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Literacy level on suicide among university students

Nivel de alfabetización en suicidio en estudiantes universitarios

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ABSTRACT

Suicide is the fourth leading cause of death worldwide among people aged 15-29 years. These data show the urgent need to address this problem, and literacy is fundamental to doing so.

The objective of this study is to determine the level of literacy about suicide and examine differences in literacy scores among students from different subject areas, as well as differences in literacy levels in the presence of psychological problems or suicidal behaviour in personal or family history in an incidental sample of students from the University of Malaga.

An incidental sample of 443 students (364 women) was obtained and completed the Literacy of Suicide Scale, short form. It was answered before attending a lecture about suicide (attendance was voluntary). The scores obtained were compared according to the field of study and the presence or absence of a history of psychological problems and suicidal behaviour, both personally and in the family. An exploratory cross-sectional and ex post facto exploratory analysis was applied using Student's test, analysis of variance, Eta squared, and Cohen's d.

Analyses performed showed that participants had a high knowledge of suicidal behaviour. By studying the dimensions that make up suicidal behaviour literacy through exploratory cross-sectional and ex post facto analysis. Differences were found in the literacy dimensions, with causes/triggers and signs being the weakest. Students with the highest literacy levels were those in the arts and humanities. Students with psychological problem histories showed higher total literacy, but no differences were found for those with or without suicidal behaviour histories.

From the results obtained, it can be concluded that more emphasis should be placed on educating students about the causes and warning signs of suicidal behavior. Likewise, university suicide prevention programs should be designed to reach out to science students in particular. Knowing who to target and what aspects to teach will help practitioners and researchers to design programs that will actually have a positive impact on suicidal behavior literacy in the university population.

Keywords: suicide, suicidal behaviour, literacy, prevention, university, mental health, youth

RESUMEN

El suicidio es la cuarta causa de muerte a nivel mundial entre personas de 15 a 29 años. Este dato evidencia la necesidad urgente de abordar esta problemática y para hacerlo la alfabetización es fundamental.

El objetivo general de este estudio es analizar el nivel de alfabetización sobre suicidio y examinar las diferencias en las puntuaciones de alfabetización entre estudiantes de distintas áreas de conocimiento, así como las diferencias en los niveles de alfabetización en presencia de problemas psicológicos o conductas suicidas en la historia personal o familiar en estudiantes universitarios.

Se obtuvo una muestra incidental compuesta por 443 estudiantes (364 mujeres) de la Universidad de Málaga (España) que completaron la Escala de Alfabetización de la Conducta Suicida en su versión reducida, que se cumplimentó antes de asistir a una jornada de sensibilización en suicidio. Las puntuaciones obtenidas se analizaron de acuerdo con el área de conocimiento de los estudiantes y a la presencia o no de antecedentes de problemas psicológicos y de conducta suicida tanto personales como familiares. Se aplicó un análisis exploratorio transversal y ex post facto, utilizando el test de Student, análisis de la varianza, Eta cuadrado y d de Cohen.
Los análisis realizados mostraron que los participantes tenían un conocimiento alto sobre la conducta suicida. Al estudiar las dimensiones que componen la alfabetización de la conducta suicida se apreciaron diferencias, siendo las causas y señales de alerta o signos de la conducta suicida las más deficitarias. Los estudiantes con mejor conocimiento sobre suicidio fueron los de artes y humanidades. Los estudiantes con antecedentes de problemas psicológicos familiares o personales mostraron una mayor alfabetización, pero no se encontraron diferencias en los niveles de alfabetización entre aquellos con o sin antecedentes de conducta suicida.
A partir de los resultados obtenidos podemos concluir que hay que hacer mayor énfasis en formar al estudiantado en las causas y las señales de alerta de la conducta suicida. Así mismo, los programas de prevención del suicidio en la universidad deben diseñarse para llegar especialmente a los estudiantes de ciencias. Conocer a quién hay que dirigirse y los aspectos a enseñar ayudará a los profesionales e investigadores a diseñar programas que realmente tengan un impacto positivo sobre la alfabetización en conducta suicida de la población universitaria.

Palabras clave: suicidio, conducta suicida, alfabetización, prevención, universidad, salud mental, jóvenes

INTRODUCTION

Suicidal behaviour is the fourth leading cause of death among people aged 15–29 years and also encompasses the entire spectrum, from thoughts of death to suicidal ideation, planning, and attempts. Across the globe, approximately 700,000 people die by suicide each year. However, suicide deaths are just the tip of the iceberg: it is estimated that, for every suicide, at least 20 people have had/made suicidal attempts (World Health Organization [WHO], 2019, 2021).

