

Contents lists available at ScienceDirect

Journal of Exercise Science & Fitness

journal homepage: www.elsevier.com/locate/jesf

Results from the Lebanese 2022 report card on physical activity for children and youth ☆, ☆ ☆, ☆ ☆ ☆

Patrick Abi Nader ^{a, *}, Ruba Hadla ^b, Lina Majed ^c, Lama Mattar ^d, Suzan Sayegh ^e^a Département des Sciences de la santé, Université du Québec à Rimouski, Rimouski, Québec, Canada^b Faculty of Health Sciences, American University of Beirut, Beirut, Lebanon^c Physical Education Department, College of Education, Qatar University, Doha, Qatar^d School of Arts and Sciences, Lebanese American University, Beirut, Lebanon^e Aspetar Orthopaedic and Sports Medicine Hospital, Doha, Qatar

ARTICLE INFO

Article history:

Received 25 July 2022

Received in revised form

18 October 2022

Accepted 20 October 2022

Available online 27 October 2022

Keywords:

Health promotion

Childhood obesity

Sports

Physical activity advocacy

Leisure

Recreation

ABSTRACT

Objective: The Lebanese Active Healthy Kids Work Group (LAHKWG) synthesized literature published on physical activity (PA) indicators among ages 5- to 17- year-olds, using a recommended harmonized process by the Active Healthy Kids Global Alliance (AHKGA), to explore Lebanon's performance since its previous report card publication.

Methods: Peer reviewed literature, national surveys, and gray literature published since 2017, on 10 common AHKGA and two LAHKWG recommended indicators were examined. Common indicators included overall PA, organized sport and PA, active play, active transportation, community and environment, sedentary behaviors, physical fitness, family and peers, school, and government. LAHKWG recommended indicators were sleep and weight status. LAHKWG members reviewed 764 records, of which 28 were selected for full review. A grade was assigned for each indicator using AHKGA's grading rubric and established benchmarks on data from nationally representative samples for children and youth.

Results: Data from one nationally representative sample were available for ages 13–17 years (i.e., no data <13 years). Five indicators received “Incomplete” (organized sport and PA; active Play; physical fitness; family and peers; community and environment); overall PA received a D-; active transportation and sleep received a D+; school and government received a D; sedentary behaviors received a C; and weight status received a B-.

Conclusion: The LAHKWG strongly encourages stakeholders to take concrete actions towards prioritizing PA promotion at a national level especially in the education sector. Offering more quality PA opportunities for Lebanese children and youth will be beneficial for their physical and mental health in any context.

© 2022 The Society of Chinese Scholars on Exercise Physiology and Fitness. Published by Elsevier (Singapore) Pte Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

* All authors (PAN, RH, L.Majed, L.Mattar, and SS) critically reviewed an edited all versions of the article that lead to the current final version. Additionally, RH wrote the introduction and collaborated on the methods section with L.Mattar. L.Majed wrote the first version of the results. PAN wrote the first version of the discussion and re-wrote certain sections to make sure that the full document was coherent.

** All authors agreed with the content of the submitted version of this manuscript to JESF. The content of this manuscript has not been submitted for publication and is not published elsewhere.

*** Authors were not funded to complete this work and have no conflicts of interest to declare.

* Corresponding author. 300 allée des ursulines, université du Québec à Rimouski, Rimouski, Québec, CA, G5L 3A1, Canada.

E-mail addresses: patrick_abinader@uqar.ca (P. Abi Nader), rah117@mail.aub.edu (R. Hadla), lina.majed@qu.edu.qa (L. Majed), lama.mattar@lau.edu.lb (L. Mattar), suzan.sayegh@gmail.com (S. Sayegh).

Abbreviations

AHKGA =	Active Healthy Kids Global Alliance
BMI =	Body Mass Index
GSHS =	Global School-Based Health Survey
LAHKWG =	Lebanese Active Healthy Kids Work Group
MENA =	Middle East and North Africa
MVPA =	moderate-to-vigorous physical activity
PA =	Physical activity
PE =	Physical Education
WHO =	World Health Organization

1. Introduction

International guidelines provide evidence that daily 60 min of moderate-to-vigorous physical activity (MVPA) among children and youth (i.e., 5–17-year-olds) are beneficial for health.¹ Despite the wide dissemination of these guidelines for at least the past decade, only 1 in 5 adolescents from 149 countries meets or exceeds them.² This highlights an urgency to take action to facilitate the integration of physical activity (PA) as a lifelong habit. Through a rigorous and harmonized international process the Active Healthy Kids Global Alliance (AHKGA) spearheaded the publication of several Global Matrices combining country-specific PA report cards.^{3–5} These international collaborations were an effort to facilitate knowledge transfer between countries to learn from each other's successes and challenges. In 2018, to benefit from this rich experience, Lebanon—a small country from Asia—joined Global Matrix 3.0 and published its first exhaustive synthesis of PA literature for Lebanese children and youth.⁶

