

The Relationship Between New Media Literacy and Xenophobia Among Health Sciences Students: A Cross-Sectional Correlational Study

Sağlık Bilimleri Öğrencilerinde Yeni Medya Okuryazarlığı ile Yabancı Düşmanlığı Arasındaki İlişki: Kesitsel ve İlişkisel Bir Çalışma

Abstract

Aim: To determine health sciences students' levels of new media literacy and xenophobia and to examine the associations of new media literacy and media-use characteristics with xenophobia and with an expressed attitude of language-based treatment prioritization.

Materials and Methods: In this quantitative, cross-sectional, correlational study, undergraduate students of a state university's Faculty of Health Sciences completed the New Media Literacy Scale (NMLS), the Xenophobia Scale, and a sociodemographic and media-use form online. After data screening, the analytic sample comprised 354 students. Data were analyzed with independent-samples t tests, one-way and Welch's ANOVA with Tukey HSD and Games–Howell post hoc tests, Pearson correlations, hierarchical multiple linear regression, and binary logistic regression.

Results: New media literacy showed a small positive correlation with xenophobia ($r = .16$, $p = .003$), carried by the functional rather than the critical sub-dimensions; the four sub-dimensions jointly accounted for 3.6% of the variance. The variable most strongly associated with xenophobia was students' self-reported experience of being affected by negative immigrant-related content on social media (Welch $F(2, 136.51) = 6.56$, $p = .002$); this association persisted after adjustment for demographic and media-use variables. Having a foreign or immigrant friend was not associated with either variable. Critical media literacy was not significantly associated with the expressed attitude of language-based treatment prioritization (OR = 0.45, 95% CI [0.17, 1.19], $p = .106$). The mean xenophobia score was 50.59 (SD = 6.63) on the possible 11–66 range.

Conclusions: In this sample, higher technical fluency with new media was not associated with lower xenophobia; self-reported affectedness by negative

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immigrant-related content showed the largest association. These cross-sectional findings provide grounds for testing critical digital media literacy content within transcultural ethics education in health sciences curricula, although they cannot demonstrate its effectiveness.

Keywords: new media literacy, xenophobia, health sciences students, transcultural care, media exposure

Introduction

International migration has reshaped the demographic and social composition of host societies, and Türkiye hosts one of the world's largest displaced populations. Xenophobia is a fear-based aversion toward individuals perceived as foreign (Van der Veer et al., 2011). Among health sciences students, who constitute the future healthcare workforce, xenophobic attitudes carry particular weight, because attitudes formed during professional socialization can later surface in communication, triage, and treatment decisions involving migrant patients. In Türkiye these attitudes bear directly on the equity of healthcare delivery (Özmete et al., 2018). The COVID-19 pandemic showed how quickly crisis conditions can turn diffuse fear into discrimination within health services (Rzymiski et al., 2021; Shang et al., 2021).

Understanding why such attitudes form requires a theoretical account of their sources. Integrated Threat Theory holds that prejudice toward outgroups is fed by perceived realistic threats, symbolic threats, intergroup anxiety, and negative stereotypes (Stephan et al., 2000). Its relevance here follows from the conditions of exposure: most students form judgments about migrants without direct contact, so the threat cues the theory describes reach them largely through media, the pathway examined in this study. Two further traditions qualify this picture. The contact hypothesis holds that positive, meaningful intergroup contact reduces prejudice under facilitating conditions (Allport, 1954), and the literature on intercultural sensitivity describes the affective readiness to engage cultural difference that is most often studied alongside

xenophobia in health-student samples (Chen & Starosta, 2000). These frameworks jointly predict that the content students encounter about foreigners, and the skill with which they process it, should shape their xenophobic tendencies.

The contemporary migration debate unfolds predominantly within interactive, algorithmically curated new media environments. Empirical work links news and social media consumption to fear and negative attitudes toward immigrants and refugees (Debrael et al., 2021), and a recent multi-method analysis showed that social media use is associated with anti-immigrant prejudice through heightened threat perceptions, with the association conditional on users' cognitive ability (Ahmed et al., 2024). This conditionality has theoretical consequences: if cognitive and evaluative skill buffers the threat pathway, then media literacy, which is teachable and amenable to curriculum design, becomes a candidate protective factor. In Türkiye, however, scholars have long noted that media literacy education has engaged only weakly with hate speech and discriminatory discourse (Sarı, 2015), leaving open whether literacy as actually acquired by students confers such protection.

New media literacy itself is a multidimensional construct. Building on the shift from passive audiences to prosumers who both consume and produce content, Chen et al. (2011) and Lin et al. (2013) mapped the construct along two continuums, from consumption to prosumption and from functional (technical, operational) to critical (analytic, evaluative, ethical) engagement, yielding four literacies: functional consumption, critical consumption, functional prosumption, and critical prosumption. Critical prosumption refers to the capacity to produce and share media content reflectively and ethically, with attention to the accuracy, framing, and potential social consequences of what one disseminates (Lin et al., 2013). The operationalization of this framework is described in the Methods section. Theoretically, critical literacies should equip individuals to deconstruct disinformation, recognize stereotyped framing, and resist algorithmically amplified outgroup hostility (Lin et al., 2022). The empirical record, however, is mixed: in a recent Turkish university sample, NMLS scores were unrelated to respect for differences

(Akıncı, 2024). Whether the four sub-dimensions relate to xenophobia, and in which direction, therefore remains an open empirical question.

