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Promoting Mental Health Support for Adolescents and Future Health Educators Through Nursing-Led Intervention: A University-School-Community Collaboration Model in Spain

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ABSTRACT

Objective: This study describes a nurse-led intervention aimed at improving mental health literacy (MHL), reducing stigma, and encouraging help-seeking behaviour.

Design: A quasi-experimental design involved 578 responses ranging in age from 13 to 52 years ($M = 20.28$, $SD = 6.29$), including secondary school pupils, nursing undergraduates, and trainee secondary school teachers.

Measurements: Pre- and post-intervention assessments examined a wide range of health indicators. These included six scales assessing mental health knowledge (MHLI), mental health support intentions (MHSSA), body dissatisfaction (EBIC), eating disorder risk (SCOFF), problematic pornography use (PPCS-6), and health-protective sexual communication (HPSC). The intervention focused on reducing stigma, encouraging help-seeking behaviour, and developing practical skills to support peers facing mental health challenges.

Results: Post-intervention results indicated significant improvements in MHL, attitudes, and behavioural intentions across all groups. Adolescents initially exhibited lower baseline scores than university participants. However, both groups demonstrated substantial gains. The most pronounced improvements were observed among women, individuals with prior experience of mental health issues, and university students.

Conclusion: This study underscores the vital role of nurses as facilitators in school-based mental health promotion and in the interdisciplinary education of future health professionals. The nurse-led mental health education into secondary and higher education curricula foster population-wide mental well-being.

1 | Introduction

Mental health, as defined by the World Health Organization (WHO 2025), is a state of well-being that enables individuals to manage stress, develop their abilities, work effectively, and contribute to their communities. Mental health can be significantly affected by a range of personal factors, environmental stressors, and familial or social dynamics (WHO 2024, 2025). Globally, mental health disorders represent a major source of morbidity and mortality, particularly among young people.

Alarmingly, suicide remains the third leading cause of death among individuals aged 15–29, contributing to over 720,000 deaths annually (WHO 2024).

Adolescents and university students are particularly vulnerable to mental health disorders. In Spain, from 2000 to 2021, 5.9% adolescent hospitalisations were due to mental health diagnoses (Soriano et al. 2024). The average age of psychiatric admission dropped from 17 to 15 years, with girls more affected by internalising disorders (such as anxiety and depression), and boys by externalising conditions (such as behavioural problems). Diagnosis rates have increased from 3.9% in 2000 to 9.5% in 2021. Moreover, suicide mortality in Spain rose by 20% between 2018 and 2022, especially among people aged 15–44, though recent data from early 2024 indicates a 12.6% decline, potentially due to emerging prevention strategies (INE 2024).

In addition, several studies (De Miguel Álvarez; Díaz Hernández et al. 2024; Morales Benito et al. 2024; Muñoz 2024; Spanish Ministry of Equality 2025) indicate that the average age of initial pornography exposure is as early as eight years old, with approximately 90% of individuals aged 9 to 24 having consumed such content. In Spain, data indicate that 12.6% of young people report daily pornography use, 50% admits excessive consumption and efforts to reduce it, and 30% have experienced personal or relational distress when unable to access it (Spanish Ministry of Equality 2025). Critically, these trends have significant mental health implications. The overexposure to pornography at an early age can lead to addiction-like symptoms: anxiety, guilt, social withdrawal, and depression (De Miguel Álvarez 2021; Díaz Hernández et al. 2024). It also contributes to low self-esteem, sexual risk behaviour, poor body image, and difficulties forming healthy, respectful relationships (Morales Benito et al. 2024; Muñoz 2024). Moreover, about 30% of Spanish adolescents rely solely on pornography as their source of sex education, which fosters misinformation and confusion, reinforcing stigma and emotional distress (De Miguel Álvarez 2021; Spanish Ministry of Equality 2025).

Despite most mental disorders appearing before age 18, peaking around age 14, youth represent the demographic least likely to access mental health services (Solmi et al. 2022; Soriano et al. 2024). Delays in help-seeking are common, primarily driven by stigma, misinformation, and low levels of mental health literacy (MHL) (Lozano-Sánchez et al. 2024). MHL, understood as the knowledge and beliefs enabling the recognition, management, and prevention of mental illnesses, is vital for early intervention (Lu et al. 2023; Nogueira et al. 2025).

Improving MHL among adolescents and university students, particularly those in health and education fields, is essential. Higher MHL correlates with reduced stigma, increased help-seeking behaviours, and better mental health outcomes (Fjelldal et al., 2025; García-Sastre et al. 2024). However, existing tools often lack cultural adaptation, especially in Spanish-speaking populations, which limits the effectiveness of MHL interventions (Lu et al. 2023). To address this, the schools play a crucial role in supporting adolescent mental health. A strong sense of school belonging promotes well-being and academic success, while its absence is associated with anxiety, depression, and risky behaviours (Camacho-Rubio et al. 2024; Lu et al. 2023). Schools provide a vital environment for early detection, emotional support, and structured mental health education (Fjelldal et al., 2025; Lucas-Molina et al. 2025).

Peer-led interventions guided by health education professionals are particularly effective, given adolescents' tendency to confide in friends during emotional difficulties. Programmes like Teen Mental Health First Aid and Spain's *PositivaMente* programme have shown promising results in improving adolescent well-being, especially among girls (Hart et al. 2018; Díez-Gómez et al. 2024). These programmes teach young people to identify mental health warning signs, listen actively, and refer peers to professional help. Participants often report improved confidence, reduced stigma, and increased willingness to seek or offer help (Freeman et al. 2024; Lu et al. 2023; Teixeira et al. 2025).