Similar to other issues, such as child sexual abuse, suicidal behaviour is surrounded by silence, taboos, and myths that hinder not only its detection and visibility but also its prevention (Keller et al., 2019; Mortier et al., 2018b; Rueda et al., 2021). Preventing a phenomenon requires understanding its key elements, this knowledge is called literacy. In the field of mental health, literacy refers to the knowledge about the causes/triggers, risk factors, signs, and treatment/prevention of a particular behaviour or disorder (Jorm, 2000; Jorm et al., 2003). In essence,

literacy involves understanding what suicidal behaviour is, the associated risk and protective factors, and the signs that indicate a person may be having suicidal thoughts (Carrasco et al., 2020). It has been noted that knowledge of signs, myths surrounding suicide and suicidal behaviour, steps to help at-risk individuals, and available resources are key to reducing the stigma associated with suicide, developing effective prevention programs (King et al., 2008; Schicker, 2011), and encouraging help-seeking among at-risk individuals (Jung et al., 2017). Suicide prevention should be considered a task to be undertaken not only by healthcare entities but also at the level of social, educational, and health policies (Harrod et al., 2014; Jorm, 2000; Weisz et al., 2005).

SUICIDAL BEHAVIOUR AMONG UNIVERSITY STUDENTS AND PREVENTION PLANS

Several international studies have estimated the prevalence of suicide attempts among young people under 35 years (Castillejos et al., 2021). Carrasco et al. (2020) in his systematic review found a greater risk of suicidal ideation, attempts in subjects under 35 years of age. In Spain, suicide has been documented as the leading cause of death among young people aged 15 to 29 in 2021 (National Institute of Statistics [NIS], 2023).

A university is a gateway through which it is possible to reach a large number of young adults, not only enrolled students but also through the bridges connecting their circles of friends (Harrod et al., 2014). Among university students, the prevalence of suicidal ideation ranges from 5% to 35% (Eskin et al., 2016; Han et al., 2017; Mortier et al., 2018a; Pedrelli et al., 2015; Robins & Fiske, 2009; Wong et al., 2011). The study by Blasco et al. (2019) reported a prevalence of 9.9% of suicide ideation among Spanish university students and 0.6% of suicide attempts. In turn, a recent study carried out at the University of Malaga informed of a prevalence of up to 30.4% of suicidal behaviour among students (Ramos-Martín et al., 2023). This later study by Ramos-Martín et al. (2023) reported a slightly higher rate of suicidal ideation (13.6%), whereas the rate of suicidal attempts remained almost equal (0.5%). These figures are in line with those obtained in a 2018 meta-analysis that covered studies from 1980 to 2016 carried out in the USA, Canada, Asia, Europe, and Uganda, and reported a prevalence of suicidal ideation in university students that ranged from 22.62% considering lifetime prevalence to 10.62% referring to the last year (Mortier et al., 2018a). However, accurately estimating suicide attempts is challenging, because hospitals are likely to assist attempts that are not officially categorised as such, thus remaining outside the statistics (Miller & Glinksi, 2000; NIS, 2023). These data highlight the need to develop prevention programs focused

on early adulthood (Feliciano-López et al., 2017; Harrod et al., 2014; Mortier et al., 2018b; Pedrelli et al., 2015; Ramos-Martín et al., 2023).

It is necessary to focus on literacy not only among healthcare professionals but also among the general population and in particular among university students, to encourage the development of prevention programs, seeking help, and resources that could save lives (Auerbach et al., 2016; Eskin et al., 2016; King, 2008; Moreno-Küstner & Ramos, 2022; Mortier et al., 2018b; Pedrelli et al., 2015; Schicker, 2011). Despite efforts to prioritise suicide prevention (WHO, 2021b), a national prevention strategy in Spain is still lacking. Likewise, actually, in Spain, few universities have a suicide prevention program. For example, the Universities of Almeria (University of Almeria, 2022), Malaga (Moreno-Küstner & Ramos-Martín, 2022), Murcia (Universidad de Murcia, 2022), and Granada (Universidad de Granada, 2023) have developed or are currently working on a suicide prevention plan. All of these programs consider literacy on suicide a keystone in its prevention and have, among their strategies, conferences and/or seminars on this topic. Given the existing data on suicidal behavior within this population it is vital to understand their literacy level in order to develop and implement prevention programs.

UNIVERSITY STUDENTS' LITERACY ON SUICIDAL BEHAVIOUR AND DIMENSIONS

Previous research has shown that the prevention of specific health and social phenomena necessarily relies on literacy in the respective matters, especially when it comes to topics marked by social stigma or silence, such as suicide (Feliciano-López et al., 2017; Rueda et al., 2021). Therefore, understanding the literacy level of university students is crucial for suicide prevention.

