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RESEARCH PAPER (ORIGINAL)

Effectiveness of the mental health first aid program in undergraduate nursing students

Efetividade do programa de primeiros socorros em saúde mental em estudantes de enfermagem

Eficacia del programa de primeros auxilios para la salud mental en los estudiantes de enfermería

Luís Manuel de Jesus Loureiro[1]
https://orcid.org/0000-0002-2384-6266

Paula Maria Figueiredo Pinto de Freitas[2]
https://orcid.org/0000-0003-0968-435X

[1] Health Sciences Research Unit: Nursing. Nursing School of Coimbra, Coimbra, Portugal

[2] Abel Salazar Institute of Biomedical Sciences, Porto, Portugal

Corresponding author:
Luís Manuel de Jesus Loureiro
luisloureiro@esenfc.pt

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Abstract

Background: The Mental Health First Aid Program (MHFA®) is one of the educational tools that can contribute substantially to increasing the mental health literacy of young higher education students.
Objective: To evaluate the effectiveness of the MHFA program, the mental health literacy rate about depression and anxiety in nursing students.
Methodology: Pre-experimental design, with a single group, evaluation pre- and post-intervention, applied to a sample of 219 students in the 1st year of the bachelor's degree in nursing. The Questionnaire for Assessment of Mental Health Literacy (QuALiSMental) was used. The data were analyzed using IBM SPSS Statistics software v24.0.
Results: The program is effective in increasing the mental health literacy rate. Statistically significant changes were observed in all dimensions analyzed, with moderate to high values in the effect size measures.
Conclusion: The MHFA program reveals to be appropriate in the integration of higher education students and can be used as a preventative measure and to promote mental health.

Keywords: mental health literacy; depression; anxiety; students; nursing; first aid

Resumo

Enquadramento: O programa de Primeiros Socorros em Saúde Mental (PSSM®) é uma das ferramentas educativas que pode contribuir de modo substancial para o incremento da literacia em saúde mental dos jovens estudantes do ensino superior.
Objetivo: Avaliar a efetividade do programa de PSSM, na literacia em saúde mental acerca da depressão e da ansiedade em estudantes de enfermagem.
Metodologia: Desenho pré-experimental, com grupo único, avaliação pré e pós intervenção, aplicado a uma amostra de 219 estudantes do 1.º ano do curso de enfermagem. Foi utilizado o Questionário de Avaliação da Literacia em Saúde Mental (QuALiSMental). Os dados foram analisados com recurso ao *software* IBM SPSS Statistics v24.0.
Resultados: O programa mostra-se efetivo em termos de incremento da literacia em saúde mental, observando-se mudanças estatisticamente significativas em todas as dimensões analisadas, com valores de moderados a elevados nas medidas de tamanho de efeito.
Conclusão: O programa PSSM revela ser adequado em contexto de integração dos estudantes ao ensino superior, podendo ser utilizado como medida preventiva e promotora da saúde mental.

Palavras-chave: literacia saúde mental; depressão; ansiedade; estudantes; enfermagem; primeiros socorros

Resumen

Marco contextual: El programa de Primeros Auxilios para la Salud Mental (PSSM®) es una de las herramientas educativas que puede contribuir sustancialmente a aumentar los conocimientos sobre la salud mental de los jóvenes estudiantes de educación superior.
Objetivo: Evaluar la efectividad del programa PSSM en la alfabetización de la salud mental sobre la depresión y la ansiedad en los estudiantes de enfermería.
Metodología: Diseño preexperimental, con grupo único, evaluación pre y posintervención, aplicado a una muestra de 219 estudiantes del 1.er año de los estudios de enfermería. Se utilizó el Cuestionario de Evaluación de la Alfabetización en la Salud Mental (QuALiSMental). Los datos se analizaron con el programa IBM SPSS Statistics v. 24.0.
Resultados: El programa es efectivo en el aumento de los conocimientos de salud mental, con cambios estadísticamente significativos en todas las dimensiones analizadas, con valores de moderados a altos en las mediciones del tamaño del efecto.
Conclusión: El programa PSSM es apropiado en el contexto de la integración de los estudiantes a la enseñanza superior y puede utilizarse como medida preventiva y de promoción de la salud mental.

