

Association Between Health and Levels of Health Literacy in 13- to 16-Year-Old Adolescents During the COVID-19 Pandemic: The Case of Lebanon

Canadian Journal of School Psychology
2023, Vol. 38(4) 302–316
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DOI: 10.1177/08295735231197344
journals.sagepub.com/home/cjs



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Abstract

The study assessed health literacy (HL) in Lebanese adolescents and its associations with health during the COVID-19 pandemic. A sample of 228 adolescents (63.1% female), 15.5 ± 1.5 years, took the survey. Data was collected between May and September 2020. The questionnaire consisted of the Health Literacy for School-Aged Children (HLSAC) scale, the Generalized Anxiety Disorder (GAD-7) assessment, sociodemographic characteristics, and health-related variables. Around 84.6% had low to moderate HL. Adolescents with moderate HL were more likely to spend more than 2 hours on sedentary behavior ($OR=0.3$, 95% CI [0.1, 0.9]) and smoke ($OR=0.3$, 95% CI [0.1, 0.8]). Adolescents with high HL had lower odds of having moderate to severe anxiety ($OR=0.2$, 95% CI [0.1, 0.8]) and excess body weight ($OR=0.1$, 95% CI [0.4, 0.5]). Adolescents with high HL had higher odds of having good to excellent health ($OR=1.2$, 95% CI [0.4, 3.7]). Interventions to strengthen HL must be implemented with a focus on at-risk adolescents.

Keywords

health literacy, adolescents, Lebanon, anxiety, health behaviors, social isolation, parents, COVID-19 pandemic

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Introduction

Health literacy (HL) is defined as knowledge and competencies that allow individuals to obtain, understand, and use health information (Ratzan & Parker, 2000). This enables making sound health decisions that affect one's own and others' health. It is an independent predictor of quality of life and a significant determinant of physiological, mental, and psychological health (Jovanić et al., 2018). HL begins in early childhood and continues throughout life (Bröder et al., 2017).

During adolescence, cognitive development, involving an evolution of psychometric intelligence and logical thinking as well as an increase in independent decision-making and information processing, affect how adolescents handle health information (Silbereisen & Weichold, 2012). In general, adolescents are healthy but can be affected by diseases with unique epidemiology involving recurrent minor illnesses or rare illness requiring specialized medical care (Forrest et al., 1997). Moreover, their health knowledge and decision-making are highly dependent on their parents. Adolescents in households with higher socioeconomic status (SES) are more likely to have parents who have high HL (Fleary et al., 2018). These parents are thus better equipped to teach their adolescents HL skills. Conversely, adolescents with parents of low SES are at increased risk for lower preventive health behaviors in adulthood (de Buhr & Tannen, 2020).

In the course of the COVID-19 pandemic, symptoms of depression and anxiety among children and adolescents doubled compared to pre-pandemic era, with pooled prevalence rates of depression and anxiety of 25.2% and 20.5% respectively (Racine et al., 2021). This was attributed to imposed isolation, a feeling of loneliness, and unmet developmental milestones at a time when adolescents need their peers for social support and identity construction (Loades et al., 2020). Additionally, behavioral difficulties increased at peak restriction times, with parents reporting that children (aged 4–10 years) experienced more COVID-19 worries and fears than adolescents (aged 11–16 years) (Creswell et al., 2021).

In Lebanon, 65.8% of adults have insufficient functional HL and 43.8% have limited comprehensive HL that puts them at risk of inappropriate health decisions and unfavorable health outcomes (Bouclaous et al., 2021). Nonetheless, the impact of HL in adolescence is under-researched, and even less in relation to COVID-19. Moreover, between January and September 2020, Lebanon reported 43,480 confirmed cases of COVID-19 (World Health Organization [WHO], n.d.). Several measures were adopted to halt the virus spread including mask wearing, restrictions on public and private gatherings, closure of schools and non-essential businesses, restrictions on domestic movements and international travel, and total lockdown. By July 2023, the country reached a cumulative of 1,238,552 with 10,936 deaths.