In line with the above, university students' literacy of suicide has been studied concerning their ideas about its causes/triggers, risk factors, treatment/prevention and signs (Calear et al., 2022; Chan et al., 2014). Several studies indicate suicide literacy levels range from moderate to intermediate in Australia (Batterham et al., 2013; Calear et al., 2022) to low in Turkey, India, and China (Arafat et al., 2022; Han et al., 2017; Öztürk & Akin, 2018). Previous studies have pointed out that although university students possess some knowledge, it can be improved, particularly in recognising its causes/triggers, risk factors and signs (Calear et al., 2022; Chan et al., 2014; Otzurk & Akin, 2018). In these studies, participants appeared to have more difficulties or lower means of recognising signs and risk factors associated with suicidal behaviour and better means in treatment/prevention dimension and cause/triggers (Calear et al., 2022; Chan et al., 2014; Ludwig et al., 2022). In line with the literature on mental health literacy, these gaps, such as poor recognition of signs and understanding of suicide risk factors, may lead to a lower likelihood of

early detection for preventing suicidal behaviour, so it is essential to act accordingly to improve this knowledge. Obtaining this background is important in order to take it into account for preventive strategies. Considering these differences in knowledge helps us guide more timely strategies that respond more directly to the knowledge needs that the population is experiencing.

VARIABLES RELATED TO THE LITERACY LEVEL OF SUICIDAL BEHAVIOUR

Previous international scientific literature suggests that certain variables influence university students' literacy levels. Among them, the relationship between the field of study and the level of literacy on suicidal behaviour has been studied. Chan et al. (2014) conducted a study in which they compared the suicide knowledge of university students with that of medical students and postgraduate medical students. Interestingly, final-year postgraduate and undergraduate students had significantly higher levels of mental health literacy than other medical students or general university staff and students. In addition, the research by Arafat et al. (2022) also found that suicide literacy was significantly higher in students of medicine. All this shows that generally, the university population has more deficiencies in their knowledge of suicidal behaviour, a finding consistent with studies involving health science students (Chan et al., 2014; Öztürk & Akin, 2018). However, it remains to be seen whether the relationship between the area of knowledge and the level of literacy is still being examined, a point that is important to address in order to design prevention programs aimed at those who need them and where they are needed (Calear et al., 2022).

Another variable that the research has also explored is whether having a history of psychological problems or suicidal behaviour, both personal and family, influences knowledge about suicidal behaviour. The results found so far are contradictory. A recent study has shown that suicide literacy was significantly higher, having a family history of suicidal attempts and non-fatal suicide attempts (Arafat et al., 2022). Also, Batterham et al. (2013) found that people with a previous history of suicide had a higher level of literacy than those without such a background. Deane et al. (2001) also reported a positive association between previous experiences of suicidal behaviour in the family and the level of literacy, in this case, among university students. Öztürk and Akin (2018) found that students who had previously a psychiatric consultation or received a psychiatric diagnosis obtained a higher average of statistically significant literacy of suicide scores compared to students who had not received psychiatric support. This research also found that students who had had suicidal ideation or suicide attempts in the past had a higher average of statistically significant literacy of suicide scores compared to students who had not thought about or attempted suicide. However, other studies have not found this association between suicidal

behaviour and psychological problems, neither personal nor in the family, with suicide literacy, in either university students or the general population (Calear et al., 2022; Goldney et al., 2002). So, does previous experience with suicidal behaviour influence knowledge about it? What about a history of psychological problems? These are questions to which answers are still to be found. Such answers will be helpful in order to better understand how to approach suicide behaviour literacy and its role in the prevention of suicidal behaviour.

The general objective of this study is to measure suicide literacy in the context of Spanish university students. We proposed the following specific objectives:

1. To determine the level of literacy regarding suicide.
2. To determine if there are differences in knowledge across the dimensions of suicidal behaviour: signs, risk factors, causes/triggers, and treatment/prevention.
3. To explore potential differences in the level of knowledge and dimensions among different fields of study: arts and humanities, sciences, health sciences, and social sciences.
4. To explore potential differences in the knowledge level and dimensions based on a history of personal or familial psychological problems.
5. To explore potential differences in the level of knowledge and dimensions based on the presence of a history of personal or familial suicidal behaviour.