Palabras clave: alfabetización en salud mental; depresión; ansiedad; estudiantes; enfermería; primeros auxilios

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Introduction

Mental disorders are recognized today as a severe public health problem. Developed countries have an estimated cumulative prevalence of 25% in young adults. The most relevant include anxiety disorders (including phobias), mood disorders such as depression, and alcohol consumption (including abuse and dependence; Gustavson et al., 2018). Concomitantly, the evidence shows that 70% of mental disorders can be diagnosed and receive appropriate treatment before the age of 25 years (Kutcher et al., 2016) and 50% before the age of 18 years (Kelly et al., 2011). This means that many situations could be detected, receive appropriate treatment, preventing the worsening of problems and their evolution to chronic conditions that threaten the future of individuals.

In the case of young higher education students, the available evidence about their mental health, produced over the past two decades, shows disturbing data relating to the prevalence of mental health problems, mainly problems related to stress, anxiety, and depression (Almeida, 2014; Nogueira, 2017; Pulido-Criollo, Cueto-Escobedo, & Guillén-Ruiz, 2018), and to alcoholism and other psychoactive substances (Silva et al., 2015).

More specifically about the young people who start their academic studies, the evidence shows that many students are not prepared to handle the challenges they face and experience high levels of stress and anxiety (Araújo & Almeida, 2015; Nogueira, 2017; Van Rooij, Jansen & van de Grift, 2018). Difficulties arising from the academic stress can endure over the course of the studies, contributing to triggering other mental health problems (Ribeiro et al., 2017). Also, it is known that other students manifest diagnosed mental health disorders that might worsen throughout the studies.

Thus, the World Health Organization (WHO) calls for the need to develop and implement programs that promote MHL, like the case of the Mental Health First Aid Program (MHFA®), because it considers health literacy, including mental health literacy (MHL), as one of the most important social health determinants, directly impacting the health and well-being of populations (WHO, 2013; Jorm, 2019; Kutcher et al., 2016).

In this sense, the higher education institutions should prioritize and develop actions and programs of mental health education and awareness, with a view to intervene in the mental health of students and their peers, focusing on the integration of students and their mentoring along the academic process.

Within this scope, this study was developed to evaluate the effectiveness of the MHFA® program on the MHL relating to depression and anxiety of first-year nursing students.

Background

The MHFA® program is one of the most widely disseminated educational programs aimed at increasing mental health literacy in the world (Jorm, 2019; Loureiro & Costa, 2019). Its effectiveness has been attested by studies carried out in different cultural, social, and economic contexts. Two recent systematic reviews, with and without meta-analyses, conducted by Hadlaczky, Hökby, Mkrtchian, Carli, and Wasserman (2014) and Morgan, Ross, and Reavley (2018) reveal that the program is effective and its effect size values vary from moderate to high in terms of increased recognition of mental health problems (disorders included), help-seeking intention, and confidence to provide aid and support to their peers. Although the studies conducted with nursing students are but a few (Bond, Jorm, Kitchener, & Reavley, 2015; Burns et al., 2017; Loureiro & Sousa, 2019; Loureiro & Costa, 2019), their results are similar to those reported in studies conducted with other types of samples (Morgan et al., 2018), the effect sizes varying from moderate to high. It should be noted that, overall, the component of the personal stigma presents the most modest effects in the studies, ranging between low and moderate (Morgan et al., 2018).

This program is necessary and appropriate for nursing students at the time of their integration in the degree because the transition process and subsequent adaptation are a critical period with impact on their mental health and well-being and, consequently, in all domains of academic success (Almeida, 2014; Van Rooij, Jansen, & van de Grift, 2018). Another reason is that the progression of the course affects the profession's teaching/learning. Students undergo a great deal of physical, intellectual, and emotional stress throughout their training (Pulido-Criollo et al., 2018), as a result, for example, of the emphasis and contact with the suffering and vulnerability of human lives in clinical training, of the demanding load of academic work, among others.