For the health professions this question carries heightened stakes. Turkish nursing and health sciences students will practice in a system serving large refugee populations, and a growing literature documents xenophobia levels in these students alongside correlates such as intercultural sensitivity (Yıldız et al., 2023), cultural competence (Özdemir & Sevinç, 2023), cultural intelligence (Güngör et al., 2023), ethnocentrism and intergroup contact (Karadas et al., 2023), prosocial tendencies (Korkmaz Aslan & Sönmezer Öcal, 2023), and educational track (Gungor et al., 2021; Karasu et al., 2022). Mixed-methods evidence is directly relevant here: students spontaneously cite negative media messages among the sources of their threat perceptions toward refugees (Karadas et al., 2023). Despite this convergence on media as a mechanism, no study to date has examined the four-dimensional new media literacy framework in relation to xenophobia in a health sciences sample, nor linked media literacy to a concrete clinical-deontological attitude such as the willingness to prioritize treatment according to the language a patient speaks.

In terms of terminology, this study uses foreigner when referring to the primary construct and scale content (Van der Veer et al., 2011; Özmete et al., 2018), immigrant/migrant when referencing general cross-border mobility and specific questionnaire items, and refugee strictly when discussing cited literature focused on displaced populations under international protection.

Significance and Aim of the Study

This study contributes to the literature in three ways. First, it provides the first empirical test of the consumption–prosumption × functional–critical model of new media literacy (Chen et al., 2011; Lin et al., 2013) as a correlate of xenophobia among health sciences students. Second, it connects media-related variables to clinically consequential attitudes, namely language-based treatment prioritization and beliefs about the role of cultural difference in care, thereby translating a social-psychological question into one of patient safety and deontology. Third, it reports directions of association and the instruments' psychometric performance transparently. The aim of

the study was to determine the levels of new media literacy and xenophobia among health sciences students and to examine the associations of new media literacy and media-use characteristics with xenophobia and clinical–professional attitudes.

Research Questions and Hypotheses

Two research questions guided the study:

RQ1. What are the levels of new media literacy (and its sub-dimensions) and xenophobia among health sciences students?

RQ2. Do sociodemographic characteristics and media-use habits differentiate students' new media literacy and xenophobia levels?

Five directional hypotheses were formulated a priori, before data analysis, on the basis of the theoretical framework:

H1. New media literacy is negatively related to xenophobia.

H2. The four NMLS sub-dimensions are negatively associated with xenophobia in a multivariable model.

H3. Reporting being affected by negative immigrant-related content on social media is associated with higher xenophobia.

H4. Having a foreign or immigrant friend is associated with lower xenophobia.

H5. Higher critical media literacy is associated with lower odds of endorsing language-based treatment prioritization.

Materials and Methods

Research Design

This was a quantitative, cross-sectional, correlational study.

Population, Sample, and Sample-Size Justification

The target population comprised all undergraduate students enrolled at the Faculty of Health Sciences of a state university in Türkiye (N = 900). Data were collected online between December 2025 and June 2026 via an electronic survey link distributed to the entire student population of the faculty through official class WhatsApp communication groups. Inclusion criteria were active undergraduate enrollment in the faculty and provision of digital informed consent; the a priori exclusion criterion was careless responding, operationalized as an identical response to all 35 NMLS items (longstring indicator). The required sample size was determined a priori

with G*Power 3.1 (F-test family; ANCOVA: fixed effects, main effects and interactions; effect size $f = 0.25$, $\alpha = .05$, power $[1 - \beta] = .80$, numerator $df = 10$, number of groups = 4, one covariate), which indicated a minimum required sample of $n = 269$ (noncentrality parameter $\lambda = 16.8125$, critical $F = 1.8667$, denominator $df = 264$, actual power = .8001). To compensate for potential non-response, incomplete forms, and careless responding, the questionnaire was distributed to all 900 students rather than a restricted subsample. Of the 900 students invited, 360 completed the form (response rate 40.0%); 6 respondents were excluded during data screening for careless responding, yielding a final analytic sample of $N = 354$, corresponding to 39.3% of the target population and exceeding the required minimum of $n = 269$ by 31.6%. A supplementary post hoc sensitivity analysis indicated that $N = 354$ provides 80% power ($\alpha = .05$, two-tailed) to detect bivariate correlations of $|r| \geq .148$ and between-group differences of $d \geq 0.32$; the design was therefore adequately sensitive to the small effects of central interest. Because the researchers hold faculty positions, several measures minimized potential pressure to participate: participation was anonymous and voluntary, occurred outside class hours and assessment contexts, no course credit or penalty was attached, and the researchers could not identify who had or had not participated.

Measures

New Media Literacy Scale (NMLS): Developed by Koç and Barut (2016), the NMLS consists of 35 items rated on a 5-point Likert-type scale and comprises four sub-dimensions: Functional Consumption (7 items), Critical Consumption (11 items), Functional Prosumption (7 items), and Critical Prosumption (10 items). The scale contains no reverse-scored items. Sub-dimension scores and the overall scale score were computed as item means (possible range 1–5), with higher scores indicating higher new media literacy. In the present sample, internal-consistency reliability was $\alpha = .74$ (McDonald's $\omega = .74$) for the total scale, $\alpha = .43$ ($\omega = .44$) for Functional Consumption, $\alpha = .53$ ($\omega = .54$) for Critical Consumption, $\alpha = .41$ ($\omega = .43$) for Functional Prosumption, and $\alpha = .48$ ($\omega = .48$) for Critical Prosumption. Neither instrument provides validated cut-off scores or normative bands for classifying respondents into low, moderate, or high levels; scores were therefore interpreted descriptively, with higher scores indicating higher levels of the construct.

