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Sociodemographic Determinants of Mental Health Literacy Among Portuguese Adolescents

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Abstract

Several studies worldwide have shown that adolescents have low levels of mental health literacy (MHL). This is a worrying situation, given the significant prevalence of mental health disorders among adolescents and the role of MHL in identifying these problems early and seeking help. This study aims to characterize MHL in Portuguese adolescents according to sociodemographic variables. The participants were 608 adolescents from the 7th to 12th grade, who filled in questionnaires on sociodemographics, MHL, and positive MHL. Bivariate analysis and hierarchical logistic regression models were conducted. A high level of adequate beliefs was found to be more likely in girls and in those whose mothers had higher levels of education. High rates of knowledge about self-help strategies were related to older age, having a mother who had a high level of education, greater subjective socioeconomic status (SSES), and better self-perception of mental health (SPMH). Help-seeking/first-aid skills were predicted by higher SSES, and lower SPMH predicted high levels of knowledge about mental health problems. Different MHL dimensions were related to diverse sociodemographic variables, and SPMH played a key role in enhancing the models' ability to explain variation in MHL—particularly in knowledge on self-help strategies. Those topics require further research. These results can be useful in the development of MHL programs tailored to the specific knowledge needs of different adolescent groups.

Keywords: mental health literacy; students; self-perception; well-being; self-care

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1. Introduction

The high prevalence of mental health problems in adolescence is a worldwide concern [1,2]. Many adolescents experience psychological problems—such as internalizing issues like depression or anxiety—that they could often be the first to recognize, during a developmental stage in which they are also striving to build their autonomy [3]. Consequently, as research has shown, many young people do not seek help for their mental health difficulties [4,5], which has led to a growing interest in understanding adolescent mental health literacy (MHL; [6]) and designing interventions to promote it, particularly within school settings [7–11]. Theory and research have proposed MHL as a protective factor in adolescent mental health, advancing toward its conceptualization as a multicomponent, multidimensional, or, more recently, multiconstruct theory [6,12]; examining its impact on mental health (e.g., [13]); and identifying the factors that influence it (i.e., its

determinants; e.g., [14]). In particular, understanding sociodemographic determinants is essential for grasping how adolescents develop MHL within the social contexts in which they live, and for tailoring interventions to specific adolescent groups and MHL dimensions. While the role of several sociodemographic determinants has been explored in previous research (most commonly gender and age) individual studies typically address only a limited number of variables (e.g., two or three), do not consider the possible influence of mental health status, and focus on a small number of MHL dimensions or rely on global measures of MHL [15]. These studies have often produced inconsistent or contradictory findings. This study, therefore, aims to establish a more comprehensive understanding of the influence of a broader set of sociodemographic variables (including mental health status) across multiple dimensions of adolescent MHL.

The concept of mental health literacy refers to "knowledge and beliefs about mental disorders that aid their recognition, management, or prevention" [16]. This involves several components: understanding how to prevent mental disorders, recognizing when a mental disorder is developing, being aware of help-seeking options and available treatments, knowing effective self-help strategies, and possessing mental health first-aid skills to support others experiencing mental health problems [6]. More recently, the concept has expanded to include positive mental health literacy (PMHL), which refers to knowledge about how to achieve and maintain good mental health [17–19]. PMHL has been gaining increasing attention, emphasizing the importance of well-being and effective functioning as central elements of mental health [20–22].

International and Portuguese studies indicate that MHL levels among adolescents are generally low [9,23,24], and factors such as culture, personal beliefs, religion, language, and one's own subjective experience seem to influence it [25–27]. Studies also show that higher MHL levels are often observed in Western populations and in more developed countries, compared to developing and less developed countries [28,29]. These differences may be attributed to a range of factors, including cultural and religious specificities, access to healthcare systems, availability of school counseling resources, levels of stigma surrounding mental health, and the degree of media literacy [28,29].

The low levels of adolescent MHL is concerning, given the high prevalence of mental disorders in this age group and their increased risk of developing other psychosocial adjustment problems, such as alcohol and cannabis use, smoking, and involvement in violent behaviors [1,30,31]. Many adolescents continue to associate mental health problems with personal weakness or view them as a "normal" part of life, which can discourage them from speaking openly and seeking help [32]. MHL plays a key role in the early recognition of mental disorders, promotes help-seeking behaviors [33], reduces stigma associated with mental illness, and supports the identification of risks to adaptive development [34]. Low levels of MHL have been linked to a worsening of existing problems, reluctance to seek professional help [35], and greater impact on psychological distress [13]. In contrast, higher levels of MHL are associated with greater overall well-being, increased empathy, and reduced bullying related to mental health issues [26,36]. MHL is increasingly recognized as a protective factor for mental health, particularly among girls [36]. Higher MHL levels are also associated with an increased ability to recognize symptoms of psychological maladjustment [37] and a greater likelihood of adolescents seeking help for mental health concerns [9,30]. Additionally, positive mental health literacy (PMHL) helps adolescents to distinguish between normal, adaptive emotional distress and actual mental health disorders. It also contributes to stigma reduction and encourages self-care strategies and help-seeking behavior when needed [9]. Ultimately, MHL plays a crucial role in promoting the use of mental health services [10,26,27].

Research has suggested that adolescents' levels of MHL vary according to sociodemographic characteristics [38]. In general, the influence of gender and age was the most studied. Girls tend to demonstrate higher levels of MHL than boys [5,14,39–41]. Adolescent boys are more likely to use broad terms (e.g., "mental illness") rather than specific diagnostic labels (e.g., "depression") when identifying mental disorders, which may contribute to difficulties in recognizing specific mental health conditions [28].