These objectives lead to the following hypotheses for this study:

1. The overall level of knowledge demonstrated by the participants will be moderate.
2. The risk factors and signs dimension will be the area with the most significant knowledge deficit.
3. Health science participants will demonstrate a more thorough knowledge than those from arts and humanities, social sciences, and sciences fields.
4. Participants with a history of personal or familial psychological problems will demonstrate better knowledge compared to those without such a history.
5. Participants with a history of personal or familial suicidal behaviour will demonstrate better knowledge compared to those without such a history.

METHODS

Design

The present study has a design exploratory, cross-sectional and ex post fact to assess the level of suicide literacy in an incidental sample of university students.

Participants

The initial sample comprised 474 students of the University of Malaga (Spain). After applying the inclusion criterion of age between 18 and 30 years, the final sample resulted in 443 participants. Regarding gender, 82.2% were female. The mean age was 20.83 years (*SD* = 2.44). Table 1 provides detailed information about the participants' field of study, the current level of education, and personal and/or family history of psychological problems or history of suicidal behaviour. It should be noted that most participants were students with 19 different academic degrees.

Table 1
Participants' information

		Percentage of participants (*N* = 443)
Gender	Male	17.3%
	Female	82.2%
	Other	0.5%
Field of study	Arts and humanities	5.6%
	Science	1.3%
	Health sciences	66.2%
	Social sciences	26.9%
Current level of education	Graduate	89.1%
	Postgraduate	10.9%
History of psychological problems	Personal	11.1%
	Family	18.7%
	Personal and Familiy	29.1%
	None	41.1%
History of suicidal behaviour	Personal	9.1%
	Family	25.7%
	Personal and Family	5.4%
	None	59.8%

Procedure

Participants were collected from students from various faculties of the University of Malaga. Each participant was informed of the purpose of the study before voluntarily attending a lecture about this topic at their faculty. They gave their

informed consent after their approval to participate in the study. The evaluation of the instruments described further down was subsequently carried out in digital format using the Google Form platform. Confidentiality and anonymity of data were ensured.

Instruments

Firstly, we used an ad hoc questionnaire to collect the following sociodemographic information: age, gender (male, female, other), fields of study (arts and humanities, sciences, health sciences and social sciences), personal or family history of mental health problems and personal or familial history of suicidal behaviour (yes/no).

Literacy of Suicide Scale, short form (LOSS-SF). This scale measures literacy (knowledge) about suicidal behaviour and has been used in previous studies carried out with university students (Calear et al., 2022; Chan et al., 2014; Rivera-Segarra et al., 2018). The original 27-item English version was developed by Chan et al. (2014), the Spanish version was adapted by Rivera-Segarra et al. (2018). Subsequently Calear et al. (2022) reduced the scale to 12 items in its English short form version. This version was used for the present study by selecting the 12 corresponding items from the Spanish version translated by Rivera-Segarra et al. (2018). Finally, the Spanish version short version was tested in the Spanish adult population by Collado et al. (2023). It consists of 12 items with a true/false/do not know response format (correct answers are assigned a score of 1, and incorrect answers or lack of response receive 0 points). The total score of the questionnaire is calculated by summing the scores of the items answered correctly. The range of scores is from 0 to 12 https://orcid.org/0000-0002-3517-1307. These items are grouped into four subscales: knowledge of (1) causes/triggers (2) risk factors, (3) treatment/prevention, and (4) signs. The score for each subscale is obtained in the same way, the range of scores for the knowledge of causes/triggers of suicide dimension is 0 to 4, in the knowledge of risk factors dimension the range of scores is 0 to 3, in the knowledge of treatment/prevention the range of scores is from 0 to 2, and in Knowledge of Signs the range of scores is 0 to 3. Higher scores indicate greater literacy about suicide. The Cronbach's alpha for the scale in the present sample was 0.79, showing adequate internal consistency. The scale adapted to Spanish by Collado et al. (2023) can be found in Appendix 1.

Statistical Analysis

The statistical analysis of the data was conducted using SPSS. Initially, the LOSS-SF scores were transformed to a range from 0 to 10, a more accessible and reader-

