

Social determinants of health literacy in children and adolescents: a scoping review



Determinantes sociais do letramento em saúde de crianças e adolescentes: uma revisão de escopo

Determinantes sociales de la alfabetización en salud en niños y adolescentes: una revisión de alcance

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ABSTRACT

Objective: To map scientific evidence on social determinants related to health literacy in children and adolescents.

Method: Scoping review conducted from April to June 2023, following the Joanna Briggs Institute guidelines and the PRISMA-ScR protocol, and registered on the Open Science Framework. The keywords “health literacy,” “adolescent,” and “social determinants of health,” including their orthographic derivatives, were combined in a search strategy used in 12 databases. The identified articles were independently screened, selected, and extracted by two researchers. Data was analyzed and discussed based on Dahlgren and Whitehead’s model of social determinants of health.

Results: Twenty-one studies found one or more social determinants related to health literacy, namely: sex, cognitive characteristics, eating habits, family structure and models, school characteristics, school environment, and parents’ conditions. Social determinants of health were classified from individual layers to macrodeterminants, according to the model adopted.

Conclusion: Multiple social determinants are related to health literacy among children and adolescents, ranging from immediate to broader contexts in their lives, requiring intersectoral educational and health approaches aligned with the Sustainable Development Goals.

Descriptors: Health literacy. Social determinants of health. Health promotion. Adolescent. Child.

RESUMO

Objetivo: mapear as evidências científicas sobre determinantes sociais relacionados com o letramento em saúde de crianças e adolescentes.

Método: revisão de escopo, realizada entre abril a junho de 2023, seguindo as diretrizes da Joanna Briggs Institute e pelo protocolo PRISMA-ScR e registrada na Open Science Framework. As palavras-chave *health literacy*, *adolescent*, e *social determinants of health*, incluindo as derivações ortográficas, foram combinadas numa estratégia de busca utilizada em 12 bases de dados. Os artigos identificados foram examinados, selecionados e extraídos de forma independente por dois pesquisadores. Os dados foram analisados e discutidos com base no modelo de determinantes sociais da saúde de Dahlgren e Whitehead.

Resultados: 21 estudos evidenciaram a presença de um ou mais determinantes sociais relacionados ao letramento em saúde de acord, a saber: sexo, características cognitivas, hábitos alimentares, estrutura e modelos familiares, características escolares, ambiente escolar e condições parentais. Foram identificados determinantes sociais da saúde desde camadas individuais até macrodeterminantes com base no modelo adotado.

Conclusão: múltiplos determinantes sociais relacionam-se com o letramento em saúde de crianças e adolescentes, que permeiam desde contextos imediatos até os mais amplos de suas vidas, requerendo abordagens intersectoriais educativas e de saúde alinhadas com os Objetivos de Desenvolvimento Sustentável.

Descritores: Letramento em saúde. Determinantes sociais da saúde. Promoção da saúde. Adolescente. Criança.

RESUMEN

Objetivo: Mapear la evidencia científica sobre los determinantes sociales relacionados con la alfabetización en salud de niños y adolescentes.

Método: Revisión de escopo realizada entre abril y junio de 2023, siguiendo las directrices del Joanna Briggs Institute y el protocolo PRISMA-ScR, y registrada en Open Science Framework. Las palabras clave “alfabetización en salud”, “adolescente”, y “determinantes sociales de la salud”, incluyendo sus derivados ortográficos, se combinaron en una estrategia de búsqueda utilizada en 12 bases de datos. Los artículos identificados fueron examinados, seleccionados y extraídos de forma independiente por dos investigadores. Los datos fueron analizados y discutidos según el modelo de determinantes sociales de la salud de Dahlgren y Whitehead.

Resultados: Veintiún estudios evidenciaron la presencia de uno o más determinantes sociales relacionados con la alfabetización en salud, a saber: sexo, características cognitivas, hábitos alimenticios, estructura y modelos familiares, características escolares, ambiente escolar y condiciones parentales. Se identificaron determinantes sociales de la salud desde camadas individuales hasta la camada de los macrodeterminantes, según el modelo adoptado.

Conclusión: Múltiples determinantes sociales se relacionan con la alfabetización en salud de niños y adolescentes, que abarcan desde contextos inmediatos hasta los más amplios de sus vidas, requiriendo enfoques intersectoriales educativos y de salud en acuerdo con los Objetivos de Desarrollo Sostenible.

Descriptor: Alfabetización en Salud. Determinantes Sociales de la Salud. Promoción de la Salud. Adolescente. Niño.

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■ INTRODUCTION

Child development includes several capacities and abilities that intersect with characteristics such as language (expressive and receptive), motor skills (gross and fine), cognitive capacity, and socioemotional aspects⁽¹⁾. Attitudes, beliefs, and health-related behaviors are created and modulated in this period and can help or harm life conditions⁽²⁻³⁾.

In childhood and adolescence, behavioral standards help determine one's current state of health and future health results⁽⁴⁾. In this stage, there are also more risks, negative behaviors, and health issues that can remain until adulthood⁽⁵⁾.

By socializing in different settings, environments, and contexts, children and adolescents expose themselves to different influences. These can be visible or invisible, and often prevent them from making their own health-related decisions⁽⁶⁾. This public must develop adequate health literacy to promote good health⁽⁷⁾.

Healthy literacy (HL) has become a complex and heterogeneous term⁽⁸⁾ with multiple facets, which is understood in many different ways, conceptually and semantically^(3,9). It is a social practice that allows individuals to get, understand, and use health information to maintain and promote good health⁽¹⁰⁻¹¹⁾. During childhood, HL gains space, and its pre-suppositions can be understood⁽¹²⁾.

Acquiring HL abilities is a continuous process, starting with the first relationships between parents and children, in which the same family learns new forms of care, given the same situations they face during their contact with personal health demands⁽¹³⁾. HL for children and adolescents is not quite the same as HL for adults, since, even when they are unable to read and define health texts, they can learn or understand healthy behaviors in their domestic environment, actively intervening in their own care⁽¹³⁾.

HL also encompasses intergenerational relations of power, which are evident in all social interactions. This influences the role of children and youths regarding their health, and the formation of active behaviors in the decision making processes related to them^(3,14).