Against this background, our study sought to determine HL level among Lebanese adolescents and its associations with anxiety, health behaviors, health status, personal activities and home environment during COVID-19 lockdown. We hypothesized that adolescents with higher levels of HL would be more health-conscious than those with lower HL by being more physically active, indulging less in substance use, reporting lower levels of anxiety, experiencing better perceived health, and stating higher understanding of COVID-19 information, even when confounding variables such as

sociodemographic characteristics are considered. Our study could help educational agents, namely teachers, school psychologists, families and communities, determine the specific needs of Lebanese adolescents, set interventions to strengthen HL level in school settings and beyond, develop health education programs to raise adolescents' understanding of mental health and wellbeing, and promote healthy behaviors such as physical activity, nutrition, and prevention of substance abuse.

Methods

Study Design and Setting

This cross-sectional study was based on convenience sampling of Lebanese adolescents (aged 13 and 16 years). Participants were members of the Lebanese scouts (a voluntary non-political educational movement for young people), and members of church community youth groups. Data collection was completed in May to September 2020, during a period of on/off lockdowns and when school classes were being held online. According to Yamane's formula (Yamane, 1967), a sample size of 204 participants is needed at 95% confidence level with $\pm 7\%$ precision, considering a population size of $N=787,000$ of 10- to 19-year-olds in Lebanon (Central Administration of Statistics, 2019).

Ethical approval was obtained from the Institutional Review Board of the Lebanese American University (IRB #: LAU.SOM.CB2.24/Apr/2020) prior to study initiation. The research was performed in accordance with the ethical standards of the IRB and with the Declaration of Helsinki and its later amendments or comparable ethical standards. The research team contacted several scout organizations and church community youth groups across Lebanon by phone then email. The solicitation included the research proposal, a copy of the survey and the IRB approval. It explained the purpose of the study and that participation was voluntary and anonymous. It provided a link to the online informed consent form and survey, which were uploaded on Google forms. Parental consent was sought, and only adolescents, whose parents or legal guardians approved, were invited to take the survey. Informed consent was also obtained from all individual participants before proceeding to the survey items.

Measures

The questionnaire included items on sociodemographic characteristics such as sex, age, school grade, and educational level of parents. Questions on health behaviors such as smoking and alcohol consumption could be answered by "yes" or "no." Items assessed health status, namely body weight and self-perceived health (using a Likert scale), and childhood chronic illness (with "yes" "no" options). Activities during lockdown assessed, on ordinal scale, time doing homework, watching TV/DVD/videos, playing computer games, using the internet, and performing physical activity. We asked a question on whether the adolescent had an adult at home who listened to them (answered on a Likert scale extending from "not at all true" to "very much true"). The effect of social isolation on studies, and heightened awareness about health in times of COVID-19, were assessed by "yes" or "no" answers.

A validated Arabic version of the Generalized Anxiety Disorder (GAD-7) assessment was used to screen for anxiety symptoms (Sawaya et al., 2016). It consists of seven items that assess severity of generalized anxiety disorder. It asks how often, during the last 2 weeks, participants were bothered by feeling nervous, anxious or on edge, not being able to stop or control worrying, worrying too much about different things, trouble relaxing, being restless, becoming easily annoyed or irritable, feeling afraid as if something awful might happen. Responses were “not at all,” “several days,” “more than half the days,” and “nearly every day,” scored as 0, 1, 2, and 3, respectively. The GAD-7 score is calculated by adding the scores on the seven questions, and ranges from 0 to 21. Four categories are reported: “minimal” (0–4), “mild” (5–9), “moderate” (10–14), and “severe” (15–21) anxiety. In our study, the internal consistency of GAD-7 was good (Cronbach $\alpha = .860$). Anxiety was recoded into two categories (score ≤ 9 and score ≥ 10).

