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VULNERABILIDADE PSICOLÓGICA, LITERACIA EM SAÚDE MENTAL, SAÚDE MENTAL POSITIVA E COMPORTAMENTOS DE SAÚDE EM ESTUDANTES DO ENSINO SUPERIOR
PSYCHOLOGICAL VULNERABILITY, MENTAL HEALTH LITERACY, POSITIVE MENTAL HEALTH AND HEALTH BEHAVIOURS IN HIGHER EDUCATION STUDENTS
VULNERABILIDAD PSICOLÓGICA, ALFABETIZACIÓN EN SALUD MENTAL, SALUD MENTAL POSITIVA Y COMPORTAMIENTOS SALUDABLES EN ESTUDIANTES DE ENSEÑANZA SUPERIOR

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RESUMO

Introdução: A vulnerabilidade psicológica e a baixa literacia em saúde mental estão negativamente correlacionadas com a saúde mental positiva nos estudantes do ensino superior. Estas correlações negativas atrasam o reconhecimento das manifestações das perturbações mentais e a procura de ajuda profissional. Os baixos níveis de literacia em saúde mental limitam a autoajuda, as estratégias de coping adaptativas e o sucesso académico. No entanto, poucos estudos examinam a associação entre a vulnerabilidade psicológica dos alunos, a literacia em saúde mental e a saúde mental positiva.

Objetivo: Explicar a relação entre vulnerabilidade psicológica, literacia em saúde mental e saúde mental positiva em estudantes do ensino superior.

Métodos: Foi utilizado um estudo correlacional transversal numa amostra de 3.600 estudantes universitários.

Resultados: Os participantes são maioritariamente mulheres (78,8%), com uma média de idades de 23 anos (DP = 6,68), não praticam exercício físico, estão insatisfeitas com a qualidade do sono por noite (62,1% dormem menos de 7 horas por noite) e não têm atividades de lazer. A maioria tem níveis elevados de Vulnerabilidade Psicológica, e baixos níveis de literacia em saúde mental e de Satisfação pessoal; 67,9% alocaram-se no grupo *flourishing*. Os resultados mostram diferenças significativas ($p < 0,001$) entre o sexo, a idade, o sono, praticar ou não exercício físico, a alimentação, as atividades de lazer e a Vulnerabilidade Psicológica, a Saúde mental positiva e a literacia em saúde mental.

Conclusão: Os resultados identificam fatores de vulnerabilidade modificáveis que justificam, em Portugal, a implementação de programas de intervenção destinados a promover a literacia e a Saúde mental positiva nos *campus*, visando capacitar os estudantes com estratégias eficazes de bem-estar e de autoajuda.

Palavras-chave: promoção da saúde; literacia; saúde mental positiva; vulnerabilidade psicológica; estudantes

ABSTRACT

Introduction: Psychological vulnerability and low mental health literacy correlate negatively with positive mental health in higher education students. These negative correlates delay recognizing mental disorders' manifestations and the search for professional help. Low levels of mental health literacy limit self-help, adaptative coping strategies, and academic success. However, few studies examine the association between students' psychological vulnerability, mental health literacy, and positive mental health.

Objective: To explain the relationship between psychological vulnerability, mental health literacy and positive mental health in higher education students.

Methods: A cross-sectional correlational study was used in a sample of 3600 undergraduate students.

Results: Participants were mostly female (78.8%), with an average age of 23 years (SD = 6.68). The majority do not exercise, are dissatisfied with sleep quality time per night (62.1% sleep less than 7 hours per night), and do not have leisure activities. The majority have high levels of Psychological vulnerability, low literacy levels, and Personal Satisfaction; and 67,9% scored in the *flourishing* group. Results show significant differences ($p < 0.001$) between sex, age, sleep, exercise, diet, leisure activities, Psychological vulnerability, positive mental health, and literacy.

Conclusion: The results identify modifiable. Vulnerability factors justify intervention-targeted programs to promote literacy and positive mental health in higher education *campuses* in Portugal to empower students with effective well-being and self-help strategies.