Xenophobia Scale (XS): Originally developed as a cross-national, fear-based cumulative measure by Van der Veer et al. (2011) and adapted into Turkish by Özmete et al. (2018), who reported $\alpha = .88$, the XS is a unidimensional instrument of 11 items rated on a 6-point Likert-type scale. Item 11 was reverse-coded prior to total-score computation. Total scores range from 11 to 66, with higher scores indicating a stronger xenophobic attitude. In the present sample, internal-consistency reliability was $\alpha = .50$ (McDonald's $\omega = .53$). The instrument provides no validated cut-off scores or categorical classification bands.

Sociodemographic and Media-Use Form: A researcher-developed form assessed age, gender, department, grade level, and income perception, together with daily social-media use, the most frequently used platform, reported affectedness by negative immigrant-related content, and professional/clinical attitudes (e.g., determining treatment priority by the language spoken and beliefs about the role of cultural differences on the treatment process).

Data Screening and Preprocessing

Data were inspected prior to analysis. There were no missing values and no out-of-range responses. Two documented preprocessing steps were applied. First, the reverse-scored xenophobia item (Item 11) was recoded (7 minus the raw response) before computing the xenophobia total; this correction was supported psychometrically, as the item's corrected item-rest correlation changed from $-.29$ (raw) to $+.29$ (recoded). Second, 6 respondents who provided an identical response to all 35 NMLS items (a longstring/straightlining indicator of careless responding) were excluded. Univariate outliers were examined using standardized scores; because trimming did not materially improve the tenability of the analyses and reduced scale variance, all remaining valid cases were retained ($N = 354$).

Normality was evaluated using skewness and kurtosis. Skewness was within ± 1.5 for the NMLS total and its sub-dimensions; the xenophobia total was negatively skewed (-1.17), indicating a concentration of responses toward the upper end of the scale. Kurtosis exceeded the ± 1.5 criterion for the NMLS total (4.24) and the xenophobia total (3.27), indicating leptokurtic distributions. In addition, the NMLS sub-dimension standard deviations (0.30–0.42 on the 1–5 metric) indicate restricted variance. Parametric tests were

retained given the large sample and the documented robustness of the t test, ANOVA, Pearson correlation, and OLS regression to moderate non-normality (Tabachnick & Fidell, 2013); where the homogeneity-of-variance assumption was additionally violated, Welch's ANOVA with Games–Howell post hoc tests was used. Because restricted variance, leptokurtosis, and the ceiling tendency in xenophobia scores all attenuate correlation coefficients, the observed associations should be read as lower-bound estimates; this is taken up in the Limitations (Table 2).

Analytic Strategy

Group differences were tested with independent-samples t tests (two-category factors) and one-way ANOVA (three-or-more-category factors); homogeneity of variance was assessed with Levene's test, and where it was violated, Welch's ANOVA with Games–Howell post hoc comparisons was reported instead of conventional ANOVA with Tukey HSD (Table 3). Given the number of group-difference tests conducted ($k = 12$), results are also evaluated against a Bonferroni-adjusted criterion ($\alpha = .004$), and findings significant only at the conventional level are labeled exploratory. Bivariate relationships were examined with Pearson correlations (Table 4). Xenophobia was then modeled with a hierarchical multiple linear regression in three blocks: Block 1: gender, income perception, and department; Block 2: daily social-media time and reported affectedness by negative immigrant-related content; Block 3: the four NMLS sub-dimensions. ΔR^2 and ΔF are reported for each block (Table 6), and the simultaneous sub-dimension model is retained as Table 5 for continuity. Regression assumptions were checked: residuals were approximately normally distributed, inspection of residual-versus-fitted plots indicated no marked nonlinearity or heteroscedasticity, the Durbin–Watson statistic was 1.77, no case exceeded conventional Cook's distance thresholds, and multicollinearity was absent (tolerance $\geq .74$, VIF ≤ 1.34). A binary logistic regression tested whether critical media literacy was associated with endorsement of language-based treatment prioritization; the 57 participants who selected the no-opinion option were excluded (analytic $n = 297$), and a sensitivity analysis recoding them as non-endorsement ($n = 354$) is reported. Statistical significance was evaluated at $p < .05$ (two-tailed). All analyses, comprising descriptive statistics, reliability estimation (Cronbach's α and McDonald's ω), group comparisons, correlations, and all regression models,

were conducted on the screened analytic dataset ($N = 354$), in which Item 11 of the Xenophobia Scale had been reverse-coded prior to the computation of total scores. Analyses were conducted with jamovi (Version 2.6; The jamovi Project, 2024), which implements R (Version 4.4; R Core Team, 2024; R packages retrieved from the CRAN snapshot of 2024-08-07); regression diagnostics were obtained with the car package (Fox & Weisberg, 2023). The cleaned dataset and outputs are available from the corresponding author upon reasonable request.

Ethical Considerations

Ethical approval was obtained from the Karamanoğlu Mehmetbey University Health Sciences Scientific Research and Publication Ethics Committee (meeting date: October 2, 2024; meeting no: 02; decision no: 02-2024/25; document no: E-15466469-100-220186, dated October 11, 2024). Institutional permission was obtained from the Dean's Office of the Faculty of Health Sciences, Karamanoğlu Mehmetbey University (date: December 24, 2025; document no: E-10487118-044-304481), on the condition that data collection be conducted outside scheduled class hours. The purpose of the study was explained at the beginning of the online survey, and digital (electronic) informed consent was obtained from all participants. For the six participants aged 17 years, digital informed consent was additionally requested and obtained from a parent or legal guardian, together with the participant's own informed assent. The study was conducted in full accordance with the Declaration of Helsinki.