friendly range. This process is known as rescaling or normalisation and is common in psychometrics, education and social sciences to facilitate the interpretation of results (Cohen & Swerdlik, 2018). The procedure initially determines the minimum value (Xmin) and the maximum value (Xmax) of the original questionnaire scores, subtracts the minimum value from each score and divides it by the result of subtracting the maximum value minus the minimum value. Finally, the result is multiplied by ten to ensure that the transformed score is within the desired range. Measures of central tendency, such as mean and standard deviation, and percentages, were calculated. To compare mean scores, we used Student's *t-tests* and analysis of variance (ANOVA) or repeated measures analysis of variance (RM-ANOVA), depending on whether the comparison was made between two or more groups. Post hoc comparison analyses were used to identify significant differences between two scores. To estimate the effect sizes of the differences between scores, Eta squared (η^2) was used to measure the proportion of the total variance of the dependent variable explained by the differences between groups. The interpretation criteria for Eta squared are values close to 0.01 as small effect sizes, values around 0.06 are valued as moderate effect sizes, and values close to 0.14 are valued as large effect sizes. Similarly, to estimate effect sizes by comparing the scores between two groups, we used Cohen's d (Cohen & Swerdlik, 2018). The interpretation of Cohen's d-value results ranges from small effect sizes around scores of 0.2, moderate effect sizes at scores around 0.5, and large effect sizes for values around 0.8.

A confirmatory factor analysis was conducted to examine the factor structure of the dimensions of LOSS-SF. First, a single factor with the twelve items was assessed. The results showed a satisfactory fit of the data (X2 (54) = 56.3, p = 0.390, CFI = 0.94, TLI = 0.93, RMSEA = 0.009, and SRMR = 0.035). The factor structure of LOSS-SF indicated in the Appendix 1 corresponding to the original version (Calear et al., 2022) and the Spanish version (Collado et al., 2023) was then checked. The results showed a satisfactory fit of the data (X2 (44) = 46.9; p = 0.355, CFI = 0.93, TLI = 0.90, RMSEA = 0.011, and SRMR = 0.032). Thus, both factor structures of the LOSS-SF are adequate.

RESULTS

In the descriptive analyses, the LOSS-SF indicated a total mean score of 7.85 (SD = 0.89), which reflects high suicide literacy among university students. Breaking it down by dimensions, the causes/triggers dimension had a mean score of 6.80 (SD = 1.81), the risk factors dimension had a mean score of 8.67 (SD = 1.71), the treatment/prevention dimension had a mean score of 6.52 (SD = 2.44), and the signs dimension had a mean score of 6.80 (SD = 1.81). Comparing these scores between dimensions, the results of mean scores by RM-ANOVA found significant differences

(F = 128.05, p < 0.001, η2 = 0.22). The causes/triggers and signs dimensions showed similar mean scores, and significant statistical differences compared to the risk factors dimension. Scores on the risk factor dimension showed significantly higher scores than the cause/trigger dimension (t = 15.40, p < 0.001, d = 0.95), higher compared with treatment/prevention scores (t = 15.76, p < 0.001, d = 1.09), and also higher scores than the sign dimension (t = 15.40, p < 0.001, d = 0.95).

In the comparative analyses of mean scores, significant differences were identified in LOSS-SF scores and dimensions based on the participant's field of study, personal or familial history of mental health problems, and history of suicide attempts. The results are presented in Table 2. First, there are not significant differences in total LOSS-SF mean scores between students from different fields of study. Second, significant differences were found in the mean scores of the causes/triggers dimension by field of study of students. Students from health science showed significant lower scores than students from social sciences (t = 4.04, p < 0.001, d = 0.46). Also, students from health science showed significant lower scores than students from arts and humanities (t = 2.80, p = 0.027, d = 0.62). Third, significant differences were found in the mean scores of the risk factors dimension. Students from health science showed significant lower scores than students from social sciences (t = 4.04, p < 0.001, d = 0.46). Fourth, not significant differences were found in the mean scores of the treatment/prevention dimension. Finally, significant differences were found in the mean scores of the signs dimension. Students from health science showed significant lower scores than students from social sciences (t = 4.04, p < 0.001, d = 0.46). Also, student from health science showed significant lower scores than students from arts and humanities (t = 2.80, p = 0.027, d = 0.62).

Table 2

Comparative results on the total mean score and each dimension of the LOSS-SF according to field of study*

	Field of study	**Mean**	*SD*	*F*	*p*	η^2
Total mean score on literacy	Arts and Humanities	8.06	0.83	0.71	0.545	0.01
	Sciences	7.83	0.45			
	Health Sciences	7.79	0.90			
	Social Sciences	7.87	0.92			
	Dimensions					
Causes/ triggers	Arts and Humanities	7.61	1.80	7.14	<0.001	0.05
	Sciences	6.50	1.37			
	Health Sciences	6.52	1.83			
	Social Sciences	7.33	1.54			