Keywords: nursing health promotion; literacy; positive mental health; psychological vulnerability; students

RESUMEN

Introducción: La vulnerabilidad psicológica y la baja alfabetización en salud mental se correlacionan negativamente con la salud mental positiva en estudiantes de educación superior. Estas correlaciones negativas retrasan el reconocimiento de las manifestaciones de los trastornos mentales y la búsqueda de ayuda profesional. Los bajos niveles de alfabetización en salud mental limitan la autoayuda, las estrategias de afrontamiento adaptativas y el éxito académico. Sin embargo, pocos estudios examinan la asociación entre la vulnerabilidad psicológica de los estudiantes, la alfabetización en salud mental y la salud mental positiva.

Objetivo: Explicar la relación entre vulnerabilidad psicológica, alfabetización en salud mental y salud mental positiva en estudiantes de enseñanza superior.

Métodos: Se utilizó un estudio correlacional transversal en una muestra de 3600 estudiantes universitarios.

Resultados: Los participantes son en su mayoría mujeres (78,8%), con una edad media de 23 años (DE = 6,68), no practican ejercicio físico, están insatisfechas con el tiempo de calidad del sueño por noche (el 62,1% duerme menos de 7 horas por noche) y no tienen actividades de ocio. La mayoría tiene altos niveles de vulnerabilidad psicológica, bajos niveles de alfabetización en salud mental, y de Satisfacción personal; y el 67,9% se situó en el grupo *flourishing*. Los resultados muestran diferencias significativas ($p < 0,001$) entre sexo, edad, sueño, practicar ejercicio, dieta, actividades de ocio y vulnerabilidad psicológica, salud mental positiva y alfabetización.

Conclusion: Los resultados identifican factores de vulnerabilidad modificables que justifican la implementación de programas de intervención dirigidos a promover la alfabetización y salud mental positiva en los *campus* universitarios en Portugal para empoderar a los estudiantes con estrategias efectivas de bienestar y autoayuda.

Palabras clave: promoción de la salud en enfermería; alfabetización; salud mental positiva; vulnerabilidad psicológica; estudiantes

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INTRODUCTION

Higher education students are exposed to wide-ranging modifiable variables that can deprive their mental health. Hence, students' positive mental health (PMH) is essential to deal with adversity daily. Research shows that low mental health literacy negatively correlates with higher education students' positive mental health (Nogueira et al., 2022). Foremost, students' optimal state of mental health is required to achieve positive results at a personal level and in academic performance and success (Loureiro & Sousa, 2019; Sequeira et al., 2019). Also, literature shows that some health variables negatively influence students' positive mental health (Teixeira et al., 2022). Additionally, recent studies in higher education students show that psychological vulnerability (PV) is associated with poor levels of PMH (Nogueira et al., 2022; Teixeira et al., 2022). Psychological vulnerability is a negative predictor of mental health as well as an obstacle to well-being since it comprises external dependence on others for a sense of self-worth and approval and a rigid global function that makes individuals more fragile under stressful environments (Nogueira et al., 2017). Furthermore, evidence also shows that students have low levels of mental health literacy and are unaware of or make little use of adequate help-seeking strategies available on university campuses (Loureiro & Sousa, 2019; Sequeira et al., 2019).

1. THEORETICAL FRAMEWORK

The mental health literacy (MHL) concept is grounded on recognizing mental disorders, help-seeking efficacy, and help-seeking strategies covering the understanding of how to obtain and maintain good mental. MHL definition encompasses the person's knowledge and beliefs about mental problems and disorders that enable them to recognize, manage, and take preventive actions in the sense of self-care (Munawar et al., 2022). Low levels of MHL correspond to difficulties in identifying the main signs and symptoms of mental disorders and their late recognition, lack of knowledge and use of self-help strategies, and lack of knowledge about mental health first aid. MHL interventions promote positive mental health (PMH), reduce stigma, and improve higher-education students' help-seeking behaviours (Loureiro & Freitas, 2020). Low levels of MHL positively correlate with negative health outcomes and psychological vulnerability (PV) (Nogueira et al., 2022; Sequeira et al., 2019). PMH's concept encompasses the *Salutogenic* perspective once it focuses on positive factors that support health and well-being rather than on risks and problems (Bhattacharya et al., 2020). PMH is based on the strengthening and development of the optimal functioning of the human being and represents a specific instance resulting from the interaction of several factors, so it is essential to deal with adversity (Nogueira et al., 2022). Currently, students make little use of adequate help-seeking and PMH promotion strategies (Loureiro & Sousa, 2019; Sequeira et al., 2019). It is also consensual that mental and physical health are codependent as a *health continuum*, influenced by contextual characteristics as positive or negative correlates (Nogueira & Sequeira, 2018, 2020; Teixeira et al., 2022). Expanding the knowledge about changeable vulnerability factors is relevant to promoting students' healthy behaviors as well as increasing self-help strategies to increase PMH (Loureiro & Freitas, 2020). Therefore, this research aimed to study differences between PV, MHL, PMH, and health behavior variables in higher education students. Identifying modifiable vulnerability factors is important to increase students' help-seeking and to provide them with professional help.

