher levels of digital health literacy and more informed health decision-making (24).

This finding aligns with the concept of the third-level digital divide, which emphasizes that inequalities in digital environments are not only related to access or use, but also to the ability to derive meaningful benefits and critically engage with information. Overall, these results support viewing HML as a cross-cutting community competence that enhances critical evaluation of multimedia content, encourages collective interpretation of health messages, and addresses inequalities related to sex, education, and geography. This broader perspective reinforces the view that disparities in digital environments concern not only access to technologies but also the benefits individuals obtain from using them (25). While digital skills training can mitigate inequalities (17), increasing digitalisation of services may also amplify offline disparities if not coupled with inclusive community policies (26).

Measuring and strengthening HML should thus be integrated into digital inclusion strategies, not only to expand access and skills but also to foster environments where digital engagement

translates into tangible health benefits for all, regardless of socioeconomic position or territorial context. Recent evidence identifies digital health literacy as a key enabler of equitable digital transformation in healthcare, highlighting its role in ensuring that digital innovations translate into meaningful health benefits for diverse populations (27). Strengthening HML should therefore be considered a public health priority, particularly in semi-rural communities where structural and digital inequalities may persist (27).

This study has several limitations. The response rate reached approximately 70% of the intended sample, and limited participation from Tejeda may restrict representativeness. In addition, the use of a non-probability convenience sampling strategy combined with digital recruitment may have favoured the inclusion of younger, female, and more digitally engaged individuals. Consequently, the findings are more representative of a digitally active subgroup than of the wider semi-rural population and may therefore overestimate HML levels. This should be considered when interpreting the results. Furthermore, the cross-sectional design precludes causal inference, and unmeasured factors such as household income or internet quality could partly explain the observed differences. Moreover, many previous studies used the MeH-Lit primarily for psychometric validation rather than population-level analysis, reducing comparability. Future longitudinal and interventional research should explore the evolution of HML and evaluate the impact of tailored educational programmes delivered through community partnerships.

The study contributes empirical evidence on determinants of HML and highlights pathways for action in community health promotion. Practitioners and policymakers can use these findings to design gender-, education-, and region-sensitive interventions that emphasize visual and media-appraisal skills. Such initiatives may enhance equitable access to trustworthy information, reduce digital divides, and strengthen participatory decision-making in community settings. Furthermore, the findings may support the development of community-based digital health literacy programmes, guide local public health communication strategies, and assist healthcare professionals in identifying population groups that may benefit from targeted interventions to strengthen critical appraisal of health information, thereby contributing to more equitable digital transformation in healthcare (27).

Conclusion

In conclusion, digitally engaged adults in the semi-rural mid-altitude areas of Gran Canaria exhibit moderate health media literacy, influenced by sociodemographic and territorial

factors. Differences by municipality, gender, and educational level underscore the need for context-specific interventions to strengthen critical and digital competencies, particularly in visual comprehension and multimedia evaluation. The lack of association between time on social networks and HML underscores the importance of promoting active and reflective media use through community education. Further longitudinal research and locally tailored programmes are needed to strengthen individuals' capacity to critically evaluate and apply health information, thereby contributing to more equitable digital inclusion and improved population health outcomes.

Acknowledgments: The authors would like to thank all participants who generously contributed their time to this study.

Availability of Data and Materials: The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Conflict of Interest: The authors declare that they have no conflicts of interest.

Consent for Publication: Not applicable.

Ethical Approval and consent to participate: The study was conducted in compliance with fundamental ethical principles and was approved by the Research Ethics Committee (CEIm) of Hospital de Gran Canaria Dr. Negrín, Las Palmas Province, Canary Islands, Spain (code: 2024-508-1). Participants received clear, detailed information about the objectives and procedures, and provided informed consent before participating. The questionnaire was administered anonymously to ensure confidentiality. Participants' rights regarding confidentiality, anonymity, and the exclusive use of data for research purposes were safeguarded. All procedures were conducted in accordance with the Declaration of Helsinki and relevant ethical guidelines.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Authors' Contributions: Conceptualization: N.DR, CA.RS, H.GT; Data curation; N.DR, CA.RS; Formal analysis: CA.RS, H.GT; Investigation: N.DR, CM.DG, MN.HL; Methodology: N.DR, CA.RS, H.GT, CM.DG, MN.HL; M.RH Software: N.DR, CA.RS, H.GT; Supervision: CA.RS; Validation: H.GT; M.RH; Visualization: N.DR, CM.DG, MN.HL, M.RH; Writing–original draft: N.DR, CA.RS, H.GT, CM.DG, MN.HL; Writing–review & editing; N.DR, CA.RS, H.GT, CM.DG, MN.HL; M.RH.

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