In this sense, the early recognition of mental health problems and the management of issues related to mental health in everyday life are some of the goals of the MHFA® program, both in terms of the individual and of whom they connect with every day.

Research hypothesis

The MHFA® program contributes to the increase of MHL about depression and anxiety of first-year nursing students, in the components of recognition of depression and anxiety, help-seeking intention, confidence to provide help, and stigma.

Methodology

This study has used a pre-experimental design with a single group, with pre- and post-intervention evaluations. The study sample was selected using a simple sampling process from the population of students enrolled in the 1st year of the bachelor's degree in nursing in a teaching institution of central Portugal, having been selected students aged ≤ 19 years. The sample consists of 219 students with a mean age of 17.99 years (*SD* = 0.59), being 185

(84.50%) females and 34 (15.50%) males.
The data collection tool used was the Mental Health Literacy Assessment Questionnaire - QuALiSMental (Loureiro, 2015). The following components were assessed: (a) recognition of mental problems and disorders to promote and facilitate help-seeking; (b) knowledge and skills to provide first aid and aid to others; c) help-seeking and requesting intention; d) confidence to provide help and support; (e) personal stigma associated with depression. Before the questions, the questionnaire includes two vignettes that present two cases, one of a young woman who shows signs and symptoms of depression (Joana) and another (Rita) with symptoms of anxiety. Both cases are in accordance with the criteria of the DSM-5 (Associação Americana de Psiquiatria, 2014):
Joana is an 18-year-old woman who has been feeling unusually sad during the last few weeks. She feels always exhausted and has trouble falling asleep or staying asleep. She has lost her appetite and lately has been losing weight. She has difficulty concentrating on her studies, and her grades have decreased. Even the daily tasks seem very difficult, so she has postponed some decisions. Her parents and friends are anxious about her.
Rita is 18 years old and began her higher education in last October, having moved from one city to another to attend the course. Since moving to the new institution, she became even more shy than usual and made just one friend. She would like to make more friends but is afraid to do or say something embarrassing when she is with other people. Although Rita's academic performance is satisfactory, she rarely participates in class and is very nervous, blushes, trembles and feels like she might throw up if she has to answer any question or speak in front of the class. With her family, Rita is very talkative, but with her housemates, this is not the case, and she prefers to remain silent when someone she does not know well visits them. Except for telephone calls from her family, she never answers the phone and refuses to participate in social events. She knows that her fears are exaggerated, but she cannot control them, and it disturbs her.

Procedures
The QuALiSMental was applied in the training room in both moments of pre- and post-intervention. The project was previously submitted for approval to the Ethics Committee of the Health Sciences Research Unit: Nursing (UICISA: E) of the Nursing School of Coimbra (no. P603-06/2019), having obtained a favorable opinion. Authorization for conducting the intervention was requested to the board of directors of the institution, and a favorable opinion was obtained, and its application authorized, in line with the pedagogical council.
The intervention occurred in September 2018 and had a 9-hour duration, composed of 3 sessions of two hours and one session of 3 hours.
The content addressed in the program was the concept of health and mental health problems (including disorders); signs and symptoms of common mental health disorders in adolescents and young adults, such as depression, stress, and anxiety (including anxiety to evaluation tests), alcohol consumption, and substance abuse (e.g. cannabis); risk factors; professionals who can help; pharmacological and non-pharmacological treatments, effective self-help strategies and strategies (with an action plan) for intervention in mental health first aid.
The sessions use primarily active pedagogical methods, based on roleplaying, video visualization, and group work.

Statistical treatment
This study used the IBM SPSS Statistics software v24.0 to calculate the appropriate summary statistics. The McNemar's test, Bowker's test, and *t*-test for paired samples were applied to assess the hypothesis in each of the components/areas. For the Bowker's test, post-hoc tests were used with Bonferroni correction.
As effect size measures, the odds ratio (OR) and the Cohen's "*g*" was calculated for the McNemar's and Bowker's tests, and the Cohen's "*d*" for the *t*-test. The following guide values were used to interpret the results of these measures: *small* ($0.05 < g < 0.15$; $0.20 \leq d < 0.50$), *medium* ($0.15 \leq g < 0.25$; $0.50 \leq d < 0.80$), and *large* ($g \geq 0.25$; $d \geq 0.80$).