2. METHODS

This study is a cross-sectional descriptive design. An e-questionnaire (*Google form*) was used for data collection. International students were excluded to control the bias of cultural differences. A filter restriction was used to prevent participants' multiple responses. Then a pilot test was performed with twelve students to confirm the e-questionnaire anonymization and content clarity. Thus, some minor wording was adjusted to avoid possible biases. Collaboration was requested from those responsible for educational institutions to send invitations to students to participate in the study, via institutional email. Furthermore, an automatic follow-up reminder was sent by email every ten days during the study period to increase response rates. Finally, questionnaires with more than 5% of unanswered questions were excluded. Students took an average of 17 minutes to complete the e-questionnaire.

2.1 Sample

A non-probability convenience sample of 3600 students was used from 20 in the north region of Portuguese private and public higher education institutions. Eligible participants must be aged 18 years or older.

2.2 Data collection instruments

Data were collected from November 2019 to May 2020. Students were invited to access the online Google survey form with a consent form appended to it to participate. Clicking the 'agree' button at the top of the form indicated that the participant had read and consciously consented to participate in the study. The e-questionnaire covered all variables and measures of the study. Ten demographic and health behaviour variables (sex, age, marital status, work, physical exercise, diet, sleep quality, drinking, medication, and leisure activities) were endorsed by a panel of twelve mental health experts.

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The Psychological Vulnerability Scale (PVS) Portuguese version (Nogueira et al., 2017) is a six-item self-administered instrument to measure psychological vulnerability (PV). PVS rates on a Likert scale with anchors 1 = *does not describe me at all* to 5 = *describes me very well*. Total scores range from 6 to 30, with higher scores indicating greater PV and values above 15 indicating psychological vulnerability. Portuguese version internal consistency was acceptable (*Cronbach alpha* = 0.73), and 5-week stability was excellent (Test-retest, $r = .88$, $p < .0001$) (Nogueira et al., 2017).

Mental Health Knowledge Assessment (MHKA) Portuguese version (Chaves et al., 2023) was used to measure mental health literacy. MHKA has 20 items and three subscales, quoted on a scale Likert type (1 = I disagree to 5 = I agree). MHKA's higher scores indicate a higher literacy level. The Portuguese version shows a very good internal consistency (*Cronbach alpha* = .847 (Chaves et al., 2023).

The **Positive Mental Health Questionnaire (PMHQ)** (Roldán-Merino et al., 2017) measures positive mental health. PMHQ is a 39-item self-administered instrument that scores on a 4-point Likert-type scale (1 = *Always or almost always* to 4 = *Rarely or never*). Nineteen items stated negatively, and twenty items stated positively. PMHQ has six factors: F1 Personal Satisfaction; F2 Prosocial Attitude; F3 Self-control; F4 Autonomy; F5 problem-solving and Personal Achievement; F6 Interpersonal Relationship Skills. PMHQ's total score is the sum of all items, ranging from 39 to 156 points. Higher scores correspond to better PMH status. Portuguese PMHQ shows a very good internal consistency (total Cronbach $\alpha = 0.92$ and *Cronbach's alpha* of six factors varying between 0.60 and 0.84), and test-retest (two months interval) revealed strong stability (0.98) (Sequeira et al., 2014). Qualitative analysis scores the following criteria: *languishing* (score 39–78), *Intermediate* (score 79–117), and *Flourishing* (score 118–156). With higher values representing better PMH (Kuettel et al., 2021). This study followed the Helsinki Declaration and Oviedo Convention recommendations, the approval of the Ethics Committee of Porto College of Nursing (CE-ESEP-Flow 2019_1945) and the Board Directors of institutions involved, as well as the permission of the author of all the instruments used. Participants were previously informed about the purpose and implications of the study and their right to withdraw at any time by not submitting the form and assured about the anonymization process of the data. All students gave written informed consent to participate and use the data for research purposes.