HL is considered to be a social determinant of health (SDH), since it is the result of learning from one's environment. It is also a mediating factor that influences the relationship between other SDH and health outcomes^(4,6-7,12,15). SDH are all conditions with which people are born, live, grown, work, and age. They correspond to social, economic, political, cultural, ethnic, psychological, and behavioral factors that influence, affect, and condition the health of the population⁽¹⁴⁾.

Among the SDH models, Dahlgren and Whitehead's model stands out by dividing the SDH in three layers⁽¹⁶⁾. In the first, we find individual determinants related to the intrinsic characteristics of a subject, such as sex, age, genetic factors, and others. Then, there is a layer corresponding to behavior and lifestyle. The third layer includes community and social networks in which the individual lives. In the fourth, factors related to life and work conditions. The fifth and last layer includes the macrodeterminants, such as the structural conditions of the environment in which the individual is inserted, as well as their socioeconomic, cultural, and developmental characteristics. Considering these layers, the authors refer to the knowledge of adequate interventions and health policy formulations⁽¹⁶⁾.

Some studies have shown significant relationships between isolated determinants in the health literacy of children and adolescents, such as socioeconomic levels, parents educational level, and school performance⁽¹⁶⁻¹⁸⁾. However, few works have investigated the contextual dynamics of health literacy and specified its variation throughout the early stages of life, considering the influence of the available resources^(2,15).

A search for reviews with this topic at PubMed and CINAHL was carried out, but did not locate scoping reviews that listed the social determinants associated with the HL of children and adolescents, nor their equivalence with the layers in Dahlgren and Whitehead's model.

This scoping review can identify gaps in the knowledge and areas of agreement and disagreement, in addition to highlighting emerging trends and needs for future research about health literacy, in order to develop efficient policies and interventions to promote youth health and achieve the Sustainable Development Goals (SDGs). Understanding these determinants allows nursing practitioners to adapt education and communication approaches according to the specific needs of children and adolescents, promoting a better understanding and adherence to preventive and self-care health practices. This is essential to train youths to make decisions about their mental health and adopt healthy behaviors throughout their lives.

Considering the above, this review aimed to map scientific evidence surrounding the social determinants related with the health literacy of children and adolescents.

■ METHOD

This scoping review was conducted according to the methodology of the Joanna Briggs Institute (JBI) for scoping reviews⁽¹⁹⁾. To start the research, the study protocol was

developed and registered in the Open Science Framework⁽²⁰⁾. This manuscript followed the checklist Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR)⁽²¹⁾. All stages were conducted from February to May 2023.

Eligibility criteria were defined according with the PCC strategy (Population, Concept, and Context), according to the JBI recommendations described below:

- *Population*: Original studies carried out with children and/or adolescents from 6 to 18 years of age whose topic was HL and SDH. There were no restrictions regarding geographic location, language, or time of publication.
- *Concept*: This review considered studies and articles that evaluated the relationship between the SDH and SL of children and adolescents. For these purposes, HL is understood as abilities that enable individuals to obtain, understand and use the available health information to make decisions and perform actions that may affect the state of their health⁽¹¹⁾. SDH, in turn, was understood as the set of interconnected factors and social structures in the lives individuals that influence the state of their health⁽¹⁴⁾. Therefore, this study included all studies found that could demonstrate a relationship between SDH and HL via association tests, correlation tests, mean or median difference tests, or regression analyses. The p-value was $p < 0.05$, and papers were excluded from this study when they did not inform or analyzed the relationship significantly.
- *Context*: studies with adolescents and/or children in several contexts were included.

This was done considering the following questions: Which social determinants are related to the HL of children and adolescents? In which layers of the Dahlgren and Whitehead model are the SDH related with the HL of children and adolescents?

This scoping review considered randomized clinical trials, non-randomized controlled trials, case-control, cross-sectional studies, and observational analytical studies, including prospective and retrospective cohort studies. We also included descriptive cross-sectional studies that described the tests used to verify the existence of relationships between SDH and HL. Regarding gray literature, theses and dissertations that pointed out some kind of relationship between DHS and HL were consulted.

The next step was the development of a three-step research strategy. At first we carried out an initial research, limited to MEDLINE (PubMed) and CINAHL, to identify studies

relevant to the topic. These were analyzed in the search for words in their titles, abstracts, and the descriptors used to describe them. These keywords and descriptors were used by a librarian, who developed a complete search strategy in MEDLINE via PubMed.

The terms Health literacy, adolescent, and social determinants of health were used as MeSH (Medical Subject Headings) descriptors in all fields. The search for the descriptors included all its orthographic variations, (e.g.: "Health Literacy"[MeSH Terms] OR "Health Literacy"[All Fields]). Finally, all searches carried out with each separate descriptor were crossed, leading to the following search strategy: ("Health Literacy"[MeSH Terms] OR "Health Literacy"[All Fields] OR ("Health Behavior"[MeSH Terms] OR "Health Behavior"[All Fields] OR "Health Behaviors"[All Fields] OR "health related behavior"[All Fields] OR "health related behavior"[All Fields] OR "health behaviour"[All Fields] OR "health promoting behavior"[All Fields] OR "health promoting behaviour"[All Fields] OR "health related behaviour"[All Fields])) AND ("Child"[MeSH Terms] OR "Child"[Title/Abstract] OR "Children"[Title/Abstract] OR "Adolescent"[MeSH Terms] OR "Adolescent"[Title/Abstract] OR "Adolescents"[Title/Abstract] OR "Adolescence"[Title/Abstract] OR "Teens"[All Fields] OR "Teen"[Title/Abstract] OR "Teenagers"[All Fields] OR "Teenager"[All Fields] OR "Youth"[Title/Abstract] OR "Youths"[All Fields] OR "young"[All Fields] OR "yongs"[All Fields] OR "adolescences"[All Fields] OR "adolescy"[All Fields]) AND ("Social Determinants of Health"[MeSH Terms] OR "Social Determinants of Health"[All Fields] OR "Health Social Determinant"[All Fields] OR "Health Social Determinants"[All Fields] OR "Structural Determinants of Health"[All Fields] OR "Health Structural Determinants"[All Fields]).

From April to May 2023, a search was carried out in all databases below, incorporating all keywords and descriptors relevant. To do so, the search strategy was adapted by the librarian for each database and/or information source, considering the technical specificities of each of them.