In Lebanon's first PA report card (2018), four indicators lacked data (active play, family and peers, community and environment, and physical fitness) and those that were graded received grades between “C–” and “D”, hence, revealing a great need for monitoring and implementing changes in Lebanon.⁶ To support stakeholders in their actions, the Lebanese Active Healthy Kids Work Group (LAHKWG) identified seven primary objectives that could be targeted (for full details see cited publication).⁷ Therefore, to examine Lebanon's progress since the publication of the first report card, the LAHKWG joined Global Matrix 4.0 and conducted an exhaustive synthesis of all PA literature that were recently published, while excluding the selection criteria used in the first report card (i.e., all PA publications up to 2017) to capture and synthesize new literature. Staying up to date on Lebanon's performance is necessary to verify that the country is moving its PA performance in the right direction and to identify any challenges to quickly address them. In this special issue for country report cards from Asia, the LAHKWG describes all the precise steps that were undertaken and audited by AHKGA to verify Lebanon's performance on 10 common PA indicators from Global Matrix 4.0 and two indicators that were chosen by LAHKWG. To avoid misrepresenting national trends, data from nationally representative samples were retained to complete the grading of PA indicators following AHKGA's scoring rubric and recommended benchmarks.

2. Methods

Five national and international researchers (i.e., LAHKWG) planned and completed all the required steps to create the 2022 Lebanese PA report card for children and youth. Initially, an exhaustive list of search strategies that was revised by an experienced librarian, was implemented (up to December 2021) to

identify all peer-reviewed literature, national surveys, and gray literature (e.g., government reports) published since December 2017 (the last date used for inclusion of publications in the previous report card) on nationally representative samples for Lebanese children and youth (5–17-year-olds). The search criteria were restricted to identifying 10 common PA indicators recommended by AHKGA (overall PA, organized sport and PA, active play, active transportation, sedentary behaviors, physical fitness, family and peers, school, community and environment, and government), and two indicators chosen by LAHKWG. Specifically, publications on weight status, an indicator that was reported in the first PA report card for Lebanon, were sought. Furthermore, sleep behavior was added as a number of countries now have guidelines on sleeping behaviors that are integrated into guidelines on movement behaviors.⁸

The LAHKWG also sought available data at the Ministries of Education and Higher Education, Public Health, Youth and Sports and the regional office of the World Health Organization. The exhaustive list of search strategies was implemented in Ovid Medline by one author (PAN) to identify all peer-reviewed articles that addressed any of the 12 indicators and found 764 unique records. The selection process was conducted in three steps to ensure that highest levels of rigor were followed. First, a review of articles' titles was performed by two reviewers independently (LMaj and RH). Inter-rater reliability was calculated and was over 80%. Disagreements were resolved by a third reviewer (PAN) and a total of 82 articles were retained for the second step that consisted of an abstract review. For this, two pairs of two researchers (PAN and SS, LMaj and RH) independently reviewed half the articles and agreed on the selection of 29 articles for full review. In the third and final step, four graduate research assistants supervised by LMat, completed the full article review and their work was revised by LMat and PAN. Upon full review, none of the publications were found to meet all inclusion criteria (i.e., reported at least one of the 12 indicators and were from a nationally representative sample for children and youth).

One source of data collected by the world health organization (WHO) in 2017 via the Global School-Based Health Survey (GSHS) was used to report on several indicators. Specifically, in GSHS, a sample of schools and then classrooms were randomly and proportionally selected to be representative from an exhaustive list of all private and public schools obtained from the Ministry of Education and Higher Education. A total of 5708 students (Grades 7–12, which is equivalent to ages 13–17) from 56 schools were surveyed. The students completed an anonymous, self-administered 88-item questionnaire which included 10 core modules addressing leading causes of morbidity and mortality among children and youth worldwide.⁹ For grading, the LAHKWG followed the recommended grading rubric (Table 1) by the AHKGA for the inception of country reports for participants of Global Matrix 4.0.¹⁰ Where appropriate, the LAHKWG considered trends over time and actual efforts being done in the Lebanese context to help inform grades for certain indicators. The LAHKWG met in January and February 2022 to agree on a grade for each indicator. The AHKGA audited and approved the final grades in February and March 2022.