Recognition of mental health problems also tends to improve with age [35]. Younger adolescents often struggle to identify symptoms of mental disorders and may interpret them as normal reactions to external stressors, such as family conflict or peer pressure [28]. As they grow older and receive more education, adolescents tend to acquire greater mental health knowledge, show increased willingness to seek help [28,42], and demonstrate interest in learning new forms of self-help as a way to face a mental health problem [10]. A recent study by Amado-Rodríguez [14] conducted on adolescents in Catalonia found that, although participants were generally able to recognize mental disorders, their overall mental health knowledge was low. They also exhibited low levels of stigma toward individuals with mental health problems and tended to seek help from informal sources such as friends or parents [14,43]. The influence of socioeconomic status (SES) has also been studied. High SES in adolescents has been linked to high levels of MHL [13,14,44]. Families with greater resources and higher educational levels seem to be better positioned to provide developmental support to their children, positively influencing their MHL [14,44,45].

Contact with mental health problems, including others' and personal problems, have been suggested to improve information seeking on mental health issues [46], stigma attitudes and knowledge about symptoms [47], and MHL about mental health problems in general [41]. Although some authors suggest that low MHL may contribute to the development of mental health problems (e.g., [48–50]), only a few studies so far have examined mental health status (referring to the presence vs. absence of mental health problems or well-being) as a determinant of MHL. One exception is the study by [51], which found that adolescents' self-perception of mental health (SPMH) was associated with positive mental health but not with global MHL or PMHL. Thus, the possible influence of mental health status on MHL dimensions deserves more research.

The Present Study

In short, adolescence is a stage of life marked by increased vulnerability to mental health issues, and MHL has been considered an important protective factor. While some research has examined the sociodemographic determinants of MHL, further investigation is needed both to improve our understanding of this complex phenomenon and to inform about the development of targeted interventions for specific adolescent groups and dimensions of MHL.

Although existing studies examine the influence of a considerable range of sociodemographic variables on MHL, each typically focuses on only a small subset of them and often overlooks potential interaction effects among these variables on MHL. The potential influence of adolescents' mental health status has also been frequently omitted. Moreover, most studies rely on global measures of MHL or address only a limited number of its specific dimensions [15]. In addition, in Portugal, research examining adolescents' knowledge about various aspects of mental health (including positive mental health) and how this knowledge varies by sociodemographic characteristics is still limited [41]. In this context, our research questions were as follows: Which sociodemographic variables have the greatest influence on levels of MHL dimensions? How do adolescents' SPMH relate to their levels of MHL dimensions? Thus, the primary aim of this study is twofold: (1) to explore the extent to which key sociodemographic factors (namely gender, age, educational

level, SSES, and parental education) are related to different dimensions of adolescents' MHL and (2) to explore the relationship between adolescents' SPMH and their levels of MHL dimensions. Several factors guided the selection of sociodemographic variables included in this study. In general, variables were chosen based on prior evidence of their impact on MHL or its dimensions among adolescents. However, many of these variables have often been examined in isolation, across different studies, and using varied methodologies. For instance, parental education has sometimes been assessed as a single measure [47] rather than separately for mothers and fathers, or as part of a broader socioeconomic status index [44]. Mental health status was also included, as it has rarely been considered in previous research, despite indications that related factors may play a role. In this study, both SES (i.e., SSES) and mental health status (as SPMH) was assessed from the adolescents' own perspective to better capture their lived experiences.

2. Materials and Methods

2.1. Participants

The sample consisted of 608 students from the 7th to 12th grade, aged between 12 and 19 years (M = 14.46, SD = 1.63). Of the participants, 44% were female, and 53.8% were male. Regarding educational level, 60.4% attended basic school (19.7% in 7th grade, 13.8% in 8th grade, and 27.0% in 9th grade), while 39.6% attended secondary education (15.0% in 10th grade, 13.5% in 11th grade, and 11.0% in 12th grade). The majority of participants (87.8%) were Portuguese, and 78% resided in urban areas. In terms of parental education, 63.7% of mothers had higher education, while 4.9% had completed 9th grade, and 24.2% had completed the 12th grade. Among fathers, 49% had higher education, 10.9% had completed the 9th grade, and 26% had completed the 12th grade.

2.2. Measures and Variables

2.2.1. Sociodemographic Questionnaire

The questionnaire collected information on age, gender, nationality, place of residence, school grade, parents' education, subjective socioeconomic status (SSES; from 1, perception of worse socioeconomic status, to 10, perception of better socioeconomic status) [52,53], and self-perception of mental health (SPMH) to measure mental health status. SPMH was assessed using a single-item scale ranging from 0 to 4, where 0 = Very bad, 1 = Bad, 2 = Reasonable, 3 = Good, and 4 = Very good. Research suggests that single-item measures of SPMH are useful and adequate for use in epidemiological and screening surveys; these measures showed good face validity, correlated with the outcomes of multi-item measures of mental health problems (e.g., depression, anxiety, psychological distress), and predicted mental health service use [54].