The Health Literacy for School-Aged Children (HLSAC) scale measures subjective HL (O. Paakkari et al., 2016). The scale was developed and validated in Finland among seventh graders (12–13 years old) and ninth graders (14–15 years old). For the Arabic translation, we followed the steps proposed by WHO involving forward translation, expert review, back-translation, pilot testing, and fine-tuning of the final version to ensure linguistic and cultural appropriateness (WHO, 2016). HLSAC is a 10-item instrument with two items for each of the five core components, which are theoretical knowledge, practical knowledge, critical thinking, self-awareness and citizenship. Participants reply to the statement, “I am confident that . . .” using a Likert scale of four options ranging from “not at all true” to “absolutely true,” scored from 1 to 4. The HL sum-scores are interpreted as follows: “low” (score 10–25), “moderate” (score 26–35), or “high” (score 36–40). In our study, the internal consistency of HLSAC was good (Cronbach’s $\alpha = .842$) showing excellent reliability.

Statistical Analysis

Continuous data were presented as mean values with standard deviation (SD), and categorical data as frequency counts and percentages. An adjusted odds ratio (OR) with a 95% confidence interval (CI) was considered to determine the associations of HL (predictor) and health behavior, health status, activities during lockdown and effects of lockdown. We performed multivariate logistic regression, controlling for differences in adolescents’ sociodemographic characteristics including sex, age, education of the mother and father. Data analyses were performed using SPSS, version 28.0 (IBM, SPSS Inc. Chicago, IL, USA), considering a level of significance of .05.

Results

The sample consisted of 228 participants with mean age 15.5 ± 1.5 years. There was a significantly higher proportion of females (63.2%; $n = 144$) and ninth graders (64%; $n = 146$). Table 1 provides the general characteristics of the sample. The adolescents’ health literacy and activity levels during lockdown are presented in Table 2. Table 3

Table 1. General Characteristics of the Study Participants.

Variables (N=288)	Male	Female	Total
	N (%)	N (%)	N (%)
<i>Sociodemographic characteristics</i>			
Educational level of father			
Elementary	7 (08.33)	8 (05.56)	15 (06.58)
Primary	12 (14.29)	32 (22.22)	44 (19.30)
Secondary	27 (32.14)	46 (31.94)	73 (32.02)
University	38 (45.24)	58 (40.28)	96 (42.11)
Educational level of mother			
Elementary	0 (00.00)	3 (02.08)	3 (01.32)
Primary	8 (09.52)	18 (12.50)	26 (11.40)
Secondary	30 (35.71)	36 (25.00)	66 (28.95)
University	46 (54.76)	87 (60.42)	133 (58.33)
<i>Health status</i>			
Childhood chronic illness			
Yes	11 (13.10)	17 (11.81)	28 (12.28)
No	73 (86.90)	127 (88.19)	200 (87.72)
Self-reported health			
Fair	1 (01.19)	12 (08.33)	13 (05.70)
Good	19 (22.62)	33 (22.92)	52 (22.81)
Very good	38 (45.24)	58 (40.28)	96 (42.11)
Excellent	26 (30.95)	41 (28.47)	67 (29.39)
Perception of body weight			
The right weight	49 (58.33)	82 (56.94)	131 (57.46)
Slightly underweight	6 (07.14)	17 (11.81)	23 (10.09)
Slightly overweight	22 (26.19)	37 (25.69)	59 (25.88)
Very overweight	5 (05.95)	3 (02.08)	8 (03.51)
Very underweight	2 (02.38)	5 (03.47)	7 (03.07)
Anxiety			
Minimal	7 (3.07)	14 (6.14)	21 (9.2)
Mild	22 (9.65)	42 (18.42)	64 (28.1)
Moderate	30 (13.16)	55 (24.12)	85 (37.3)
Severe	25 (10.96)	33 (14.47)	58 (25.4)
<i>Health behavior</i>			
Cigarette smoking			
Yes	29 (34.52)	27 (18.75)	56 (24.56)
No	55 (65.48)	117 (81.25)	172 (75.44)
Alcohol consumption			
Yes	37 (44.05)	50 (34.72)	87 (38.16)
No	47 (55.95)	94 (65.28)	141 (61.84)

Table 2. Adolescents' Ease of Understanding COVID-Related Information and Activity Level During Lockdown.

