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Article

Depression: [Mental] Health Literacy, Stigma, and Perceived Barriers to Help-Seeking During Transitions Among Undergraduate Nursing Students

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Abstract: Background/Objectives: Mental health literacy (MHL) can play a fundamental role in transition processes, influencing, for example, students' entry and adaptation to higher education and later the transition to the job market. This study aims to assess MHL about depression in nursing students and to determine whether MHL and related variables are predictors of the year of study. **Methods**: A cross-sectional descriptive correlational study was conducted with 478 nursing students (59.4% enrolled in the first year and 40.6% enrolled in the fourth year), predominantly women (82.2%), with a mean age of 20.41 years (SD=4.71) and median of 19.0 years. **Results**: On the one hand, there was a low level of recognition of depression and knowledge of mental health first aid (MHFA) strategies, including health literacy. On the other hand, students tended not to hold beliefs based on myths and stereotypes about mental illness and patients with mental illness and, therefore, did not have strongly stigmatizing views. MHL varies by year of study, with fourth-year students having more adequate MHL. **Conclusions**: Based on these results, there is a need to introduce MHL as a tool for academic success. One way to do this could be through health education programs that include health promotion and preventive mental health, including programs that promote MHFA.

Keywords: nursing; mental health literacy; depression; transitions; higher education

1. Introduction

The concept of mental health literacy (MHL) was introduced by Jorm and colleagues [1] in Australia, who defined it as the beliefs and knowledge about mental disorders (including mental health problems) that enable individuals to recognize, manage, and/or prevent these problems in everyday life [1]. This concept includes five components: a) recognition of mental health problems (and mental disorders) to facilitate help-seeking; b) knowledge of professional help and available treatments; c) knowledge of effective self-help strategies; d) knowledge and skills to provide support and first aid to others; e) knowledge of how to prevent mental illness [2,3].

More recently, the inclusion of other components in the concept, namely positive mental health, has been suggested [4,5] to give interventions a salutogenic perspective, focusing them on mental health promotion and aligning MHL with health literacy (HL) [6].

More than a quarter of a century after the concept was first introduced, MHL has come to occupy a prominent place in the public health panorama, both because it is now considered a social determinant of health and because it involves a set of interventions that can reduce the social stigma and discrimination associated with mental and psychiatric illnesses [6].

The MHL of higher education (HE) students, namely those enrolled in health-related programs such as nursing, has been a source of growing concern for educational institutions [7–9]. This concern stems primarily from evidence of the prevalence of mental health problems among students [10–12], which can affect their academic success to the point of jeopardizing their future. These include problems related to stress, anxiety, depression, and substance abuse such as alcohol. It should be noted that some young people have already been diagnosed with mental health problems before enrolling in HE. In other cases, these problems start or worsen during their attendance.

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There is little evidence on the MHL of nursing students, and the results of various studies suggest modest levels of MHL identical to those of the general population [7–9,14–18]. It has also been found that students tend to share the same beliefs and attitudes about mental illness and disease, which may influence their future work as nurses [8,9]. It is necessary to invest in MHL because the evidence shows that people with adequate levels of MHL tend to have greater control over their mental state, can recognize signs and assess symptoms of psychological distress, and are more likely to seek help if they need it [2].

Although the challenges and expectations that nursing students face in their academic lives are similar to those of students in other HE programs, the specific nature and characteristics of the nursing program imply an increased risk of developing or even worsening mental health problems. Aspects such as exposure to human vulnerability and suffering, mortality salience, excessive academic workload, and the need to enhance technical and human skills are considered factors that affect mental health [19].

Therefore, emphasis should be placed on the mental health of nursing students throughout their programs, especially at two key moments: the first year when they enter HE and the final year when they graduate and enter the job market [20–24].

In the case of final-year students, the academic demands of graduation, the uncertainty about their professional future, competitiveness, autonomy, decision-making, and the responsibility for patient care are factors that contribute to the emergence of mental health problems or the exacerbation of pre-existing problems.

Given the assumption that MHL increases as students progress through their programs and given that final-year students have greater theoretical knowledge, more experience in nursing care, less social stigma, and greater personal and professional skills than first-year students, this study aimed to assess MHL about depression among first- and fourth-year nursing students by comparing the following aspects: a) the ability to recognize depression in order to facilitate help-seeking and b) knowledge about the provision of mental health first-aid (MHFA).

This study also aims to evaluate the perceived barriers to mental health help-seeking, the intention to seek help, and the personal and perceived stigma associated with depression, as well as to analyze positive MHL and beliefs about mental illness and people with mental illness.

Finally, it aims to identify whether the variables described above are predictors of the year of study. This analysis allows us to understand whether fourth-year students have a higher level of MHL than first-year students and how this change occurs, including related variables.