Results

Sample Characteristics

The sociodemographic and media-use profile of the final analytic sample ($N = 354$) is presented in Table 1. The sample was predominantly female ($n = 239$, 67.5%), with a mean age of 20.42 ± 1.58 years. Almost half of the participants were enrolled in Nursing ($n = 174$, 49.2%), followed by Nutrition and Dietetics ($n = 68$, 19.2%); the remaining students were distributed across Physiotherapy and Rehabilitation, Social Work, and Health Management. Half of the sample was in the first year of study ($n = 178$, 50.3%), and half perceived their personal income as partially sufficient ($n = 178$, 50.3%). Most students reported that they do not speak a foreign language ($n = 311$, 87.9%), and 27.1% ($n = 96$) reported having a foreign

or immigrant friend in their immediate social circle. Social media use was high. Of the health sciences students, 96.6% used these platforms for more than one hour daily, divided almost evenly between 1–3 hours ($n = 172$, 48.6%) and 4 hours or more ($n = 170$, 48.0%). Instagram was the most frequently used platform ($n = 231$, 65.3%), followed by YouTube ($n = 80$, 22.6%), and the main purpose of use was entertainment and socializing ($n = 213$, 60.2%).

With respect to clinically and socially sensitive indicators, more than half of the sample endorsed the

belief that foreigners bring disease ($n = 205$, 57.9%) and reported being personally affected by negative immigrant- or foreigner-related content encountered on social media ($n = 200$, 56.5%). Approximately one in five students ($n = 67$, 18.9%) stated that they would prioritize emergency or clinical treatment according to the language a patient speaks, and 37.9% ($n = 134$) considered that cultural differences affect the clinical treatment or counseling process.

Table 1 Sociodemographic and Media-Use Characteristics of the Sample ($N = 354$)

Characteristic	n	%
Gender		
Female	239	67.5
Male	115	32.5
Department		
Nursing	174	49.2
Nutrition and Dietetics	68	19.2
Physiotherapy and Rehabilitation	40	11.3
Health Management	34	9.6
Social Work	38	10.7
Grade level		
1st year	178	50.3
2nd year	82	23.2
3rd year	36	10.2
4th year	58	16.4
Income perception		
Sufficient	102	28.8
Partially sufficient	178	50.3
Insufficient	74	20.9
Speaks a foreign language		
Yes	43	12.1
No	311	87.9
Has a foreign/immigrant friend		
Yes	96	27.1
No	258	72.9
Foreign/immigrant marriage in family/circle		
Yes	41	11.6
No	313	88.4
Daily social-media use		
Less than 1 hour	12	3.4
1–3 hours	172	48.6
4 hours or more	170	48.0
Most-used platform		

Instagram	231	65.3
Twitter/X	15	4.2
TikTok	28	7.9
YouTube	80	22.6
Main purpose of use		
Following news/current affairs	88	24.9
Entertainment and socializing	213	60.2
Communication	29	8.2
Education	11	3.1
Shopping/marketing	13	3.7
Shops on social media		
Yes	264	74.6
No	90	25.4
Belief that foreigners bring disease		
Yes	205	57.9
No	33	9.3
No opinion	116	32.8
Affected by negative immigrant content		
Yes	200	56.5
No	96	27.1
No opinion	58	16.4
Would prioritize treatment by language		
Yes	67	18.9
No	230	65.0
No opinion	57	16.1
Cultural differences affect treatment/counseling		
Yes	134	37.9
No	166	46.9
No opinion	54	15.3
	Mean	SD
Age (years)	20.42	1.58

Note: Values are n(%) unless otherwise indicated; age is reported as mean $\pm$ standard deviation.

Descriptive Statistics and Reliability

Table 2 reports item counts, observed ranges, means, standard deviations, distributional indices, and internal-consistency reliabilities (Cronbach's α and McDonald's ω). Across the NMLS sub-dimensions,

item means ranged from 3.55 to 3.89 on the 1–5 metric, with an overall NMLS item mean of 3.76 (SD = 0.26). The xenophobia total mean was 50.59 (SD = 6.63) on the possible 11–66 range.

Table 2 Descriptive Statistics and Internal-Consistency Reliability of Study Scales (N = 354)

Scale / Sub-dimension	k	Min	Max	Mean	SD	Skew	Kurt	α	ωT
Functional Consumption	7	2.86	5.00	3.83	0.36	-.09	.48	.43	.44
Critical Consumption	11	2.82	5.00	3.89	0.30	-.20	2.19	.53	.54
Functional Prosumption	7	2.29	5.00	3.78	0.42	-.14	1.20	.41	.43
Critical Prosumption	10	2.10	5.00	3.55	0.38	-.04	1.56	.48	.48
NMLS Total	35	2.63	4.89	3.76	0.26	.03	4.24	.74	.74
Xenophobia Scale	11	19.00	66.00	50.59	6.63	-1.17	3.27	.50	.53

Note: k = number of items; Skew = skewness; Kurt = kurtosis; α = Cronbach's alpha computed in the present sample (N = 354); ω = McDonald's omega total (ωT), estimated from a unidimensional congeneric one-factor CFA fitted separately to each scale. For the four NMLS sub-dimension models, all standardized loadings were positive, no negative error variances occurred, and model fit was good (all $\chi^2 < df$, CFI $\geq .95$, RMSEA $< .06$, SRMR = .030–.066). For the Xenophobia Scale model, no negative error variances occurred and the CFI/RMSEA criteria were met, but Item 8 loaded negatively (–.25) and the SRMR (.11) exceeded the .08 criterion; the ωT for this scale should therefore be interpreted with caution.