The following databases were selected: National Center for Biotechnology Information/Medical Literature Analysis and Retrieval System Online (MEDLINE) via Pubmed; Cumulative Index to Nursing and Allied Health Literature (CINAHL) via EBSCOHost; PsycINFO, the search platform of the American Psychological Association (APA); Scopus, via Elsevier; Cochrane Library; Educational Resources Information Centre (ERIC); Web of Science; LILACS; and EMBASE. The ProQuest Theses and Dissertations (Ovid), the CAPES/Brazil Catalog of Theses and dissertations, and Google Scholar were searched to identify unpublished gray literature studies. Finally, the third stage consisted in consulting the bibliography of all evidence sources already included to identify additional studies.

After finishing the research, all citations found were grouped, classified, and loaded into the Rayyan® software. Duplicates were only counted once. Two independent reviewers conducted a pilot test to verify the selection of the sources regarding inclusion criteria. Since there were no disagreements, we proceeded to a reading of titles and abstracts.

The final sample of articles was imported into Covidence (Veritas Health Innovation, Melbourne, Australia) for data extraction. This stage was also carried out by two independent reviewers, using a data extraction form based on the model suggested by the JBI, in line with the objectives and questions of the review and inserted in the software in order to standardize extraction procedures.

Two reviewers carried out a pilot test including 10 articles to ensure that data was captured with precision. There were no disagreements regarding any item/variable in the form. The main information included authors, year of publication, country of origin, participants, design/methodology/statistical features of the relationship and discoveries related to SDH distributed in each layer of Dahlgren and Whitehead's model. Each article was read, this information was extracted and stored in a form. Then, a spreadsheet was made including all relevant data. The reviewers found a consensus about the information from each article, so there were no disagreements.

Considering the criteria established for this review, 2426 articles were found in the databases and libraries. 220 were found in Cinahl, 664 in Embase, 09 in Lilacs, 39 in PsycINFO, 540 in Pubmed, 620 in Scopus, 119 in Web of Science, 38 in ERIC, 29 in Cochrane, 34 in Proquest, 100 in Google Scholar, and 14 in the CAPES catalog of theses and dissertations.

Two independent reviewers (AG, GM) read the titles and abstracts of all articles, evaluating duplicates only once. From the results found (n=1,358), 91 were kept for eligibility analysis; 39 were eligible for full text analysis. As a result, 19 studies were included.

From the bibliography of these 19 studies, 77 papers were found. Only 2 of them were in accordance with our eligibility criteria. 21 studies were included in this review. The results of the search strategy and of the inclusion process are described below (Figure 1). They have been reported in full and presented in a PRISMA flowchart for scoping reviews – PRISMA-ScR⁽²¹⁾.

These results are presented using tables and schemes, with a narrative description that is in accordance with the guiding questions of this review. The methodological quality of the articles was not evaluated, as this is not mandatory in a scoping review⁽¹⁹⁾.

■ RESULTS

Chart 1 shows the authors, year of publication, country of origin, statistical measures of relationships, participants, context of the study, and SDH related to HL.

The countries with the highest number of publications were Iran (21%), Brazil and China (both with 13%), followed by Germany and the USA (both with 8%). There was also one publication from each of the following countries: Ghana, Poland, Korea, Finland, Denmark, the West Bank, Lebanon, and Italy.

Multivariate analyses, such as linear regressions and univariate and multivariate logistic regressions, were the most common methods of analysis in the studies included, being used in approximately 70% of them and showing a consistent and fixed dynamic in the express relationship between SDH and HL. Most studies were carried out in an educational context, involving nearly 71,692 students, all of whom were children and adolescent from the 4th grade to the first years of higher education.

According with Chart 1, SDHs related to the HL of children and adolescents can be described as: sex; age group; cognitive characteristics; access to health information; alcohol intake; religion; parents' conditions; access to health services; social-community support; school characteristics; school environment; family structure and models; ethnicity; smoking; eating habits; physical activity; general socioeconomic situation; housing; access to books and cell phones; personal income; and quality of life.

The SDH listed above were organized according with Dahlgren and Whitehead's model, which is shown in Figure 2. Each SDH in the layers was in accordance with the definitions proposed by these authors.

In the macrodeterminant layers, we find the general socioeconomic situation experienced by children and adolescents^(26,28,31,36). In the life conditions layer, we find personal income⁽³¹⁾, access to books and cell phones⁽²⁸⁾, housing^(28,30,35), school environment⁽¹⁷⁾, access to health services^(23,28) and parent's financial conditions^(17,23,27–28,30,33–35,39–41). In the social and community network layer, are included family structure and models^(22,29,30,34,36–37), religion^(24,32), school characteristics^(26,28,30–31,37,39–40), and social-community support^(28,31).

In the layer of behavior and lifestyle, we find quality of life⁽³²⁾, physical activity⁽²⁶⁾, eating habits⁽²⁶⁾, smoking⁽²⁶⁾, access to health information^(23,40), and alcohol intake⁽²⁴⁾. In the proximal layer, related to an individual level, we found sex^(17,22–24,26–28,33–34,37,39), age group^(22,24,30–31,34–35,38), cognitive characteristics^(17,23,27,33–35,39–40), and ethnicity⁽²⁴⁾.