The following steps were taken:

- To evaluate the differences in the ability to recognize depression, as well as in the knowledge to provide MHFA, according to the year of study;
- To analyze the differences in the perceived barriers to mental health help-seeking, the intention to seek help, the personal and perceived stigma associated with depression, positive MHL and beliefs about mental illness and people with mental illness, according to the year of study;
- To determine which sociodemographic and MHL-related variables, including familiarity with depression, are predictors of the year of study (first-year or fourth-year).

2. Materials and Methods

2.1. *Research Design*

This descriptive, correlational study follows a quantitative approach [25]. The STROBE checklist for cross-sectional studies was used to report the findings of this study [26].

2.2. Sample and Setting

Data were collected at a HE institution in the central region of mainland Portugal between September and October 2024. All first- and fourth-year students were invited to participate in the study.

2.3. Data Collection

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Data were collected in the classrooms using the Google Forms platform, with the researchers present during each questionnaire administration session. Access to the questionnaires was provided through a QR code. Participants gave their informed consent electronically, confirming their understanding of the study's objectives and their voluntary participation. The average time to complete the questionnaires was 25.17 minutes.

2.4. Instruments

- *Sociodemographic questionnaire*: It includes a set of variables such as year of study, age, gender, and parents' education level.
- *Questionnaire for Assessment of Mental Health Literacy – QuALiSMental* [27].

This questionnaire, validated for the Portuguese population, assesses the five components of MHL presented by Jorm [1]. Psychometric studies carried out in the Portuguese context indicate good reliability and a factor structure that is consistent with the theoretical components of MHL. It is preceded by a vignette describing the case of a 21-year-old girl called Joana who suffers from depression, according to the diagnostic criteria for depression in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders [28]:

Joana is a 21-year-old girl who has been feeling unusually sad for the last few weeks. She is tired all the time and has trouble falling asleep or staying asleep. She doesn't feel like eating and has lost weight. She has trouble concentrating on her studies and her grades have sunk. Even day-to-day tasks seem too much for her, so she has put off making decisions. Her parents and friends are very concerned about her.

This study assessed only two components of QuALiSMental, namely: a) recognition of disorders, which includes different labels (e.g. depression, nervous breakdown, age crisis, psychosis, etc.) in a multiple-choice format; and b) knowledge and skills to provide support and first aid to others, which includes 10 items rated as "helpful", "harmful", or "neither helpful nor harmful" (Tables 2 and 3 show the labels used and the content of the items).

- *Personal stigma and perceived stigma scales* [29]

The personal stigma and perceived stigma scales [30,31] have been validated for the Portuguese population. However, in the Portuguese version, each scale consists of 7 items rated on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). The personal stigma items are preceded by the phrase "in my opinion" and the perceived stigma items are preceded by the phrase "most people believe". Both scales use the same items. Each scale comprises two factors called "weak-not-sick" and "dangerous/unpredictable."

- *Positive Mental Health Literacy Questionnaire – PosMHLit* [32]

This questionnaire consists of 20 items that assess positive MHL and well-being on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). Following the authors' proposal, this study used the total score of the scale. Studies carried out in the Portuguese context indicate that this tool has good reliability and construct validity.

- *Beliefs Toward Mental Illness Questionnaire – BtMIq* [33]

The BtMIq was developed in the Portuguese context. Its short version consists of 23 items rated on a Likert scale from 1 (strongly disagree) to 6 (strongly agree). The questionnaire covers the following seven beliefs: belief in dangerousness (BtMIq1); belief in inferiority and inability to live in society (BtMIq2); belief in the benefits of patients' social integration and involvement (BtMIq3); belief in individual responsibility (BtMIq4); belief in the efficacy of psychotropic drugs (BtMIq5); belief in chronicity/incurability (BtMIq6), and belief in the efficacy of treatment and rehabilitation (BtMIq7). The scale has good reliability.

- *European Health Literacy Survey* – HLS-EU-PT-*Q 16* [34]

The Health Literacy Survey, validated for the Portuguese population, consists of 16 items and is the short form of the HLS-EU-PT-Q47. It covers three domains of health literacy – healthcare, disease prevention, and health promotion – rated on a Likert scale from 1 (very difficult) to 4 (very easy). Following the authors' proposal, this study used the total score of the scale [34].