Levels of New Media Literacy and Xenophobia (RQ1)

On the 1–5 metric, students reported the highest literacy in Critical Consumption (M = 3.89, SD = 0.30) and Functional Consumption (M = 3.83, SD = 0.36), followed by Functional Prosumption (M = 3.78, SD = 0.42) and Critical Prosumption (M = 3.55, SD = 0.38). The NMLS total item mean was 3.76 (SD = 0.26). The xenophobia total mean was 50.59 (SD = 6.63) on the possible 11–66 range. Because the scale provides no validated cut-off values, no categorical level is assigned; comparative context is provided in the Discussion.

Group Differences (RQ2, H3, H4)

Table 3 summarizes group comparisons for the NMLS total and xenophobia total. Levene's test indicated heterogeneous variances for xenophobia across reported-affectedness groups ($p = .011$); Welch's ANOVA confirmed the group difference, $F(2, 136.51) = 6.56$, $p = .002$, $\eta^2 = .04$. Games–Howell comparisons showed that students who reported being affected by negative immigrant-related content (M = 51.73, SD =

5.57) scored higher than those who reported not being affected (M = 48.73, SD = 8.62), $p = .006$, Hedges $g = 0.45$, and higher than those reporting no opinion (M = 49.74, SD = 5.36), $p = .041$. This finding also remains significant under the Bonferroni-adjusted criterion ($\alpha = .004$). For new media literacy, Welch's ANOVA across daily social-media time was significant, $F(2, 30.43) = 3.65$, $p = .038$, but the Games–Howell contrast between the 1–3-hour and less-than-1-hour groups did not reach significance ($p = .051$) and rests on only 12 participants in the smallest group; it is therefore reported as exploratory. For department, variances were heterogeneous (Levene $p = .004$) and Welch's ANOVA was non-significant, $F(4, 106.42) = 2.39$, $p = .055$; the department difference observed under conventional ANOVA is accordingly treated as non-robust. Xenophobia did not differ by gender, department, grade, income, social-media time, or having a foreign/immigrant friend (all $p > .05$); thus, Hypothesis 4 was not supported.

Table 3 Differences in NMLS Total and Xenophobia Scores by Sociodemographic and Media-Use Variables

Variable	Mean	SD	NMLS t/F (df)	p	η²/d	Mean	SD	Xeno t/F (df)	p	η²/d
Gender										
Female	3.75	0.28	t(352) = −0.34	.737	.04	50.87	6.71	t(352) = 1.18	.241	.13
Male	3.76	0.22				49.99	6.42			
Foreign/immigrant friend										
Yes	3.78	0.24	t(352) = 1.13	.259	.14	51.24	6.29	t(352) = 1.13	.259	.14
No	3.75	0.27				50.34	6.74			
Department			F(4, 106.42) = 2.39 ^a	.055	.03			F(4, 349) = 0.73	.569	.01
Grade level			F(3, 350) = 1.46	.227	.01			F(3, 350) = 0.21	.889	.00
Income perception			F(2, 351) = 0.36	.696	.00			F(2, 351) = 2.45	.088	.01
Daily social media time			F(2, 30.43) = 3.65 ^a	.038	.02			F(2, 351) = 0.23	.798	.00
Affected by negative immigrant content			F(2, 351) = 0.04	.961	.00			F(2, 136.51) = 6.56 ^a	.002	.04

Note: NMLS = New Media Literacy Scale total; Xeno = Xenophobia Scale total. For t tests the effect size is Cohen's d; for ANOVAs it is η^2 , computed from the conventional one-way ANOVA and reported as a descriptive effect-size estimate. df for gender and foreign-friend comparisons = 352.^a Levene's test indicated heterogeneous variances for this comparison, so Welch's F with Games–Howell post hoc comparisons is reported in place of conventional ANOVA with Tukey HSD; all remaining ANOVA rows are conventional one-way ANOVAs with Tukey HSD post hoc comparisons. Post hoc results: for Xeno by reported affectedness, Games–Howell comparisons showed affected ($M = 51.73$, $SD = 5.57$) > not affected ($M = 48.73$, $SD = 8.62$), $p = .006$, and affected > no opinion ($M = 49.74$, $SD = 5.36$), $p = .041$. For NMLS by daily social-media use, the Games–Howell contrast between the 1–3 hr and less-than-1-hr groups did not reach significance ($p = .051$) and rests on only 12 participants in the smallest group; it is reported as exploratory. For NMLS by department, Welch's F was non-significant ($p = .055$), whereas the conventional one-way ANOVA was significant, $F(4, 349) = 2.88$, $p = .023$, with a Tukey HSD contrast of Nutrition and Dietetics > Social Work; this difference is accordingly treated as non-robust and is not interpreted. The rounded test statistics for the two outcomes in the foreign/immigrant friend row coincide by chance; the exact values differ (NMLS: $t = 1.1302$, $p = .2591$; Xenophobia: $t = 1.1300$, $p = .2593$), as verified by recomputation from the raw data, and the group descriptives (Mean $\pm$ SD columns) show that the two comparisons are distinct.

Correlations (H1)

Table 4 presents zero-order correlations. Contrary to Hypothesis 1, the NMLS total correlated positively with xenophobia, $r = .16$, $p = .003$. At the sub-dimension level, Functional Consumption ($r = .16$, $p = .003$) and Functional Prosumption ($r = .14$, $p =$

.009) were significantly and positively associated with xenophobia, whereas Critical Consumption ($r = .07$, $p = .17$) and Critical Prosumption ($r = .10$, $p = .07$) were not. Thus, higher new media literacy was associated with slightly higher rather than lower xenophobia, and the two critical sub-dimensions were unrelated to xenophobia.