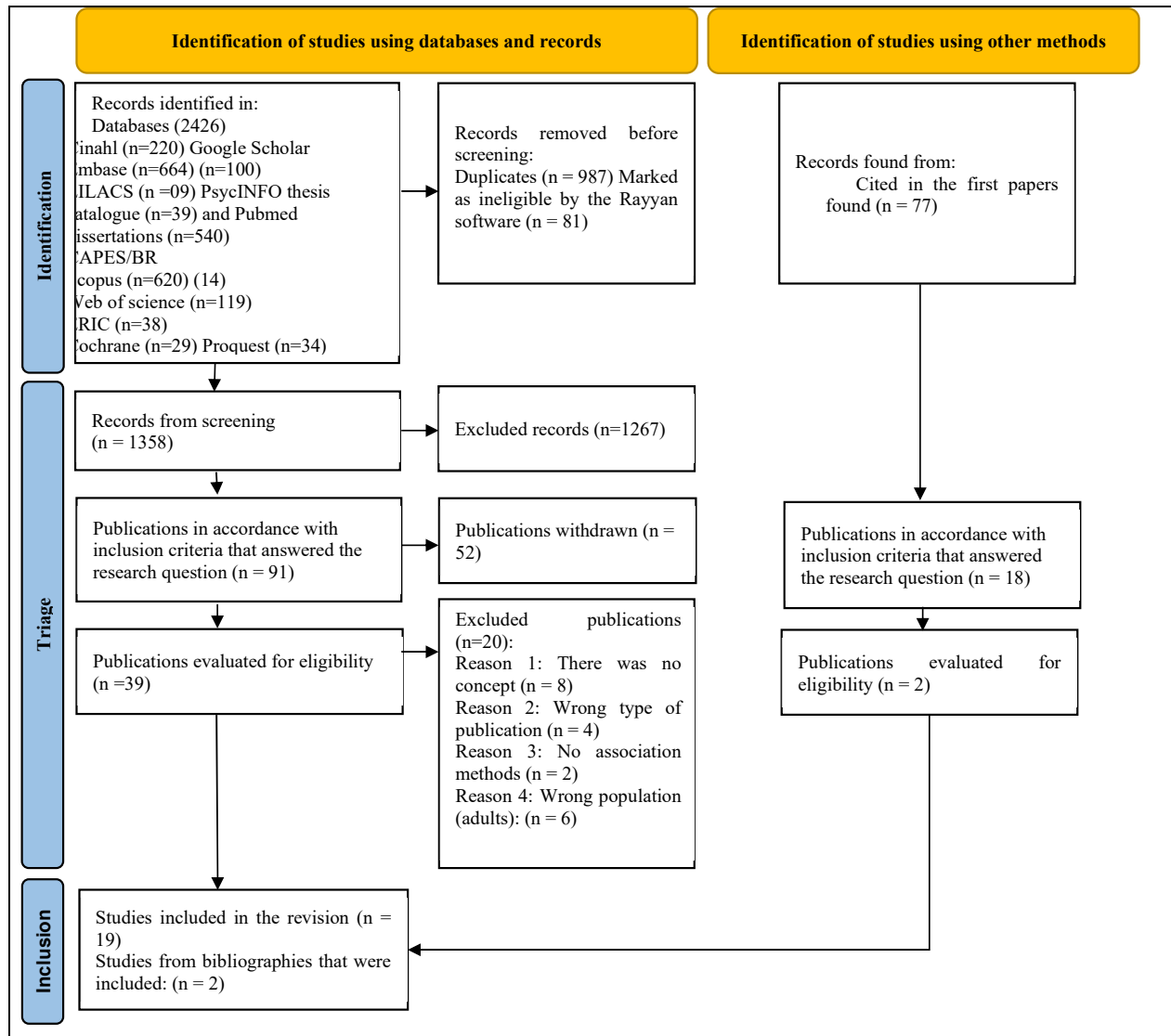
Figure 1 – Search results; process of selection and inclusion of studies. Recife, Pernambuco, Brazil, 2023.Source: adapted^[21].

Chart 1 – Characteristics of the publications included, addressing Social Determinants of Health related to Health Literacy. Recife, Pernambuco, Brazil, 2023.

Author (Year)	Country of origin	Statistical measures of relationship*	Participants	Context of the study	SDH related to HL
Sarhan, A. <i>et al.</i> (2021) ⁽²³⁾	West Bank	Student's t-test and ANOVA	472 Palestinian students	Educational	Sex; self-perception of health; access to health information; level of education of parents; type of employment; access to health services
Guo, S. <i>et al.</i> (2021) ⁽¹⁷⁾	China	Student's t-test and ANOVA followed by factor analysis	650 high school adolescents	Educational	Sex; self-efficacy; social environment; community environment; family income; school environment
Amoah, P. <i>et al.</i> (2019) ⁽²⁴⁾	Ghana	Chi-square test	337 young people from five suburbs in an urban business district	Community	Age; sex; alcohol intake; religion; ethnicity; education; homelessness
Maness, S.B.; Thompson, E.L.; Lu, Y. (2022) ⁽²⁵⁾	USA	Multiple logistic regression	775 sexually active young people	Community	Family structure; employment; educational level
Kwak, S.-H.; Lee, H.-J.; Shin, B.-M. (2022) ⁽²⁶⁾	Korea	Multiple logistic regression	27,919 high school students	Educational	Sex; soft drink intake; physical activity; smoking; academic performance; school system; type of school; socioeconomic status
Haghi, R. <i>et al.</i> (2021) ⁽²⁷⁾	Iran	Multiple logistic regression.	761 students from the 9th grade of urban public schools	Educational	Sex; self-efficacy; situational influences; parents' educational level
Duplaga, M.; Grysztar, M. (2021) ⁽²⁸⁾	Poland	Univariate logistic regression	2223 high school students	Educational	Sex; parents' educational level; community support; personal educational level; housing; cell phone spending and access to books; general socioeconomic status

Chart 1 – Cont.