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- *Barriers to Mental Health Help-Seeking Questionnaire – BMHHSQ* [15]

This instrument is an annex to QuALiSMental and does not fit specifically into any component, although it has been used in various studies [1,35,36]. This study evaluated its psychometric characteristics through an analysis of reliability and construct validity (EFA). It consists of 9 items rated on a Likert scale from 1 (completely disagree) to 5 (completely agree), preceded by the following instructions: "*Below are different statements about barriers that may stop you from seeking professional help in mental health. If you had a problem like Joana, what would stop you from seeking help?*"

The EFA was performed using the principal components method with Varimax orthogonal rotation. A two-factor solution was found that explained 54.77% of the total variance. The first factor, with five items, is called *Personal barriers to seeking he*lp and explains 33.26% of the variance. This factor includes items such as: "Concern that the person might feel negatively about me" and "concern about what other people might think". The second factor is called *Barriers to accessing specialized professional help* and includes items such as: "Concern that I might have difficulties getting an appointment". It explains 21.52% of the total variance. In terms of reliability, the value of internal consistency using Cronbach's alpha coefficient was α=0.83 in the first factor and α=0.71 in the second factor.

2.5. Data Analysis

Data were analyzed using SPSS Version, Version 29.

Appropriate summary statistics were calculated, as well as absolute and percentage frequencies in cases where the type of variable justified it. The normal distribution of the variable in the population was analyzed using the Lilliefors-corrected Kolmogorov-Smirnov test. Homogeneity of variance was assessed using Levene's test.

In order to meet the study's main objectives, the following tests were used:

- The two-proportion *z*-test using Cohen's *h* effect size [37], where: *h*=0.20: small effect size; *h*=0.50: medium effect size, and *h*=0.80: large effect size.

- Chi-square test for RxC contingency tables using Cramer's *V* effect size with *Df*=2, where: *CV*=0.07: small effect size; *CV*=0.21: medium effect size, and *CV*=0.35: large effect size [37].

- Student's *t*-test for independent samples, with Cohen's *d* effect size, where *d*=0.20: small effect size; *d*=0.50: medium effect size, and *d*=0.80: large effect size [38].

- Binary Logistic Regression Analysis (LRA) by blocks using the forward method. Validation of the LRA assumptions was carried out by analyzing the residuals and diagnosing influential cases [39]. Prior to the analysis, the nominal qualitative variables were transformed into "0" and "1". The criterion or predictor variable was coded for the first-year group as "0" and for the fourth-year group as "1".

2.6. Ethical Considerations

The research was conducted according to the Declaration of Helsinki for medical research involving human subjects. It was approved by the Ethics Committee of the Health Sciences Research Unit: Nursing of the Nursing School of Coimbra, Portugal. The participants' identities were kept anonymous, and the data were stored in an encrypted online archive, accessible only to the study's authors. The surveys included an electronic consent form for students to sign. Consent also included permission for the publication of the research data.

3. Results

The sample consisted of 478 nursing students: 284 (59.4%) enrolled in the first year and 194 (40.6%) in the fourth year. Regarding gender, 82 (17.2%) were male and 396 (82.8%) were female. The mean age was 20.41 years (SD=4.71) and the median 19.0 years.

In terms of familiarity with mental health, 315 (66.0%) reported they had family members or close friends in a situation similar to the one described in the vignette, while 162 (34.0%) reported

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they did not. A total of 242 (50.7%) students reported they had already sought or received treatment to manage mental health problems. Of the total sample, 115 (24.11%) students had a friend in a similar situation and had also sought professional help themselves.

With regard to the study's first aim, "*to assess the differences in the ability to recognize depression, as well as in the knowledge to provide first aid to others, according to the year of study*", Table 1 on the use of labels to identify the problem revealed differences in the labels *age crisis* (z=5.186; p<0.001; h=0.52), *nervous breakdown* (z=4.160 p<0.001; h=0.39), and *anxiety* (z=2.416; p<0.05; h=0.22) according to the year of study. In the three cases, the labels were mentioned mostly by first-year students. The three h effect sizes were medium.

Another relevant finding is that the ability to correctly identify the situation described in the vignette is very modest: 12.0% of first-year students correctly identified the case as depression, rising to 27.3% among fourth-year students. The differences were statistically significant (z=-4.252; p<0.001; h=0.39), with a medium effect size.

A high percentage of students mentioned the labels "nervous breakdown" (78.8% in the first year and 61.3% in the fourth year) and "anorexia" (23.7% in the first year and 18.6% in the fourth year).

Table 1. Absolute and percentage distribution of the labels used to identify the problem described in the vignette, according to the year of study (N=478).