Variables (N=288)	Male	Female	Total
	N (%)	N (%)	N (%)
<i>Health literacy</i>			
Low	12 (5.26)	14 (6.14)	26 (11.4)
Moderate	56 (24.56)	111 (48.68)	167 (73.2)
High	16 (7.01)	19 (8.33)	35 (15.4)
<i>Ease of understanding information</i>			
Sort of easy to understand	22 (26.19)	45 (31.25)	67 (29.39)
Very easy to understand	50 (59.52)	93 (64.58)	143 (62.72)
Sort of hard to understand	12 (14.29)	4 (02.78)	16 (07.02)
Very hard to understand	0 (00.00)	2 (01.39)	2 (00.88)
<i>Daily activities during lockdown</i>			
<i>Homework</i>			
Less than 2 hr	49 (58.33)	83 (57.64)	132 (57.89)
2 hr or more	35 (41.67)	61 (42.36)	96 (42.11)
<i>Watching TV/DVD/videos</i>			
Less than 2 hr	39 (46.43)	46 (31.94)	85 (37.28)
2 hr or more	45 (53.57)	98 (68.06)	143 (62.72)
<i>Computer games (PlayStation/Xbox)</i>			
Less than 2 hr	39 (46.43)	114 (79.17)	153 (67.11)
2 hr or more	45 (53.57)	30 (20.83)	75 (32.89)
<i>The Internet</i>			
Less than 2 hr	12 (14.29)	5 (03.47)	17 (07.46)
2 hr or more	72 (85.71)	139 (96.53)	211 (92.54)
<i>Physical activity</i>			
Less than 2 hr	61 (72.62)	113 (78.47)	174 (76.32)
2 hr or more	23 (27.38)	31 (21.53)	54 (23.68)
<i>Effect of lockdown</i>			
<i>An adult who listens at home</i>			
A little true	13 (15.48)	38 (26.39)	51 (22.37)
Very much true	40 (47.62)	68 (47.22)	108 (47.37)
Pretty much true	21 (25.00)	30 (20.83)	51 (22.37)
Not at all true	10 (11.90)	8 (05.56)	18 (07.89)
<i>Effect of social isolation on studies</i>			
Yes	71 (84.52)	125 (86.81)	196 (85.96)
No	13 (15.48)	19 (13.19)	32 (14.04)
<i>Adapting to staying at home</i>			
Well	33 (39.29)	72 (50.00)	105 (46.05)
Not particularly well	51 (60.71)	72 (50.00)	123 (53.95)
<i>More aware about health in times of corona</i>			
Yes	49 (58.33)	91 (63.19)	140 (61.40)
Not particularly	35 (41.67)	53 (36.81)	88 (38.60)

Table 3. Associations Between HL and Health (Behavior and Status), Information-Seeking Behavior, Activities and Effects of the Lockdown in Times of COVID-19: Multivariate Logistic Regression.