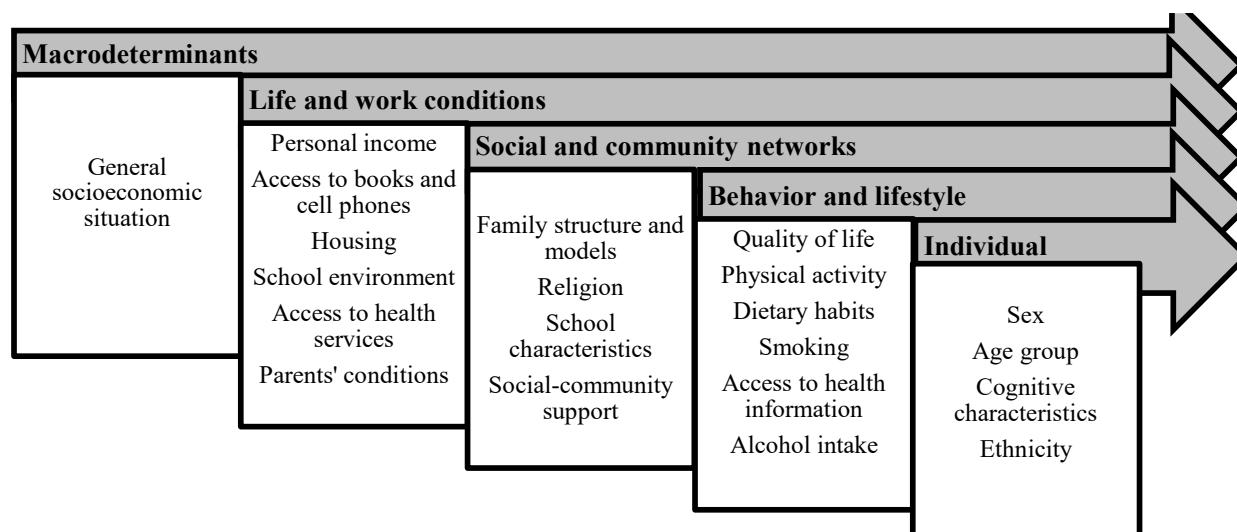
Author (Year)	Country of origin	Statistical measures of relationship*	Participants	Context of the study	SDH related to HL
Velasco, V.; Gragnano, A.; Vecchio, L.P. (2021) ⁽²⁹⁾	Italy	Hierarchical linear regression	2.128 high school students	Educational	Family support; school context
Naghavi, A. <i>et al.</i> (2021) ⁽³⁰⁾	Iran	Mann-Whitney, chi-square and Kruskal-Wallis tests; multiple regression coefficient	324 students from the first and second year of high school.	Educational	Age; living with one of the parents; housing area; personal educational level; parents' educational level; mother's work
França, A.S. <i>et al.</i> (2020) ⁽³¹⁾	Brazil	Mann-Whitney test and Chi-square test	41 pregnant adolescents and 45 pregnant adults	Clinical	Age; support from parents and friends; school performance; personal income; general socioeconomic status
Rocha, P.C.; Rocha, D.C.; Lemos, S.M.A. (2017) ⁽³²⁾	Brazil	Multiple logistic regression	384 high school adolescents	Educational	Religion; quality of life social domain; work
Paakkari, L. <i>et al.</i> (2020) ⁽³³⁾	Finland	Univariate logistic regression	14,590 15-year-olds	Educational	Sex; health self-assessment; family income; general socioeconomic status
Fretian, A. <i>et al.</i> (2020) ⁽³⁴⁾	Germany	Multiple linear regression	907 4th grade students	Educational	Age; sex; self-efficacy; parental health literacy; family income
Zhang, Y.; Piao, W.; Ji, Y. (2016) ⁽³⁵⁾	China	Multiple linear regression	967 children from six urban and suburban primary schools.	Educational	Age; sex; health knowledge; family context; public school education; housing conditions; parents' educational level

Chart 1 – Cont.

Author (Year)	Country of origin	Statistical measures of relationship*	Participants	Context of the study	SDH related to HL
Said, L.; Gubbels, J.S.; Kremers, S.P.J. (2020) ⁽³⁶⁾	Lebanon	Pearson's correlation coefficient	1,535 adolescents from public and private high schools located in urban and rural regions, and 317 of their parents.	Educational	Parent's influence, level of parents' knowledge
König, C. <i>et al.</i> (2018) ⁽³⁷⁾	Denmark	Univariate and multiple logistic regression	2,768 9th grade students from 97 Danish public schools.	Educational	Sex; friend network; relationship with parents; school performance
Olumide, A.O. <i>et al.</i> (2014) ⁽²²⁾	USA	Multiple linear regression	2,332 adolescents	Community	Sex; age; paternal absence; family support; school evasion
Panahi, R. <i>et al.</i> (2020) ⁽³⁸⁾	Iran	Univariate logistic regression	375 adolescents from high school	Educational	Age
Ye, X.H. <i>et al.</i> (2014) ⁽³⁹⁾	China	Univariate logistic regression	3,821 students aged 13-25	Educational	Sex; health knowledge; type of school; parents' educational level; personal educational level
Saeedi, F.; Panahi, R.; Osmani, F. (2016) ⁽⁴⁰⁾	Iran	Student's t-tests and ANOVA.	400 second-year high school students	Educational	Self-perception of health; access to health information; interest in health-related topics; parents' educational level; personal educational level
Khajouei, R.; Salehi, F. (2017) ⁽⁴¹⁾	Iran	Chi-square	312 high school students	Educational	Type of school, family income, parents' educational level

Source: research data, 2023. Caption: *p-value ≤ 0.05

Figure 2 – Social Determinants of Health that are associated with the Health Literacy of children and adolescents, organized and disposed according to the layers of Dahlgren and Whitehead's model. Recife, Pernambuco, Brazil, 2023.



Source: adapted⁽¹⁶⁾.

DISCUSSION

The identification of the SDH related with the HL of children and adolescents allows discovering multiple factors that influence health results. On a bigger scale, the changes required can support strategies to support government actions such as the United Nations (UN) Sustainable Development Goals (SDGs).

Regarding the SDH in the individual layer, we find sex, age group, cognitive characteristics, and ethnicity. The main element, in this case, is not the ability of individuals to show their literacy and numeracy, as much as the actions literacy enables them to do⁽¹⁵⁾.

It is essential to go "beyond what teenagers know", towards an investigation about "how they actively build meaning from health information"⁽³⁾, so they develop their knowledge and adopt healthy choices, going against the effects of poverty on their family and community. Thus, the SDG 1 (elimination of poverty) can benefit from these healthy choices.

In the behavior and lifestyle layer, the SDH that stand out are quality of life, physical activity, smoking, access to health information, alcohol intake, and eating habits. The ability of children and adolescents to learn is varied, and responds to different types of communication and media⁽²²⁾. Thus, the government must act towards simplifying the communication and the transmission of health information to improve collective well-being. This can help change

the behaviors of children and adolescents and reduce the inequalities in health systems, increasing compliance with the SDG 1.

Furthermore, new behavior must be linked to the good habits parents transmit to their children, as they are models that generate information to improve the HL of these children, leading to better choices in several capacities, such as dietary habits. These influences could work together with global initiatives as part of government policies and interventions aimed at preventing malnutrition and hunger in all relevant sectors, thus helping achieve SDG 2 (zero hunger) and SDG 3 (health and well-being).