3. Results

Table 2 summarizes the grades assigned to indicators in the 2022 Lebanese PA Report Card. A concise description of indicators' grades is provided in the short form of the 2022 Lebanese Report Card for which the cover page is presented in Fig. 1. All graded indicators presented below (except the government indicator) were based on data from the 2017 Lebanese GSHS. The GSHS was completed by youth aged 13–17 years, hence, the grading does not

Table 1
Grading rubric.

Grade	Interpreting the grade
A+	Succeeding with 94%–100% of the targeted population
A	Succeeding with 87%–93% of the targeted population
A-	Succeeding with 80%–86% of the targeted population
B+	Succeeding with 74%–79% of the targeted population
B	Succeeding with 67%–73% of the targeted population
B-	Succeeding with 60%–66% of the targeted population
C+	Succeeding with 54%–59% of the targeted population
C	Succeeding with 47%–53% of the targeted population
C-	Succeeding with 40%–46% of the targeted population
D+	Succeeding with 34%–39% of the targeted population
D	Succeeding with 27%–33% of the targeted population
D-	Succeeding with 20%–26% of the targeted population
F	Succeeding with less than 20% of the targeted population
INC	No available data or available data were insufficient or inadequate to inform a grade

Adapted from Global Matrix 4.0.¹⁴.

reflect Lebanon's performance with younger children (i.e., 5–12-year-olds) as no nationally representative data were available for this age group. Five indicators (Organized sport and PA, Active Play, Physical Fitness, Family and Peers, and Community and Environment) received an incomplete grade (INC) due to the lack of nationally representative data that addressed any of the recommended benchmarks for these indicators.

Overall PA: 20.7% of adolescents reported being physically active for at least 60 min per day on five or more days of the week prior to data collection. Additionally, a larger proportion (28.5%) of male participants reported achieving the benchmark as compared to female participants (14.3%) and a greater percentage of private school students (22.9%) attained the benchmark as compared to students in public school (17.1%).⁹ No additional differences between grades were reported for overall physical activity. A “D-” was assigned to the overall PA indicator.

Active Transportation: 63.2% of participating adolescents did not use active transportation means, specifically walk or bike to and from school in the 7 days prior to partaking in the GSHS. Hence, 36.8% of the sample (grade of D+) used active transportation means and a statistically significant difference was identified between male and female study participants. Specifically, a larger proportion (42%) of male adolescents as compared to female adolescents (32.4%) used active transportation means 7 days prior to partaking in the GSHS.⁹ No further differences in active transportation were identified between grades or school type.

Sedentary Behaviors: 44.8% of study participants engaged in at least 3 h per day in sedentary pursuits that included screen-based

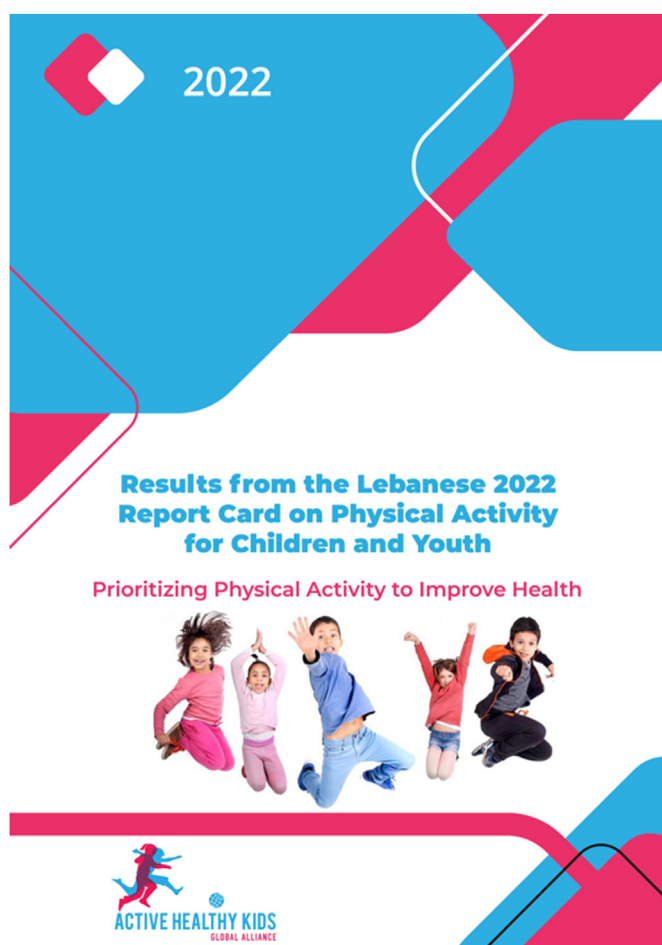


Fig. 1. Front cover of the 2022 Lebanese physical activity report card.