	Health literacy of school-aged 13- to 16-year-old adolescents		
	Odds ratios [95% Confidence interval]		
	Low	Moderate	High
Health behavior			
Cigarette smoking	ref	0.3 [0.1, 0.8]	0.3 [0.1, 1.1]
Alcohol consumption	ref	0.5 [0.2, 1.2]	0.3 [0.1, 0.9]
Health status			
Current weight	ref	0.4 [0.1, 0.8]	0.1 [0.4, 0.5]
Anxiety	ref	0.6 [0.2, 1.3]	0.2 [0.1, 0.8]
Self-reported health	ref	0.9 [0.4, 2.1]	1.2 [0.4, 3.7]
Childhood chronic illness	ref	0.8 [0.2, 2.6]	0.5 [0.1, 2.8]
Information on corona			
Understanding information on corona	ref	1.3 [0.5, 2.4]	18.8 [3.3, 108.2]
Activities during lockdown			
Sedentary behavior (<2 and ≥2 hr)	ref	0.3 [0.1, 0.9]	0.4 [0.1, 1.3]
Physical activity (<2 and ≥2 hr)	ref	1.4 [0.4, 4.4]	0.7 [0.2, 3.1]
Effect of lockdown			
An adult who listens at home	ref	1.4 [0.6, 3.4]	1.5 [0.5, 4.5]
Effect of the social isolation on studies	ref	0.9 [0.3, 3.2]	0.9 [0.2, 4.4]
Adapting to staying at home	ref	1.6 [0.7, 3.9]	1.1 [0.4, 3.5]
More aware about health in times of corona	ref	0.8 [0.3, 2.1]	0.6 [0.2, 1.8]

Note. Bold values indicate significance at $p < .05$. Model adjusted for sex, age, and education of the mother and the father.

shows the associations of health (e.g., health behaviors and health status), activities and effects of lockdown with HL. When compared to the reference low level of HL, adolescents with moderate level of HL were less likely to smoke ($OR=0.3$, 95% CI [0.1, 0.8]), and those with high level of HL were less likely to drink alcohol ($OR=0.3$, 95% CI [0.1, 0.9]). Also, those with moderate and high HL had lower odds of being overweight ($OR=0.4$, 95% CI [0.1, 0.8] and $OR=0.1$, 95% CI [0.04, 0.5], respectively). Adolescents with high HL had lower odds of reporting moderate to severe anxiety ($OR=0.2$, 95% CI [0.1, 0.8]). Adolescents with higher HL had higher odds of having good to excellent self-perceived health ($OR=1.2$, 95% CI [0.4, 3.7]). High HL among adolescents was associated with higher odds of finding it easy to understand information on COVID-19 ($OR=18.8$, 95% CI [3.3, 108.2]). The odds of spending more than 2 hours on sedentary behavior were 70% lower for adolescents with moderate HL ($OR=0.3$, 95% CI [0.1, 0.9]).

Discussion

Research on HL in adolescents is more nascent than in adults, and thus has more limited evidence. Our data showed that adolescents with high HL had significantly lower odds of having moderate or severe anxiety. Data from 2017 to 2018 showed that 8.1% of 12- to 17-year-old adolescents in Lebanon reported clinically significant depressive symptoms (Baroud et al., 2020). In another study, about a third (32.74%) of children and adolescents screened positive for at least one psychiatric disorder, with adolescents (aged 12–17 years) having the highest prevalence estimate (Maalouf et al., 2022). The prevalence of moderate to severe anxiety in our sample was 62.7%, significantly higher than the national rate of 2018. This trend could potentially be attributed to stressors such as political turmoil, corruption, debt, and a refugee crisis from hosting the largest number of refugees per capita in the world. The country was grappling with a dire economic collapse that led to an 80% devaluation of the local currency (Sly, 2020). This triggered a surge in prices of essential commodities in a nation heavily dependent on imports, and pushed over three-quarters of the population below the poverty line (ESCWA, 2021). Compounding the predicament, the Beirut port explosion in August 2020 left thousands injured and hundreds dead; this traumatic event was linked to increased mental strain, reduced well-being and significant worry and anxiety about the future (Bouclaous, Fadlallah et al., 2023).