Labels	Year		z[(a)]	ES[(b)]
	First Year (N=284)	Fourth Year (N=194)		
Age crisis	84 (29.7)	19 (9.8)	5.186***	0.52
Mental illness	162 (57.2)	124 (63.9)	-1.461ns	0.14
Bulimia	23 (8.2)	14 (7.2)	0.365ns	0.03
Stress	266 (94.0)	178 (91.8)	0.947ns	0.09
Nervous breakdown	221 (78.8)	119 (61.3)	4.160***	0.39
Alcohol abuse	7 (2.5)	6 (3.1)	-0.408ns	0.04
Psychosis	15 (5.3)	8 (4.1)	0.589ns	0.06
Psychological problems…	255 (90.1)	175 (90.2)	-0.036ns	0.01
Anorexia	67 (23.7)	36 (18.6)	1.334ns	0.13
Anxiety	271 (95.8)	175 (90.2)	2.416*	0.22
Depression	234 (82.7)	162 (83.5)	-0.234ns	0.02
Schizophrenia	5 (1.8)	2 (1.0)	0.657ns	0.07
Correct identification	34 (12.0)	53 (27.3)	-4.252***	0.39

[(a)] two proportion z-test; [(b)] effect size h measure; * p< 0.05; *** p< 0.001

As regards the *knowledge to provide first aid to others, according to the year of study*, the chi-square test (Table 2) showed statistically significant differences in the following items: "Talk to her firmly about getting her act together" [MHFA_i2] ($\chi^2_{(2)}$=71.350; p<0.001; CV=0.39), "Ask her whether she is feeling suicidal"[MHFA_i5] ($\chi^2_{(2)}$=14.963; p<0.001; CV=0.18), "Not acknowledge her problem, ignoring her while she gets over it" [MHFA_i8] ($\chi^2_{(2)}$=6.284; p<0.05; CV=0.11), "Keep her busy to keep her mind off problems" [MHFA_i9] ($\chi^2_{(2)}$=35.924; p<0.001; CV=0.28), and "Encourage her to become more physically active" [MHFA_i10] ($\chi^2_{(2)}$=16.806; p<0.001; CV=0.18).

In all items with statistically significant differences, more adequate knowledge was associated with fourth-year students. With regard to effect size measures, the values were between 0.18 and 0.28, which corresponded to medium effects.

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Table 2. Absolute and percentage distribution of students' opinions on strategies for providing MHFA, according to the year of study (N=478).

Knowledge about MHFA	Year	helpful	harmful	NHH[(a)]	χ^2	ES
1. Listen to her problems in an understanding way [MHFA_i1]	1st	277 (58.7)	1 (33.3)	3 (100.0)	2.563[1](ns)	0.08
	4th	195 (41.3)	2 (66.7)	--- (0.0)		
Total % in row		98.7	0.6	0.6		
2. Talk to her firmly about getting her act together [MHFA_i2]	1st	52 (96.3)[b]	116 (43.1)	113 (72.9)[a]	71.350***	0.39
	4th	2 (3.7)	153 (56.9)[b]	42 (27.1)		
Total % in row		11.5	56.4	32.3		
3. Suggest she seek professional help [MHFA_i3]	1st	253 (57.6)	5 (62.5)	23 (74.2)	3.334[1] (ns)	0.08
	4th	186 (42.4)	3 (37.5)	8 (25.8)		
Total % in row		91.8	1.7	6.5		
4. Make an appointment for her to see a GP with her knowledge [MHFA_i4]	1st	203 (57.7)	23 (74.2)	55 (57.9)	3.249(ns)	0.08
	4th	149 (42.3)	8 (25.8)	40 (42.1)		
Total % in row		**73.4**	6.5	20.1		
5. Ask her whether she is feeling suicidal [MHFA_i5]	1st	82 (47.7)	105 (68.2)[b]	94 (61.8)	14.963***	0.18
	4th	90 (52.3)[b]	49 (31.8)	58 (38.2)		
Total % in row		35.4	33.2	33.2		
6. Suggest she have a few drinks to forget her troubles [MHFA_i6]	1st	5 (71.4)	263 (58.1)	13 (72.2)	1.762(ns)	0.06
	4th	2 (28.6)	190 (41.9)	5 (27.8)		
Total % in row		1.5	94.8	3.8		
7. Rally friends to cheer her up [MHFA_i7]	1st	177 (59.8)	21 (63.6)	83 (55.7)	1.029(ns)	0.05
	4th	119 (40.2)	12 (36.4)	66 (44.3)		
Total % in row		62.1	6.9	31.0		
8. Not acknowledge her problem, ignoring her [MHFA_i8]	1st	3 (100.0)	264 (57.6)	14 (82.4)[b]	6.284**	0.11
	4th	--- (0.0)	194 (42.4)[b]	3 (17.6)		
Total % in row		0.6	95.8	3.6		
9. Keep her busy to keep her mind off problems [MHFA_i9]	1st	133 (71.1)[b]	53 (38.4)	95 (62.1)	35.924***	0.28
	4th	54 (28.9)	85 (61.6)[b]	58 (37.9)		
Total % in row		39.2	28.7	32.1		
10. Encourage her to become more physically active [MHFA_i10]	1st	207 (54.3)	5 (62.5)	69 (77.5)[b]	16.806[(1)]***	0.18
	4th	174 (62.5)[b]	3 (37.5)	20 (22.5)		
Total % in row		**79.7**	1.7	18.7		