2.2.2. Mental Health Literacy Questionnaire (MHLq-SVa)

The MHLq-SVa [55] consists of 16 items and assesses four dimensions of mental health literacy (MHL): (1) knowledge of mental health problems (6 items; e.g., "The symptoms' length is one of the important criteria for the diagnosis of a mental disorder"); (2) erroneous beliefs and stereotypes (3 items; e.g., "Only adults have mental disorders"); (3) help-seeking and first-aid skills (3 items; e.g., "If I had a mental disorder, I would seek for a psychologist's help"); and (4) self-help strategies (4 items; e.g., "Sleeping well contributes to good mental health"). Adolescents rated their level of agreement with each statement using a five-point Likert scale (1 = Totally disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Totally agree). The score for each dimension was calculated by summing its items' scores, with higher scores indicating higher levels of MHL. For the beliefs/stereotypes dimension, item scores were reverse coded prior to summation. The instrument demonstrated strong

psychometric properties. The internal consistency of the questionnaire was acceptable, with Cronbach's alphas ranging from $\alpha = 0.66$ (self-help) to $\alpha = 0.82$ (total scale; others were knowledge, 0.72; beliefs, 0.67; and help-seeking, 0.69) [55]. Cronbach α in the present study ranged from 0.54 (self-help) to 0.70 (help-seeking; others were knowledge, 0.61; beliefs, 0.67; and total scale, 0.67). The four-factor structure of the questionnaire was also confirmed, supporting its construct validity [55].

2.2.3. Mental Health Promoting Knowledge Scale (MHPK-10)

The MHPK-10 [17,56] consists of 10 affirmative statements that assess adolescents' perceptions of what they believe contributes to maintaining good mental health. Each item is rated on a five-point Likert scale (1 = Totally disagree to 5 = Totally agree), with an additional response option "N/A" (Not applicable), which is scored as zero. The overall score is the mean of all item scores. Regarding psychometric properties, the scale demonstrated adequate internal consistency, with a Cronbach's alpha of $\alpha = 0.79$ [56] and 0.69 in the current sample. Construct validity was examined using exploratory factor analysis with varimax rotation [56].

2.3. Procedures

This study followed the ethical guidelines outlined in the Declaration of Helsinki for research involving human participants and received approval from the Ministry of Education, as well as from the Ethics Committee of the University. A non-probability convenience sampling method was used. Initial participant recruitment targeted students from the 7th to 12th grade and was conducted through school principals who agreed to allow data collection within their institutions. Class directors from 30 classes in four schools in a town in the South of Portugal agreed to participate in the study. Informed consent forms were distributed to the legal guardians of 707 students. Of these, 611 forms were signed and returned (86.42%), 33 guardians (4.67%) declined to authorize their child's participation, and 63 forms (8.91%) were not returned. As 3 participants either submitted improperly completed forms or were absent on the day of data collection, the final sample comprised 608 participants. In addition, all participants gave oral approval to participate in the study.

Data collection was carried out by the first author in a single session conducted in the classroom. Prior to completing the questionnaires, students were reminded that all data would remain confidential and that their participation was entirely voluntary and they could withdraw at any time without any consequences. Data collection took place in January 2025.

2.4. Data Analysis

Collected data entered into a database using IBM® SPSS® version 27 (Statistical Package for the Social Sciences–IBM) for Windows, which was also used to perform the statistical analyses. The proportion of missing data was minimal (LSMq-SVa: 0.88%; MHPK-10: 0.92%), and Little's MCAR test indicated that these data were missing completely at random (MHLq-SVa, $p = 0.110$; MHPK-10, $p = 0.762$). Missing values were subsequently imputed using the expectation–maximization method [57]. Scale scores were then calculated, and no substantial violations of normality were observed, based on acceptable skewness (absolute values < 2) and kurtosis (absolute values < 7) thresholds [58]. Participants' school grade variables were recoded in two categories: basic and secondary education. Parents' education categories were ordered from 1 (4th grade) to 7 (higher education).

Mean differences, independent samples *t*-tests, and associations between variables were examined using Pearson or Spearman correlations, as appropriate. The effect size of mean differences was provided by Cohen's *d* and was considered small ($0.20 \leq d < 0.50$),

medium ($0.50 \leq d < 0.80$), or large ($d \geq 0.80$). Correlation strength was considered small ($0.10 \leq r < 0.30$), medium ($0.30 \leq d < 0.50$), or large ($d \geq 0.50$) [59].

In addition to the bivariate analysis, five hierarchical logistic regressions were performed to estimate the ability of the sociodemographic and SPMH variables to independently predict high vs. low levels of each MHL dimension (knowledge, beliefs, help-seeking/first-aid skills, self-help strategies, and PMHL). Logistic regression was chosen over linear regression to allow for more interpretable, clear outcome variables and statistics, like the odds ratios (ORs). For these, MHL dimensions were recoded into dichotomous variables representing low vs. high levels of MHL [60]. In the absence of established clinical or theoretical cut-offs, the mean value was used as a cut-point to dichotomize the variables. This approach provided a straightforward and interpretable way to distinguish between relatively higher and lower levels within the sample. The use of the mean is particularly common in exploratory analyses and when the variable distribution is approximately symmetric, as is the case [60,61].

Values equal to or below the mean were coded as "low" (0), and values above the mean value were coded as "high" (1). In each model, one MHL dichotomous variable was entered as an outcome variable, and two blocks of predictors were considered: firstly, the sociodemographic variables, namely age, gender (male—0, female—1; 0 was considered the reference category), education level (basic school—0, secondary school—1; 0 was the reference category), father's education, mother's education, and SSES; secondly, the SPMH variable. The enter method was used. Hierarchical logistic regression was preferred to determine the extent to which SPMH contributed to the prediction of MHL dimensions beyond sociodemographic characteristics. By testing nested models, this approach offered a clearer understanding of the additional explanatory power provided by SPMH after controlling for sociodemographic influences.

