

The Relationship Between Positive Mental Health Literacy and Mental Well-Being Among Adolescents: Implications for School Health Services

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Abstract

Mental health education is a central part of school nurses' practice. Mental health literacy is an asset for health that educational initiatives can strengthen, and a significant determinant of mental health. This study was intended to examine the relationship between positive mental health literacy (PMeHL) and mental well-being to discuss its implications for school health services' mental health education. The relationship was assessed using a multiple linear regression model controlling for relevant covariates. Data were derived from a cross-sectional school-based survey including 1,888 adolescents aged 15–21 years (response rate 97.3%). A weak gender difference was found in PMeHL. The regression model accounted for 41% of the variance in adolescents' mental well-being; PMeHL was a significant explanatory variable of mental well-being. Accordingly, the current study found support for including PMeHL, or knowledge of how to obtain and maintain good mental health, as an integral component of school health services' mental health education among adolescents.

Keywords

mental well-being, positive mental health literacy, mental health literacy, adolescence, school health services, mental health promotion, school nursing

School health services play an important role in health care for the adolescent population by providing health education, promoting health, and addressing diverse health problems (American Nurses Association & National Association of School Nurses, 2015). Mental health in the adolescent population has received considerable attention in recent years and has emerged as a public health concern that needs to be addressed (Norwegian Institute of Public Health, 2014; World Health Organization, 2013). School nurses are in a position to provide mental health education and may therefore greatly influence adolescents' mental health and well-being (American Nurses Association & National Association of School Nurses, 2015); thus, determining what to include in the mental health education provided by school nurses is important.

Adolescence is characterized by a sense of increasing independence, emerging adult responsibilities, and the development of decision-making abilities. Learning and adopting health-promoting knowledge and behavior during this formative life period may improve healthy decision-making and health literacy among adolescents (Bröder et al., 2017). Health literacy involves having the knowledge

and competence necessary to meet the complex health-related demands of our society (Sørensen et al., 2012). Health literacy is an essential life skill that represents a building block for health (Kickbusch, 2008) and is an outcome of health education initiatives (Nutbeam, 2000). Mental health literacy (MHL), a component of health literacy, can be expected to have similar attributes (Kutcher, Wei, Costa, et al., 2016). Adolescents constitute a target group for MHL interventions (Bröder et al., 2017), and school health services have emerged as a sensible setting for promoting MHL. Health education and health promotion,

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including mental health, are core elements for school nurses working with adolescents (American Nurses Association & National Association of School Nurses, 2015). It is well established that the foundation for mental health and well-being is laid in the early years (Braddick, Carral, Jenkins, & Jané-Llopis, 2009). Promoting mental health in adolescents can benefit society as a whole and is important for ensuring a healthy and productive future adult population (World Health Organization, 2008, 2013, 2016).

Previous research has identified mental health as an area where adolescents themselves have expressed a need for health education (Smart, Parker, Lampert, & Sulo, 2012). Mental health includes mental well-being (World Health Organization, 2014), and mental well-being is defined as something more than the absence of mental illness; it is defined as a positive mental state that allows individuals and populations to thrive (Clarke et al., 2011). In adults, mental well-being has been regarded as comprising happiness, contentment, subjective well-being, self-realization, and positive functioning (Ryan & Deci, 2001). Mental well-being among adolescents has been less studied (Clarke et al., 2011).

MHL is an evolving concept that has been conceptualized in different ways since it was first coined by Jorm and colleagues in 1997 (Jorm, 2015; Jorm et al., 1997; Wei, McGrath, Hayden, & Kutcher, 2015). In past years, MHL has evolved from a focus of mental illness and risk factors to becoming an asset for health that can be strengthened through educational initiatives (Kutcher, Wei, & Coniglio, 2016). A recent definition of MHL outlined four key components:

- (1) Understanding how to obtain and maintain good mental health, (2) understanding mental disorders and their treatments, (3) decreasing stigma related to mental disorders, and (4) enhancing help-seeking efficacy (knowing when, where, and how to obtain good mental health care and developing competencies needed for self-care [Kutcher, Wei, Costa, et al., 2016]).