2.3 Statistical analysis

Data analyses were performed using IBM SPSS Statistics Version 29 (IBM Corp., United States). Participants were excluded since they did not accomplish the established rule for a maximum of 10% of missing values on each scale. Descriptive and exploratory statistical analysis techniques were performed using the mean, standard deviation, and minimum and maximum values. Cronbach's alpha coefficients were based on standardized items and calculated to assess internal consistency. Independent samples *t-test* and ANOVA were performed followed by Tukey's test. Results with a $p < 0.05$ were considered significant.

3. RESULTS

Participants' mean age was 23 years ($SD = 6.68$), ranging from 18 to 36 years and a large amount (80.5 %) fits the age group of 18 to 25 years, followed by the group over >30 years (12.1%) and the 26-30 group (7.4%). 78.8% were women, and 89.5% were single, the majority attended the first and second academic years (75.3% and 24.7% respectively). More than 25% work full or part-time. The majority (66.1%) do not exercise, but those who work out do it weekly ($M = 5.6 \pm 4.05$). Mainly (68.8%) stated having a healthy diet with fruit and vegetables, and nearly everyone (95.8%) reported eating three or more meals per day ($M = 4.3 \pm 2.3$). Participants (45.6%) are dissatisfied with sleep quality time per night, 62.1% reported sleeping less than 7 hours ($M = 6.7 \pm 2.8$ per night), and 6.1% took sleeping pills. The majority (84.8%) stated that they do not have any recreational or leisure activities. Table 1 summarises participants' characteristics.

DOI: <https://doi.org/10.29352/mill0227.39780>**Table 1** - Demographic and health behaviour descriptive information of the sample (N=3600).

Variables	n (%)
Sex	
Women	2832 (78.8)
Man	768 (21.2)
Age	M= 23; SD =6.68; moda = 23; median = 21
Satisfactory dating/relationship	
Single	3222 (89.5)
Married/other	378 (15.1)
Scholarship	
Yes	1341 (37.5)
No	2238 (62.5)
Part-time work	
Yes	967 (26.7)
No	2658 (73.3)
Displaced from home	
Yes	1545 (42.6)
No	2085 (57.4)
Physical exercise	
Yes	1232 (33.9)
No	2397 (66.1)
Diet (> 6 meals/day)	
Yes	2476 (68.8)
No	1123 (31.2)
Sleep Quality	
< 6 h/nigth	492 (14.8)
> 6h or more h/nigth	2830 (85.2)
Leisure activities	
Yes	550 (15.2)
No	3063 (84.8)

Table 2 presents the results obtained from the variables in the study. Results from PVS show that a large percentage (67.8 %) of participants scored above 15 points indicating that participants had a psychological vulnerability (M=17.2; SD= 5.3). Item 5 obtained the highest score (M=2.8; SD=1.3), revealing frustration with goal achievement. Results from the MHKA reveal low literacy levels in the sample, and the F1 *knowledge about mental health and mental disorders characteristics* was the subscale with the higher mean.

Results from PMHQ show very good levels of PMH. The majority (67,9%) scored in the *flourishing* group (range 118 to 156), 31,5 % in the *intermediate* group (range 79 to 117), and only 0.6% scored in the *languishing* group (range 39 to 78). As shown in Table 2, *Problem-solving and personal achievement* obtained the highest mean, and *Self-Control* was the lowest (M= 13.9; SD= 3.2), indicating an area in need of intervention to increase skills in emotional regulation and *Self-Control*.