Despite their central role, educators and future healthcare professionals often lack sufficient training to effectively address mental health issues (Amaechi et al. 2023; Fortes 2024). Integrating MHL into university curricula for teachers and health professionals is essential to equip them with culturally competent, evidence-based strategies (Gorczynski and Sims-Schouten 2024; Pastore et al. 2024). Current research suggests that while health sciences students display more confidence in addressing mental health issues than education students, all groups benefit from targeted interdisciplinary training (Alonso-Martínez et al. 2024a).

A major challenge in Spanish schools is the lack of specialised staff, particularly school nurses, to consistently deliver health education (Armas Junco et al. 2024). Teachers, often without specific training, are expected to cover sensitive topics such as sexual and mental health, which may result in misinformation or inadequate support (Nygård et al.; 2025; Bramhagen and Lundström 2024). These gaps are exacerbated by adolescents' exposure to health-related misinformation online, which they may struggle to critically evaluate (Fowler et al. 2022).

School nurses play a key role within government-led school health strategies, particularly in the context of Spanish health-promoting school programmes (Armas Junco et al. 2024). In this framework, school nurses are essential professionals who lead health education initiatives, engage in the prevention and early detection of mental and physical health issues, and collaborate closely with teachers and families to support students' holistic development (Nygård et al.; 2025). Thanks to their clinical expertise and holistic, community-oriented training, nurses are well-positioned to fill this educational gap (Bramhagen and Lundström 2024). They are particularly effective in delivering comprehensive, developmentally appropriate health education across school and family settings, an essential role in today's societies where open conversations about mental health or sexuality may be limited (Sánchez-Muñoz et al. 2024).

Nurses are uniquely positioned to lead adolescent mental health initiatives owing to their holistic, person-centred approach that encompasses physical, emotional, and social aspects of well-being (Teixeira et al. 2025). Their ongoing involvement within schools, universities and communities enables early identification of psychological distress and the implementation of preventive measures (Alonso-Martínez et al. 2024b; García-Sastre et al. 2024). Equipped with expertise in health education, counselling, and

interprofessional collaboration, nurses effectively bridge communication between students, families, educators, and healthcare providers (Nogueira et al. 2025; Sánchez-Muñoz et al. 2024). Evidence further underscores the critical role of nursing leadership in fostering resilience, emotional literacy, and sustainable mental health interventions among adolescents that improve continuity of care and follow-up support (Sánchez-Muñoz et al. 2024; Teixeira et al. 2025).

Their ability to provide emotional support, reduce stigma, and foster coping skills makes them invaluable in the school environment (Leibold et al. 2022). This holistic nursing perspective reinforces the need for integrating nurse-led MHL programmes into both adolescent education and the training of future educators and healthcare workers, especially nurse. These interventions not only promote students' mental well-being but also prepare young professionals to serve as competent, empathetic, and informed support systems within their communities (Amaechi et al. 2023; Gunawardena et al. 2024).

This study aims to evaluate the effectiveness of a nurse-led MHL intervention targeting adolescents, secondary school teachers, and nursing students in Spain by enhancing mental health knowledge, reducing stigma, and promoting help-seeking behaviours while addressing risk factors such as problematic pornography use, communication of sexual behaviours, and body dissatisfaction. It is hypothesised that participants will show significant improvements in MHL and supportive intentions post-intervention, with nurses starting at higher baselines and adolescents and future teachers starting at lower baselines but achieving notable gains. Females and those with prior mental health experiences are expected to improve more substantially. The intervention is also anticipated to reduce risky behaviours and be viewed as feasible for broader curricular integration.

2 | Methods

2.1 | Research Design

A longitudinal quasi-experimental design was employed to evaluate the impact of a nursing peer-led mental health support intervention in educational and health settings. Both control and experimental groups completed pre-test and post-test assessments to determine the intervention's effectiveness.

2.2 | 2.2 Participants

The study *N* involved 578 responses ranging in age from 13 to 52 years ($M = 20.28$, $SD = 6.29$), including $n = 430$ females, $n = 166$ males, and $n = 6$ individuals identifying as gender fluid. Participants were recruited from secondary schools and universities, focusing on students in nursing, secondary education, and high school programmes. The experimental group comprised 306 participants (181 pre-test, 125 post-test), while the control group included 272 participants. Inclusion criteria required informed consent and in-person completion of both the survey and the programmes in the experimental group; those who did not meet these criteria were excluded. Sociodemographic data, including education level, political ideology, and mental health history, were collected to examine their potential impact on mental health (see Table 1 for further detailed).

The intervention was delivered collaboratively by nurses, educators and health and educational students in collaboration with AMECE (National and International Organizations of School Nursing) and mental health organizations, integrating active learning methodologies to enhance engagement and knowledge retention. AMECE provided expertise in school nursing, offering guidance on best practices, professional standards, and the design of school-based health interventions. The intervention also benefited from the involvement of the creator of the "Acompáñame" (Accompany me) programme, which offered guidance on mental health support. These experts and the organizations were actively involved in reviewing the intervention and the questionnaire to ensure both were appropriately tailored to participants' educational levels and professional pathways.

2.3 | Measures

A questionnaire was created using Microsoft Forms, incorporating informed consent, personal and sociodemographic items, six standardized measurement scales, and open-ended questions aimed at gathering participant feedback and insights regarding the intervention. Multiple validated scales were used to assess mental health knowledge, support intentions, stigma-related attitudes, self-reported mental health problems, and communication skills. This comprehensive analysis enabled a nuanced understanding of the relationships between these variables and the overall impact of the intervention.

Mental Health Support Scale for Adolescents (Spanish MHSSA, pending of publication), adapted from Lu et al. (2023) assesses the likelihood of engaging in supportive versus harmful mental health first aid actions. The 12-item scale presents two hypothetical cases, one involving suicidal ideation and depression, the other social anxiety. Participants rate their intentions on a 5-point Likert scale, with higher scores indicating stronger supportive intentions. The scale shows high reliability ($\alpha = 0.88$), with a mean score of 48.9 ($N = 578$, *range* = 13–60 and $SD = 7.66$).