Results

In terms of labels used to characterize depression (Table 1), statistically significant changes occurred in all labels, either due to their increased use, as are the cases of *depression* ($p < 0.01$; $OR = 2.28$; $g = 0.19$); *mental illness* ($p < 0.001$; $OR = 8.80$; $g = 0.40$), or due to its decreased use, for labels such as *stress* ($p < 0.001$; $OR = 5.33$; $g = 0.34$); *nervous breakdown* ($p < 0.001$; $OR = 17.4$; $g = 0.45$), *age crisis* ($p < 0.001$; $OR = 17.00$; $g = 0.44$); *psychological/mental/emotional problems* ($p < 0.001$; $OR = 3.32$; $g = 0.27$); and *anxiety* ($p < 0.001$; $OR = 3.78$; $g = 0.29$).
Regarding the labels used for the vignette of anxiety, after the intervention, an increase was observed in the use of labels *depression* ($p < 0.001$; $OR = 5.67$; $g = 0.35$), *mental illness* ($p < 0.001$; $OR = 4.00$; $g = 0.30$), *stress* ($p < 0.001$; $OR = 2.64$; $g = 0.23$), *nervous breakdown* ($p < 0.05$; $OR = 3.00$; $g = 0.25$), and *anxiety* ($p < 0.001$; $OR = 2.74$; $g = 0.23$). Also, a reduction occurred in the percentage frequencies of labels, *age crisis* ($p < 0.001$; $OR = 3.47$; $g = 0.28$) and *emotional/psychological problems* ($p < 0.001$; $OR = 3.32$; $g = 0.27$).
The (correct) identification of the situations described in the vignette observed a significant increase only in the case of depression ($p < 0.001$; $OR = 13.71$; $g = 0.47$). In the case of anxiety, the increase was residual, going from 88.58% to 90.41% at the end of the intervention ($p > 0.05$).

Table 1
Percentage distributions of labels marked by participants, pre and post-intervention, for depression and anxiety (N = 219)

Depression vignette labels	*Pre-intervention*	*Post-intervention*	χ^2	OR (*g*)
Depression	76.04	86.24	8.203**	2.28 (0.19)
Mental illness	8.29	26.15	29.469***	8.80 (0.40)
Stress	68.20	38.07	43.116***	5.33 (0.34)
Nervous breakdown	48.85	11.01	71.315***	17.4 (0.45)
Age crisis	8.29	0.92	***(a)	17.0 (0.44)
Psychological problems…	51.61	31.19	22.549***	3.32 (0.27)
Anxiety	55.76	32.57	27.919***	3.78 (0.29)
Correct identification	21.92	62.56	75.184***	13.71 (0.43)
Anxiety vignette labels	***Pre-intervention***	***Post-intervention***	χ^2	OR (*g*)
Depression	3.96	16.67	18.225***	5.67 (0.35)
Mental illness	6.93	18.98	15.022***	4.00 (0.30)
Stress	47.03	62.96	17.582***	2.64 (0.23)
Nervous breakdown	3.96	7.41	*(a)	3.00 (0.25)
Age crisis	5.45	0.93	**(a)	10.0 (0.41)
Psychological problems…	50.00	29.63	19.343***	3.47 (0.28)
Anxiety	78.22	85.19	11.161***	2.73 (0.23)
Correct identification	88.58	90.41	0.281ns	1.26 (0.06)

Note. χ^2 = McNemar's test statistics; (a) Test using binomial distribution; OR = Odds Ratio; Cohen's (*g*).
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; ns = not significant.

As regards the knowledge to provide first aid and support to a person (Table 2) who suffers from a mental health problem, statistically significant changes were observed in 80.0% of the items in relation to depression, and in the case of anxiety, in 70.0% of the items.