Statistics of model fit were computed, as well as *B* and *SE* statistics and *ORs* with the respective 95% confidence interval for each predictor. Model effect sizes were provided by Nagelkerke's pseudo-R^2, considered to be small ($0.02 \leq R^2 < 0.13$), medium ($0.13 \leq R^2 < 0.26$), or large ($R^2 \geq 0.26$) [59]. The *OR* estimated the effect size, quantifying the strength and direction of the association between a predictor (sociodemographic variables, SPMH) and the outcome, low vs. high MHL, such that the odds of the outcome (i.e., high level of a MHL dimension) increased when $OR > 1$ and decreased when $OR < 1$ [62]. In general, effects were considered statistically significant when $p < 0.05$.

3. Results

Tables 1 and 2 show descriptive statistics (*N*, *M* and *SD*) and *t*-test statistics or correlations about the relationship between MHL dimensions and sociodemographic and mental health self-perception.

Table 1. Means and standard deviations for MHL dimensions according to gender and education level ($N = 608$).

	N	Knowledge	Beliefs	Help-Seeking/First-Aid	Self Help	Positive Mental Health Literacy
Gender						
Girls	327	24.23 (2.75)	13.51 (1.77)	12.05 (1.97)	16.83 (1.99)	4.21 (0.62)
Boys	270	23.31 (2.44)	13.04 (1.85)	11.97 (2.38)	17.09 (1.80)	4.17 (0.58)
Prefer not to say	11	23.99 (4.24)	12.64 (2.77)	11.45 (2.46)	16.55 (2.58)	4.32 (0.84)
Education Level						
Basic	367	23.43 (2.54)	12.99 (2.01)	12.24 (2.12)	16.98 (1.95)	4.14 (0.62)
Secondary	241	24.40 (2.78)	13.74 (1.43)	11.66 (2.20)	16.88 (1.88)	4.27 (0.59)

Table 2. Sociodemographic characteristics' descriptive statistics (*M* and *SD*) and correlations with MHL dimensions (*N* = 608).

	M (*SD*)	Knowledge	Beliefs	Help-Seeking/First-Aid	Self-Help	Positive Mental Health Literacy
Age	14.4 (1.63)	0.203 **	0.202 **	−0.161 **	−0.041	0.086 *
Father's education	5.93 (1.63)	0.054	0.075	−0.002	0.114 **	0.046
Mother's education	6.41 (1.15)	0.065	0.168 **	−0.040	0.187 **	0.117 **
SSES	7.06 (1.22)	−0.022	0.014	0.094 *	0.192 **	0.129 **
SPMH	2.78 (0.96)	−0.238 **	−0.162 **	0.099 **	0.280 **	0.007

Note. SSES—subjective socioeconomic status; SPMH—self-perception of mental health. Spearman correlations were computed for mental health self-perceptions; all others are Pearson correlations. * $p < 0.05$. ** $p < 0.01$.

3.1. Sociodemografic Variables and MHL: Bivariate Analysis

As Table 1 shows, girls demonstrated significantly higher levels of knowledge about mental health problems compared to boys, $t(595) = -4.225$, $p < 0.001$, $d = -0.347$, as well as more favorable beliefs/stereotypes, $t(595) = -3.136$, $p = 0.002$, $d = -0.258$.

Adolescents in secondary school reported significantly higher levels of knowledge about mental health problems, $t(606) = -4.431$, $p < 0.001$, $d = -0.367$, greater awareness of factors that promote mental health, $t(604) = -2.570$, $p = 0.010$, $d = -0.213$, and more appropriate beliefs, $t(602.473) = -5.367$, $p < 0.001$, $d = -0.415$ (Table 1). On the other hand, the students in basic school scored higher in help-seeking and first-aid skills, $t(606) = 3.256$, $p = 0.001$, $d = 0.270$.

Table 2 shows the correlations between the MHL dimensions and the remaining sociodemographic variables. Age was found to have statistically significant positive associations with higher levels of knowledge about mental health problems ($p < 0.001$), positive mental health ($p = 0.018$), and more favorable beliefs and reduced stereotypes ($p < 0.001$). However, age was also significantly and negatively correlated with help-seeking and first-aid skills ($p < 0.001$).

Self-help skills were positively and significantly associated with both the father's and mother's levels of education ($p = 0.006$ and $p < 0.001$, respectively). Additionally, appropriate beliefs and PMHL were positively associated with the mother's level of education ($p < 0.001$ and $p = 0.005$, respectively).

The SSES was significantly and positively correlated with help-seeking and first-aid skills ($p = 0.023$), self-help strategies ($p < 0.001$), and PMHL ($p < 0.001$).

SPMH was found to be significantly and positively associated with help-seeking and first-aid skills ($p = 0.015$) and self-help strategies ($p < 0.001$), and significantly and negatively associated with knowledge about mental health problems ($p < 0.001$) and appropriate beliefs and reduced stereotypes ($p < 0.001$).

The effect sizes of significant means differences and correlations were all small [59].

3.2. Sociodemographic Variables and MHL: Hierarchical Logistic Regression

Table 3 displays the statistics of five hierarchical logistic regression models to predict low vs. high levels of each MHL dimension, respectively, from sociodemographic variables (Block 1) and SPMH (Block 2).