Table 2

Grades assigned to indicators in the 2022 Lebanese report card on physical activity for children and youth.

Indicator	Grades
Overall Physical Activity	D-
Organized Sport and Physical Activity	INC
Active Play	INC
Active Transportation	D+
Sedentary Behaviors	C
Physical Fitness	INC
Family and Peers	INC
School	D
Community and Environment	INC
Government	D
Sleep	D+
Body Mass Index (BMI)	B-

Note. If applicable a “*” is added to the grade if it is based on mixed data; device-measured and self-reported; and a “**” is added to the grade if it is based on device-measured data exclusively.

activities for leisure in addition to non-screen-based sitting activities.⁹ This implies that about 55.2% of participants (grade of C) engaged in less than 3 h of sitting activities per day. For the sedentary behavior's indicator, no statistically significant differences were reported between grades, sexes, or school type.

School: 31.5% of participants attended a physical education (PE) class on two or more days per week during the current school year. A greater proportion of male adolescents (27.6%) reported participating in PE classes as compared to female adolescents (17.9%)

(note: the cut-off used for the comparison was attendance in three or more weekly sessions of PE).⁹ No statistically significant differences were reported between grades or school type on this indicator.

Government: Evidence-based recommendations are provided on the integration of PA initiatives at schools in the Knowledge 2 Policy (K2P) center's policy brief. The brief indicates that a few stakeholders in Lebanon are making a priority out of the promotion of PA.¹¹ The policy brief detailed prior governmental efforts and financial resources exerted on PA and targeting Lebanese children. A grade of D was selected for this indicator.

Sleep: Approximately 37.2% (grade D+) of participating adolescents reported sleeping 8 h or more per night on an average school night.⁹ In addition, sleeping behavior did not present any statistically significant differences between grades, sexes, or school type.

Weight status reported by the measurement of Body Mass Index (BMI): 32.1% of adolescents were classified as being overweight or obese while 4.3% of them were underweight according to the WHO's classification for BMI using age and sex distribution for height and weight.⁹ Therefore, 63.6% of participants were classified as having a normal weight (grade of B-). A higher proportion of male participants were classified as overweight or obese (39.8%) as compared to female participants (25.5%). No other statistically significant differences between grades or school type were reported for BMI.

4. Discussion

The 2022 report card highlights that Lebanon's performance on several PA indicators was improved, worst, or remained stable as compared to the 2018 report card. In 2022, five indicators (organized sport and PA, active play, physical fitness, family and peers, community and environment) had incomplete data as compared to four (PA, active play, physical fitness, family and peers, community and environment) in 2018. This result continues to support the need to conduct national surveillance studies to fill gaps in the literature. Two indicators received a lower score (overall PA, and government). Suggesting the need to nationally prioritize PA promotion. Three indicators received a higher grade (active transportation, sedentary behaviors, weight status), which might suggest positive societal changes that must be confirmed in future surveillance studies. One indicator remained stable (school), highlighting that the status quo at schools must be addressed.

Lebanon's context: It is important to interpret the 2022 report card grades while considering Lebanon's context which can hamper the application of any suggested recommendations. Lebanon published its first PA report card for children and youth in 2018,⁶ during a period that was relatively stable economically and politically.¹² Therefore, it was a period during which stakeholders could technically implement various actions based on recommendations to prioritize PA promotion. Between the time of publishing the first report card and the time that the 2022 one was developed and disseminated (2018–2022), numerous unfortunate and difficult events transpired in Lebanon bringing any prevention and action efforts, and surveillance studies to update the literature to a halt.^{12–14} More specifically, the economic crisis that began in October 2019, the enormous explosion at the port of Beirut on August 4 2020, which caused high rates of deaths and injuries, and displaced more than 300 000 individuals, and finally the COVID-19 pandemic that further exacerbated the impacts of the other two events.^{12–14} Acknowledging the occurrence of these national crises and their short, mid, and long-term effects on the population is important as it will help stakeholders prioritize PA promotion strategies that the population will most likely benefit from during

challenging life events (such as focusing on daily survival).¹⁴ In 2021, it was reported that more than 80% of Lebanese citizens were living in multidimensional poverty, and with soaring inflation rates this percentage may further increase.¹⁴