MHL has been shown to be a significant determinant of mental health in the population (Bröder et al., 2017; Jorm, 2012; Kutcher, Wei, & Coniglio, 2016; Wei, Hayden, Kutcher, Zygmunt, & McGrath, 2013). Previous research on MHL has focused on mental illness (Chambers, Murphy, & Keeley, 2015) and suggests that adolescents' MHL is associated with their mental health status; specifically, low levels of MHL were found to be associated with depression (Lam, 2014). Additionally, education has been shown to influence MHL, with less education being associated with less knowledge of the prevalence and symptoms of mental disorders (Von Dem Knesebeck et al., 2013). Furthermore, gender differences in adolescent MHL have been observed, with males scoring lower and females scoring higher on MHL measures (Cotton, Wright, Harris, Jorm, & McGorry, 2006).

Aim

The purpose of this study was to investigate whether it is worthwhile to include education on how to obtain and maintain good mental health in the health education provided by school nurses working with adolescents. The specific aim of this study was to identify the positive component of MHL (positive mental health literacy [PMeHL]), namely, understanding how to obtain and maintain good mental health (Kutcher, Wei, Costa, et al., 2016), and its relations to mental well-being to discuss its implications in a school health context. To the authors' knowledge, the relationship between PMeHL and mental well-being has not been previously studied. Gender, age, family affluence, loneliness, stress, and physical health have been shown to influence adolescents' mental well-being (World Health Organization, 2016); accordingly, these variables were included as covariates in the current study. Furthermore, gender differences in mental well-being and PMeHL were investigated.

Method

Participants

The current study was based on a cross-sectional classroom survey of adolescents aged 15–21 years at five upper secondary schools in an urban area in mid-Norway. In Norway, the prevalence of mental health disorders among children and adolescents is 15–20% (Norwegian Institute of Public Health, 2014), which is comparable to other Western countries such as the United States, where a total of 13–20% of children experience a mental disorder in a given year (Centers for Disease Control and Prevention, 2013). The five schools are located in Sør-Trøndelag County and offer a broad variety of both vocational and general courses. The study was approved by the Regional Committee for Medical and Health Research Ethics (REK midt 2014/1996).

The schools in the current study include 5 of the 10 upper secondary schools (8 public and 2 private) in one of the largest cities in Norway. Four of the included schools are public and one private school, representing typical Norwegian upper secondary schools. The five schools are recruited from two of the four geographical districts in the city, where all districts are relatively similar in terms of sociodemographic factors. Each school has 260 to 1,087 students with an even distribution of boys and girls, where the majority of adolescents have parents with a higher education and a good financial situation in their family (Table 1). The questionnaire was administered to 2,145 (65.4%) of the 3,281 students, and 2,087 responded with usable information, with a response rate of 97.3%. Regarding exclusion criteria, 11 respondents were excluded for completing only the background information section of the questionnaire; 169 respondents, for lacking required parental consent, as they were 15 years old; 19 respondents, for being >21 years old; and 74 respondents, for missing information on age. The final

Table 1. Description of the Sample Included in the Analysis.

	N	%
Gender		
Female	957	51
Male	907	48
Missing	24	1
Age		
15	34	2
16	704	37
17	553	29
18	449	24
19	106	6
20	25	1
21	17	1
Education		
General studies	1,156	61
Vocational studies	711	38
Missing	21	1
Parents' education ^a		
Primary and lower secondary school	87	5
Upper secondary school	343	18
University, up to 4 years	393	21
University, more than 4 years	465	25
Don't know	518	27
Missing	83	4
Family finances		
Good	1,305	69
Neither good nor bad	424	23
Bad	115	6
Missing	44	2
Parents live together		
Yes	1,122	59
No	710	38
Missing	56	3
Born in Norway		
Yes	1,727	92
No	140	7
Missing	21	1

Note. $N = 1,888$.

^aAssessed by asking about each parent; the mean score between the mother and father is presented.

sample size was thus $N = 1,814$. The mean age of the sample, 17.02 years ($SD = 1.04$), was input for the 74 respondents (3.9%) with missing age information given the small variation in sample age; therefore, $n = 1,888$ students were included in the analyses. Table 1 describes the current study sample.