[(a)] NHH = Neither helpful nor harmful; [(b)] Adjusted Residuals > 1.96; ES: effect size; [1] based on the Fisher-Freeman-Halton Exact Test; ns: non-significant; * p<0.05; ** p<0.01; *** p<0.001

In order to meet the objective "*To analyze the differences in the perceived barriers to mental health help-seeking, the intention to seek help, the personal and perceived stigma associated with depression, positive MHL and beliefs about mental illness and people with mental illness, according to the year of study*", several *t*-tests for independent groups were calculated. Table 3 shows statistically significant differences in the following beliefs: *Dangerousness* (t= 2.996; p<0.05; d=0.28), *Inferiority and inability to live in society* (t= 7.449; p<0.001; d=0.69), *Social integration and involvement* (t= -4.263; p<0.001; d=0.40), *Efficacy of psychotropic drugs* (t=-3.262; p<0.001; d=0.30), *Chronicity/incurability* (t=2.828; p<0.01; d=0.26), and *Efficacy of treatment and rehabilitation* (t=-3.291; p<0.05; d=0.31). The effect size measures ranged from

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d=0.26 to *d*=0.69, that is, small effect sizes (*d*=0.26; *d*=0.28; *d*=0.30; *d*=0.31 and *d*=0.40) and medium effect sizes (*d*=0.69).

On the one hand, the mean values for the beliefs considered to be adjusted and positive, such as the belief in *social integration and involvement* and the *efficacy of psychotropic drugs*, were higher for fourth-year students and, on the other hand, the mean values for negative beliefs were higher for first-year students.

In terms of personal stigma, statistically significant differences were found in both subscales, namely *weak-not-sick* (t=4.576; p<0.001; d=0.43) and *dangerous/unpredictable* (t=2.633; p<0.01; d=0.25). As regards perceived stigma, the differences were statistically significant only in the *weak-not-sick* subscale (t=-2.750; p<0.01; d=0.26).

As regards the barriers to mental health help-seeking associated with depression, statistically significant differences were found in the dimension *Personal barriers to seeking help* (t=-3.058; p<0.01; d=0.29), as well as in the dimension *Barriers to seeking professional help* (t=-3.449; p<0.001; d=0.29). In both cases, the effect size measures were small.

The last two variables - *positive mental health* (t=-4.362; p<0.001; d=0.28) and *health literacy* (t=-2.948; p<0.01; d=0.41) - had statistically significant differences according to the year of study, with higher mean values among fourth-year students.

With regard to HL, the variable was categorized according to the authors' proposal [34]. In terms of categories for the total sample, 19.1% had a level of HL considered inadequate, 29.8% problematic, and 51.2% adequate. As regards the level of HL by year of study, a statistically significant association was observed ($\chi^2_{(2)}$=6.613; p=0.037; CV=0.12), with a tendency for most first-year students to have an inadequate level of HL and for most fourth-year students to have an adequate level of HL.

Table 3. Beliefs about mental illness, and people with mental illness, personal and perceived stigma, barriers to seeking help, health literacy, and positive mental health literacy by year of study (N=478).

	Year	Mean	SD	t	ES
Beliefs about mental illness and people with mental illness					
Dangerousness (BtMIq1)	1st	2.17	0.78	2.996*	0.28
	4th	1.96	0.73		
Inferiority and inability to live in society (BtMIq2)	1st	2.66	0.55	7.449***	0.69
	4th	2.29	0.52		
Social integration and involvement (BtMIq3)	1st	4.09	0.52	-4.263***	0.40
	4th	4.30	0.53		
Individual responsibility (BtMIq4)	1st	2.32	0.65	0.274ns	0.03
	4th	2.30	0.54		
Efficacy of psychotropic drugs (BtMIq5)	1st	2.44	0.74	-3.262**	0.30
	4th	2.66	0.65		
Chronicity/incurability (BtMIq6)	1st	2.82	0.60	2.828**	0.26
	4th	2.67	0.60		
Efficacy of treatment and rehabilitation (BtMIq7)	1st	3.61	0.63	-3.291*	0.31
	4th	3.80	0.55		
Personal stigma					
Weak-not-sick	1st	1.82	0.60	4.576***	0.43
	4th	1.59	0.47		
Dangerous/unpredictable	1st	1.63	0.52	2.633**	0.25
	4th	1.51	0.51		