It is of great concern that a generation of Lebanese children and youth may experience permanent negative health outcomes as a result of recurrent exposure to stressful life events.^{15–17} Prioritizing engagement in PA (as a lifelong habit) might be a solution to alleviate or reduce the negative health consequences of stressful life events.^{18–21} In fact, previous research has shown positive health outcomes when used with individuals who have experienced traumatic events and/or regular life's stressors.^{18–20} Research suggests that participating in PA whether it is organized or unorganized may be a natural choice for youth when exposed to life stresses.²² Hence, stakeholders' role may need to be more focused on facilitating the adoption of physical activity by offering children and youth the safe space needed for unorganized PA and providing them with accessible opportunities to participate in organized sports. Although the 2022 Lebanese report card on PA for children and youth only reports data for youth above the age of 12 years old, it highlights several areas where stakeholders may intervene to improve upon current scores.

Overall PA: In the 2022 report card this indicator received a lower grade (D-) as compared to the previous report card (D).^{6,7} Additionally, the publicly reported data that were used to assign this grade were not available in a format that permitted its matching with one of the two benchmarks that are recommended by AHKGA, which makes it suboptimal for comparison with other countries. To improve upon this indicator the LAHKWG recommends to: 1) Prioritize schools as primary intervention sites to offer better quality PE, more opportunities for PA during and before or after the school day, and increase support to public schools; 2) conduct national campaigns to reshape cultural norms regarding female participation in PE and PA opportunities; and 3) develop and enact a strategic plan to promote PA at a national level with a selected group of primary PA stakeholders.

Organized Sport and PA: In the 2022 report card this indicator did not receive a grade as no data were available to grade it. This is a change from the previous report card in which organized sport and PA had received an F.^{6,7} However, even then, the available data were not optimal as they were a report of the percentage of children and youth that participated in sports events that were organized by the Ministry of Youth and Sports.⁶ As such, to improve this indicator, firstly measurement of the related benchmarks must occur on a nationally representative sample in collaboration with the Ministry of Youth and Sports to measure, at the very least, a baseline assessment. The collected data will inform policy, funding and resource allocation that should occur to improve Lebanon's performance on the indicator. This work should decrease the national focus on competitive sports as organized sports and PA must be accessible to all performance, interests, and ability levels.

Active Play: Data on active play have consistently been unavailable for report card grading.^{6,7} Unorganized active play is regarded as very beneficial for human development and must be prioritized and facilitated.²³ Hence, Lebanese stakeholders must implement nationally representative research to concretely evaluate Lebanon's performance on the indicator by directly measuring benchmarks of the indicator. This information will help stakeholders make the best decisions regarding how outdoor play areas should be modified and where their availability should be increased to support children and youth's active play time. Lebanese stakeholders can lead national efforts to promote active play by enacting national sports days or weeks, or by implementing traffic calming or traffic limiting laws in residential neighborhoods.^{24,25}

Active Transportation: In the 2022 report card active transportation received a D+ which is an increase from the previous report (D).^{6,7} Nationally, this looks like a slight improvement, however, it is impossible to link this slight improvement to any action taken by Lebanese stakeholders. Therefore, the report card may have just identified a natural variation in the behavior between different cohorts of individuals that completed the survey. To improve on the indicator, it is recommended to collaborate with the Ministry of Education and Higher Education to: (1) develop and implement a policy that requires schools to prioritize enrolment of students residing within the limits of the school district; (2) assist schools in planning and implementing safe routes to school programs to ensure children and youth's safety²⁵; (3) create national media campaigns to promote the behavior among all segments of the targeted population, especially females. For future report card development, measurement of the indicator should also include active transportation from and to any location (i.e., not just schools).

Sedentary Behaviors: This indicator improved from C- to a C since the last report card.^{6,7} However, this slight increase could be explained by the change in how data were reported in the 2022 report card. Specifically, the cut-off used to report the percentage of youth participating in sedentary behaviors was based on 3 h per day of sitting activities and not 2 h per day of screen-based leisure activities as recommended by AHKGA and used in the first report card.^{6,7} Hence, for future report card development measurement of the indicator should be modified to match the recommendations. Additionally, the current measurement also included non-screen-based activities (e.g., *talking with friends*) which may have further biased the results. Nevertheless, targeted efforts to improve this indicator should focus on: (1) the creation and dissemination of national guidelines via mass campaigns that highlight negative impacts of sedentary behaviors, and (2) increasing the availability of PA opportunities where people live.²⁶

Physical Fitness: Since the first participation of Lebanon in the development of report cards, no data have been available to grade this indicator.^{6,7} In the development of future report card, this is yet another indicator that should be prioritized and funds should be made available to create the first national database for Lebanon's children and youths' fitness level. Monitoring fitness levels through regular assessments of [at least] health-related fitness components (e.g., cardiorespiratory endurance and musculoskeletal fitness) in schools would reflect future trends of the population's health and offer comparisons to worldwide references.