Table 2 - Mean, SD, minimum and maximum scores of PVS, MHKA, and PMHQ N= 3600

PVS items	M (SD)	Min	Max
1. If I don't achieve my goals. I feel like a failure as a person	3.2 ± 1.3	1.0	5.0
2. I feel entitled to better treatment from others than I generally receive	2.8 ± 1.3	1.0	5.0
3. I am frequently aware of feeling inferior to other people	2.3 ± 1.3	1.0	5.0
4. I need approval from others to feel good about myself	2.2 ± 1.3	1.0	5.0
5. I tend to set goals too high and then become frustrated trying to reach them	2.8 ± 1.3	1.0	5.0
6. I often feel resentful when others take advantage of me	3.4 ± 1.4	1.0	5.0
EVP Total ($\alpha = 0.80$)	17.2 ± 5.3	6.0	30.0
MHKA			
F1 Knowledge about mental health and mental disorders characteristics	21.6 ± 2.7	6.0	25.0
F2 Belief in the epidemiology of the mental disorder	12.3 ± 2.7	5.0	25.0
3 Awareness of health promotion activities	2.4 ± 1.2	1.2	4.0
PMHQ			
F1 Personal Satisfaction (PS) $\alpha = .863$	25.8 ± 4.8	8.0	32.0
F2 Prosocial Attitude (PA) $\alpha = .551$	17.9 ± 1.9	6.0	20.0
F3 Self-control (SC) $\alpha = .824$	13.9 ± 3.2	5.0	20.0
F4 Autonomy (A) $\alpha = .761$	15.5 ± 2.9	5.0	20.0
F5 Problem-Solving and Self-Actualization (PSSA) $\alpha = .813$	28.4 ± 4.4	12.0	36.0
F6 Interpersonal Relationship Skills (IRS) $\alpha = .696$	22.3 ± 3.9	8.0	32.0
PMHQ Total ($\alpha = .921$)	123.6 ± 15.5	62	156

M: Mean, SD: Standard deviation

PVS: Psychological Vulnerability Scale, PVS Total - 6 itens[6 - 30]

MHKA: Mental Health Knowledge Subcales 14 itens[14 - 70]

PMHQ: Positive Mental Health Questionnaire, PMHQ Total - 39 itens[39-156], PS - 8 itens [8 - 32]; PA - 5 itens [5 -20]; SC - 5 itens [5-20]; A - 5 itens [5-20]; PSSA - 9 itens[9-36; IRS - 7 itens [7-28]

 α – Cronbach's Alpha

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Results presented in Table 3 show significant differences between dependent variables among the explored groups. Participants with worse levels of PV were female, younger students (18-25 years), and those who slept less than 6 hours of sleep/night. Those who eat > 6 meals/day have fewer levels of PV. Participants over 30 years old scored lower levels of PV and better levels of PMH; those who sleep > 6 hours per/night, those who exercise (>3 times/week), and those who have leisure activities. Participants with a better Literacy level were the female students at subscales F1 and F3 but not at F2, and those who eat > 6 meals/day have better F3 Awareness of health promotion activities.

Table 3 - Differences T-Test/ ANOVA between PVS, PMHQ and MHKA in demographic and health variables (N=3600)

		PVS Total		PMHQ Total		F1		MHKA F2		F3	
		M ± SD	t/F, p, ES	M ± SD	t/F, p, ES	M ± SD	t/F, p, ES	M ± SD	t/F, p, ES	M ± SD	t/F, p, ES
Sex	Female	17.6±5.3	t(3619) = 7.35,	123.4±15.4	t(3627) = -2.42,	84.8±12.8	t(956.5) = 7.14,	20.2±15.9	t(1041.4) = -9.42,	62.1±30.2	t(1037.4) = 6.93,
	Male	16.0±5.2	p<0.001 , d=0.299	124.9±15.5	p=0.015, d=-0.098	80.1±16.5	p<0.001 , d=0.347	27.1±17.8	p<0.001 , d=-0.422	52.4±33.8	p<0.001 , d=0.311
Age	18-25	17.6±5.2 ^a	F(2,528.3)=4.12,	122.8±15.4 ^b	F(2,3636)=3.09,	83.7±13.6	F(2,3401)=0.2,	21.7±16.4	F(2,3401)=0.4,	59.2±30.9 ^b	F(2,500.1)=5.3,
	26-30	16.8±5.2 ^a	p<0.001 , h2=0.025	124.9±15.7 ^b	p<0.001 , h2=0.017	84.1±14.4	p=0.853, h2<0.01	20.9±16.5	p=0.661, h2<0.001	63.0±30.5 ^{ab}	p=0.005 , h2=0.003
	31-40	15.0±5.7 ^b		128.9±14.7 ^a		84.0±14.6		22.1±17.8		64.1±33.1 ^a	
Sleep ^a	<6h	18.5±5.4	t(3625) = 6.13,	120.2±16.4	t(692.9) = -5.42,	83.6±14.1	t(3396) = -0.42,	20.1±15.4	t(714.9) = -2.43,	59.7±32.0	t(3396) = -0.31,
	>=6h	17.0±5.2	p<0.001 , d=0.288	124.3±15.2	p<0.001 , d=-0.27	83.8±13.7	p=0.673, d=-0.02	22.0±16.8	p=0.015, d=-0.111	60.2±31.1	p=0.763, d=-0.015
Exercise ^b	<3h	16.3±5.1	t(1214) = 0.91,	123.8±15.6	t(1216) = -3.63,	82.8±16.4	t(261.6) = -0.45,	23.8±18.5	t(1134) = 1.23,	57.7±30.9	t(1134) = -2.37,
	>=3h	15.9±5.3	p=0.363, d=0.068	127.8±14.6	p<0.001 , d=-0.272	83.3±13.9	p=0.655, d=-0.039	22.1±17.0	p=0.218, d=0.096	63.4±31.1	p=0.018, d=-0.185
Diet ^c	<3	19.0±5.7	t(3631) = 4.29,	116.1±17.4	t(163.5) = -5.57,	81.2±14.0	t(151.8) = -2.3,	24.0±15.4	t(3402) = 1.68,	51.2±34.5	t(3402) = -3.42,
	>=3	17.1±5.26	p<0.001 , d=0.353	124.0±15.28	p<0.001 , d=-0.517	83.9±13.7	p=0.023, d=-0.202	21.6±16.6	p=0.093, d=0.144	60.4±31.0	p<0.001 , d=-0.295
Leisure ^d	No	17.3±5.30	t(3603) = 1.92,	123.2±15.52	t(3611) = -4.56,	83.6±13.8	t(3379) = -1.95,	22.0±16.6	t(3379) = 2.33,	59.5±31.5	t(3379) = -2.38,
	Yes	16.8±5.19	p=0.055, d=0.089	126.5±14.68	p<0.001 , d=-0.211	84.9±13.7	p=0.051, d=-0.094	20.1±16.5	p=0.02, d=0.112	63.1±29.9	p=0.018, d=-0.114