Table 4 Means, Standard Deviations, and Pearson Correlations Among Study Variables (N = 354)

Variable	1	2	3	4	5	6
1. Functional Consumption	—					
2. Critical Consumption	.39**	—				
3. Functional Prosumption	.29**	.36**	—			
4. Critical Prosumption	.30**	.37**	.40**	—		
5. NMLS total	.64**	.75**	.70**	.77**	—	
6. Xenophobia total	.16**	.07	.14**	.10	.16**	—
Mean	3.83	3.89	3.78	3.55	3.76	50.59
SD	0.36	0.30	0.42	0.38	0.26	6.63

Note: NMLS = New Media Literacy Scale. NMLS total is the mean of the 35 items; sub-dimensions are item means..

* $p < .05$. ** $p < .01$.

Prediction of Xenophobia (H2)

A simultaneous multiple regression with the four NMLS sub-dimensions predicting xenophobia was statistically significant but explained little variance, $R^2 = .036$, adjusted $R^2 = .025$, $F(4, 349) = 3.23$, $p = .013$. Only Functional Consumption was a significant predictor with a positive coefficient ($\beta = .13$, $p =$

.024). Critical Consumption, Functional Prosumption, and Critical Prosumption were not significant. Multicollinearity was not a concern (all tolerances $\geq .74$, all VIFs ≤ 1.34). Because the direction was positive and the critical sub-dimensions were non-significant, Hypothesis 2 (significant negative prediction) was not supported.

Table 5 Multiple Linear Regression Predicting Xenophobia From New Media Literacy Sub-Dimensions

Predictor	B	95% CI	SE B	β	t	p	Tol	VIF
(Constant)	35.75	(25.45, 46.05)	5.24		6.82	< .001		
Functional Consumption	2.44	(0.33, 4.54)	1.07	.13	2.27	.024	.81	1.24
Critical Consumption	-0.50	(-3.14, 2.14)	1.34	-.02	-0.37	.709	.74	1.34
Functional Prosumption	1.59	(-0.29, 3.46)	0.95	.10	1.66	.097	.77	1.30
Critical Prosumption	0.41	(-1.64, 2.46)	1.04	.02	0.39	.693	.76	1.31

Note: Dependent variable = Xenophobia Scale total. B = unstandardized coefficient; CI = confidence interval; SE B = standard error of B; β = standardized coefficient; Tol = tolerance; VIF = variance inflation factor. $R^2 = .036$, adjusted $R^2 = .025$, $F(4, 349) = 3.23$, $p = .013$, Durbin-Watson = 1.77.

Hierarchical Multiple Regression Analysis

Table 6 presents the hierarchical regression predicting xenophobia. Demographic variables in Block 1 did not account for significant variance, $R^2 = .027$, $F(7, 346) = 1.36$, $p = .220$. Media-use variables in Block 2 added significant variance, $\Delta R^2 = .038$, $\Delta F(4, 342) = 3.52$, $p = .008$, and the NMLS sub-dimensions in Block 3 added a further $\Delta R^2 = .032$, $\Delta F(4, 338) = 2.99$, $p = .019$; the final model accounted for 9.7%

of the variance (adjusted $R^2 = .057$). In the final model, reported affectedness by negative content remained the variable most strongly associated with xenophobia (not affected vs. affected: $B = -2.89$, $p < .001$; no opinion vs. affected: $B = -2.08$, $p = .034$), and Functional Consumption retained a small positive association ($B = 2.34$, $p = .030$); no other predictor was significant.

Table 6 Hierarchical Multiple Linear Regression Predicting Xenophobia (N = 354)

Model / Predictors	B	SE	β	t	p	ΔR^2	ΔF	p (ΔF)
Block 1: Demographics						.027	1.36	.220
Gender (Male vs. Female)	0.98	0.76	.07	1.29	.198			
Income perception	-0.72	0.52	-.08	-1.39	.166			
Department controls					> .05			
Block 2: Media Use & Content						.038	3.52	.008
Daily social media time	0.12	0.61	.01	0.20	.843			
Affected by negative content (Not vs. Affected)	-2.89	0.81	-.19	-3.57	< .001			
Affected by negative content (No opinion vs. Affected)	-2.08	0.98	-.11	-2.12	.034			
Block 3: NMLS Sub-dimensions						.032	2.99	.019
Functional Consumption	2.34	1.07	.13	2.18	.030			
Critical Consumption	-0.38	1.33	-.02	-0.29	.776			
Functional Prosumption	1.48	0.95	.09	1.56	.120			
Critical Prosumption	0.35	1.03	.02	0.34	.734			

Note: Final Model $R^2 = .097$, Adjusted $R^2 = .057$, $F(15, 338) = 2.42$, $p = .002$.

Critical Media Literacy and Language-Based Clinical Discrimination (H5)

A binary logistic regression tested whether critical media literacy (mean of the Critical Consumption and Critical Prosumption items) was associated with the odds of endorsing language-based treatment prioritization (yes, $n = 67$, vs. no, $n = 230$; the 57 participants who selected the no-opinion option were excluded, analytic $n = 297$). The association was not statistically significant, $B = -0.81$, $SE = 0.50$, $OR = 0.45$, 95% CI [0.17, 1.19], $p = .106$. A sensitivity analysis recoding the no-opinion responses as non-endorsement ($n = 354$) yielded a materially identical estimate ($OR = 0.50$, 95% CI [0.19, 1.28], $p = .147$). Hypothesis 5 was not supported.