Family and Peers: This indicator also lacks data for grading since the first report card.^{6,7} As family and peers are a critical component of the support system for each individual, it is becoming increasingly important to fill the gap in this literature to ascertain that children and youth are receiving the right type of support, especially during economic and political crises.^{12,14} The LAHKWG also suggests to invite parents to participate in safe routes to school programs as they may also benefit from this additional opportunity to be physically active.²⁷

School: This indicator received the same grade (D) as in the previous report card.^{6,7} In both report cards however, self-reported participation in the number of weekly PE sessions was used as a proxy to grade the indicator (i.e., none of the recommended benchmarks by AHKGA for the indicator were measured). Contextually, it is also important to note that since 1997, the Lebanese PE curriculum recommends (i.e., does not mandate) that schools offer two classes per week of PE for all grade levels except for the last year of high school for which it is recommended to offer one class per week.²⁸ Therefore, the LAHKWG suggests to make the two PE hours per week mandatory, and require that these sessions be led by trained PE specialists. Additionally, as children and youth spend

most of their time on school property, it is recommended to prioritize schools as sites for the promotion of increased PA by increasing the availability of PA opportunities and resources.

Community and Environment: No data were available in Lebanon to assign a grade for this indicator.^{6,7} Historically, exposure to external causes of injury is notoriously high in Lebanon, such that perceived safety of neighborhoods and community may have been impacted.²⁹ Through rigorous measurement of the built environment and walkability of communities, Lebanese stakeholders may be able to better identify features of the community and its environment that should be modified to facilitate PA behavior. Communities may also benefit from implementing sports for development initiatives to foster peace, collaboration, and acceptance among diverse members of the community as these initiatives have proven to be effective agents of change elsewhere.^{30,31}

Government: The grade on this indicator decreased from C+ in the previous report card to a D in the 2022 report card.^{6,7} In both report cards, the LAHKWG highlighted that the K2P center elaborated a policy brief that integrated PA initiatives at schools. In the previous report card, the policy brief was a new effort that was mandated by Lebanese stakeholders, however, in the 2022 report card this effort was no longer new and four years later it was impossible to assess how and by whom the policy brief was being utilized to make any modifications. The LAHKWG recommends that the government initiates a national task force to develop and implement a national PA plan that includes a national surveillance system and numerous well-funded strategies to promote healthy behaviors.

Sleep: This is the first time that LAHKWG reports on sleep in the report card. A grade of D+ was assigned, which demonstrates that Lebanon is succeeding with four out of ten youths in attaining international recommendations for sleeping behavior. It is concerning, however, that 60% of youth are not sleeping enough every day. As a movement behavior, sleep has also been associated with negative health outcomes such as poorer emotional regulation, lower cognitive function, lower academic achievement, lower PA levels, and greater levels of sedentary behaviors among other things.³² In addition, to promoting PA behaviors, schools can become a site for the promotion and prevention of suboptimal sleeping behaviors.

Weight status reported by the measurement of Body Mass Index (BMI): This indicator improved since the last report card from a C to a B-.^{6,7} In light of the recent food shortages and poverty estimates, the LAHKWG recommends the continued monitoring of weight status to ensure that the country is not experiencing an increase in the number of children and youth who live with a concerning low-level BMI for their age and sex, or are not developing chronic malnutrition and stunting.

5. Strengths and limitations

This report card used the best available evidence to evaluate PA indicators in Lebanon. Additionally, the scientific team followed very rigorous methods to evaluate the literature. Despite that, several limitations should be considered while interpreting the results. Most importantly, this report card focuses on data for youth between the ages of 13 and 17 years. Data for children between the ages of 5–12 years were not available for any of the indicators based on the GSHS. For future work, it is of the utmost importance to make those data available. Moreover, available data were measured in 2017. This means that all the difficulties and problems lived by Lebanese from 2018 to 2022 are not reflected in the report card. Hence it is very likely that grades in this report card do not represent the updated reality. In addition, several indicators for

which a grade was reported were not measured with exact benchmarks that are recommended by AHKGA, which might further limit the usability of the grade from a public health standpoint.