Table 3. Hierarchical logistic regression to predict low vs. high MHL dimensions.

Outcomes/ Predictors	Block 1				Block 2			
	B (SE)	*p*	OR	95% CI of OR	B (SE)	*p*	OR	95% CI of OR
Knowledge								
Age	0.13 (0.09)	0.171	1.14	[0.947; 1.36]	0.09 (0.10)	0.370	1.08	[0.904; 1.31]
Gender	0.45 (0.18)	0.014	1.56	[1.10; 2.22]	0.30 (0.19)	0.109	1.35	[0.935; 1.95]
Education level	0.05 (0.31)	0.884	1.05	[0.574; 1.91]	0.06 (0.31)	0.857	1.05	[0.576; 1.94]
Mothers education	0.02 (0.09)	0.816	1.02	[0.856; 1.22]	0.03 (0.09)	0.778	1.02	[0.858; 1.22]
Fathers education	0.06 (0.06)	0.291	1.07	[0.946; 1.20]	0.08 (0.06)	0.185	1.08	[0.961; 1.22]
SSES	−0.05 (0.08)	0.541	0.953	[0.818; 1.11]	0.01 (0.08)	0.863	1.01	[0.864; 1.19]
SPMH					−0.33 (0.11)	0.002	0.718	[0.581; 0.886]
Constant	−21 (1.5)	0.143	0.117		−11 (1.5)	0.467	0.333	
NagelKerke R^2 (ΔR^2)	*0.042*				*0.066 (0.024)*			
Beliefs								
Age	−0.01 (0.09)	0.892	0.987	[0.822; 1.18]	−0.04 (0.10)	0.681	0.962	[0.798; 1.16]
Gender	0.56 (0.18)	0.002	1.76	[1.22; 2.51]	0.48 (0.19)	0.011	1.61	[1.11; 2.33]
Education level	0.44 (0.31)	0.155	1.55	[0.846; 2.86]	0.46 (0.31)	0.146	1.58	[0.854; 2.90]
Mothers education	0.18 (0.09)	0.044	1.20	[1.00; 1.43]	0.19 (0.09)	0.040	1.20	[1.00; 1.44]
Fathers education	−0.08 (0.06)	0.233	0.928	[0.820; 1.05]	−0.07 (0.06)	0.292	0.935	[0.826; 1.06]
SSES	0.00 (0.08)	0.999	1.00	[0.856; 1.16]	0.03 (0.08)	0.661	1.03	[0.883; 1.21]
SPMH					−1.9 (0.11)	0.075	0.826	[0.670; 1.02]
Constant	−0.75 (1.47)	0.612	0.474		−0.12 (1.5)	0.937	0.888	
NagelKerke R^2 (ΔR^2)	*0.052*				*0.060 (0.008)*			
Help-seeking/First aid								
Age	−0.00 (0.09)	0.991	0.999	[0.831; 1.20]	0.00 (0.10)	0.974	1.00	[0.833; 1.20]
Gender	−0.02 (0.18)	0.908	0.979	[0.683; 1.40]	−0.00 (0.19)	0.973	0.994	[0.684; 1.44]
Education level	−0.48 (0.31)	0.123	0.618	[0.335; 1.14]	−0.48 (0.31)	0.122	0.617	[0.334; 1.14]
Mothers education	−0.09 (0.09)	0.350	0.919	[0.769; 1.09]	−00.9 (0.09)	0.347	0.918	[0.770; 1.10]
Fathers education	−0.03 (0.06)	0.612	0.969	[0.859; 1.09]	−0.03 (0.06)	0.595	0.968	[0.857; 1.09]
SSES	0.29 (0.08)	<0.001	1.34	[1.14; 1.58]	0.29 (0.09)	<0.001	1.33	[1.13; 1.57]
SPMH					0.03 (0.11)	0.764	1.03	[0.839; 1.27]
Constant	−1.5 (1.5)	0.327	0.235		−1.6 (1.5)	0.306	0.212	
NagelKerke R^2(ΔR^2)	*0.055*				*0.055 (0.000)*			
Self-help								
Age	0.15 (0.10)	0.124	1.16	[0.960; 1.40]	0.25 (0.10)	0.014	1.28	[1.05; 1.57]
Gender	−0.11 (0.19)	0.554	0.895	[0.619; 1.29]	0.192 (0.20)	0.343	1.21	[0.815; 1.80]
Education level	−0.56 (0.32)	0.080	0.573	[0.307; 1.07]	−62 (0.33)	0.059	0.538	[0.282; 1.02]
Mothers education	0.25 (0.09)	0.008	1.28	[1.06; 1.54]	0.26 (0.10)	0.007	1.29	[1.07; 1.56]
Fathers education	0.06 (0.06)	0.936	1.00	[0.889; 1.14]	−0.3 (0.07)	0.681	0.974	[0.857; 1.10]
SSES	0.21 (0.08)	0.010	1.24	[1.05; 1.45]	0.11 (0.09)	0.216	1.11	[0.940; 1.32]
SPMH					0.64 (0.12)	<0.001	1.90	[1.52; 2.39]
Constant	−4.5 (1.5)	0.003	0.011		−7.0 (1.7)	<0.001	0.001	
NagelKerke R^2 (ΔR^2)	*0.063*				*0.144 (0.081)*			
Positive mental health literacy								
Age	0.09 (0.09)	0.345	1.09	[0.909; 1.31]	0.10 (0.10)	0.314	1.10	[0.913; 1.32]
Gender	0.13 (0.19)	0.474	1.14	[0.794; 1.64]	0.16 (0.19)	0.414	1.17	[0.803; 1.70]
Education level	0.21 (0.31)	0.504	1.23	[0.667; 2.28]	0.21 (0.31)	0.507	1.23	[0.666; 2.27]
Mothers education	0.09 (0.09)	0.352	1.09	[0.910; 1.30]	0.08 (0.09)	0.357	1.08	[0.909; 1.30]
Fathers education	0.01 (0.06)	0.867	1.01	[0.894; 1.14]	0.01 (0.06)	0.898	1.00	[0.892; 1.13]
SSES	0.17 (0.08)	0.034	1.19	[1.01; 1.39]	0.16 (0.08)	0.052	1.17	[0.999; 1.37]
SPMH					0.05 (0.11)	0.623	1.05	[0.856; 1.29]
Constant	−2.8 (1.5)	0.058	0.60		−3.0 (1.5)	0.050	0.050	
Nagelkerke R^2 (ΔR^2)	*0.037*				*0.038 (0.001)*			