Regarding the layer of social and community networks, the SDH found were family structure and models, religion, school characteristics, and social-community support. By approaching family structures and models, we found that the insufficient HL of children and adolescents is associated with low family support, living with a parent^(30,22), parents with low levels of HL and self-perceived poor health⁽³⁴⁾, parents with little knowledge about health⁽³⁶⁾, and poor relationships with parents⁽³⁷⁾. Similar results can be found in other studies⁽⁴²⁻⁴³⁾, according to which parents are essential in the construction of their children's HL.

In order to intervene in these cases, health workers, such as nurses, can use educational strategies to minimize the influence of these SDH, such as fostering a bond between the family and the health unit in the territory, family counseling, referral to community resources, and others.

Vulnerable parents may need additional support to improve their knowledge about health, accessing available health information, navigate the health care system, and make health-related decisions⁽⁴⁴⁾. Therefore, increasing health-related knowledge and skills of parents can improve the results of their children and adolescents, especially in the fields of nutrition, exercise, and self-care, reflecting on SDG 3 (health and well-being).

These influences also take place in the school environment. One's educational level⁽⁴¹⁾, school performance⁽³¹⁾, and school evasion⁽²²⁾ are also related to HL. Although HL is mediated by the community and the organizational structures, resources, and commitments, this relationship is bidirectional⁽⁴⁵⁾. Community organizations that promote HL in their community, such as schools, can benefit from this. They can reach their goals better and fulfill their responsibility with their members, leading to the achievement of SDG 4 (quality education) and SDG 16 (peace, justice, and effective institutions).

Regarding the layer "life and work conditions", the following SDH were found: personal income, access to books and cell phones, housing, access to health services, school environment, and parental conditions, the latter two being widely discussed in the studies. Children and adolescents that developed their studies in urban public schools^(26,35,42), as well as those who are satisfied with their school educational system⁽²⁹⁾ have higher HL levels.

Similar results can be seen in studies⁽⁴⁶⁻⁴⁷⁾ which showed the influence of school on young people's health behaviors. This shows an association with the role of teachers who are not held back by the gaps and obstacles in the public educational system or difficulties of the student, implementing broader teaching practices that foster the life skills necessary to avoid risks to one's health. This can result in environments that are favorable to the construction of individuals more coherent in their life and career choices, contributing for SDG 8 (decent work and economic growth), and SDG 9 (industry, innovation and infrastructure).

In the layer of macrodeterminants, it became clear that the general socioeconomic situation influences the HL of children and adolescents⁽³³⁾. Families that perceive their economic situation as unfavorable tend to influence their children to engage in risky behaviors⁽²⁶⁾. We believe this is due to the fact that the social status of the family affects the attitude of parents regarding their children, as they pass on limited knowledge and risky practices that have been established by the family, in addition to the lack of resources which prejudice the acquisition of abilities to promote health.

The development of public policies regarding income, education, and health can ensure better conditions for the development of the HL of children and youths, which will guarantee better future results in the health of many population groups. This will create a population that will take advantage of their right to health, and ensure this right is guaranteed for all. This could help reach the SDG 10 (reduction of inequalities).

Dahlgren and Whitehead's model, used here, highlights the interconnectedness and complexity of SDH, emphasizing the importance of multifaceted and interdisciplinary approaches involving health workers and the health system. The authors provided a useful structure to understand how social, economic, and environmental factors relate to the HL of children and adolescents and can guide public health interventions and policies aimed at promoting health and addressing health inequalities. These strategies can lead to the formation of a more equal, fair, solidary, and healthy society, ensuring that SDG goals are achieved.

Limitations of this study include difficulties comparing these findings between countries, since different HL measures were used in the different socioeconomic and cultural settings where these children and adolescents are located. Another limitation is the fact that the SDH may influence only some areas of the HL, not necessarily all of them, since it is a multifaceted concept with multiple areas of evaluation (acquisition, use, understanding, decision-making). Therefore, we must consider what is the actual influence of an SDH on each of them. The third limitation is the interpretative power of the statistical methods employed. Even though inferential statistics (several tests) were used, they cannot identify the subjective effects of the concepts studied, as these are hidden at the time these children and adolescents are interviewed and answer their questionnaires.

■ CONCLUSION

Some SDH widely described in literature showed significant influence on the HL of children and adolescents, namely: sex, cognitive characteristics, eating habits, family structure and models, school characteristics, school environment, and parents' conditions. The presence of SDH in all layers of Dahlgren and Whitehead's model gives even more credence to the thought that proximal factors are as important to identify HL as distal factors. This implies that there are many potential targets for action, depending on the life context to which these children and adolescents are exposed.

In practice, the health and educational systems must create connections that allow formulating health education interventions in schools, composing educational materials pertinent to reflections on the development of health skills, creating campaigns to provide health orientation, involving parents in the health-related actions in which their children participate, providing extracurricular health programs in schools, and strengthening educational and health programs and policies in schools.

With these interventions, the impact of SDH can be minimized. Once the HL of children and adolescents are improved, government policies to promote health and social development can be successful, including the Sustainable Development Goals, which would have a prospective impact on the social inequality in these populations.

It is essential to carry out future studies that can mitigate the limitations imposed by the methodological processes in this review. Alternatives include the elaboration of systematic reviews to evaluate the methodological rigor of the relationships indicated by the several studies, in an attempt to mitigate the exploration of the concept of HL, in addition to population-based analytical studies that can clarify the actual influence SDH have over the multiple HL areas.