6. Conclusion

The 2022 Lebanese physical activity report card for children and youth identified several gaps in the literature that must be addressed in future national efforts to facilitate PA behavior. Lebanon's low performance on several indicators supports the need for Lebanese stakeholders to take immediate actions. Building the momentum to make important societal changes requires commitment and time. Despite hardships in Lebanon, it remains essential to improve availability and access to increased PA opportunities. PA opportunities may play a seminal role in the maintenance of wellbeing amid unprecedented and stressful events.

Funding support

This study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgements

Members of the LAHKWG would like to thank Ms. Rena Al Atar, Ms Joy Khalil, Ms Mariam Hakim, and Ms Melissa Barakat all from the Lebanese American University for their diligent and rigorous review of the literature. Additionally, without the contributions of Mr. Majed Moghrabi the LAHKWG would not have had a designed quality report card to disseminate with the Lebanese population.

References

- Bull FC, Al-Ansari SS, Biddle S, et al. World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *Br J Sports Med.* 1451;54:20. doi: 10.1136/bjsports-2020-102955.
- Guthold R, Stevens GA, Riley LM, Bull FC. Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1.6 million participants. *Lancet Child Adolesc Heal.* 2020;4(1):23–35. [https://doi.org/10.1016/S2352-4642\(19\)30323-2](https://doi.org/10.1016/S2352-4642(19)30323-2).
- Tremblay MS, Gray CE, Akinroye K, et al. Physical activity of children: a global Matrix of grades comparing 15 countries. *J Phys Activ Health.* 2014;11(s1):S113–S125. <https://doi.org/10.1123/JPAH.2014-0177>.
- Tremblay MS, Barnes JD, González SA, et al. Global Matrix 2.0: report card grades on the physical activity of children and youth comparing 38 countries. *J Phys Activ Health.* 2016;13(s2):S343–S366. <https://doi.org/10.1123/JPAH.2016-0594>.
- Aubert S, Barnes JD, Abdeta C, et al. Global Matrix 3.0 physical activity report card grades for children and youth: results and analysis from 49 countries. *J Phys Activ Health.* 2018;15(s2):S251–S273. <https://doi.org/10.1123/JPAH.2018-0472>.
- Abi Nader P, Majed L, Sayegh S, et al. First physical activity report card for children and youth in Lebanon. *J Phys Activ Health.* 2019;16(6):385–396. <https://doi.org/10.1123/JPAH.2018-0473>.
- Lebanese Active Healthy Kids Work Group. *The first lebanon physical activity report card For Children And Youth Improving Context to Facilitate Behaviour Change 2018*; 2018, 25th of July 2022 <https://www.activehealthykids.org/lebanon/>.
- Canadian 24-Hour movement guidelines for Children and Youth: An Integration of Physical Activity, Sedentary Behaviour, and Sleep PREAMBLE; 2016. www.csep.ca/guidelines/PAR6253_24Hour_Guidelines.indd1. Accessed July 5, 2022.
- Ministry of Public Health. Ministry of education and higher education, world health organization. *Global School-Based Student Health Survey Report Lebanon 2017*; 2018;1–154. https://www.moph.gov.lb/userfiles/files/GSHS_Report_2017.pdf.
- Aubert Salomé, Barnes Joel D, Demchenko Iryna, et al. Global matrix 4.0 physical activity report card grades for children and adolescents: results and analyses from 57 Countries. *J Phys Activ Health.* 2022 <https://doi.org/10.1123/jpah.2022-0456>. Advance online publication.
- Saleh R, Nakkash R, El-Jardali F. *K2P Policy Brief: Promoting Effective School Policies for Childhood Overweight and Obesity Prevention in Lebanon.* 2019. <https://doi.org/10.1177/0022146511411423>. Beirut, Lebanon.
- Majed R, Salman L. Lebanon's Thawra Cite This Paper Related Papers.
- Koweyes J, Salloum T, Haidar S, Merhi G, Tokajian S. COVID-19 pandemic in Lebanon: one year later, what have we learnt? *mSystems.* 2021;6(2). <https://doi.org/10.1128/msystems.00351-21>.
- ESCWA United Nations. *Multidimensional Poverty in Lebanon (2019-2021): Painful Reality and Uncertain Prospects.* 2021:1–6.