Community Attitudes towards Mental Illness (CAMI; Ochoa et al. 2016) assesses social stigma toward mental illness using 40 items across four subscales. This study used the 10-item Social Restriction subscale, which measures perceived societal danger linked to mental illness. Responses use a 5-point Likert scale, with some items reverse-scored. Higher scores indicate less restrictive attitudes. The subscale showed good reliability ($\alpha = 0.73$) with a mean score of 24.64 ($N = 578$, *range* = 15-–49 and $SD = 6.13$).

The Body Dissatisfaction Brief Scale (EBIC, Baile Ayensa et al. 2012) is a 3-item scale assessing body dissatisfaction in youth. It uses 3- and 4-point Likert responses, with scores from 0 to 11, higher scores indicate greater dissatisfaction. The scale shows good reliability ($\alpha = 0.77$), with a mean score of 2.76 ($N = 578$, *range* = 0–8 and $SD = 1.88$).

The SCOFF (Sick, Control, One, Fat, Food, Rueda Jaimes et al. 2005) survey is a 5-item yes/no screening tool for eating disorders, with a positive result indicated by two or more "yes" responses.

TABLE 1 | Sociodemographic characteristics of the study population.

Variables	Total
Education	
Quasi experimental group	306 (52.9%)
4th secondary education	154 (26.6%)
1st degree in nursing	70 (12.1%)
Master's of education	82 (14.2%)
Control group	272 (47.1%)
3rd secondary education	34 (5.9%)
2nd sixth form	12 (2.1%)
2nd degree in nursing	72 (12.5%)
3rd degree in nursing	36 (6.2%)
4th grade in nursing	19 (3.3%)
1st degree in educator	33 (5.7%)
2nd degree in educator	21 (3.6%)
Other educator degree	8 (1.4%)
Master of health science (MHS) degree	4 (0.7%)
Master's of education	28 (4.8%)
Other training	5 (0.9%)
Mental health problem experienced	
Yes	447 (77.3%)
No	131 (22.7%)
Mental health problem diagnosed	
Yes	105 (18.29%)
No	473 (81.8%)
Total	578 (100%)
Mental health treatment if you have diagnosed	
Drug medication	13 (2.2%)
Psychology therapy	22 (3.8%)
Psychology therapy with leisure activity	31 (5.4%)
Mixed treatment: Psychological therapy and drug medication.	28 (4.8%)
Other treatment not mentioned.	2 (0.3%)
Did not receive treatment	9 (1.6%)
Total	105 (100%)
Political ideology[a]	
Right	49 (8.5%)
Centre right	40 (6.9%)
Centre left	50 (8.7%)
Left	151 (26.1%)
None of the above	88 (15.2%)
Total	378 (100%)

[a]*Note:* The political ideology variables were asked exclusively of adults and not of minors. This can be attributed to ethical restrictions imposed by the ethics committee, which advised against collecting data on these variables from underage students.

Participants had a mean score of 1.27 ($N = 578$, *range* = 0–5, $SD = 1.28$). A total of 178 participants tested positive, accounting for 39.3% of the sample with a positive SCOFF score.

The Short Problem Pornography Use Scale (PPCS-6, Villena-Moya et al. 2024) evaluates six aspects of problematic pornography use through 6 items on a 5-point Likert scale. Lower scores indicate reduced pornography use. The scale shows excellent reliability ($\alpha = 0.91$), with a mean score of 7.78 ($N = 578$, *range* = 6–42 and $SD = 4.71$).

The Health Protective Sexual Communication Scale (HPSC, Alonso-Martínez et al. 2024a) evaluates how individuals discuss safe sex and sexual history with new partners. Using 8 items on a 5-point Likert scale, lower scores indicate less concern for conversations related to health issues. The scale shows high reliability ($\alpha = 0.84$), with a mean score of 19.67 ($N = 578$, *range* = 8–32 and $SD = 6.38$).

The Mental Health Literacy Assessment (MHLI, pending of publication) is a 9-item multiple-choice questionnaire evaluating key content from the intervention. Administered to both control and intervention groups, it measures knowledge of mental health and literacy. Scores range from 0 to 9, with higher scores indicating greater understanding. The scale shows good reliability ($\alpha = 0.79$), with a mean score of 5.06 ($N = 578$, *range* = 0–9 and $SD = 2.61$).

2.4 | Data Collection and Ethical Considerations

Data collection was conducted in person during tutoring hours at schools and university courses facilitated by institutional platforms and email communication. Participants spent approximately 30 min completing each questionnaire. The study obtained ethical approval from the relevant committee prior to initiation. Informed consent was secured from all participants and legal guardians for minors. Confidentiality and anonymity were assured, and participants were informed about available psychological support services following survey completion.

The intervention was collaboratively developed and implemented by nurses affiliated with AMECE, alongside nursing students and educators, and local mental health and sexual health organizations to enhance MHL and supportive behaviors among adolescents and young adults training to become nurses or secondary school teachers. Designed to be age-appropriate and contextually relevant, it incorporated participatory methodologies including Problem-Based Learning (PBL) and Service-Learning (SL). The program consisted of four three-hour sessions delivered through presentations, gamified content, and interactive case-based discussions to promote active participation and peer learning. A standardized structure was maintained with adaptations according to participants' educational level and professional trajectory.

The intervention was aligned with national and international frameworks, including UNESCO recommendations, the WHO (2021), the Spanish Government's Mental Health Strategy, the National Program of Emotional Wellbeing in Education, and local resources such as the Burgos City Council Health Education Guide and the Castilla y León Public Health System (SACYL). Institutional support was also provided by the University's Health

Care Service (SUAS). Content was tailored with expert input from health and education professionals to ensure relevance and engagement. Communication with families, teaching staff, and school guidance teams was encouraged to reinforce mental well-being messages. Overall, the nursing intervention fostered critical thinking, mental health awareness, and practical skills for identifying and addressing mental health needs in educational settings.