Note. *N* = 597. SSES—subjective socioeconomic status; SPMH—self-perception of mental health.

The model with sociodemographic and SPMH variables significantly predicted adolescents' level of knowledge about mental health problems, $\chi^2(7) = 26.659$, $p < 0.001$. Gender first emerged as a significant predictor, with the *OR* indicating that females were 1.56 times more likely than males to have considerable knowledge about mental health problems. However, when SPMH entered the model, gender no longer remained significant, and only SPMH emerged as a significant predictor; this suggests that adolescents with poorer SPMH had lower odds of having high level of knowledge about mental health problems. With the inclusion of the SPMH predictor in Block 2, the Nagelkerke R^2 values indicated that

the proportion of variance explained by the model showed a modest increase; the model with all predictors was able to explain 6.6% of the variance (small effect size). Yet a modest improvement in adolescent classification accuracy was found, from 57.4% to 58.9%.

Two sociodemographic predictors emerged for beliefs about mental health and remained even after accounting for SPMH. One was gender, suggesting that females were more likely than males to endorse higher beliefs, and the other was mothers' education level, revealing that a higher level of maternal education was associated with a greater likelihood of being informed about mental health. The overall model fit the data well, $\chi^2(7) = 24.060$, $p = 0.001$, but the explained variance (Nagelkerke R^2 increased slightly to 6%, a small effect size, with a small change, $\Delta R^2 = 0.008$) and classification accuracy (from 58.5% to 58.0%) were minimal from Block 1 to Block 2.

Among the six sociodemographic predictors, only SSES was significantly associated with help-seeking and first-aid skills, this remained after including SPMH in the model. This suggested that adolescents reporting higher SSES had greater odds of having high help-seeking and first-aid skills. The full model showed good fit to the data, $\chi^2(7) = 22.227$, $p = 0.002$, though the explained variance (5.5%; small effect size) and classification accuracy (60.2%) were modest and the entry of SPMH in the model did not represent an improvement in the model's explanatory power.

Mothers' education and SSES emerged as independent predictors of self-help strategies among the sociodemographic variables, such that adolescents who reported higher rates of maternal education and higher SSES were more likely to report higher levels of knowledge about self-help strategies. When SPMH entered the model, mothers' education remained a significant predictor (but not SSES), and two new predictors emerged, namely age and SPMH. Thus, both older adolescents and adolescents with more positive SPMH were more likely to report high rates of knowledge of self-help strategies. The complete model fit the data well, $\chi^2(7) = 59.083$, $p < 0.001$, and the entry of SPMH represented a meaningful improvement of the explained variance to 14.4% (medium effect size) and of classification accuracy (rising from 63.4% to 66.7%).

Finally, among the six sociodemographic predictors, only SSES was significantly associated with PMHL, indicating that adolescents reporting higher SSES had increased odds of having high PMHL. However, after adding SPMH to the model, SSES did not remain a significant predictor, and no other predictors emerged. The final model was statistically significant, $\chi^2(7) = 14.854$, $p = 0.038$, and, from block 1 to block 2, the explained variance increased only marginally to 3.8% (small effect size); the classification accuracy remained unchanged at 59.9%.

4. Discussion

The aim of this study was to explore how sociodemographic variables and SPMH relate to adolescents' knowledge across different dimensions of MHL. Different independent sociodemographic predictors emerged for different MHL dimensions, and SPMH was revealed to be a crucial predictor of knowledge about mental health problems and self-help strategies. Globally, the direction of the effects was in line with findings from previous research; however, novel results also emerged. Notably, lower SPMH predicted greater knowledge of mental health problems, and the models showed their strongest effect (medium) when predicting knowledge of self-help strategies. A detailed discussion by predictor follows, intertwined with findings of the bivariate analyses. This discussion first addresses the research question regarding which sociodemographic variables have the greatest influence on levels of MHL dimensions, and then turns to the question of the extent to which adolescents' SPMH affects their MHL.

4.1. MHL and Gender

According to bivariate analysis, girls demonstrated higher levels of knowledge about mental health problems and more favorable beliefs compared to boys, and hierarchical logistic regression partially supported these findings. This is consistent with previous research indicating higher levels of mental health literacy (MHL) among females [5,14,35,39,41,50] and suggests that girls may more accurately recognize and identify mental health disorders than boys [28]. These gender differences may be due to several biological and psychosocial factors [63]. For instance, regarding cultural and educational influences, girls' upbringing often fosters empathy and attention to emotional and relational dimensions (both personal and others'), which may enhance their awareness and understanding of mental health [64,65]. However, the findings suggest that gender ceases to be a significant predictor once adolescents' mental health status is accounted for, with the latter emerging as the strongest predictor of knowledge about mental health problems. This is an interesting finding that calls for further research on the interplay between gender and psychological problems regarding the construction of knowledge about mental health problems.