- Maalouf FT, Haidar R, Mansour F, et al. Anxiety, depression and PTSD in children and adolescents following the Beirut port explosion. *J Affect Disord.* 2022;302:58–65. <https://doi.org/10.1016/j.jad.2022.01.086>.
- El Khoury Malhame M, Harajli DA, Reykowska D, Ohme R. Traumatic effect of Beirut port explosion on Lebanese people's experiences. *SSRN Electron J TA - TT -*; 2021. <https://doi.org/10.2139/ssrn.3929408.LK>. <https://uqar.on.worldcat.org/oclc/9296250262>.
- Magruder KM, McLaughlin KA, Borbon DLE. Trauma is a public health issue. *Eur J Psychotraumatol.* 2017;8(1). <https://doi.org/10.1080/20008198.2017.1375338>.
- Rosenbaum S, Vancampfort D, Steel Z, Newby J, Ward PB, Stubbs B. *Physical Activity in the Treatment of Post-traumatic Stress Disorder: A Systematic Review and Meta-Analysis.* 2015. <https://doi.org/10.1016/j.psychres.2015.10.017>.
- Stults-Kolehmainen MA, Sinha R. The effects of stress on physical activity and exercise. *Sports Med.* 2014;44(1):81–121. <https://doi.org/10.1007/s40279-013-0090-5>.
- Allender S, Hutchinson L, Foster C. Life-change events and participation in physical activity: a systematic review. *Health Promot Int.* 2008;23(2):160–172. <https://doi.org/10.1093/heapro/dan012>.
- Corder K, Winpenny E, Love R, Brown HE, White M, Van Sluijs E. Change in physical activity from adolescence to early adulthood: a systematic review and meta-analysis of longitudinal cohort studies. *Br J Sports Med.* 2019;53:496–503. <https://doi.org/10.1136/bjsports-2016-097330>.
- Abi Nader P, Ward S, Eltonsy S, Bélanger M. The impact of life stresses on physical activity participation during adolescence: a 5-year longitudinal study. *Prev Med.* 2018;116:6–12. <https://doi.org/10.1016/j.ypmed.2018.08.030>.
- Kemple KM, Oh J, Kenney E, Smith-Bonahue T. The power of outdoor play and play in natural environments. *Child Educ.* 2016;92(6):446–454. <https://doi.org/10.1080/00094056.2016.1251793>.
- Verhoeven H, Van Hecke L, Van Dyck D, et al. Differences in physical environmental characteristics between adolescents' actual and shortest cycling routes: a study using a Google Street View-based audit. *Int J Health Geogr.* 2018;17(1):1–15. <https://doi.org/10.1186/S12942-018-0136-X/TABLES/5>.
- Van Sluijs EMF, Jones NR, Jones AP, Sharp SJ, Harrison F, Griffin SJ. School-level correlates of physical activity intensity in 10-year-old children. *Int J Pediatr Obes.* 2011;6(2-2):574–581. <https://doi.org/10.3109/17477166.2010.518239>.
- Sarmiento OL, Rios AP, Paez DC, Quijano K, Fermino RC. *The Recreovia of Bogotá, a Community-Based Physical Activity Program to Promote Physical Activity among Women: Baseline Results of the Natural Experiment Al Ritmo de las Comunidades.* 2017. <https://doi.org/10.3390/ijerph14060633>.
- Voulgaris CT, Alexander S, Hosseinzade R, Jimenez J, Lee KK, Pande A. Measuring Success for Safe Routes to School Programs. Mobility MC for T, ed. doi:<https://doi.org/10.31979/mti.2020.1821>.
- The Center of Education Research and Development. Curriculum of physical education - AR | CRDP Lebanon. https://www.crdp.org/curriculum-content_details/منهج-التربية-الرياضية/عربي; 1997. Accessed February 18, 2022.
- Al-Hajj S, Pawliuk C, Smith J, Zheng A, Pike I. History of injury in a developing country: a scoping review of injury literature in Lebanon. *J Public Heal (United Kingdom).* 2021;43(1):E24–E44. <https://doi.org/10.1093/pubmed/fdaa043>.
- Gadai S, Décarpentrie L, Charland P, Arvisais O. Health and Education through Sport for Development and Peace in Extreme Development Contexts: Cases Studies from Various Developing Countries. doi:10.31236/OSF.IO/CAU6J.
- Lyras A, Welty Peachey J. Integrating sport-for-development theory and praxis. *Sport Manag Rev.* 2011;14(4):311–326. <https://doi.org/10.1016/j.smr.2011.05.006>.
- Dutil C, Podinic I, Sadler CM, et al. Sleep timing and health indicators in children and adolescents: a systematic review. *Heal Promot Chronic Dis Prev Canada Res Policy Pract.* 2022;42(4):150. <https://doi.org/10.24095/HPCDP.42.4.04>.