2.5 | Data Analysis

Statistical analyses were conducted using IBM SPSS Statistics 29.0.1.0. Descriptive statistics summarised sociodemographic variables and scale scores. Inferential statistics included *Student's t-tests* and *ANOVA* with Bonferroni post hoc comparisons to analyze group differences across gender, educational level, and mental health experience. Effect sizes were calculated using Cohen's *d* for *Student's t-tests* (small: 0.20, medium: 0.50, large: 0.80) and partial eta squared (ηp^2) for *ANOVA* results (small: 0.01, medium: 0.06, large: 0.14), providing insight into practical significance. *Pearson*'s correlation coefficients were used to evaluate associations between age and scale scores, interpreted as small ($r = 0.1$), medium ($r = 0.3$), and strong ($r = 0.5$). A significance threshold of $p \leq 0.05$ and $p \leq 0.001$ was applied (Field 2018). The intervention's effectiveness was evaluated by comparing pre-test and post-test results, aiming to increase helpful support intentions and reduce harmful attitudes.

3 | Results

3.1 | Comparative Analysis of Intervention Between Quasi-Experimental and Control Groups

The effectiveness of the intervention was evaluated by comparing the outcomes between the quasi-experimental and control groups. MHSSA scores showed a significant difference, with the quasi-experimental group ($N = 306$, $M = 57.19$, $SD = 8.40$) scoring lower than the control group ($N = 271$, $M = 58.90$, $SD = 7.30$), $t_{(575)} = -2.59$, $p = 0.01$, $d = 0.21$, *95% CI* (−0.38, −0.05). This small effect was attributed to initially higher health first aid actions in the control group. CAMI scores also differed significantly, with the quasi-experimental group ($N = 306$, $M = 23.92$, $SD = 4.45$) scoring lower than the control group ($N = 272$, $M = 25.44$, $SD = 4.89$), $t_{(576)} = -3$, $p = 0.003$, $d = 0.31$, *95% CI* (−0.41, −0.09). The medium effect reflected initially less restrictive attitudes toward mental illness in the control group. SCOFF scores indicated a significant difference, with the quasi-experimental group ($N = 306$, $M = 1.16$, $SD = 1.15$) scoring lower than controls ($N = 272$, $M = 1.41$, $SD = 1.37$), $t_{(576)} = -2.49$, $p = 0.01$, $d = 0.20$, *95% CI* (−0.37, −0.04), suggesting higher sample effect of prevalence of eating disorder symptoms in the control group. HPSC scores revealed small but significant differences favoring the quasi-experimental group ($N = 306$, $M = 20.18$, $SD = 6.81$) over controls ($N = 272$, $M = 19.1$, $SD = 5.82$), $t_{(576)} = 2.06$, $p = 0.04$, $d = 0.17$, *95% CI* (0.01, 0.34), indicating greater sample effect concern about health-related conversations in the intervention group. MHLI scores demonstrated a significant difference, with the control group ($N = 306$, $M = 4.62$, $SD = 2.71$) outperforming the quasi-experimental group ($N = 272$, $M = 5.56$, $SD = 2.41$), $t_{(576)} = -4.36$, $p = 0.001$, $d = 0.37$, *95% CI* (−0.53, −0.20), reflecting higher sample effect baseline mental health knowledge in controls. However, no significant differences were found for EBIC and PPCS-6 scales.

3.2 | Comparative Analysis of Intervention Between Pre-Test and Post-Test in the Quasi-Experimental Group and Post-Test Control Group

3.2.1 | Comparative Analysis of Intervention Between Pre-Test and Post-Test in the Quasi-Experimental Group

The implemented intervention demonstrated a positive impact, reflected by improvements across all standardized scale scores from pre-test to post-test. These results indicate enhanced mental health knowledge, reduced stigma, and increased help-seeking behaviors, alongside effective addressing of risk factors such as problematic pornography use, communication about sexual behaviors, and body dissatisfaction. However, significant differences were only obtained on the MHSSA scores showed a significant difference, with the pre-test group ($N = 181$, $M = 56.38$, $SD = 7.93$) scoring lower than the post-test group ($N = 125$, $M = 58.38$, $SD = 8.92$), $t_{(304)} = -2.06$, $p = 0.04$, $d = 0.23$, *95% CI* (−0.47, −0.01). This small effect was attributed to higher health first aid actions in the post-test group. HPSC scores revealed small but significant differences favoring the post-test group ($N = 125$, $M = 21.10$, $SD = 6.67$) over pre-test group ($N = 181$, $M = 19.55$, $SD = 6.85$), $t_{(304)} = 1.98$, $p = 0.049$, $d = 0.23$, *95% CI* (−0.46, −0.001), indicating greater sample effect concern about health-related conversations in the post-test group. MHLI scores demonstrated a significant difference, with the pre-test group ($N = 181$, $M = 4.14$, $SD = 2.43$) outperforming the post-test group ($N = 125$, $M = 5.32$, $SD = 2.94$), $t_{(304)} = -3.88$, $p = 0.001$, $d = 0.44$, *95% CI* (−0.67, −0.21), reflecting higher sample effect baseline mental health knowledge in post-test. However, no significant differences between the pre-test and post-test groups were found for CAMI, SCOFF, EBIC, and PPCS-6 scales.