In terms of strategies/actions deemed appropriate for the situation of depression, "Listen to his/her problems in an understanding way" is considered "useful" by the majority of the participants before the intervention (99.09%), a value that goes up to 100.00% at the end of the intervention. Before the intervention, other appropriate strategies, such as "suggest him/her to seek professional help" (85.84%), "make an appointment with the family doctor" (71.23%), "rally friends to cheer him/her up" (88.58%) and "encourage him/her to become more physically active" (78.08%), are also considered as useful by a very substantial part of the participants (>70.00%). The exception in the strategies deemed appropriate relates to "ask whether he/she is feeling suicidal ", that only 20.55% considers as "useful". However, 32.42% stated not knowing whether it is "useful" or "harmful".

Regarding inappropriate strategies, "talk to him/her firmly about getting his/her act together" is perceived as "useful" by 25.11% of the participants, and 45.66% of them reported not knowing. "Not acknowledging his/her problem, ignoring it until he/she gets over it" is perceived as "harmful" by more than 95% of participants, and "keep him/her busy to keep his/her mind off problems" is deemed as "useful" by 74.43%. It should be noted that almost all of the participants (96.80%) consider alcoholism as harmful ("suggest him/her to have a few drinks to forget his/her troubles").

The comparison between the answers to the items before and after the intervention shows changes in almost all of the items. In two items ("listen to his/her problems in a understanding way"; "suggest him/her to have a few drinks to forget his/her troubles"), the pattern of the responses of the participants did not allowed the application of tests. As shown in Table 2, the frequency of the program contributes to a statistically significant increase ($p < 0.05$) of the perception of usefulness in the items that correspond to strategies/actions deemed appropriate (items 3, 4, 5, 7, and 10), while fewer reported these actions as harmful and even claimed not knowing. The opposite occurred in inappropriate strategies/actions (items 2, 8, and 9), observing an increase of knowledge resulting in these strategies being perceived as harmful. The number of participants with perception of their usefulness was lower, as well as the number of those who claimed not knowing. All values obtained in the effect size measures revealed an increased effect ($g \geq 0.25$).

Regarding the anxiety vignette, the profile of responses (Table 2) is identical to the answers obtained in relation to depression, mainly in the items "listen to his/her problems in an understanding way", "suggest him-her to have a few drinks to forget his/her troubles"; "rally friends to cheer him/her up"; "not acknowledging his/her problem, ignoring it until he/she gets over it"; "encourage him/her to become more physically active", and "keep him/her busy to keep his/her mind off problems."

A substantial part of the participants reported that they do not know if the strategies are useful or harmful, mainly in relation to the following: "talk to him/her firmly about getting his/her act together" (36.53%), "suggest him/her to seek professional help" (37.90%), and "make an appointment with the family doctor" (52.97%).

The a posteriori tests show that the program contributes

to a statistically significant increase ($p < 0.05$) in the perception of the usefulness of the strategies deemed appropriate. The opposite happens in strategies deemed inadequate, meaning that the increase in knowledge leads to these strategies being perceived as harmful. Also, fewer participants report their perception of the usefulness of these strategies, and fewer participants report not knowing whether the strategies are useful or not.

The strategy "ask him/her if he/she is feeling suicidal" should be emphasized because, initially, only 6.85% of the participants considered it as "useful", a value that goes up to 69.41% after the intervention, which would not be expected in relation to contents exposed in the program. The values of the effect size measures show an increased effect ($g \geq 0.25$) in all cases in which the a posteriori tests revealed to be statistically significant ($p < 0.05$).

As shown by Table 2, when the participants were questioned about the help-seeking intention in a situation similar to that described in the vignette (*If you were currently living a situation similar to that of Joana/Rita, would you seek help?*), a statistically significant change occurs in both cases (depression and anxiety), pre- and post-intervention. In the case of depression, the help-seeking intention increases from 63.47% to 86.30% ($p < 0.001$; $g = 0.43$) at the end of the intervention. As for anxiety, 51.14% of participants initially reported that they would seek help, a value increased to 79.00% at the end of the intervention ($p < 0.001$). The change occurs in those who claim not seeking help ($p < 0.05$; $g = 0.41$) and in those who report not knowing ($p < 0.001$; $g = 0.37$).