4.2. MHL and Age

Consistently with other studies [10], age emerged as an independent predictor of greater knowledge about self-help strategies. This finding contributes to a better understanding of this less studied dimension of MHL. In addition, in line with other research, age has been identified in the present study's bivariate analysis as a candidate for the prediction of several other MHL dimensions. First, as adolescents grow older, research suggests that they tend to develop higher levels of knowledge and understanding mental health problems [14,24,35,41] and knowledge of how to promote good mental health [14,41,51].

However, more worrying and contrary to other findings (e.g., [47]), the current bivariate analyses suggest that the willingness to seek help decline with age. As our result aligns with findings from another study utilizing a previous version of the same instrument [66], the observed decrease with age may be attributable to methodological factors. Research shows that older adolescents place less value on formal sources of help (such as psychologists or psychiatrists), precisely those that were considered in the instrument used in this study (that is, the MHLq-SVa) [55], and may instead prefer informal support networks such as parents or friends [14,44,67]. In the same vein, MHLq-SVa first-aid skill items focus exclusively on encouraging other individuals in distress to seek professional help. This decrease in help-seeking from professionals might also reflect the growing sense of autonomy that typically develops during adolescence [3]. Further research is needed to gain a more nuanced understanding of both the intention to seek help and the development of first-aid skills among Portuguese adolescents, according to age. Furthermore, the interplay between age and other socioeconomic variables and SPMH in predicting self-help strategies also needs further research in order to better in-form models of self-help promotion.

4.3. MHL and Level of Education

Consistent with the previous research (e.g., [42,51]), bivariate analyses suggested that secondary school students demonstrated higher levels of knowledge about mental health problems and promotion strategies, as well as more appropriate beliefs. This trend may be explained, on the one hand, by the rapid cognitive and emotional development that occurs during adolescence [36,51] and, on the other hand, by the increased acquisition of knowledge in academic settings [28,43]. However, it was younger, basic-school students who demonstrated higher levels in the domain of first-aid skills and help-seeking behaviors, in line with the equivalent age-related effect discussed above. Nevertheless, when the level

of education was considered simultaneously with other sociodemographic variables and SPMH, in the hierarchical logistic regression model, these possible effects of the level of education on MHL dimensions collapsed, possibly due to some overlap with age.

4.4. MHL and Parent Education and Socioeconomic Status

A higher level of maternal education was found to be an independent predictor of an adolescent's knowledge of self-help strategies and greater rate of having appropriate beliefs, whereas paternal education was not. A study by González- Sanguino et al. [47] was one of the few studies that examined the impact of parental education on MHL; however, the authors did not distinguish between mother's and father's education level and did not assess the specific dimensions of MHL identified as predictors in our study, nor did they identify the bivariate positive associations between mother's education with PMHL and between father's education and self-help strategies. Moreover, our findings do not support the association reported by González-Sanguino et al. [47] between higher parental education and lower help-seeking skills among adolescents.

These discrepancies between different studies' findings may be due to different methodological approaches (e.g., separate vs. single measure in studying both parents; different instruments) and underscore the need for further research on the role of parental education in shaping adolescent MHL. Given that parents serve as key role models, their educational background may play an important role in influencing the development of adolescents' mental health knowledge and coping strategies [47]. In addition, our results encourage further research into the separate roles of mothers' and fathers' education, which seems to be an under-researched topic that deserves further study.

The results suggested that higher SSES is related to high help-seeking rates and first-aid skills, even when other sociodemographic variables and SPMH are included in the model. This finding contradicts other studies that found no relationship between help-seeking and income [14,28]. One explanation for these different results can be, once again, the different indicators of socioeconomic status, as perceived by adolescents (in the present study) or income. In the present study, higher SSES also emerged as an independent predictor of high self-help strategy rates and knowledge about how to promote good mental health. This is consistent with previous findings and with the interaction of variables in logistic regression, indicating that a favorable family financial situation is associated with higher levels of PMHL [17], for instance. Alongside the previously noted influence of parent education, our findings align globally with the existing literature, showing that socioeconomic status affects access to information, exposure to environments that facilitate mental health discussions, perceptions of self-efficacy, and overall mental health literacy [30]. Nonetheless, these two SSES predictive abilities vanished when SPMH was entered into the model. Furthermore, our findings highlight the importance of distinguishing between socioeconomic status and mother's and father's education levels in research on MHL determinants, as in this study all three socioeconomic indicators appeared to predict different outcomes. More research is needed to understand the interplay of SSES and SPMH as determinants of MHL dimensions, in particular concerning the knowledge about self-help strategies.