3.2.2 | Post-Test Correlations Between Scale Scores and Age Between Quasi-Experimental and Control Groups

Table 2 presents the correlations observed within the post-test intervention group. This group was selected to avoid duplication of participants, although findings were consistent with those from the pre-test and the full sample. The results indicate that stronger intentions to provide mental health support (MHSSA) were associated with more positive attitudes towards individuals with mental health conditions (lower CAMI scores), reduced pornography addiction (PPCS-6), better communicative behaviours regarding sexual health (HPSC), and greater mental health knowledge (MHLI). Additionally, more favourable attitudes towards people with mental health problems (CAMI) were linked to lower body dissatisfaction (EBIC), reduced pornography addiction (PPCS-6), and increased mental health literacy (MHLI). Higher levels of body dissatisfaction (EBIC) showed a strong correlation with the presence of eating disorder symptoms (SCOFF) and a weak correlation with older age. Pornography addiction (PPCS-6) was inversely related to protective sexual communication (HPSC) and

TABLE 2 | Correlations between standardized scales scores and age in the post-test group.

	MHSSA	CAMI	EBIC	SCOFF	PPCS-6	HPSC	MHLI	Age
MHSSA	1							
CAMI	−0.26**	1						
EBIC	0.06	−0.12*	1					
SCOFF	0.02	−0.07	0.68**	1				
PPCS-6	−0.20**	−0.12*	0.09	0.06	1			
HPSC	0.20**	−0.03	−0.06	−0.03	−0.15**	1		
MHLI	0.45**	−0.13*	−0.01	−0.07	−0.07	0.07	1	
Age	−0.06	0.07	0.11*	0.09	0.14**	−0.05	0.01	1

*$p < 0.05$.
**$p < 0.001$.

positively associated with age. No further statistically significant correlations were found between the remaining scales and age.

3.3 | Examining the Relationship Between Scale Scores and Sociodemographic and Clinic Variables in the Sample

3.3.1 | Comparative Analysis of Scale Scores With the Sociodemographic and Clinic Variables

Table 3 presents an analysis of mean score differences across the sample based on selected criterion variables. Gender comparisons reveal that women report significantly stronger intentions to mental health first aid actions, lower levels of mental health stigma, a higher prevalence of eating disorder symptoms, greater body dissatisfaction, lower levels of pornography addiction, more frequent communication with protective sexual partners, and higher levels of mental health knowledge compared to men. These differences were associated with medium to large effect sizes. In relation to mental health experience, individuals who had experienced mental health problems, demonstrated significantly higher intentions to help others, a greater presence of eating disorder symptoms, increased body dissatisfaction, and higher mental health knowledge than those without such experiences, with medium to large effect sizes. Similarly, individuals with a formal mental health diagnosis also showed significantly higher scores for eating disorder symptoms, body dissatisfaction, and mental health knowledge, with medium effect sizes observed across these variables.

Table 4 presents a comparative analysis of mean scale scores across various factors, including course of study, Master's specialisation in Education, political ideology, and mental health treatment history. The results showed that nursing students, followed by education students, reported higher intentions to provide help (MHSSA), lower levels of stigma towards individuals with mental health problems (CAMI), more protective communication regarding sexual health (HPSC), and greater mental health knowledge (MHLI) than the rest of the sample. In terms of Master's specialisation, those specialising in the humanities and social sciences exhibited the least restrictive attitudes towards mental health (CAMI) and a higher prevalence of eating disorder symptoms (SCOFF). Regarding political ideology, right-leaning participants demonstrated the highest levels of protective communication (HPSC), while individuals identifying as centre-left or left-wing showed the greatest mental health knowledge (MHLI). Participants who had received a mental health diagnosis and were undergoing treatment, particularly those engaged in psychological therapy combined with leisure activities, reported stronger intentions to help (MHSSA). Those receiving mixed treatments also showed higher levels of body dissatisfaction (EBIC), while individual's not undergoing treatment reported higher levels of communication of sexual risk behaviours (HPSC). Effect sizes for differences by course of study ranged from medium to large, while differences based on specialisation, ideology, and mental health treatment history were small. No other statistically significant differences in scale scores were observed according to course of study, master's specialisation in Education, political ideology, or prior history of mental health treatment.

4 | Discussion

This study successfully met its primary objective by demonstrating the effectiveness of a nurse-led mental health intervention across varied educational settings in Spain. The programme significantly improved participants' mental health knowledge, reduced stigma, and promoted positive helping intentions. It also addressed emerging public health challenges, including problematic pornography use, body dissatisfaction, and health-protective sexual communication (HPSC). These findings underscore the importance of embedding mental health promotion within educational environments, highlighting the pivotal role of nurses as facilitators and educators (Alonso-Martínez et al. 2024b; Nygård et al. 2025).

Importantly, both adolescents and future educators participating in the nurse-led intervention demonstrated notable progress, highlighting the programme's relevance and adaptability across educational contexts. Nevertheless, nursing students consistently exhibited the highest levels of mental health knowledge, which was expected given their ongoing exposure to such content throughout their academic training. These results underscore the potential of structured, nurse-led interventions to promote MHL across diverse populations and life stages (Armas Junco et al. 2024, Alonso-Martínez et al. 2024b; Sánchez-Muñoz et al.

TABLE 3 | Differences in scale scores in relation to gender, mental health problem experienced and diagnosed.