Independent Samples *t*-test and ANOVA followed by Tukey's test. Lowercase letters indicate significant differences between groups ($p < 0.05$); M: Mean; SD: Standard deviation; p: two-tailed p-value; ES – Effect size (*Cohen's d* and *Eta-squared*); ^a > 6 hours of Sleep/night; ^b > 3 times/week; ^c > 6 meals/day; ^d Leisure activities Yes/No; **PVS**: Psychological Vulnerability Scale; **PMHQ**: Positive Mental Health Questionnaire; **MHKQ**: Mental Health Knowledge Questionnaire.

4. DISCUSSION

Results are similar to previous studies (Nogueira et al., 2021, 2022; Sequeira et al., 2019), and overall, clarify that older students have better levels of PMH, literacy and less VP, which is quite important to health professionals and for universities. For instance, integrating mental health services on-campus (clinics or telehealth services); Early Identification and Intervention (screening programs to identify students at risk); Training Faculty and Staff and Peer Support; Financial and Social Support Programs due to financial, emotional, or academic stressors (de Faria et al., 2023; Verlenden et al., 2021).

Also, female students have worse PV and better literacy levels, except for F2. Results show a high percentage of student-workers, mainly explained by the current socioeconomic and financial constraint context (Jacob et al., 2018) but also by the lack of time for entertaining activities, as reported by most participants. Students with leisure activities have better levels of PMH. Leisure activities have the potential to shape students individuals' internal kinship and external qualities (Richardson et al., 2017). In a recent study with 454 British undergraduate students, Richardson and colleagues found that greater loneliness predicted greater anxiety, stress, depression and general mental health over time. Leisure provides individuals with physical and psychological renewal and is relevant for students and young adults as they reinforce social skills and affective relationships (Chen & Liu, 2020; Wolitzky-Taylor et al., 2019) and deal with loneliness (Richardson et al., 2017).

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A large percentage of students reported being unsatisfied with their sleep quality, and those who sleep more than six hours per night have worse PV levels and better PMH levels. These results are in line with international findings (Ghrouz et al., 2019; Mnatzaganian et al., 2020) reporting 51% of students with poor sleep quality, as well as national studies (Mendes et al., 2019). Because difficulty in starting and maintaining sleep is common in students, this result is an alarming signal and a major concern because sleep is an important element for maintaining good general health, and unhealthy sleep has been associated with low academic performance. Students' poor sleep quality associated with reduced hours of sleep per day (during school time) is one of the robust predictors of worse mental health (Nogueira & Sequeira, 2020), physical and mental illness, depressive symptoms and anxiety (Wang & Bíró, 2021).