REFERENCES

- Munhoz TN, Santos IS, Blumenberg N, Barcelos RS, Bortolotto CC, Matijasevich A, et al. Fatores associados ao desenvolvimento infantil em crianças brasileiras: linha de base da avaliação do impacto do Programa Criança Feliz. *Cad Saúde Pública*. 2022;38(2):e00316920. <https://doi.org/10.1590/0102-311X00316920>
- Bröder J, Carvalho JS. Health literacy of children and adolescents: Conceptual approaches and developmental considerations. In: Okan O, Bauer U, Levin-Zamir D, Pinheiro P, Sørensen K, editors. *International handbook of health literacy: Research, practice and policy across the life-span*. Bristol (UK): Policy Press; 2019. p. 39–52.
- Bröder J, Okan O, Bollweg TM, Bruland D, Pinheiro P, Bauer U. Child and youth health literacy: a conceptual analysis and proposed target-group-centered definition. *Int J Environ Res Public Health*. 2019;16(18):3417. <https://doi.org/10.3390/ijerph16183417>
- Sukys S, Trinkuniene L, Tilindiene I. Subjective health literacy among school-aged children: first evidence from Lithuania. *Int J Environ Res Public Health*. 2019;16(18):3397. <https://doi.org/10.3390/ijerph16183397>
- Potrebny T, Wiium N, Haugstvedt A, Sollesnes R, Torsheim T, Wold B, et al. Health complaints among adolescents in Norway: A twenty-year perspective on trends. *PloS One*. 2019;14(1):e0210509. <https://doi.org/10.1371/journal.pone.0210509>
- Schulenkorf T, Sørensen K, Okan O. International understandings of health literacy in childhood and adolescence: a qualitative-explorative analysis of global expert interviews. *Int J Environ Res Public Health*. 2022;19(3):1591. <https://doi.org/10.3390/ijerph19031591>
- Jenkins CL, Wills J, Sykes S. Involving children in health literacy research. *Children (Basel)*. 2023;10(1):23. <https://doi.org/10.3390/children10010023>
- Ancker JS, Grossman LV, Benda NC. Health Literacy 2030: is it time to redefine the term? *J Gen Intern Med*. 2020;35:2427–30. <https://doi.org/10.1007/s11606-019-05472-y>
- Saboga-Nunes L, Martins LAS, Farinelli MR, Julião CH, editors. *Literacia para a saúde: origens e implicações do conceito*. In: *O papel da literacia para a saúde e educação para a Saúde na promoção da saúde*. Curitiba: CRV; 2019. p. 13–31.
- Guo S, Yu X, Davis E, Armstrong R, Naccarella L. Comparison of health literacy assessment tools among Beijing School-Aged Children. *Children (Basel)*. 2022;9(8):1128. <https://doi.org/10.3390/children9081128>
- Sørensen K. Defining health literacy: exploring differences and commonalities. In: Okan O, Bauer U, Levin-Zamir D, Pinheiro P, Sørensen K, editors. *International handbook of health literacy: research, practice and policy across the life-span*. Bristol (UK): Policy Press; 2019. p. 05–20.
- Summanen AM, Rautopuro J, Kannas L, Paakkari L. Measuring health literacy in basic education in Finland: the development of a curriculum- and performance-based measurement instrument. *Int J Environ Res Public Health*. 2022;19(22):15170. <https://doi.org/10.3390/ijerph192215170>
- Bubadué RM, Cabral IE. Curta-metragem sobre revelação do HIV à criança: avaliação de uma estratégia de letramento em saúde. *Rev Enferm UERJ*. 2022;30:e68725. <https://doi.org/10.12957/reuerj.2022.68725>
- Rumor PCF, Heidemann ITSB, Souza JB, Manfrini GC, Durand MK, Beckert RAT. Reflexos dos determinantes sociais da saúde na aprendizagem de crianças escolares. *Rev Esc Enferm USP*. 2022;56:e20220345. <https://doi.org/10.1590/1980-220X-REEUSP-2022-0345en>
- Nutbeam D, Lloyd JE. Understanding and responding to health literacy as a social determinant of health. *Ann Rev Public Health*. 2021;42:159–73. <https://doi.org/10.1146/annurev-publhealth-090419-102529>
- Zanoni BHB, Venturi T, Souza RS. Determinantes sociais da saúde e sua influência na evasão escolar de estudantes da educação de jovens e adultos. *Educere*. 2022;22(1):230–52. <https://doi.org/10.25110/educere.v22i1.2022.8666>
- Guo S, Naccarella L, Yu X, Armstrong R, Browne G, Shi Y, et al. Health literacy and its mediating role in predicting health behaviors among Chinese Secondary Students. *Asia Pac J Public Health*. 2021;33(1):76–83. <https://doi.org/10.1177/1010539520980926>
- Yang R, Li D, Hu J, Tian R, Wan Y, Tao F, et al. Association between health literacy and subgroups of health risk behaviors among Chinese Adolescents in Six Cities: a study using regression mixture modeling. *Int J Environ Res Public Health*. 2019;16(19):3680. <https://doi.org/10.3390/ijerph16193680>
- Peters MDJ, Godfrey C, McInerney P, Munn Z, Tricco AC, Khalil, H. Chapter 11: Scoping Reviews. In: Aromataris E, Munn Z, editors. *JBI Manual for Evidence Synthesis* [Internet]. Adelaide: JBI; 2020 [cited 2023 Sep 27]. Available from: <https://synthesismanual.jbi.global>
- Gomes AS, Santos GMR, Perrelli JGA, Frazão CMFQ. Determinantes Sociais do Letramento em Saúde de Crianças e Adolescentes: um protocolo de revisão de escopo [Projeto]. Open Science Framework [Internet]. 2023 [cited 2023 Sep 27]. Available from: <https://osf.io/pvyq7/>
- Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med*. 2018;169(7):467–73. <https://doi.org/10.7326/M18-0850>