4.5. MHL and Self-Perception of Mental Health

The present findings suggest that adolescents who perceive their mental health as poorer are more likely to exhibit considerable knowledge about mental health problems but less knowledge of self-help strategies. This link between poorer self-perceived mental health and greater knowledge of mental health problems observed in our study seems to diverge from the previous research. For instance, Nobre et al. [51], in one of few studies using a single-item measure of SPMH, found that SPMH predicted neither a

global measure of MHL nor PMHL. Conversely, other studies have generally revealed that lower knowledge about mental disorders is associated with higher levels of psychological symptoms (e.g., anxiety, depression, and behavioral problems [13,49,50]) and a lower level of well-being [68]. A plausible explanation of the present findings that deserves investigation is that the experience of psychological distress may enhance adolescents' tendencies to seek information about mental health problems [46] at a time when they have not yet developed effective strategies to manage these issues [43,46]. On the other hand, bivariate analysis also suggested higher levels of willingness to seek professional help among adolescents who reported better self-perceived mental health, which aligns with findings from previous studies (e.g., [7]).

Adding SPMH to sociodemographic predictors proved to be crucial, as it emerged as an independent predictor of knowledge about mental health problems and self-help strategies, removed the predictive ability of SSES on self-help strategies and knowledge about the factors that promote good mental health, and pushed age to appear for the first time as an independent predictor of self-help strategies. In particular, adding SPMH critically improved the ability of the models based on sociodemographic predictors to explain the variance of low vs. high knowledge of self-help strategies.

4.6. Limitations of the Current Study

This study has a few limitations. First, the sample consisted solely of adolescents from a single region in Portugal who were exclusively from public schools, which may limit the generalizability of our findings. Second, the instruments used, although recent, may not adequately discriminate between different MHL dimensions that other research has suggested are important (e.g., more diverse first-aid skills). Third, some scales demonstrated lower internal consistency. These values may reflect the small number of items or the complex, multidimensional nature of the constructs being assessed. While this may limit the reliability of some findings, it is not uncommon in exploratory or developmental research [69,70]. Despite this limitation, we believe that reporting these findings remains valuable for the broader understanding of the constructs and may inform the refinement of measurement tools in future research. Subjective, single-item measures of mental health and socioeconomic statuses are another limitation. Although such measures are frequently used for their practicality, instruments with a larger number of items tend to capture the complexity of these constructs more effectively and generally offer stronger psychometric properties. Therefore, the findings should be interpreted with caution, and future research is encouraged to employ validated, multi-item scales to provide a more comprehensive evaluation of mental health and socioeconomic statuses.

Furthermore, the use of self-report measures introduces potential biases. Participants' responses may have been influenced by their subjective interpretation of the items, as well as by social desirability bias (especially concerning sensitive topics such as mental health, stigma, and help-seeking behavior). Finally, this study carries a risk of Type I error due to multiple testing. However, corrections were not applied to avoid increasing Type II errors, given the exploratory aims. All results were reported transparently for appropriate interpretation.

5. Conclusions

The present study highlights that different dimensions of mental health literacy (MHL) are associated in varying ways with distinct sociodemographic variables. Gender predicted high levels of adequate beliefs and, to some extent, high rates of knowledge about mental health problems; age predicted high rates of knowledge on self-help strategies; mothers' education predicted high levels of adequate beliefs and self-help strategies; SSES predicted

high rates of help-seeking behavior and first-aid skills and, to some extent, self-help strategies; lower SPMH predicted high knowledge about mental health problems; and higher SPMH predicted high rates of knowledge about self-help strategies. On the other hand, adolescents' education level (i.e., attending basic vs. secondary education) and fathers' education did not emerge as independent predictors of any MHL dimension. The predictive role of SPMH in relation to MHL was also highlighted, encouraging the inclusion of single-item measures of self-rated mental health in surveys when longer, multi-item instruments are not feasible. Such measures may aid in identifying key determinants of MHL and refining screening procedures in community and school settings, thereby informing the selection of relevant MHL dimensions for intervention and the targeting of specific adolescent subgroups.

5.1. Implications for Intervention

The data collected reinforce the importance of promoting MHL programs that are sensitive to gender, age, socioeconomic status, mother's educational background, and adolescent mental health status. The findings also recommend that interventions aimed at improving LSM include not only knowledge of mental health problems but also aspects more focused on adolescents' actions in promoting their mental health, such as self-help and help-seeking, which were shown to be positively associated with SPMH. In particular, the strong influence of family and socioeconomic context on young people's beliefs, stereotypes, and help-seeking strategies underscores the need to consider socioeducational inequalities when designing and implementing mental health literacy programs. Interventions aimed at young people across different educational levels, particularly those from more vulnerable socioeconomic and educational backgrounds, should prioritize the development of first-aid self-help skills, as well as improve the willingness to seek help, and the promotion of more positive beliefs and attitudes toward mental health problems, especially among boys.

5.2. Implications for Future Research

Further research is needed to explore the interplay of specific sociodemographic variables (e.g., gender, age) and adolescents' mental health status in shaping their knowledge across distinct dimensions of mental health literacy (e.g., self-help strategies, knowledge of mental disorders) in the context of adolescent development. In addition, there remains a notable gap in the literature regarding the bidirectional relationship between mental health and MHL dimensions. The instruments used to assess MHL also warrant further investigation, as well as the single-item measures of mental health and socioeconomic statuses.

It is also important to explore how adolescents' contact with individuals experiencing mental illness impacts their MHL and to validate interventions aimed at promoting equitable access to mental health knowledge across different adolescent groups, while fostering MHL across all its dimensions.

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Abbreviations

The following abbreviations are used in this manuscript:

MHL	Mental health literacy
PMHL	Positive mental health literacy
SES	Socioeconomic status
SSES	Subjective socioeconomic status
MHLq-Sva	MHL questionnaire
MHPK-10	Mental Health Promoting Knowledge scale

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