	Field of study	Mean	*SD*	*F*	*p*	η^2
Risks factors	Arts and Humanities	8.93	1.58	3.76	0.011	0.03
	Sciences	7.33	1.49			
	Health Sciences	8.82	1.62			
	Social Sciences	8.28	1.90			
Treatment/ Prevention	Arts and Humanities	6.13	2.14	2.04	0.108	0.01
	Sciences	9.00	2.23			
	Health Sciences	6.51	2.50			
	Social Sciences	6.35	2.33			
Signs	Arts and Humanities	7.61	1.80	7.14	<0.001	0.05
	Sciences	6.50	1.37			
	Health Sciences	6.52	1.83			
	Social Sciences	7.33	1.54			

*LOSS-SF: Literacy of Suicide Scale, short form

On the other hand, to explore potential differences in mean scores between participants with and without a history of personal or familial psychological problems, we conducted comparative analyses of the total mean score on literacy and means score in each dimension. The results are presented in Table 3. Significant differences were found in the total mean score literacy and in the mean scores on the risks factors dimension. The magnitude of the effect sizes between the mean score differences found were low. University students who have had some kind of psychological problem in their lives reported higher total mean score on literacy, as well as greater knowledge about suicide risks factors than their peers who have not had history of personal or familial psychological problems.

Table 3

Comparative results on the total mean score and each dimension of the LOSS-SF by participants with and without a history of personal or familial psychological problems*

	History of personal or familial psychological problems	Mean	*SD*	*t*	*p*	*d*
Total mean score on literacy	No	7.22	1.33	-2.79	0.005	0.258
	Yes	7.54	1.14			
Causes/triggers	No	5.98	2.28	-0.98	0.323	0.096
	Yes	6.19	2.06			

	History of personal or familial psychological problems	Mean	*SD*	*t*	*p*	*d*
Risks factors	No Yes	8.27 8.64	2.09 1.81	-1.99	0.047	0.189
Treatment/ prevention	No Yes	6.12 6.35	2.56 2.64	-0.91	0.360	0.088
Signs	No Yes	5.98 6.19	2.28 2.06	-0.98	0.323	0.096

*LOSS-SF: Literacy of Suicide Scale, short form

Finally, to analyse whether there were differences in total mean score on literacy and dimensions score between participants with and without a history of personal or familial suicide behaviour, we conducted comparative analyses. The results showed no significant differences in the total mean score on literacy nor in any of the dimensions. These results are presented in Table 4.

Table 4

Comparative results on the total mean score and each dimension of the LOSS-SF by participants with and without a history of personal or familial suicide attempts*

	History of personal or familial suicide attempts	Mean	*SD*	*t*	*p*	*d*
Total mean score on literacy	No Yes	7.32 7.54	1.28 1.16	-1.91	0.056	0.177
Causes/triggers	No Yes	6.00 6.25	2.16 2.14	-1.24	0.213	0.115
Risks factors	No Yes	8.35 8.69	2.00 1.84	-1.95	0.051	0.180
Treatment/prevention	No Yes	6.30 6.23	2.67 2.56	0.29	0.768	0.027
Signs	No Yes	6.00 6.25	2.16 2.14	-1.24	0.213	0.115

*LOSS-SF: Literacy of Suicide Scale, short form

DISCUSSION

Our study presents a descriptive and exploratory approach to suicidal literacy among students at the University of Malaga because understanding what a given population knows about a phenomenon is important for designing effective prevention programs (Jorm, 2000; Jorm et al., 2003). The current sample was 82.2% female, which is common in this study area when participation is voluntary (Dovidio et al., 2012). Regarding the field of study, 66.2% of the sample was drawn from the field of health sciences and only 1.3% to the field of science. The rest of the sample was distributed among social sciences (26.9%) and arts and humanities (5.6%). When asked about the history of psychological problems and suicidal behaviour, both personal and within the family, more than half of the participants (58.9%) acknowledged having a personal or family history of psychological problems, and 40.2% had a history of suicide. Our participants demonstrated high suicide literacy (7.85 out of 10). To be clear, these students had not received any information about suicide as part of the university's prevention program prior to administering the questionnaire. This result improves the initial prediction of the hypothesis of the present work assuming moderate levels of knowledgement, obtaining a higher mean knowledge of suicide literacy. A comparison of the present results with those obtained in previous studies on a sample of the Spanish general population (Collado et al., 2023) suggests that the literacy of university students is higher than those found in previous studies. The main difference between the samples of previous studies and the sample of the present study is the difference in the mean age. In the previous study (Collado et al., 2023) assessing suicide literacy, the mean age was 46.62 years, while the mean age of the present sample was 20.83 years. A younger population may be more knowledgeable and literacy-oriented than previous generations. It is also consistent with other previous studies that examine suicide literacy among university students, finding high scores in the young university population (Arafat et al., 2022; Chan et al., 2014; Ötzürk & Akin, 2018). In this regard, some of these researchers have previously suggested that stigma, limited knowledge and various sociocultural factors may contribute to low levels of literacy about suicide (Aldalaykeh et al., 2020; Arafat et al., 2022; Chan et al., 2014). As far as we know, Spanish society is making a reasonable effort to destigmatise suicidal behaviour and disseminate support resources, so sociocultural variables may be helping to achieve a more moderate level of literacy in suicidal behaviour in this regard. On the other hand, it is important to mention that a positive correlation has been reported between higher educational levels and better knowledge of suicidal behaviour (Batterham et al., 2013; Ludwig et al., 2022; Nakamura et al., 2023). In this sense, it can be considered that university students have a higher level of