As regards the confidence to provide help and support in mental health (*How confident do you feel to help Joana/Rita?*), a statistically significant increase is observed in both cases in the mean values ($p < 0.05$) from pre- to post-intervention. In the case of depression, there is an increase in average terms from 2.78 points to 3.63 points ($p < 0.001$; $p = 0.74$), in the case of anxiety ($p < 0.001$; $p = 0.74$), the mean value went from 2.74 points to 3.68 points ($p = 0 < 001$; $d = 0.74$). In both, the value obtained in the d measure indicates a medium effect size.

Regarding personal stigma, assessed only for the case of depression (Table 2), a statistically significant reduction was observed ($p = < 0{,}001$), going from 13.67 points ($SD = 3.68$ points) to 11.16 points ($SD = 3.12$ points) at the end of the intervention. The effect of this change is considered as average ($d = 0.71$).

Table 2
Pre- and post-intervention comparison in terms of first aid provision, help-seeking intention, confidence to provide help, and personal stigma (N = 219)

Depression vignette *First aid strategies*	*Pre-intervention*			*Post-intervention*			χ^2	*Post-hoc*[(a)] *(g)*		
	Useful (A)	Harmful (B)	Don't know (C)	Useful (A)	Harmful (B)	Don't know (C)		*AB*	*AC*	*BC*
1. Listen to his/her	99.09	0.00	0.91	100.00	0.00	0.00	na	na	na	na
2. Talk to him/her	25.11	29.22	45.66	1.83	90.87	7.31	134.46***	(0.48) ***	(0.50)*	(0.47)***
3. Suggest to seek...	85.84	1.83	12.33	98.63	0.46	0.91	27.15***	na	(0.50)***	na
4. Make…doctor	71.23	4.57	24.20	93.15	2.74	4.11	44.75***	ns	(0.44)***	ns
5. Ask him/her if...	20.55	47.03	32.42	87.67	8.22	4.11	143.74***	(0.50) ***	(0.47)***	ns
6. Suggest few drinks...	0.91	92.24	6.85	0.46	98.63	0.91	10.28**	ns	na	(0.38)**
7. Rally friends…	88.58	1.83	9.59	58.45	27.85	13.70	69.47***	(0.46) ***	(0.37)***	(0.50)***
8. Not acknowledging...	1.37	96.80	1.83	0.00	100.00	0.00	na	na	na	na
9. Keep busy.	74.43	5.94	19.63	47.49	30.59	21.92	61.74***	(0.47) ***	(0.28)***	(0.41)***
10. Encourage …	78.08	0.00	21.92	94.52	0.00	5.48	21.86***[(b)]	na	(0.32)	na
Help-seeking intention	Yes (A)	No (B)	Don't know (C)	Yes (A)	No (B)	Don't know (C)		AB	AC	BC
	63.47	2.74	33.79	86.30	0.91	12.79	45.82***	ns	***(0.43)	ns
Confidence to provide help	Mean=2.78 (SD=0.65)			Mean=3.63 (SD=0.69)			*t*=-10.90***		$d^{(b)}$=0.74	
Personal stigma	Mean=13.67 (SD=3.68)			Mean=11.16 (SD=3.12)			*t*=10.44***		$d^{(b)}$=0.71	
Anxiety vignette *First aid strategies*	*Pre-intervention*			*Post-intervention*			χ^2	*Post hoc*[(a)] *(g)*		
	Useful (A)	Harmful (B)	Don't know (C)	Useful (A)	Harmful (B)	Don't know (C)		*AB*	*AC*	*BC*
1. Listen to his/her...	99.54	0.00	0.46	100.00	0.00	0.00	na	na	Na	na
2. Talk to him/her...	32.88	30.59	36.53	5.02	86.76	8.22	143.57***	(0.48) ***	Ns	(0.49)***
3. Suggest to seek...	57.99	4.11	37.90	96.35	0.46	3.20	91.41***	(0.41) *	(0.49)***	na
4. Make…doctor	41.10	5.94	52.97	90.41	3.65	5.94	114.90***	ns	(0.47)***	ns
5. Ask him/her if...	6.85	54.79	38.36	69.41	11.87	18.72	163.47***	(0.49) ***	(0,48) ***	(0.35) **
6. Suggest few drinks...	2.28	89.95	7.76	0.00	99.54	0.46	na	na	na	(0.44) ***[(b)]
7. Rally friends…	81.74	7.31	10.96	64.84	25.11	10.05	35.21***	(0.41) ***	ns	ns
8. Not acknowledging...	0.46	94.98	4.57	0.00	99.54	0.46	9.64**	na	na	(0.41) *
9. Keep busy...	65.75	10.05	24.20	47.03	29.22	23.74	38.58***	(0.33) ***	ns	(0.36) **
10. Encourage…	73.52	0.46	26.03	94.98	0.00	5.02	na	na	(0.32) **[(b)]	na
	Yes (A)	No (B)	Don't know (C)	Yes (A)	No (B)	Don't know (C)		*AB*	*AC*	*BC*
Help-seeking intention	51.14	10.05	38.8	79.00	2.74	18.3	51.44***	(0.41) *	(0.37) ***	ns
Confidence to provide help	Mean= 2.74 (*SD* = 0.78)			Mean = 3.68 (*SD* = 0.72)			*t* = -10.96***		$d^{(a)}$ = 0.74	