Procedure

The survey was conducted in September 2016. Prior to the survey, principals and teachers received oral and written information from the research group, and the schools' principals gave informed consent for data collection at the designated schools. Questionnaires were available over a 3-week period, during which the teachers chose a convenient session for survey administration. Information was provided

to students and parents through a written invitation letter and through an informational video available through the school's e-learning platform. Students aged 16 years and older gave consent for participation by completing the questionnaire, while students aged 15 years provided written parental consent according to the Norwegian Act on Medical and Health Research (Health Research Act, 2008). Prior to survey administration, the teachers read aloud an information letter from the research group that emphasized that participation was voluntary and anonymous.

Measures

The *background variables* used to describe the sample were gender, age, education, parents' living status, and whether the respondent was born in Norway.

Parents' education level was assessed by 1 item: "What is your parents' highest level of education?", with response options of *primary and lower secondary school* (1), *upper secondary school* (2), *university up to 4 years* (3), and *university, more than 4 years* (4).

Family finances were measured by 1 item: "How has your family's financial situation been during the past two years?" The students responded on a scale of *we have had a poor financial situation the whole time* (1), *we have more or less been in a poor financial situation* (2), *we have neither been in a poor nor good financial situation* (3), *we have more or less been in a good financial situation* (4), and *we have been in a good financial situation the whole time* (5).

Loneliness was assessed by 1 item that covered the frequency of feeling lonely: "Do you ever feel lonely?", with response options of *never or almost never* (1), *rarely* (2), *sometimes* (3), *regularly* (4), and *almost all the time* (5).

Stress was assessed using the Norwegian version of the Adolescent Stress Questionnaire (ASQ-N; Moksnes, Byrne, Mazanov, & Espnes, 2010). The ASQ-N consists of 30 items rated on a 5-point Likert-type scale, ranging from *not at all stressful or is irrelevant to me* (1) to *very stressful* (5); higher mean scores indicate higher stress levels (range 0–5). The internal consistency and construct validity of the ASQ-N have been tested among adolescents (Moksnes et al., 2010; Moksnes & Espnes, 2011). Cronbach's α in the present study was .95.

Self-rated health was assessed using 1 item: "How is your current health?" The students responded on a scale of *very poor* (1), *poor* (2), *neither poor or good* (3), *good* (4), and *excellent* (5). This item has been previously found to be satisfactory for use among adolescents (Bredidablik, Meland, & Lydersen, 2009).

PMeHL was measured by the 10-item Mental Health Promoting Knowledge (MHPK-10) scale. The MHPK-10 measures the component of MHL that addresses an individual's understanding of how to obtain and maintain good mental health or PMeHL (Bjørnsen, Espnes, Eilertsen, Ringdal, & Moksnes, in press). The MHPK-10 is a one-

Table 2. Descriptive Statistics of the Scales Included in Study: Mean (SD), *t* Test by Gender, and Number of Observations (N).

	Mean (SD)	Gender		<i>t</i> Test	N
		Girls	Boys		
		Mean (SD)	Mean (SD)		
Positive mental health literacy	4.51 (0.54)	4.55 (0.55)	4.47 (0.52)	3.03**	1,813
Mental well-being	3.59 (0.71)	3.41 (0.67)	3.78 (0.70)	-11.02**	1,696
Stress	2.43 (0.91)	2.69 (0.88)	2.13 (0.85)	12.01**	1,396
Loneliness	2.5 (1.1)	2.77 (1.07)	2.20 (1.07)	11.24**	1,845
Self-rated health	3.94 (0.95)	3.82 (0.94)	4.07 (0.93)	-5.69**	1,837

** $p \leq .01$.

dimensional instrument consisting of statements of factors important for good mental health within the dimensions of autonomy, relatedness, and competence. Respondents are asked to rate each item on a 6-point scale that starts at *do not know* (0), and then ranges from *completely wrong* (1) to *completely correct* (5); higher mean scores indicate a higher level of knowledge (range 0–5). The MHPK-10 was recently found to be a valid and reliable measure of PMeHL among Norwegian adolescents (Bjornsen et al., in press) and had a McDonald's ω of .84 and Cronbach's α of .86 in the present study.