Discussion

This study examined whether health sciences students' new media literacy is related to xenophobia and to language-based clinical discrimination, testing five a priori hypotheses in a sample of 354 undergraduates.

The discussion is organized around four results: a mean xenophobia score of 50.59 ($SD = 6.63$); a small but statistically significant positive rather than negative association between new media literacy and xenophobia, carried by the functional rather than the critical sub-dimensions; a robust association between reported affectedness by negative immigrant-related media content and higher xenophobia; and non-significant results for intergroup friendship and for the protective effect of critical literacy on language-based treatment prioritization, the latter trending in the hypothesized direction.

Levels of Xenophobia and New Media Literacy

The mean xenophobia score of 50.59 ($SD = 6.63$) is higher than the 45.27 ($SD = 11.73$) reported by Güngör et al. (2023) for a closely comparable Turkish health sciences population and than means reported in nursing samples from high-refugee-density regions (Karasu et al., 2022; Özdemir & Sevinç, 2023). In the absence of validated cut-offs for the Turkish form (Özmete et al., 2018), we refrain from categorical

labels and interpret the level only relative to these published samples. That roughly one in five students (18.9%) endorsed determining treatment priority according to the language a patient speaks, and that more than half believed foreigners bring disease, indicates that these attitudes extend to clinically consequential judgments. New media literacy scores were high across functional dimensions, with critical prosumption, defined as the capacity to produce media content reflectively and ethically, as the least developed sub-dimension, a pattern consistent with the original NMLS validation work showing that critical-productive skills lag functional-receptive ones among university students (Koç & Barut, 2016).

The Functional-Literacy Paradox (H1 and H2)

Contrary to Hypotheses 1 and 2, new media literacy correlated positively with xenophobia ($r = .16$), the four sub-dimensions jointly explained only 3.6% of the variance, and the sole significant predictor in the regression was functional consumption ($\beta = .13$), the most technical and least evaluative quadrant of the framework. The critical sub-dimensions were unrelated to xenophobia. One reading of this pattern is an exposure-without-appraisal account: functional skill indexes how fluently students navigate new media environments, and fluency increases the volume of algorithmically curated content they encounter, including the sensationalized, threat-laden immigrant coverage that dominates such feeds, without conferring any capacity to deconstruct it. In Integrated Threat Theory terms (Stephan et al., 2000), technical fluency increases the volume of realistic and symbolic threat cues that reach the student, whereas filtering those cues requires critical appraisal. This reading is consistent with evidence that the prejudice-promoting effect of social media use operates through threat perception and is conditioned by cognitive-evaluative resources (Ahmed et al., 2024), and with the echo-chamber logic by which recommendation algorithms progressively narrow the attitudinal range of content a fluent user consumes.

Two comparisons qualify this interpretation. First, the null association between critical literacies and xenophobia diverges from Lin et al. (2022), who related news media literacy to lower xenophobia through intellectual humility and reduced threat perception; their instrument, however, targeted explicitly critical news-evaluation skills, whereas the NMLS blends technical and evaluative content

across quadrants. Second, our result converges with Akıncı (2024), who found no correlation between NMLS scores and respect for differences in a Turkish university sample, which suggests that generic new media literacy, as currently acquired and measured, may be unrelated to intergroup attitudes. The positive coefficient therefore cautions against equating technical training with attitudinal inoculation; it does not indicate that media literacy causes prejudice.

Reported Affectedness by Negative Media Content (H3)

The clearest and most consistent finding of the study is that students who reported being affected by negative immigrant- and foreigner-related content on social media scored higher on xenophobia than students who reported no such influence (Welch $F(2, 136.51) = 6.56$, $p = .002$, Hedges $g = 0.45$). This association was larger than that of any demographic variable tested, and it persisted after adjustment in the hierarchical regression model. This result supports Hypothesis 3 and aligns with the media-effects literature linking news and social media consumption to fear-based negativity toward immigrants and refugees (Debrael et al., 2021; Ahmed et al., 2024). It also provides quantitative support for qualitative reports in which Turkish nursing students spontaneously identified negative media messages among the sources of their threat perceptions (Karadas et al., 2023). More than half of the present sample (56.5%) acknowledged being affected by such content. Because exposure frequency and evaluative appraisal were measured within a single item, this result demonstrates measurement covariation rather than an established media-effects pathway.

Intergroup Contact and Language-Based Treatment Prioritization (H4 and H5)

Having a foreign or immigrant friend was not associated with lower xenophobia, leaving Hypothesis 4 unsupported. This null result contrasts with contact-hypothesis expectations (Allport, 1954) and with studies in which contact variables predicted lower xenophobia among students (Doğan & Ayata Küçükbükücü, 2025; Karadas et al., 2023). The most plausible reconciliation is measurement: a binary friendship item captures neither the quality, depth, and equality of status of contact nor its cooperative character, which are the conditions on which prejudice reduction depends. Experimental evidence reinforces this point: structured, supervised, repeated contact

with refugees embedded in an educational program significantly reduced nursing students' xenophobia in a randomized controlled trial (Ozaydin et al., 2021), and a single-group forum-theater intervention improved attitudes toward immigrants (Tok & Uzun, 2026). Acquaintance alone does not meet the conditions the theory specifies.