Results showed that adequate sleep, exercise, and diet improve positive mental health. Results from the PVS indicate a worse level of PV when compared to previous studies in similar populations (Nogueira, 2017; Nogueira & Sequeira, 2020) and this result is a major concern because PV comprises external dependence on others for self-worth and approval. It stands out that younger students present higher PV than older students, which is novel information that clarifies previous knowledge. Participants reveal difficulties in dealing with frustration and goal achievement. A recent study found that oftentimes, students prefer to handle the problem alone (56.4%) or talk with friends or relatives instead (48.0%), feeling too embarrassed to go to campus professionals (Ebert et al., 2019). Also, WMH-ICS surveys report that the majority of freshmen are hesitant to seek help in case of future emotional problems. Therefore, for fragile individuals in stressful environments, positive behaviors in seeking professional help should be reinforced. Results present modifiable vulnerability factors that allow designing programs to empower students with effective well-being and self-help strategies. This knowledge is equally relevant for future investigations, namely to identify variables that behave as predictors and negative correlates of positive mental health in students.

Results reveal low literacy levels in the sample, which is a substantial concern. However, the results align with previous results involving the general population and student samples (Oliveira et al., 2022). MHL is essential for students' health promotion because it refers to understanding how to obtain and maintain good mental health (recognise mental disorders, help-seeking efficacy, and help-seeking strategies). Results highlight the need for a significant investment in programs to promote MHL on campus as well as mental health first aid skills (Forbes et al., 2022). Good levels of MHL allow students to recognize signs and symptoms of mild to moderate problems, know when and where to seek help, and develop self-management skills for well-being versus psychological suffering.

The participants' majority scored in the *flourishing* group, however, far above the score of 83.4 found by Sequeira and colleagues in 2019 in nursing students (Sequeira et al., 2019). PMH is essential for good overall cognitive functioning (dealing with emotions, interacting socially with family and friends) making the most of individual potential, and coping with everyday life (Nogueira & Sequeira, 2020), so this is excellent news since better PMH means better lifestyles and academic achievement. *Problem-Solving and Self-Actualisation* and *Personal Satisfaction* subscale higher scores were unexpected but worthy, with data showing participants' high perception of their fulfilment, analytical and flexibility skills, and the ability to make decisions and adapt. These capacities reflect students' attitudes of self-development and growth and prosocial attitudes and autonomy. Having PMH means the ability to perceive understand and interpret the environment, to adapt and change it, if necessary, to feel good, think and communicate with others as a state of optimal functioning of the human being (Sequeira et al., 2019). These aspects, associated with the enormous ability to establish interpersonal relationships of the sample, are likely to promote students' very good mental health. Remarkably, the lowest score was found in *Self-control*, showing a lack of emotional balance and control, which may indicate students' difficulties in coping with stress in conflict situations, and anxiety. This result highlights an area in need of strategic intervention that increases tolerance to frustration and skills to manage negative emotions. The findings may have been somewhat limited by the bias of the self-report instruments, which can have led the participants to under- or over-report certain types of behaviour, depending on whether they consider it socially acceptable or not (social desirability).

CONCLUSION

Overall, participants have moderate psychological vulnerability and low literacy levels, particularly at F1- *knowledge about mental health and mental disorders characteristics*. The majority scored in the *flourishing* group, despite having self-control issues. Results show significant differences in PV, PMH, and Literacy considering sex, age, and health behaviours. The results identify modifiable vulnerability factors that justify the need to implement intervention-targeted programs to promote more positive mental health behaviours in higher education campuses in Portugal to empower students with effective well-being and self-help strategies.

AUTHORS' CONTRIBUTION

Conceptualization, M.J.N., J.C.C. and C.S.; data curation, M.J.N. and P.C.; formal analysis, M.J.N., J.C.C. and C.S.; investigation, M.J.N., J.C.C. and C.S.; methodology, M.J.N.; project administration, M.J.N.; resources, M.J.N.; software, M.J.N.; supervision, M.J.N.; validation, M.J.N., J.C.C., P.C. and C.S.; visualization, M.J.N., J.C.C. and C.S.; writing-original draft, M.J.N.; writing-review and editing, M.J.N., J.C.C., P.C. and C.S.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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