Variables		*t*	*df*	*Sig.*	Cohen's *d*	
					d	**95% CI**
Gender, *M* (*SD*) MHSSA						
Woman	Man				0.65	
59.56(6.91) $n = 414$	54.47(8.7) $n = 157$	7.30	569	0.001**		(0.50, 0.87)
Gender, *M* (*SD*) CAMI						
Woman	Man					
24.10(6.21) $n = 415$	25.74(5.63) $n = 157$	−2.88	570	0.002*	0.28	(−0.45, −0.09)
Gender, *M* (*SD*) SCOFF						
Woman	Man					
1.35(1.27) $n = 415$	1.01(1.11) $n = 157$	3.00	570	0.001*	0.29	(0.10, 0.47)
Gender, *M* (*SD*) EBIC						
Woman	Man					
2.89(1.81) $n = 415$	2.29(1.84) $n = 157$	3.48	570	0.001	0.33	(0.14., 0.51)
Gender, *M* (*SD*) PPCS-6						
Woman	Man				0.81	
6.53(1.55) $n = 415$	10.24(6.27) $n = 157$	−11.21	570	0.001		(−1.24., −0.86)
Gender, *M* (*SD*) HPSC						
Woman	Man				0.37	
20.35(6.36) $n = 415$	18.05(5.98) $n = 157$	4.03	570	0.001		(0.18, 0.55)
Gender, *M* (*SD*) MHLI						
Woman	Man				0.36	
5.36(2.49) $n = 415$	4.41(2.75) $n = 157$	3.76	570	0.001		(0.18, 0.55)
Mental health problem experienced, *M* (*SD*) MHSSA						
Yes	No				0.42	
58.76(7.7) $n = 446$	55.40(8.22) $n = 131$	4.17	575	0.001		(0.23, 0.63)
Mental health problem experienced, *M* (*SD*) SCOFF						
Yes	No					
1.46(1.31) $n = 447$	0.65(.85) $n = 131$	6.69	576	0.001	0.73	(0.47, 0.86)
Mental health problem experienced, *M* (*SD*) EBIC						
Yes	No					
3.07(1.88) $n = 447$	1.73(1.48) $n = 157$	7.53	576	0.001	0.79	(0.55, 0.95)
Mental health problem experienced, *M* (*SD*) MHLI						
Yes	No					
5.36(2.49) $n = 447$	4.07(2.81) $n = 157$	5.07	576	0.001	0.49	(0.31, 0.70)
Mental health problem diagnosed, *M* (*SD*) SCOFF						
Yes	No					
1.94(1.40) $n = 105$	1.13(1.90) $n = 472$	6.14	576	0.001	0.49	(0.45, 0.88)
Mental health problem diagnosed, *M* (*SD*) EBIC						
Yes	No					
3.42(1.90) $n = 105$	2.62(1.84) $n = 473$	3.95	576	0.001	0.43	(0.22, 0.65)
Mental health problem diagnosed, *M* (*SD*) MHLI						
Yes	No					
5.75(2.18) $n = 105$	4.91(2.67) $n = 473$	3.00	576	0.003	0.34	(0.11, 0.54)

*$p < 0.05$ and
**$p < 0.001$.

TABLE 4 | Differences in scales scores based on criterion variables.

Variables					*t*		*df*		*Sig.*		Cohen's *d*				
											d	*F*	95% CI		
													df	*Sig.*	η_p^2
Study course, *M* (*SD*) **of the MHSSA**.															
3° SE[a]	4° SE[b]	2° SF[c]	1°ND[d]	2° ND[e]	3°ND[f]	4°ND[g]	1° ED[h]	2°ED[i]	MEd[j]	M.H.Sc[k]	Other[l]	7.	11,	0.001**	0.13
43.97	45.40	48.25	51.56	51.1	51.25 (5.47)[a,b]	48.39	51.63	51.62	50.38	50.50	47.77	67	577		
(9.35)[d,e,f,,h,i,j]	(9.58)[d,e,f,,h,i,j]	(4.97)	(4.81)[a,b]	(5.42)[a,b]	$n = 36$	(7.52)	(4.81) [a,b]	(7.84)	(5.50)	(6.76)	(9.71)				
$n = 34$	$n = 154$	$n = 12$	$n = 70$	$n = 72$		$n = 18$	$n = 33$	[a,b]	[a,b]	$n = 4$	$n = 13$				
								$n = 21$	$n = 110$						
Study course, *M* (*SD*) **of the CAMI**.															
3° SE[a]	4° SE[b]	2° SF[c]	1°ND[d]	2° ND[e]	3°ND[f]	4°ND[g]	1° ED[h]	2°ED[i]	MEd[j]	M.H.Sc[k]	Other[l]	41.40	11,	0.001**	0.45
26.79	25.75	25.54	21.85	22.56	39.03	23.07	22.57	22.72	22.24	21.04	24.29		577		
(4.79)[d,e,f,,h,i,j]	(4.66)[d,e,f,,h,i,j]	(6.59) [f]	(3.39)[a,b,f]	(4.40)[a,b,f]	(8.29)[a,b,c,d,e,g,h,i,j,k,l]	(5.91)[f]	(3.04) [a,b,f]	(3.86)[f]	(3.43)	(2.99)[f]	(5.24)[f]				
$n = 34$	$n = 154$	$n = 12$	$n = 70$	$n = 72$	$n = 36$	$n = 19$	$n = 33$	$n = 21$	[a,b,f]	$n = 5$	$n = 13$				
									$n = 110$						
Study course, *M* (*SD*) **of the HPSC**.															
3° SE[a]	4° SE[b]	2° SF[c]	1°ND[d]	2° ND[e]	3°ND[f]	4°ND[g]	1° ED[h]	2°ED[i]	MEd[j]	M.H.Sc[k]	Other[l]	2.08	11,	0.02*	0.04
18.76	20.21	18.92	22.01	20.18	20.36	18.37	17.28	18.81	18.43	19.25	19		577		
(7.69)[d,e,f,,h,i,j]	(7.84)[d,e,f,,h,i,j]	(3.87) [f]	(5.72)[a,b,f]	(5.63)[a,b,f]	(5.4)[a,b,c,d,e,g,h,i,j,k,l]	(6.22)[f]	(5.38) [a,b,f]	(5.47)[f]	(5) [a,b,f]	(5.97)[f]	(6.33)[f]				
$n = 34$	$n = 154$	$n = 12$	$n = 70$	$n = 72$	$n = 36$	$n = 19$	$n = 33$	$n = 21$	$n = 110$	$n = 4$	$n = 13$				
Study course, *M* (*SD*) **of the MHLI**.															
3° SE[a]	4° SE[b]	2° SF[c]	1°ND[d]	2° ND[e]	3°ND[f]	4°ND[g]	1° ED[h]	2°ED[i]	MEd[j]	M.H.Sc[k]	Other[l]	43.18	11,	0.001**	0.46
1.71	2.92 (2.27)	7.08	6.13	6.64	6.78 (1.73) [a,b,h,i]	7 (1.25)	4.93(2.05)	4.57	6.44	5.75	4.69		577		
(1.78)[c,d,e,f,g,h,i,k,j,l]	[c,d,e,f,g,h,i,j]	(1.68)	(1.86)[a,b]	(1.63)[a,b,h,i]	$n = 36$	[a,b,h,i]	[a,b,e,f,g,j]	(2.50)	(1.79)	(.96)[a]	(1.84)[a]				
$n = 34$	$n = 154$	[a,b,i]	$n = 70$	$n = 72$		$n = 19$	$n = 33$	[a,b,c,e,f,g,j]	[a,b,h,i]	$n = 4$	$n = 13$				
		$n = 12$						$n = 21$	$n = 110$						
Master of education (MEd) specializations, *M* (SD) **of the CAMI**															
Humanities[a]					Science[b]				Social Science[g]			3.41	2,	0.04*	0.06
21.71 (3.52) $n = 50$					23.32 (3.43) $n = 41$				21.29 (2.74) $n = 18$				108		
Master of education (MEd) specializations, *M* (SD) **of the SCOFF**															
Humanities[a]					Science[b]				Social Science[g]			5.76	2,	0.04*	0.10
1.34 (1.19)[b] $n = 50$					0.63 (0.66)[a] $n = 41$				1.33 (1.32) $n = 18$				108		
Ideology, *M* (*SD*) **of HPSC**															