Mental well-being was measured by the Warwick-Edinburgh Mental Well-being Scale (WEMWBS). The WEMWBS measures subjective well-being and psychological functioning through 14 items assessed on a 5-point Likert-type scale, ranging from *not at all* (1) to *all the time* (5); higher mean scores indicate greater well-being (range 1–5; Putz, O'Hara, Taggart, & Stewart-Brown, 2012). The WEMWBS enables monitoring of the mental well-being of the general population and is validated for use among young people (Clarke et al., 2011; Taggart, Stewart-Brown, & Parkinson, 2015); in this study, Cronbach's α of the WEMWBS was .93.

Statistical Analysis

STATA version 14.2 (StataCorp, 2015, Stata Statistical Software: Release 14. College Station, TX: StataCorp LP) was used for the statistical analysis. Mean scores and standard deviations were examined for the main measures in the current study, and *t* tests were conducted to assess mean differences by gender and place of birth. Cohen's *d* was used to interpret the effect sizes (Cohen, 1998). Pearson's bivariate correlations were calculated to examine the relationships between the main measures in the study. Multiple linear regression analyses with ordinary least squares (OLS) were conducted to determine the unique variance in mental well-being due to PMeHL, while controlling for gender, age, education, parents' education, family finances, loneliness, stress, and self-rated health. An interaction effect was modeled by adding an interaction term between gender and PMeHL. Age, family finances, and education were dummy coded, using the largest response category as the reference

group. The significance level was set to $p \leq .05$. Assumptions for OLS were tested using the following parameters: Breusch-Pagan test for heteroscedasticity >0.05 , variance inflation factor (VIF) testing for multicollinearity problems <5.00 , Shapiro-Wilk's *W*-test for normality of residuals >0.01 , Linktest for specification of the model >0.05 , test for appropriate functional form >0.05 , and Cook's *D* for influential observations <1.00 (Mehmetoglu & Jakobsen, 2017).

Results

The results of the *t* tests investigating gender mean differences in the main variables showed that boys scored higher on mental well-being and self-rated health, whereas girls scored higher on PMeHL, stress, and loneliness (Table 2). Based on Cohen's *d* (Cohen, 1998), the effect size was considered small for gender differences in PMeHL (.15) and self-rated health (.26) and medium for gender differences in mental well-being (.54), stress (.65), and loneliness (.53; Cohen, 1998).

The results of the *t* tests investigating place-of-birth mean differences in the main variables showed that adolescents not born in Norway report significantly more stress and poorer family financial situation than adolescents born in Norway; the former are also slightly older than adolescents born in Norway in the current study sample (Table 3). No other differences were found based on adolescents' place of birth in this study.

Bivariate correlations of the study measures were calculated (Table 4). Age showed a significant, negative, and weak correlation with parents' education, family finances, and self-rated health. Adolescents who perceived their family's financial situation to be good scored significantly lower on loneliness and stress and significantly higher on self-rated health, PMeHL, and mental well-being. Higher parental education was significantly associated with lower mental well-being among adolescents. Loneliness correlated significantly with higher levels of stress and with lower levels of PMeHL, mental well-being, and self-rated health. Stress was significantly correlated with lower levels of physical health and lower mental well-being. PMeHL correlated significantly and positively with mental well-being and higher levels of physical health (Table 4).

Table 3. Mean (SD), *t* Test, Number of Observations (*N*), and Cohen's *d* for Differences Between Adolescents by Place of Birth.

	Born in Norway	Not Born in Norway	<i>t</i> Test	<i>N</i>	Cohen's <i>d</i>
	Mean (SD)	Mean (SD)			
Age	17 (0.03)	17.24 (0.11)	−2.55**	1,867	−0.22
Education mom	2.55 (0.03)	2.41 (0.13)	1.30	1,809	0.12
Education dad	2.53 (0.03)	2.69 (0.12)	−1.35	1,779	−0.12
Family finances	3.04 (0.02)	2.55 (0.10)	4.31**	1,832	0.39
Loneliness	2.49 (0.03)	2.59 (0.09)	−.86	1,826	−0.08
Stress	2.41 (0.03)	2.69 (0.11)	−2.65**	1,385	−0.31
Self-rated health	3.94 (0.02)	3.97 (0.08)	−.37	1,819	−0.03
PMeHL	4.51 (0.01)	4.60 (0.05)	−1.99	1,799	−0.18
Mental well-being	3.59 (0.02)	3.53 (0.07)	0.77	1,682	0.08

Note. PMeHL = Positive Mental Health Literacy.