education and this may also be as a result of their higher knowledge about suicidal behaviour.

Regarding the second hypothesis of exploring possible differences in the level of knowledge across the dimensions of suicidal behaviour—causes/triggers, risk factors, treatment/prevention, and signs—the results demonstrated that the dimensions with the lowest average literacy levels were causes/triggers and signs, followed by treatment/prevention dimension. Contrary to the hypothesis, the highest score was observed in the risk factors dimension. These findings are mostly aligned with several previous studies in which university students from Australia, China, Germany, and Turkey also showed more difficulties or lower averages in recognising the signs, risk factors, and causes/triggers of suicidal behaviour but found questions related to seeking help or treatment easier (Aldalaykeh et al., 2020; Calear et al., 2022; Chan et al., 2014; Ludwig et al., 2022; Öztürk & Akin, 2018). Similarly, Collado et al. (2023), in their study with a Spanish population, found that participants in the sample also had difficulty responding to questions about the signs and causes/triggers of suicide, as well as risk factors. However, participants provided accurate responses regarding seeking help or treatment as a preventive measure. This suggests variability in how different populations internalise aspects of suicide literacy. On reflection, since no previous initiatives had been implemented at the university before the scale was passed, the increased awareness of risk factors in this population could reflect broader societal trends, such as increased media coverage of mental health issues or growing public awareness of suicide prevention in Spain. This emphasises the need for tailored educational interventions focusing on areas of weakness, such as identifying causes/triggers and signs, while reinforcing strengths, like understanding risk factors. By addressing these gaps, we can equip individuals with the necessary knowledge for early detection and prevention, ultimately enhancing the effectiveness of suicide prevention strategies.

In summary, as Calear et al. (2022) previously emphasised and in light of the findings of this study, it is crucial to adopt an educational approach to recognising the signs, causes/triggers, and risk factors of suicide—both in oneself and in others, such as family and friends—as this could enhance the effectiveness of suicide sensitisation strategies. Addressing these gaps in literacy, such as the poor recognition of signs and limited understanding of the causes/triggers of suicidal behaviour, is essential, as they may lead to a lower likelihood of early detection and prevention of suicidal behaviour. Thus, it is vital to take steps to improve this knowledge and incorporate it into preventive strategies. Considering these differences in knowledge allows us to guide more timely and targeted strategies that address the specific knowledge needs of the population.

With regard to the third hypothesis that students from health science programs would demonstrate higher literacy compared to students in other fields, there are not significant differences in total literacy scores between students from different fields of study. Students in the arts and humanities had the highest scores, while students in the sciences and health sciences had the lowest scores, respectively. The findings showing that students from the sciences and health sciences scored lower on suicide literacy compared to those from the arts and humanities may seem counterintuitive, given the expectation that health science students would have a stronger foundation in such topics. However, this result aligns with previous research indicating that the general university population, including health science students, often has significant gaps in their knowledge of suicidal behaviour (Chan et al., 2014; Öztürk & Akin, 2018). This suggests that, despite their academic focus, students in these fields may not be adequately exposed to or educated about suicide-related topics within their curricula. It is crucial to explore further the relationship between the field of study and suicide literacy, as addressing these knowledge deficiencies is essential for developing effective prevention programs tailored to the specific needs of various student populations (Calear et al., 2022). Notably, our sample was incidental, so it is also likely that the small percentage of students who attended the lecture in the arts and humanities fields might have been highly motivated and interested in the topic, which may skew the literacy average.

Regarding the fourth hypothesis, and as was expected, university students with a history of psychological problems (both personal or familial) demonstrated higher total suicide literacy than their peers without such a history. This aligns with previous findings that students with a history of psychological problems would have better literacy (Batterham et al., 2013; Calear et al., 2024; Deane et al., 2001). It reinforces the link between mental health problems and a greater interest in knowledge of suicide, as previously documented (Calear et al., 2024; Deane et al., 2001; Žilinskas, & Lesinskienė, 2023). In other words, they suggest that personal or familial experiences with psychological issues often lead to heightened awareness and understanding of suicide-related topics.