(Continues)

TABLE 4 | (Continued)

Variables			t	df	Sig.	Cohen's d			
						d	F	df	Sig.	η_p^2
Right[a]	Centre right[b]	Centre left[c]	Left[d]	None one of above[e]		4.17	4,	0.003*	0.04
21.43 (5.57)	17.40(3.93)	20.34 (5.16)	18.85 (5.73)	20.26 (5.92)			377		
$n = 48$	$n = 40$	$n = 50$	$n = 151$	$n = 88$					
Ideology, *M* (*SD*) **of MHLI**									
Right[a]	Centre right[b]	Centre left[c]	Left[d]	None one of above[e]		4.87	4,	0.001**	0.1
6.27 (1.80)[a,c]	5.9 (1.72) [a]	6.66 (1.77)[e]	6.46 (1.80)[a]	5.49 (2.19)			377		
$n = 49$	$n = 40$	$n = 50$	$n = 151$	$n = 88$					
Mental health treatment, *M* (*SD*) **of MHSSA**									
Drug medication[a]	Psychology	Psychology therapy with	Mixed treatment[d]	Other	Did not received	2.41	5,	0.04*	0.11
53.85 (11.71)	therapy[b]	leisure activity[c]	58.93 (6.93)	treatment[e]	treatment[f]		104		
$n = 13$	58.18 (8.89)	61.19 (6.37)	$n = 28$	65.5 (7.78)	54.22 (7.82)				
	$n = 22$	$n = 31$		$n = 2$	$n = 9$				
Mental health treatment, *M* (*SD*) **of EBIC**									
Drug medication[a]	Psychology	Psychology therapy with	Mixed treatment[d]	Other	Did not received	2.83	5,	0.02*	0.13
2.23 (1.59)[c]	therapy[b]	leisure activity[c]	4.21 (2.15)	treatment[e]	treatment[f]		104		
$n = 13$	3.59 (1.74)	3.35 (1.60) [a]	$n = 28$	1.5 (.71)	2.99 (1.96)				
	$n = 22$	$n = 31$		$n = 2$	$n = 9$				
Mental health treatment, *M* (*SD*) **of HPSC**									
Drug medication[a]	Psychology	Psychology therapy with	Mixed treatment[d]	Other	Did not received	2.34	5,	0.04*	0.11
20.46 (6.1)	therapy[b]	leisure activity[c]	18.5 (5.82)	treatment[e]	treatment[f]		104		
$n = 13$	15.27 (5.07)	19.42 (6.37)	$n = 28$	18 (7.1)	21.78 (4.71)				
	$n = 22$	$n = 31$		$n = 2$	$n = 9$				

Note: SE = Secondary Education. SF = Sixth Form. ND = Nursing Degree. ED = Educator Degree. MEd = Master of Education. M.H.Sc = Master of Health Sciences. Based on the Bonferroni post hoc test ($p < 0.001$), superscript letters were assigned to each group. Groups that, in addition to having their letter, are accompanied by another superscript letter or letters from another group or groups, differ significantly from the other groups with the superscript letter or letters.

*$p < 0.05$.

**$p < 0.001$.

2024). Furthermore, the collaborative model, integrating schools, universities, and local health services, reflects a community-based participatory approach to public health, fostering shared responsibility, sustainable engagement, and cross-sector partnerships (Bramhagen and Lundström 2024; Díez-Gómez et al. 2024).

The use of standardized, multidimensional assessment tools enhanced the reliability of the findings. In line with Fjelldal et al. (2025) and Bramhagen and Lundström (2024), the integration of theoretical content with participatory and experiential methodologies promoted critical thinking, heightened motivation, and facilitated deeper understanding.