***p* < .01.

Table 4. Correlations Between the Study Variables.

	Age	EM	ED	FF	LO	ST	PH	PMeHL	MW
Age	1								
Education mom (EM)	−0.12**	1							
Education dad (ED)	−0.07**	0.62**	1						
Family finances (FF)	−0.08**	0.07**	0.05*	1					
Loneliness (LO)	0.06	0.01	0.01	−0.21**	1				
Stress (ST)	0.04	−0.05	−0.03	−0.14**	0.39**	1			
Physical health (PH)	−0.05*	−0.03	−0.02	0.28**	−0.38**	−0.27**	1		
Positive mental health literacy (PMeHL)	0.01	0.003	0.03	0.09**	−0.12**	−0.03	0.17**	1	
Mental well-being (MW)	−0.01	−0.06*	−0.07**	0.23**	−0.54**	−0.36**	0.44**	0.17**	1

p* ≤ .05. *p* < .010.

Regression Analysis

The assumptions for OLS were met; the predetermined criteria for accepting OLS were met by all tests except Shapiro-Wilk's *W*-test, which indicated a problem with nonnormal distribution of residuals ($p \leq .001$). However, after calculating the summary statistics for skewness (−.5373) and kurtosis (4.1998) and inspecting the histogram of the residuals, we concluded that the residuals were approximately normally distributed and that there were no problems with nonnormally distributed errors (Mehmetoglu & Jakobsen, 2017).

A significant regression equation was found, $F(18, 1208) = 48.68, p < .0001$, with the model explaining 41% of the variance in mental well-being (Table 5). Loneliness had the strongest negative association with mental well-being, followed by stress and father's education. Self-rated health, followed by male gender and PMeHL, had the strongest positive effect on mental well-being. Having a good family financial situation was associated with higher mental well-being. Mental well-being was stable and approximately equal throughout the different ages of adolescence (15–21 years), except for the age of 18 years, with 18-year-olds reporting significantly higher mental well-being than the

reference group of those aged 16 years. Adolescents' education and mother's level of education were nonsignificantly related to mental well-being (Table 5). An interaction effect between gender and PMeHL was tested and found to be nonsignificant (results not shown in the table).

Discussion

In this study of Norwegian adolescents, PMeHL was significantly and positively associated with mental well-being. This finding indicates that adolescents with higher levels of PMeHL reported significantly higher levels of mental well-being than adolescents with lower PMeHL scores. This trend is in line with those observed in several previous studies, which found that focusing on mental health promotion instead of mental illness prevention is an effective approach in adolescent mental health education (O'Mara & Lind, 2013; Weare & Nind, 2011).

PMeHL and Mental Well-Being

MHL and its measures have traditionally focused on knowledge and beliefs about mental disorders rather than on mental health (Chambers et al., 2015). In recent years, the

Table 5. Summary of Regression Analysis Results.

Mental Well-Being (VEMWBS)	B	β	SEB	T	Sig. t
Gender (<i>female</i> = 0, <i>male</i> = 1)	.141	.099	.0342	4.11	<.001**
Age (16 years old as reference category)					
15 years old	.012	.025	.030	1.09	.778
17 years old	.017	.011	.039	0.43	.664
18 years old	.089	.054	.041	2.15	.032*
19 years old	.027	.009	.071	0.39	.698
20 years old	.086	.013	.149	0.58	.563
21 years old	-.067	-.008	.186	-0.36	.717
Line of study (general studies as reference category)					
Vocational studies	-.042	-.026	.038	-1.11	.269
Mother's education (years of education)	-.013	-.022	.017	-0.78	.438
Father's education (years of education)	-.042	-.073	.016	-2.60	.009**
Family finances (good family financials as the reference category)					
Poor family financials the whole time	.278	.051	.125	2.22	.026*
More or less poor family financials	-.203	-.057	.083	-2.44	.015*
Neither poor nor good family financials	-.096	-.056	.043	-2.20	.028*
More or less good family financials	-.047	-.031	.038	-1.25	.213
Loneliness	-.241	-.371	.017	-14.22	<.001**
Stress	-.102	-.130	.019	-5.26	<.001**
Self-rated health	.161	.218	.019	8.62	<.001**
Positive mental health literacy (PMeHL)	.126	.094	.030	4.16	<.001**
Constant	3.435		.180	19.09	<.001
N	1,227				
R ² (adjusted)	.41				