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Perceived stigma					
Weak-not-sick	1st	2.89	0.88	-2.750**	0.26
	4th	3.11	0.89		
Dangerous/unpredictable	1st	2.48	0.74	-0.670	0.06
	4th	2.53	0.78		
Barriers to mental health help-seeking					
Personal barriers to seeking help (PBHSS-1)	1st	3.28	0.96	3.058**	0.29
	4th	3.00	0.99		
Barriers to accessing specialized professional help (PBHSS-2)	1st	2,52	0.80	-3.449***	0.32
	4th	2,78	0.86		
Other variables					
Positive mental health literacy (PosMHLit)	1st	84.28	8.90	-4.362***	0.28
	4th	87.82	8.47		
Health literacy (HLS-EU-PT-Q)	1st	11.38	4.13	-2.948**	0.41
	4th	12.45	3.58		

Finally, the aim was to identify which sociodemographic variables and those associated with MHL (including familiarity with depression) are predictors of the year of study (first or fourth year), using binary LRA carried out in blocks.

Table 4 shows that the predictors involved in the model are, related to the recognition of disorders, the *age crisis* (*b*=-1.18; *p*<0.001; *OR*=0.31) and *nervous breakdown* (*b*=-0.57; p<0.05; *OR*=0.31) labels, as well as the following items related to knowledge and skills about MHFA: *Talk to her firmly about getting her act together* - MHFA_i2 (*b*=-3.31; *p*<0.001; *OR*=0.04), *Ask her whether she is feeling suicidal* - MHFA_i5 (*b*=0.71; *p*<0.01; *OR*=2.02), *Keep her busy to keep her mind of problems* - MHFA_i9 (*b*=-0.79; *p*<0.001; *OR*=0.45) and *Encourage her to become more physically active* - MHFA_i10 (*b*=1.37; *p*<0.001; *OR*=3.94).

Regarding the beliefs, the predictors were the *Belief in inferiority and inability to live in society* - BtMIq2 (*b*=-1.23; *p*<0.001; *OR*=0.29), *Belief in social integration and involvement* - BtMIq3 (*b*=.56; *p*<.05; *OR*=1.74), *Belief in efficacy of psychotropic drugs* – BtMIq5 (*b*=0.47; *p*<0.01; *OR*=1.60), and *Belief in efficacy of treatment and rehabilitation* (*b*=0.47; *p*<0.05; *OR*=1.59). The last variable to enter the model was the *weak-not-sick* subscale of the perceived stigma scale (*b*=0.35; *p*<0.01; *OR*=1.42).

Model fit was assessed through pseudo-R-square measures, namely the Cox-Snell and Nagelkerke R-square. The values obtained were $R^2_{Cox\text{-}Snell}$=0.33 and $R^2_{Nagelkerke}$=0.45, indicating a good model fit. The area under the curve (AUC) was 0.86, indicating very good discrimination and a strong model.

Table 4. Logit coefficients of the binary logistic regression model of the variable: year of study according to the sociodemographic variables, variables related to MHL, beliefs, stigma, and HL (N=478).

Variables	B	SE	Wald	df	p	*OR*	Lower	Upper
Age crisis	-1.18	0.32	13.872	1	<0.001	0.31	0.17	0.57
Nervous breakdown	-0.57	0.26	4.993	1	<0.05	0.56	0.34	0.93
MHFA_i2 (helpful)	-3.31	0.80	17.069	1	<0.001	0.04	0.01	0.18
MHFA_ i5 (helpful)	0.71	0.25	7.916	1	<0.01	2.02	1.24	3.31
MHFA_ i9 (helpful)	-0.79	0.25	10.224	1	<0.001	0.45	0.28	0.74
MHFA_ i10 (helpful)	1.37	0.31	19.592	1	<0.001	3.94	2.15	7.23
BtMIq2	-1.23	0.24	26.123	1	<0.001	0.29	0.18	0.47
BtMIq3	0.56	0.24	5.235	1	<0.05	1.74	1.08	2.80

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BtMIq5	0.47	0.17	7.406	1	<0.01	1.60	1.14	2.24
BtMIq7	0.47	0.21	5.181	1	<0.05	1.60	1.07	2.41
Perc. stigma (weak-not-sick)	0.35	0.14	6.512	1	<0.01	1.42	1.09	1.86
Constant	-3.94	1.40	7.945	1	0.005	.019		

4. Discussion

The following discussion takes into account that the nursing students who participated in this study have a high level of familiarity with mental illness (knowledge of cases in the family or close friends). Half of the sample reported having sought or received treatment for mental health problems. This aspect, which has traditionally been seen as an enabler of MHL, may contribute to its reduction, either because of negative experiences with the health care system and mental health professionals, or because of the excessive normalization resulting from contact with people diagnosed with mental illness (family/friends), which can lead to the trivialization of symptoms and reduce the ability to recognize problems and disorders.