Evidence shows that adolescents with inadequate HL are more likely to experience anxiety and depression (Zhang et al., 2019). Our findings also underline the role of HL in protecting adolescents against anxiety. During the COVID-19 pandemic, spiking anxiety levels can be moderated by resilience and coping skills developed prior to the pandemic (Rantanen, 2020). This is especially important as 35% of our participants reported being negatively affected by social distancing and isolation. The role of early intervention in helping adolescents with mental health issues has been emphasized but interventions such as the intensive peer mentoring program or the universal classroom-based program have not addressed loneliness and isolation as contextual factors (Loades et al., 2020). Other interventions such as computerized and internet cognitive behavioral therapy programs yielded a medium effect size while computer-delivered attention bias modification programs yielded a small effect size on anxiety and depression (Grist et al., 2019).

A systematic review on HL and smoking reports positive, negative, or no association (Fleary et al., 2018). Our results showed that adolescents with moderate HL had significantly lower odds of smoking. It is worth pointing that smoking might be under-reported due to cultural context (Reisi et al., 2014). Another possible explanation is that smoking and other substance use are subject to peer pressure. Our data also showed that adolescents with high HL had significantly lower odds of consuming alcohol. This is in line with the literature where adolescents with inadequate HL in substance use were more likely to drink alcohol (Yangyuen et al., 2021). Additionally, alcohol consumption has been associated with alcohol expectancies, defined as one's expectations for specific outcomes stemming from drinking (Goldman et al., 1999). Adolescents who had positive alcohol consumption expectancies were more likely to

drink than those who had negative expectancies. In teens with higher HL, expectancies were more strongly predictive of alcohol use behaviors (Chisolm et al., 2014). Adolescents with lower levels of HL may tend to depend on reactive and immediate decision-making rather than rational decision-making that would weigh the risks and benefits of their behavior (Reyna & Farley, 2006).

Our study found that having moderate HL significantly decreased the likelihood of spending more than 2 hours on sedentary behavior. Prior studies have reported a decrease in children and adolescents' physical activity with COVID-19 restrictions (Rossi et al., 2021). Educational agents such as schools and parents need to develop adolescents' HL to positively impact physical activity by stressing the health benefits of sports. Research has also shown that participation in sports clubs minimized disparities in HL resulting from differences in academic achievement (Paakkari et al., 2017). Among adolescents with low and moderate school achievement, participation in sports club activities was associated with higher perceived HL. Moreover, our data demonstrates that adolescents with moderate and high HL had significantly lower odds of being overweight. Low HL has been linked to excess body weight, particularly in adolescents and children (Michou et al., 2018). This finding could be explained by the familiarity of individuals with higher HL with the health consequences of surplus body weight. Schools with strong health education programs could help children embrace healthy eating habits and physical activity. These learned behaviors could be transmitted to the home, leading to "upward pressure" against obesity within the family and community (Shih et al., 2016). Parental HL may also contribute to healthy childhood eating behaviors and improved management of a child's health (Mo et al., 2016). Adolescents with low HL are more likely to come from households with low socioeconomic status including low parental educational level and increased engagement in unhealthy behaviors, and where the environment does not encourage higher HL (Lam & Yang, 2014). In our study, the association between chronic illness and HL was not significant. Parental HL may be a confounding factor that alters the association between adolescent HL and chronic illness.

Our data showed that adolescents with moderate and high HL were more likely to have adults who listen to them at home (measure of family connectedness), though without statistical significance. Findings from Texas have shown that parental HL was the only household predictor of adolescent HL (Melton & Caldwell, 2022). This could be because adolescents are more autonomous and detached from parents. Parents with high HL were more likely to influence their adolescents' behavior by acting as role models for healthy behavior and by providing them with accurate information on behaviors and practices to reduce health risks.