*Significant at the 5% level, $p \leq .05$. **Significant at the 1% level, $p \leq .01$.

conceptualizations and measures of MHL have included a component on achieving and maintaining good mental health (Bjornsen et al., in press; Kutcher, Wei, Costa, et al., 2016). Studying the relationship between PMeHL and mental well-being is consistent with the past decade's advances in mental health promotion, in which there has been increasing awareness of the effects of strengthening mental well-being on mental health (Maheswaran, Weich, Powell, & Stewart-Brown, 2012; World Health Organization, 2008). In adults, mental well-being has been considered to comprise happiness, contentment, subjective well-being, self-realization, and positive functioning (Ryan & Deci, 2001). However, mental well-being has been studied less among adolescents (Clarke et al., 2011).

Interestingly, this study showed that parental education level, especially father's education level, was negatively associated with mental well-being; adolescents' mental well-being decreased as fathers' education increased. Parental education is an important index of socioeconomic status and is thought to predict behavioral outcomes and academic achievements (Dubow, Boxer, & Huesmann, 2009). However, it is important to note that achievements and absence of mental illness do not necessarily translate into mental well-being (Rose et al., 2017). Previous studies have established that parental education is a unique positive predictor of children's achievements (Dubow et al., 2009), and there is a link between parents' expectations and children's achievements (Shute, Hansen, Underwood, & Razzouk, 2011). As both

parents' education and parents' expectations predict children's academic achievements, we may assume that parents with higher education have higher expectations for their children's academic achievements. While expectations can certainly be helpful, expectations that are set too high can cause stress (Pickhardt, 2010). In the current study, stress was negatively correlated with mental well-being, which is consistent with previous findings (Sigfusdottir, Kristjansson, Thorlindsson, & Allegrante, 2016). Future research should examine high parental expectations as a possible explanation for why adolescents of higher educated parents report lower mental well-being.

Gender Differences in PMeHL and Mental Well-Being

The lifetime onset of mental health disorders is similar in both genders (Wilhelm, 2014). However, there are important differences to note; girls seem to internalize problems and report more negative self-esteem, whereas boys report more externalizing styles and more school problems, often known as "bad behavior" (Wilhelm, 2014).

Gender differences in mental well-being found in this study conform to previous findings in which there were clear gender differences in mental well-being among adolescents; namely, girls reported lower levels of mental well-being, perceived health and life satisfaction compared to boys (World Health Organization, 2016). Our study clearly showed that gender is a predictor of mental well-being

during adolescence, with girls reporting lower mental well-being compared to boys. Gender differences were also found in PMeHL; however, these differences were small. Additionally, after adding an interaction term to the regression equation, gender did not moderate the effect of PMeHL on mental well-being. Thus, our findings are consistent with previous studies of MHL, indicating that there are fewer gender differences in MHL than previously thought (Furnham, Annis, & Cleridou, 2014).

Differences Between Adolescents born and not born in Norway

Place of birth is an important variable in light of global migration patterns; thus, we assessed whether place of birth was significantly associated with any of the outcome variables. In the current study, significant differences were found only in stress and family finances; being born outside of Norway was significantly associated with reporting higher stress levels and poorer family finances. A small proportion of the sample (7%) was not born in Norway. This is less than in the general population in Norway (13.8%; Statistics Norway, 2017). Our sample is hence probably not representative of the immigrant population in Norway, and the results should be interpreted with this in mind. Further research in a representative sample is needed to investigate how being an immigrant associates with PMeHL and mental well-being. Furthermore, our data do not allow us to differentiate between immigrants from other Western countries and, for example, asylum seekers who will have very different histories and backgrounds that affect mental health.