Note. χ^2 = Bowker's test statistics; [(a)] A posteriori tests with Bonferroni significance correction; [(b)]McNemar's test using binomial distribution; na = not applicable test; ns = not significant; *g* = Cohen's effect size measure; *d* = Cohen's effect size measure; AB = Change from Useful to Harmful; AC = Change from Useful to Don't know; BC = Change from Harmful to Don't know. The three changes are pre- and post-intervention. A) Cohen's *d* effect size measure.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; *SD* = standard deviation.

Discussion

In terms of the component of recognition of mental problems/disorders, the results suggest a double meaning depending on whether it is depression or anxiety. In relation to depression, it is found from the start that the ability of recognition of the problem is low because only 21.92% of the sample (about 1/5) identifies depression correctly, a value that increases to 62.56% (3/5) at the end of the intervention. This effect size is high, being in line with the results of other studies, including samples of nursing students (Bond et al., 2015; Burns et al., 2017; Loureiro & Sousa, 2019; Loureiro & Costa, 2019). Even though the program does not intend to teach or to make diagnoses in mental health, it is a very good thing to note that the program contributes to the increase of the ability of nursing students to recognize the signs of depression and validate the associated symptoms. The students can problematize the situation presented in the vignette, also reflected by the change in the pattern of responses to the associated labels, such as the reduced use of labels such as "nervous breakdown", "age crisis", "stress", and "anxiety", like in other studies (Loureiro & Sousa, 2019; Loureiro & Costa, 2019).

In the case of anxiety, the results are different from depression, that is, from the start a very substantial part (88.58%) recognizes and properly identifies anxiety. This data is positive and suggests that young people are aware of the problems associated with anxiety, a result mainly of how obvious these problems are during the previous education cycles (5th to 12th grade). However, the change in terms of correct identification pre- to post-intervention is statistically significant because at the end of the intervention the increase was residual, going up to 90.41%. It is worth noting the change in the use of other labels, mainly because an increase occurred, which was not expectable (e.g., "depression"), as well as a reduction (e.g., "psychological/emotional/mental problems"). The lack of studies specifically about this topic and this type of samples inhibits comparisons. Still, such results may be because, for example, the anxiety vignette presents some limitations compared to the content taught in the program. The program content focuses on and covers virtually every type of anxiety disorders, including anxiety in assessment situations. Although the scope of first aid includes panic attacks, the program lacks a reordering of content relating to this type of problem, especially in this component. Another possibility might be adding other vignettes that include other anxiety disorders (e.g., "obsessive compulsive disorder").

In the component of knowledge and skills to provide first aid in mental health, the results confirm the effectiveness of the program for both mental health problems, as shown by the high effect sizes obtained in this study. These results are consistent with other studies (Bond et al., 2015; Burns et al., 2017; Morgan et al., 2018; Loureiro & Costa, 2019; Loureiro & Sousa, 2019).