Sociodemographic variables were found to influence the outcomes of the intervention. Women, individuals with prior experience of mental health challenges, nursing students, and those identifying with left-leaning or nonideological political views demonstrated significantly higher intentions to provide mental health first aid (MHSSA). These findings are consistent with previous research by Lu et al. (2023), Morcillo et al. (2025), and Miles et al. (2020), which highlight the importance of lived experience and open discourse in fostering empathy and a willingness to support others. Miles et al. (2020) also linked helping intentions to personal or familial exposure to mental health diagnoses, a theme echoed by Gorczynski and Sims-Schouten (2024), who reported that women generally exhibit stronger competencies in providing mental health support. Furthermore, political ideology appears to shape prosocial mental health behaviors; individuals with left-wing affiliations tend to report lower levels of stigma and higher support intentions (Salmela and von Scheve 2018). Correlational analyses supported expected associations between intentions to provide mental health first aid, lower stigma (CAMI), and greater mental health literacy (MHLI), aligning with prior studies (Ochoa et al. 2016; Lu et al. 2023). These results underscore stigma as a persistent barrier to supportive behavior and emphasize the importance of incorporating stigma-reduction strategies in educational interventions, particularly for young people and future healthcare professionals, such as nurses.

Notably, our findings differ from previous research in several respects. Protective sexual behaviors (HPSC) were higher prevalent than those reported by Alonso-Martínez et al. (2024a) in a university-only sample. Conversely, body dissatisfaction (EBIC) was lower than in Baile Ayensa et al. (2012) study involving minors, likely due to the inclusion of older participants in our sample. Our SCOFF results (33.3%) were slightly lower than those reported by Rueda Jaimes et al. (2005), who found a 39.4% prevalence among females aged 10–20. This discrepancy may be explained by our more gender-diverse sample, highlighting the importance of gender-sensitive analysis in future research, particularly as SCOFF rates typically approximate 20% in gender-balanced samples, whereas the higher proportion of females in our cohort may account for the elevated rate. Problematic pornography use (PPCS-6) was higher in our cohort compared to the adolescent-focused study by Villena-Moya et al. (2024), likely reflecting our broader age range, which included adults up to 52 years old. These findings emphasize the necessity of tailoring interventions to specific demographic profiles and developmental stages (Fjelldal et al. 2025; Freeman et al. 2024).

The success of the intervention is further supported by literature highlighting the effectiveness of interactive, nurse-led methodologies (Alonso-Martínez et al. 2024b; Armas Junco et al. 2024; Nygård et al. 2025). These include small group-based approaches that foster dialogue and reflection, which are especially effective in developing competencies among health professionals (Bramhagen and Lundström 2024). Moreover, prior research confirms that participatory interventions contribute to improved adolescent outcomes, such as reduced mental health stigma (Lu et al. 2023), enhanced body image and media literacy (Baile Ayensa et al. 2012), and safer sexual behaviors (Alonso-Martínez et al. 2024a), all of which align with our findings.

4.1 | Strength, Limitations, Future Study and Practical Implications

The strength of this intervention lies in its innovative dual focus: training future nursing and education professionals while simultaneously engaging the adolescent population they will ultimately support. This parallel approach fosters early professional competence, enhances empathy, and bridges the gap between theoretical knowledge and practical application. Involving nursing students and educators in mental health education reinforces their roles as frontline advocates for adolescent well-being. Moreover, it emphasizes the vital contribution of nurses in school-based mental health promotion, positioning them as leaders in interdisciplinary collaboration and public health education. This model encourages sustainability, peer learning, and improved community health outcomes.

Despite the positive outcomes, this study has several limitations that should be acknowledged. The quasi-experimental design, while practical in educational settings, does not include random assignment and the short-term nature of follow-up of the intervention may introduce selection bias. Furthermore, the use of self-reported measures, even if validated, is susceptible to social desirability and response biases. Additionally, while the sample was diverse in terms of age and educational background, it was geographically confined to a single region in Spain, potentially limiting the generalizability of the findings to other cultural or educational contexts.

Future research should assess its long-term impact on MHL, stigma reduction, and help-seeking behaviors. Exploring differential outcomes by gender, political orientation, and personal experience with mental health may provide valuable insights for tailoring future interventions. Additionally, broadening the delivery format to include digital platforms could improve accessibility and support wider implementation.

In practical terms, this model shows considerable potential for integrating mental health promotion into nursing and teacher education curricula. It highlights the vital role of nurses as facilitators and agents of change within school environments, supporting the inclusion of structured, nurse-led programmes in broader Spanish public health strategies. By engaging both adolescents and training future professionals, this dual-level approach fosters sustainable competencies, promotes intergenerational dialogue, and enhances community resilience. Education policymakers and public health planners are encouraged to

adopt and adapt similar nurse interventions to strengthen early prevention efforts and advance collaborative models of mental health care.

5 | Conclusions

This study underscores the effectiveness and innovation of a nurse-led mental health intervention that simultaneously engages adolescents while equipping future professionals in nursing and education. The programme significantly enhanced MHL, reduced stigma, and encouraged supportive behaviors, demonstrating measurable outcomes across varied participant groups. Its collaborative, school-based model highlights the pivotal role of nurses in health education and the promotion of community well-being. Embedding such interventions within educational curricula not only empowers students but also cultivates a culture of early intervention and peer support. These findings support the broader adoption of interdisciplinary, nurse-led mental health promotion strategies within public health and educational systems.

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Ethics Statement

All procedures were performed according to the ethical standards of the Declaration of Helsinki and the National Research Committee. This study was approved by the Bioethics Commission of the University of Burgos (ID: IR29/2023) and with the consent of the school management and university bodies. Informed consent was obtained from all participants prior to the research, guaranteeing their voluntary participation.

Conflicts of Interest

The authors declared no potential conflicts of interest.

Data Availability Statement

The data reported in this manuscript can be approached through contacting the corresponding authors and it is deposited in a digital repository that can be accessed from the following link, https://doi.org/10.5281/zenodo.15534975

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