22. Olumide AO, Robinson AC, Levy PA, Mashimbye L, Brahmbhatt H, Lian Q, et al. Predictors of substance use among vulnerable adolescents in five cities: findings from the well-being of adolescents in vulnerable environments study. *J Adolesc Health*. 2014;55(6 Suppl):S39-S47. <https://doi.org/10.1016/j.jadohealth.2014.08.024>
23. Sarhan MBA, Fujii Y, Kiriya J, Fujiya R, Giacaman R, Kitamura A, et al. Exploring health literacy and its associated factors among Palestinian university students: a cross-sectional study. *Health Promot Int*. 2021;36(3):854-65. <https://doi.org/10.1093/heapro/daaa089>
24. Amoah PA, Koduah AO, Gyasi RM, Gwenzi GD, Anaduaka US. The relationship between functional health literacy, health-related behaviours, and sociodemographic characteristics of street-involved youth in Ghana. *Int J Health Promot Educ*. 2018;57(3):116-132. <https://doi.org/10.1080/14635240.2018.1552835>
25. Maness SB, Thompson EL, Lu Y. Associations between social determinants of health and adolescent contraceptive use: an analysis from the national survey of family growth. *Fam Community Health*. 2022;45(2):91-102. <https://doi.org/10.1097/FCH.0000000000000316>
26. Kwak SH, Lee HJ, Shin BM. Do school-level factors affect the health behaviors of high school students in Korea? *Int J Environ Res Public Health*. 2022;19(2):751. <https://doi.org/10.3390/ijerph19020751>
27. Haghi R, Ashouri A, Karimy M, Rouhani-Tonekaboni N, Kasmaei P, Pakdaman F, et al. The role of correlated factors based on Pender health promotion model in brushing behavior in the 13-16 years old students of Guilan, Iran *Ital J Pediatr*. 2021;47(1):111. <https://doi.org/10.1186/s13052-021-01063-y>
28. Duplaga M, Gryztar M. Socio-Economic determinants of health literacy in high school students: a cross-sectional study. *Int J Environ Res Public Health*. 2021;18(22):12231. <https://doi.org/10.3390/ijerph182212231>
29. Velasco V, Gragnano A, Vecchio LP. Health literacy levels among Italian students: monitoring and promotion at school. *Int J Environ Res Public Health*. 2021;18(19):9943. <https://doi.org/10.3390/ijerph18199943>
30. Naghavi A, Khalesi ZB, Rad EH, Safshekan S. Health literacy of Iranian adolescent girls and its determinants. *Pol Ann Med*. 2021;28(2):128-33. <https://doi.org/10.29089/2020.20.00156>
31. França AS, Pirkle CM, Sentell T, Velez MP, Domingues MR, Bassani DG, et al. Evaluating health literacy among adolescent and young adult pregnant women from a low-income area of Northeast Brazil. *Int J Environ Res Public Health*. 2020;17(23):8806. <https://doi.org/10.3390/ijerph17238806>
32. Rocha PC, Rocha DC, Lemos SMA. Functional health literacy and quality of life of high-school adolescents in state schools in Belo Horizonte. *Codas*. 2017;29(4):e20160208. <https://doi.org/10.1590/2317-1782/20172016208>
33. Paakkari L, Torppa M, Mazur J, Boberova Z, Sudeck G, Kalman M, et al. A Comparative study on adolescents' health literacy in Europe: findings from the HBSC Study. *Int J Environ Res Public Health*. 2020;17(10):3543. <https://doi.org/10.3390/ijerph17103543>
34. Fretian A, Bollweg TM, Okan O, Pinheiro P, Bauer U. Exploring associated factors of subjective health literacy in school-aged children. *Int J Environ Res Public Health*. 2020;17(5):1720. <https://doi.org/10.3390/ijerph17051720>
35. Zhang Y, Piao W, Ji Y. Social determinants of health behaviors in primary school children: a cross-sectional study of both migrant and resident children in Beijing, China. *J Huazhong Univ Sci Technolog Med Sci*. 2016;36(2):289-94. <https://doi.org/10.1007/s11596-016-1582-y>
36. Said L, Gubbels JS, Kremers SPJ. Dietary knowledge, dietary adherence, and BMI of Lebanese adolescents and their parents. *Nutrients*. 2020;12(8):2398. <https://doi.org/10.3390/nu12082398>
37. König C, Skriver MV, Iburg KM, Rowlands G. Understanding educational and psychosocial factors associated with alcohol use among adolescents in Denmark; implications for health literacy interventions. *Int J Environ Res Public Health*. 2018;15(8):1671. <https://doi.org/10.3390/ijerph15081671>
38. Panahi R, Yekfallah L, Shafaei M, Dehghankar L, Anbari M, Hosseini N, et al. Effect of health literacy among students on the adoption of osteoporosis-preventive behaviors in Iran. *J Educ Health Promot*. 2020;9:191. https://doi.org/10.4103/jehp.jehp_400_19
39. Ye XH, Yang Y, Gao YH, Chen SD, Xu Y. Status and determinants of health literacy among adolescents in Guangdong, China. *Asian Pac J Cancer Prev*. 2014;15(20):8735-40. <http://dx.doi.org/10.7314/APJCP.2014.15.20.8735>
40. Saeedi F, Panahi R, Osmani F. The survey of health literacy and factors influencing it among high school students in Tehran, 2016. *Health Educ Health Promot*. 2016 [cited 2023 Sep 23];4(2):49-59. Available from: <https://hehp.modares.ac.ir/article-5-11648-en.pdf>
41. Khajouei R, Salehi F. Health Literacy among Iranian High School Students. *Am J Health Behav*. 2017;41(2):215-22. <https://doi.org/10.5993/AJHB.41.2.13>
42. Sarhan MBA, Fujiya R, Kiriya J, Htay ZW, Nakajima K, Fuse R, et al. Health literacy among adolescents and young adults in the Eastern Mediterranean region: a scoping review. *BMJ Open*. 2023;13(6):e072787. <https://doi.org/10.1136/bmjopen-2023-072787>
43. Loer A-KM, Domanska OM, Stock C, Jordan S. Subjective generic health literacy and its associated factors among adolescents: results of a population-based online survey in Germany. *Int J Environ Res Public Health*. 2020;17(22):8682. <https://doi.org/10.3390/ijerph17228682>
44. Buhr E, Tannen A. Parental health literacy and health knowledge, behaviours and outcomes in children: a cross-sectional survey. *BMC Public Health*. 2020;20(1):1096. <https://doi.org/10.1186/s12889-020-08881-5>
45. Organização Pan-Americana da Saúde OPAS). Transformar cada escola em uma escola promotora de saúde: Padrões e indicadores globais. Washington, D.C.: Organização Pan-Americana da Saúde; 2022[cited 2023 Sep 23]. Available from: <https://doi.org/10.37774/9789275725122>
46. Kim S-I, Lee H-R, Ma D-S, Park D-Y, Jung SH. The differences of oral health-related behaviors by type of school among high school students in Gangneung city. *J Korean Acad Oral Health*. 2012;36:309-14. <https://doi.org/10.11149/jkaoh.2012.36.4.309>
47. Bae EJ, Yoon JY. Factors associated with current smoking among male high school students according to school type: Using data from the 13th (2017) Korea youth risk behavior web-based survey. *J Korean Soc School Health*. 2019;32:77-87. <https://doi.org/10.15434/kssh.2019.32.2.77>

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