As a component of MHL, the recognition of the problem/disorder is a prerequisite for seeking help in MH [1–3]. The results are similar to those found in other studies [7–9,40], particularly in terms of the frequency of the labels considered appropriate. The prevalence of the *depression* label was > 80.0% in both years of study. However, the most frequent labels were *stress*, *anxiety*, and *psychological, mental, and emotional problems*.

A careful reading of the vignette shows that the symptoms suggest a situation of depression according to the DSM-5 [28], and although depression can coexist with anxiety, they are distinct conditions.

Two labels considered inappropriate had substantial differences across the years of study, namely *age crisis* and *nervous breakdown*, with the *age crisis* label being more frequent (*h*> 0.50). The *anorexia* label was also frequent.

The use of the *nervous breakdown* label was more frequent among first-year students (around 4/5 of the sample), but it is still used by more than half (>60.0%) of fourth-year students. This non-specific label is used by most people in everyday life to describe or name any change in mental health. In this case, these labels contribute significantly to low identification.

Although there are differences in the percentage of students who correctly identify depression between the years of study (12.0% to 27.3%), this result can be read in two ways. On the one hand, the percentage of students who correctly identify depression is modest (18.3%), which is consistent with other studies [41–43]. On the other hand, attending the program contributes to an increase in students' MHL, although this increase is less than desired [44,45].

With regard to the component of knowledge about how to provide first aid and support to others, the results are consistent with those found in other studies [41–43]. Listening is favored and perceived by almost all as useful in the process of helping others, which is aligned with the guidelines of the MHFA program [46,47]. It is also positive to note that a substantial majority of the sample considered it useful to *Suggest she seek professional help and Make an appointment for her to see a GP with her knowledge*, which has also been found in other studies [7–9,40–43,47].

With regard to other positive or help-seeking promotion interventions, *Ask her whether she is feeling suicidal* stands out. This result was also found in most studies conducted in a variety of contexts [7–9,40,46]. Slightly more than 1/3 of the participants found it useful to use this strategy. This finding is worrying because most people, including nursing students, students in other programs, or even health professionals, consider this action to be harmful, or are unaware of its value. The reason is that people believe that questioning the person can instill the idea [40].

In other strategies such as *Talk to her firmly about getting her act together*, *Not acknowledge her problem, ignoring her*, and *Keep her busy to keep her mind off problems*, there is a substantial effect of training, as the results show that the academic journey can indeed improve MHL, particularly in

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deconstructing myths and stereotypes about mental illness. This finding is consistent with other studies [46].

With regard to beliefs about mental illness and people with mental illness, and even the social stigma associated with illness, most studies suggest that students initially hold beliefs and attitudes that promote stigma and social distance toward people with mental illness [48,49].

In this study, the scores for beliefs and personal and perceived stigma do not indicate that nursing students have negative beliefs and a stigmatizing view of mental illness and what it entails. These findings seem to partly reflect what has been found in other studies [50–53].

In all cases, the mean scores are consistent with positive beliefs and inconsistent with negative ones. However, as found in other studies [52,53], the year of study, when comparing first- and final-year students, suggests that the program seems to mitigate negative beliefs and promote positive ones. This finding also emerges from this study, more significantly (effect size = 0.69) for the *belief in inferiority and inability to live in society*.

In this case, attending the program seems to have contributed to an increase in positive beliefs about mental illness and people with mental illness (*belief in social integration and involvement*, *belief in efficacy of psychotropic drugs*, *belief in efficacy of treatment and rehabilitation*) and a decrease in negative beliefs (*belief in dangerousness* and *belief in chronicity/incurability*). The program can then provide evidence-based training to deconstruct myths and stereotypes. This process of change is facilitated by the educational context of nursing education and leads students to process new information, for example, from mental health and psychiatric disciplines and clinical teaching in psychiatry, which may to some extent challenge pre-existing beliefs.

In addition to the negative beliefs mentioned above, some systematic literature reviews [48,49] have also shown that young people not only have little knowledge about mental health problems and negative beliefs but also have high levels of personal stigma. They do not see depression as an illness but rather as a sign of personal weakness and say that people suffering from depression can even be dangerous to themselves and others.

In this study, the data on personal stigma and perceived stigma indicate that fourth-year students have lower stigma scores than first-year students, which suggests that attending the program can have an impact on social stigma, as has been mentioned in other studies [54,55].