Contrary to expectations, the fifth hypothesis did not show significant differences in total literacy scores or knowledge of signs between participants with or without a history of personal or familial suicidal behaviour. This finding aligns with studies such as Calear et al. (2022) and Goldney et al. (2002), which did not find a clear association between suicidal behavior or psychological problems (either personal or familial) and suicide literacy in university students or the general population. Therefore, this result is not contradictory to the literature but suggests that personal experiences with suicidal behaviour may not always lead to better literacy, even though such a relationship is commonly observed (Arafat et al., 2022; Batterham et al., 2013; Deane et al., 2001). Our study indicates that personal histories of suicidal

behaviour may not necessarily lead to greater suicide literacy. Further research is needed to clarify how these experiences and antecedents influence suicide literacy. This discrepancy may reflect a gap in how these experiences are internalised or processed in terms of knowledge acquisition, suggesting that having a history of suicidal behaviour does not always translate into a better understanding of the signs of suicide or a broader suicide literacy. The above highlights that there is still a pending issue in universities at a social level: raising awareness that having literacy to prevent suicide is everyone's business and that awareness must permeate the general population, whether or not they have a history of suicide, in order to be able to act from universal prevention.

The main limitation of this study relates to the sample selection procedure because our sample was incidental and our design study transversal. The participants voluntarily attended the lecture and, thus, likely were driven by motivation and interest in the topic. Furthermore, the imbalance in gender and the size of the groups by fields of study prevent comparisons from being made adequately. This is a common phenomenon in psychology studies (Dovidio et al., 2012; Ferragut et al., 2020). Despite these limitations, as far as we know this is the first study on suicide behaviour literacy conducted among the Spanish university population, the findings open the door for the design of truly effective prevention programs developed in the university setting and to be replicated while overcoming the limitations noted. Along these lines in the future, continuing to gather evidence on this matter assessing the impact of interventions and measuring the knowledge gained through them is crucial.

We encourage lecturers, as reference figures for students, to become active agents in promoting mental health and preventing problems. To achieve this, it is necessary not only to facilitate student attendance at events on the topic offered by the university but also to incentivise it. We encourage educational leaders to expand their perspectives and view university education as part of comprehensive personal development.

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APPENDIX 1

Scale of Suicide Literacy, short form (LOSS-SF), original scale by Calear et al., (2022) and Spanish version adapted by Collado et al., (2023).

The scale presents a series of statements about suicide, and you have to answer whether each statement is true or false [La escala presenta una serie de afirmaciones sobre el suicidio, y debéis responder si cada afirmación es verdadera o falsa].

1. If assessed by a psychiatrist, everyone who suicides would be diagnosed as depressed [Si fueran valorados por un psiquiatra, todos los que se suicidan serían diagnosticados de depresión].[d]
2. Seeing a psychiatrist or psychologist can help prevent someone from suicide [Consultar a un psiquiatra o psicólogo puede ayudar a prevenir que alguien se suicide].[d]
3. Most people who suicide are psychotic [La mayoría de las personas que se suicidan son psicóticas].[d]
4. There is a strong relationship between alcoholism and suicide [Existe una fuerte relación entre el alcoholismo y el suicidio].[a]
5. People who talk about suicide rarely commit suicide [Las personas que hablan del suicidio rara vez terminan suicidándose].[a]
6. People who want to attempt suicide can change their mind quickly [Las personas que quieren intentar suicidarse pueden cambiar de opinión rápidamente].[a]
7. Talking about suicide always increases the risk of suicide [Hablar de suicidio siempre aumenta el riesgo de suicidio].[a]
8. Not all people who attempt suicide plan their attempt in advance [No todas las personas que intentan suicidarse planifican su intento con antelación].[b]
9. People who have thoughts about suicide should not tell others about it [Las personas que tienen pensamientos suicidas no deben decírselo a otros].[b]
10. Very few people have thoughts about suicide [Muy pocas personas tienen pensamientos suicidas].[b]
11. Men are more likely to suicide than women [Los hombres son más propensos a suicidarse que las mujeres].[c]
12. A suicidal person will always be suicidal and entertain thoughts of suicide [Una persona suicida siempre será un suicida y tendrá pensamientos de suicidio].[c]

([a]) Knowledge of Causes/Triggers of Suicide ([b]) Knowledge of Risk Factors, ([c]) Knowledge of Treatment/Prevention, and ([d]) Knowledge of Signs.

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