Implications

In the past two and a half decades, schools have been identified as an important setting for health promotion; numerous studies, evaluations, books, and reports have examined the effects of initiatives promoting health in schools (Leger, Young, Blanchard, & Perry, n.d.). The current analyses provide insight into and guidance on important issues for school health services regarding mental health promotion in the adolescent population. The results indicate that a focus on good mental health can be beneficial for adolescents' mental well-being. The findings may have implications for future educational initiatives targeted toward the adolescent population. This study found that 41% of the variance within the adolescents' mental well-being is explained by gender, age, line of study, parents' education level, family finances, loneliness, stress, self-rated physical health, and knowledge of how to obtain and maintain good mental health (PMeHL). This also means that further study is needed to identify what accounts for the other 59% of the variance. It is reasonable, based on the results, to suggest that school nurses can provide mental health education that focuses on promoting PMeHL. Such education on how to obtain and maintain

good mental health can be found in the dimensions of PMeHL: autonomy, relatedness, and competence (Deci & Ryan, 2000). Every item in the PMeHL scale is considered applicable and translatable into public health practice; thus, the items in the PMeHL scale can be utilized for developing mental health education initiatives for improving PMeHL. To teach PMeHL, school nurses may offer open seminars, classroom seminars, and smaller group discussions with adolescents focusing on, for example, stress management, relaxation techniques, normal emotional variations, sleep hygiene, body image, self-esteem, and autonomy, as well as how to say no, making decisions based on one's own will, and recognizing personal limits.

Factors such as parents' education, family finances, age, and gender are difficult to alter; however, it is useful to know that these factors influence mental well-being when working with adolescents. To promote adolescents' mental health, this study showed that public health education initiatives should address stress, loneliness, and physical health in addition to PMeHL. Although knowledge from education or being mental health literate does not necessarily lead to mental-health-promoting behavior, knowledge is a necessary foundation for making purposeful health-promoting decisions.

The findings of the current study support a progression in mental health education among adolescents to include teaching the adolescents knowledge of factors important to obtaining and maintaining good mental health, versus the traditional focus on mental disorders. The findings suggest that a focus on good mental health has effects on adolescents' mental well-being and should therefore play a role in shaping future health policy to include a focus on good mental health.

Strengths and Limitations

Major strengths of this study include the high response rate and large sample size. Validated instruments and recognized single items were used, although the main independent variable, PMeHL, was measured by a newly developed measure that has not previously been applied. However, the measure was validated among Norwegian adolescents and has been shown to be a valid and reliable instrument for assessing PMeHL. The results should be interpreted while considering some limitations. The data were from a cross-sectional study, and thus we were unable to make any conclusions regarding causality. Our sample consists of a relatively homogenous population of suburban Norwegian adolescents; thus, the results may not necessarily be transferable across cultures and nations. The study was based solely on self-report and was thus subject to potential self-reporting bias. The adolescents may have been prone to social desirability bias when responding to the questionnaire. Furthermore, the questionnaire consisted of closed questions, and if the fixed responses did not reflect their true feelings, the respondents were unable to provide an

alternative response. However, they were able to leave comments on the last question.

Conclusion

Finding new approaches to improving mental health among adolescents is an important responsibility of the school health services. This study found that PMeHL is a significant explanatory variable of adolescent mental well-being. We believe the school nurse is the preferred profession to provide PMeHL education in schools because school nurses are health-care professionals available at schools that provide health education and health promotion. If school health services can be successfully implemented and applied at schools to increase PMeHL in the general adolescent population, these initiatives may positively influence adolescents' mental well-being. Weak gender differences were found, and we therefore suggest increasing PMeHL as a universal approach for adolescents instead of targeting PMeHL education toward one gender in particular. Further research is needed to evaluate PMeHL education provided by school nurses to assess the effect of such education initiatives.

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Supplemental Material

Supplementary material for this article is available online.

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