With regard to the perceived barriers to help-seeking, studies show that a significant number of young people tend not to seek mental health help [1–3,56]. One of the first reasons cited is factors related to the personal stigma associated with these problems [57], followed by factors related to the accessibility of services and professionals. Nursing students are no exception [58], and the results of this study are consistent with the evidence [57,58]. The highest scores were found for personal barriers to seeking help compared to access to professional help. Fourth-year students show a lower "weight" of personal factors compared to those related to access, whose scores are higher for first-year students.

As far as positive MHL is concerned, there are very few studies carried out on nursing students due to the fact that the positive MHL approach is a relatively new concept [32,59], compared to the MHL approaches stemming from Jorm's work [6]. However, the scores found in this study indicate overall satisfactory results, with high average scores, which are more marked in fourth-year students, indicating good knowledge of MHL in both years.

HL is also considered to be an important variable for nursing students, particularly in terms of how HE institutions incorporate HL into their curricula [60]. The available evidence on the HL of nursing students suggests that between 35.0% and 45.0% have an inadequate or even problematic level of HL [61–64]. In this study, these figures were around 50% of the sample, which is a worrying result for nursing students.

Finally, looking at the resulting model, it can be said that the program has a mitigating effect on the aspects that contribute to students' low MHL. Overall, being a fourth-year student has a 69% reduction in the likelihood of reporting the *age crisis* label and a 44.0% reduction in reporting the *nervous breakdown* label compared to being a first-year student.

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With regard to MHFA strategies, being a fourth-year student indicates a 96% reduction in the chance of finding the strategy *Talk to her firmly about getting her act together* useful, compared to first-year students, and a 55.0% reduction in the chance of finding the strategy *Keep her busy to keep her mind off problems* useful.

Fourth-year students were 102.0% more likely to find it helpful to *Ask her whether she is feeling suicidal* and 294.0% more likely to find the strategy *Encourage her to become more physically active* helpful compared to first-year students.

With regard to beliefs, the greater the student's *belief in inferiority and inability of patients to live in society*, the less likely they are to be a fourth-year student than a first-year student. For each 1-unit increase in the *belief in social integration and involvement of patients*, the probability of the student being in the fourth year increases by 74%; for each 1-unit increase in the *belief in efficacy of psychotropic drugs*, the probability of the student being in the fourth year increases by 60.0%; for each 1-unit increase in the *belief in efficacy of treatment and rehabilitation*, the probability of the student being in the fourth year increases by 60.0%; and finally, for each 1-unit increase in *perceived stigma*, namely in the *weak-not-sick* dimension, the probability of the student being in the fourth year increases by 42.0%.

These findings support the idea that positive beliefs become stronger and more balanced, and negative beliefs become less prevalent, as students progress through the program. The data suggest that, as mentioned above, the program helps to mitigate negative beliefs and increase knowledge of MHFA. At the same time, there is a recognition of signs and a valuation of symptoms, particularly with a reduction in the use of inappropriate labels that contribute to the stigma associated with mental illness.

5. Conclusions

The results of this study are an important contribution to HE institutions whose mission is focused on nursing education, as they show that investing in MHL from the moment students are admitted contributes to the promotion of ML and well-being, which are fundamental to academic success in all its dimensions.

Given the conceptual definition of MHL, which encompasses beliefs and knowledge about mental disorders, this study points to two clusters of consistent findings. On the one hand, there is a view of mental illness that does not indicate a strong social stigma among students. This is promising for young people who will be healthcare providers and whose daily lives will focus on human relationships. On the other hand, there is a reduced ability to recognize depression, which can translate or indicate a devaluation of the symptoms. This is all the more worrying when half of the students have inadequate or problematic MH.

Although participants had some knowledge of MHFA strategies, there was a significant number who claimed to be unaware of them. This finding points to the need to implement MHFA programs that can, for example, favor the components in which they have deficits. The results also suggest the need to include MH in nursing students' curricula.

Future studies should include an assessment of MHL in all years of study and other variables such as students' MH and well-being.

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Informed Consent Statement: Consent to participate in this study was obtained through responses to the online survey. All participants provided online informed consent before taking part in the study. Consent also included permission for the publication of data research.

Data Availability Statement: Data supporting the findings of this study are available from the corresponding author upon request.

Public Involvement Statement: There was no public involvement in any aspect of this research.

Guidelines and Standards Statement: This quantitative study used the STROBE checklist to report the findings of cross-sectional studies in Epidemiology.

Use of Artificial Intelligence: No artificial intelligence was used in the design, analysis, or reporting of this study.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

DSM	Diagnostic and Statistical Manual of Mental Disorders
HE	Higher Education
HL	Health Literacy
MH	Mental Health
MHFA	Mental Health First Aid
MHL	Mental Health Literacy

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