A relevant fact in this component that may justify the application of the MHFA® program during the integration in the nursing course relates to the pattern of responses observed in the pre-intervention phase. The results reveal a lack of knowledge reflected by mistaken beliefs about the strategies proposed, where "harmful is considered "useful" and vice-versa, and an inability to decide whether strategies and actions are adequate or inadequate. If students assume this ignorance, the managers of institutions should be aware of the need to intervene early to facilitate the adaptation to higher education and enhance the academic success, given the constraints arising from academic stress.

As regards the intention seek help in mental health in situations similar to those described in the vignettes, the frequency of the program revealed changes (with high effect sizes) in terms of increasing the help-seeking intention in mental health, like in most studies (Morgan et al., 2018). If this result is associated with the results obtained in the recognition of mental problems and disorders, it is observed that the program can contribute as a facilitator of seeking help in mental health, encouraging early intervention and preventing recurrence of problems. It should be noted that the majority of individuals delay or refuse mental health aid, especially young people. As a result, for example, the time between the development of the first signs and symptoms of problems and the seeking professional help is too long (Jorm, 2019), with an effect on recovery.

The level of confidence to provide aid and support to someone who suffers from a mental health problem, the effect obtained with the frequency of the program is moderate in both cases. This positive data is in accordance with the evidence available on the effectiveness of the program (Bond et al., 2015; Burns et al., 2017; Loureiro & Sousa, 2019; Loureiro & Valente, 2019, Morgan et al., 2018).

As the main objective of the MHFA® program is to increase the mental health literacy rate, for instance, teaching people to provide help and support to someone who is developing a mental health problem or even a crisis (Kelly et al., 2011), the training in help delivery is fundamental, encouraging intervention in mental health. The knowledge and mastery of the first aid action plan is a fundamental tool, since it allows planning the action and provides the important tools to conduct the approach, emphasizing communication (Loureiro & Sousa, 2019; Loureiro & Costa, 2019).

Regarding personal stigma associated with depression, the observed changes in terms of reduction in scores show a moderate effect size. This change is higher than that observed in the majority of studies (Morgan et al., 2018). Although the stigma associated with mental illness remains very substantial and has social and cultural roots, there is an opportunity for a change of attitudes and behaviors. The program is one of the possible means of intervention, now that the stigma is considered a barrier to seeking help in mental health because many people do not seek help for fear of the associated stigma (Jorm, 2019).

It should be noted now that some of the limitations of this study are a result of the research design used. Because it is a pre-experimental study, the internal and external validity is jeopardized, compared to experimental or even quasi-experimental design.

The non-use of a control group does not allow, for instance, comparing the effect that the MHFA® program has on MHL, compared to another type of intervention (or even its eventual absence). However, the results obtained in this study are not invalid and, therefore, a careful reading of the results is necessary.
The inexistence of follow-up is also a weakness since it does not allow assessing the consistency of results over time.
It should be noted that statistical tests were not applied in some items, as shown in the tables. This fact derives not from any constraints associated with the size of the sample because the intervention was conducted with a considerable-sized sample (n = 219), but from the pattern of responses that inhibits the use of statistical tests.

Conclusion

It can be concluded that the MHFA® program is useful in the sense that it increases the levels of mental health literacy about depression and anxiety of nursing students. This effectiveness is evident for all the components involved in the intervention.
In the case of nursing students, the MHFA® program should be applied early in the training process because it can help these young people to develop the ability to manage the challenges they face every day, especially relating to the academic stress. Promoting academic success, as a multifaceted concept, is also a social mission of higher education institutions. The focus on the mental health of students is vital for the successful future of these health professionals.
Future applications of the program should use an experimental research design, with a control group, as well as conduct the assessment of follow-up.

Author contributions

Conceptualization: Loureiro, L. M., Freitas, P. M.
Methodology: Loureiro, L. M., Freitas, P. M.
Validation: Loureiro, L. M., Freitas, P. M.
Formal analysis: Loureiro, L. M., Freitas, P. M.
Investigation: Loureiro, L. M., Freitas, P. M. F.
Data curation: Loureiro, L. M.
Writing - original draft: Loureiro, L. M., Freitas, P. M.
Writing - review and editing: Loureiro, L. M.

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