Hypothesis 5 addressed whether critical media literacy was associated with lower odds of endorsing language-based treatment prioritization. Although the association trended in the hypothesized direction ($OR = 0.45$, 95% CI [0.17, 1.19]), it did not reach statistical significance ($p = .106$), with the wide confidence interval reflecting the modest number of endorsing students ($n = 67$). Whether critical media literacy is associated with lower endorsement of language-based treatment prioritization could not be established here; the non-significant point estimate warrants replication in larger, adequately powered samples before a protective interpretation can be advanced. Rather than demonstrating clinical protection, the current findings motivate testing critical digital media literacy as a plausible curriculum component within transcultural nursing and healthcare education (Gungor et al., 2021; Yüksel Kaçan & Yükrük, 2025).

Demographic Patterns

No gender difference in xenophobia emerged ($t(352) = 1.18$, $p = .241$, $d = 0.13$), diverging from some previous reports of higher xenophobia among male nursing students (Korkmaz Aslan & Sönmezer Öcal, 2023; Dursun Ergezen & Aydın, 2025). With $n = 239$ women and $n = 115$ men, the design had 80% power to detect $d \geq 0.32$; the observed d of 0.13 indicates that any undetected gender difference in this population is at most small, which is a more defensible conclusion than attributing the null result to the predominance of women. Neither department nor daily social-media time robustly differentiated new media literacy or xenophobia, and income perception showed only a non-significant gradient toward higher xenophobia under greater economic strain, a direction consistent with the realistic-threat component of Integrated Threat Theory (Stephan et al., 2000), under which economic vulnerability sharpens perceived competition with migrants.

Limitations

Several limitations temper these conclusions. First, the cross-sectional design precludes causal inference: students already high in xenophobia may, for instance, seek out or be algorithmically served more negative content, and all associations reported here are directionless covariations. Second, the single-faculty convenience sample limits generalizability, and self-report on socially sensitive attitudes invites social-desirability bias and common-method variance. Third, the psychometric performance of the instruments in this sample constrains interpretation: internal consistency was acceptable for the NMLS total ($\alpha = .74$, $\omega = .74$) but low for the four sub-dimensions ($\alpha = .41-.53$) and for the Xenophobia Scale ($\alpha = .50$, $\omega = .53$), and the distributions showed leptokurtosis, restricted variance in the NMLS sub-dimensions, and a ceiling tendency in xenophobia scores (skewness = -1.17). Low reliability and restricted range both attenuate correlations, so the small observed coefficients are best read as lower-bound estimates, and part of the apparent weakness of the literacy–xenophobia association may reflect measurement artifact rather than the true structure of the data. Because covariance-based reliability estimates (α and ω) assume approximately continuous, well-spread item distributions, the strong negative skew of the xenophobia total (-1.17), the leptokurtosis of the composite scores (3.27 and 4.24), and the item-level ceiling tendency (sub-dimension item means of 3.55–3.89 on the 1–5 metric) are all expected to suppress these coefficients; the low sub-dimension and Xenophobia Scale reliabilities should accordingly be read as lower-bound estimates obtained in a distributionally restricted sample. Fourth, the media-use and clinical-attitude variables were each measured with a single, researcher-developed, self-report item without formal validity evidence. In particular, the negative-content item did not distinguish the frequency of exposure to negative immigrant-related content from the perceived influence of that content; ideally, exposure (a behavioral frequency) and affectedness (an evaluative appraisal) should be measured separately, and without this distinction the finding demonstrates measurement covariation rather than a media-effects pathway. Likewise, the treatment-prioritization item captures an expressed attitude toward a hypothetical scenario, not observed clinical discrimination, and no inference about actual clinical behavior is warranted. Finally, the modest explained variance (9.7% in the

full hierarchical model) is a substantive result in itself: whatever is associated with xenophobia in this population, general new media literacy is at most a small part of it.

Conclusion and Recommendations

In a sample of 354 Turkish health sciences students, the variable most strongly associated with xenophobia was students' self-reported experience of being affected by negative immigrant-related media content rather than a deficit in media literacy. New media literacy, contrary to expectation, showed a small positive association with xenophobia that was carried by its functional-technical sub-dimensions and retained after adjustment for demographic and media-use variables, while its critical sub-dimensions were unrelated to xenophobia and showed a non-significant inverse association with the expressed attitude of language-based treatment prioritization. The findings caution against the assumption that teaching students to use digital media skillfully is, by itself, associated with protection from negative attitudinal correlates of media environments, and they redirect attention toward what students encounter online and how critically they can appraise it, as questions for longitudinal and experimental designs.

One implementable format for health sciences and nursing curricula is outlined here. A 14-hour critical digital media literacy module could be embedded in existing second-year transcultural nursing or professional ethics courses rather than added as a new course: four hours on source verification and disinformation recognition using migrant-related news cases; four hours on sensationalized and stereotyped framing of migrants and on algorithmic curation and echo-chamber dynamics; three hours of ethical content-production workshop (critical presumption); and three hours of structured, cooperative contact or forum-theater work with refugee and migrant community participants, adapting the protocols of Ozaydin et al. (2021) and Tok and Uzun (2026). Measurable outcomes would be pre-post change in the NMLS critical sub-dimension scores, Xenophobia Scale scores, and the proportion of students endorsing language-based treatment prioritization, evaluated in a controlled pre/post design. We emphasize that the present cross-sectional findings motivate testing such

a module; they do not demonstrate its effectiveness. For future research, multi-center longitudinal designs are recommended to examine the causal pathways: adequately powered and preferably multi-site studies capable of detecting small effects, and longitudinal or experimental studies that can separate exposure effects from selection, testing directly whether strengthening critical media literacy changes the way negative immigrant-related content is processed.

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