Our results show that adolescents of high HL were more likely to find what they hear about corona easily understandable. HL has been associated with better knowledge and adoption of COVID-19 preventive measures such as handwashing, physical distancing and social contact limitation (Riiser et al., 2020). One way of making information more understandable is by engaging with adolescents. This could involve connecting with them through platforms they commonly use, partnering with youth organizations to create content that is age-appropriate and tailored to different groups

including the marginalized due to gender, disability and background, determining their needs and finding solutions (UNICEF, 2020). A study among Lebanese university students showed that reliance on social media for information on COVID-19 was associated with a lower capacity to evaluate information reliability (Bouclaous, Kamand et al., 2023). Since more than 92% of our sample spend a considerable amount of time surfing the Internet daily, efforts should be exerted to design interventions such as the creation of educational videos that demonstrate proper use of the Internet, ways to assess relevance and reliability of online health information, and the use of this information to make appropriate health decisions. The help of influencers, role models and celebrities can be solicited to achieve this goal among youth.

Schools have a key role to play in the development of HL, as they have a nearly universal reach. The problem lies in how well HL is integrated in school programs. In Lebanon, 70% of schools provide health-related courses in their curricula, with dental health, physical activity and smoking cessation as the most cited topics and mental health as the least cited (Akel et al., 2019). Moreover, 60% of schools seek to promote community members' active involvement in school life, and around two-thirds have health promotion policies in place, yet less than half of these schools established plans to guarantee the achievement of health promotion goals and assessment of program effectiveness. Focus should be placed on fostering collaboration between the health and educational sectors, training schools to implement HL in their curricula and ensuring the availability of financial and professional resources for such implementation (WHO, 2021).

Moreover, preventive support and timely interventions must be offered by clinical services to combat any increase in mental health disorders (Loades et al., 2020) resulting from the pandemic. A focus on mental health literacy may improve outcomes through facilitating help-seeking by the adolescents themselves or through improving adults' ability to identify adolescents' mental health disorders earlier and seek help on their behalf (Kelly et al., 2007). This effort can be led by schools.

Our study is not without its set of limitations. Our survey was conducted online, which might have compromised the participation of adolescents without internet access or with low digital competencies (potentially revealing a digital divide). The study focused on a convenience sample of 13- to 16-year-olds because the HLSAC was validated in this age group. Hence, our findings may not be representative of the whole adolescent population (10–19 years old). In addition to the COVID-19 pandemic, Lebanon faced a crippling financial and economic crisis, mass protests, significant inflation and poverty, the Beirut port explosion, fuel and medicine shortages, rising food prices, and loss of public services. These unique events may constitute confounding factors and affected the generalizability of our findings to other settings. Also, there may have been a social desirability bias especially in participants' self-report of sensitive issues like smoking, drinking, time spent on computer games, educational level of parents, or assimilation of health information. Moreover, the cross-sectional design prevents the establishment of causal relationships between variables, making it unclear whether health literacy is co-occurring with or leading to greater health, lower anxiety, and healthier lifestyle during the COVID-19 pandemic.

Conclusion

This study assessed HL among Lebanese adolescents and its associations with health and behavior during the COVID-19 pandemic. Lower HL levels were associated with unhealthy lifestyle, difficulty in understanding COVID-19-related information, higher anxiety and lower perceived health. Strengthening HL would ensure that adolescents learn to adopt healthy behaviors regardless of peer pressure and make appropriate health decisions, a competence they will need throughout life. HL can be remediated through incorporation of age- and grade-specific HL goals in school curricula. Additionally, there is a need for baseline information on mental health literacy among youth and caretakers to assess whether they can identify mental health problems and seek help when needed.

Author Contributions

CB: Conceptualization, Design, Methodology, Supervision, Project Administration, Investigation, Formal Analysis, Interpretation, Visualization, Writing-Original Draft, Writing-Revised Draft RD: Investigation, Formal Analysis, Interpretation, Writing-Original Draft WO: Investigation, Formal Analysis Writing- Original Draft RR: Formal Analysis, Interpretation, Writing-Original Draft HH: Investigation, Formal Analysis, Writing-Original Draft.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.


Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical Approval

Ethical approval was obtained from the Institutional Review Board of the Lebanese American University (IRB #: LAU.SOM.CB2.24/Apr/2020) prior to study initiation.

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