Chapter 14
Health "Is Not Rocket Science": The General, Nutritional, and Oral Health Literacy of Portuguese Adolescents

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The Role of Health Literacy in Redressing European Adolescent Health Inequalities

Health literacy is a European public health challenge that should be taken seriously by policymakers, and the health literacy agenda in Europe needs to be accelerated (Quaglio et al., 2017). The World Health Organization (WHO) considers health literacy to be the level of knowledge, social skills, confidence, motivation, and competence to access, understand, and appraise health information (Kickbusch et al., 2013). It comprises a set of strategies to improve health and well-being across the lifespan, from individual health literacy to organizational and public health literacy. Health literacy development begins in childhood and adolescence, where it should be supported in an integrated, inclusive, and multidisciplinary approach, promoting and developing competencies and, therefore, knowledge, skills, and attributes (Vaz de Almeida, 2020). Health literacy encompasses different areas of health, such as oral health and nutrition.

In Europe, eight countries participated in the European health literacy questionnaire (HLS-EU 12) in 2014: Austria, Bulgaria, Germany, Greece, Ireland, the Netherlands, Poland, and Spain (Sørensen et al., 2015). Among the results obtained with random samples in the European population, at least one in ten (12%) registered insufficient health literacy, and nearly one in two (47%) had limited (insufficient or problematic) health literacy. The distribution of levels differed substantially across countries (29–62%) (Sørensen et al., 2015). The HLS-EU contains several questions specifically about food and nutrition, but only in the HLS-PT, translated by Saboga-Nunes et al. (2014) and applied in Portugal, that a concern about oral health including nutrition is evident.

Other studies have been conducted among children and adolescents in Europe that confirm the importance of children and adolescents developing health skills, health-related knowledge, and healthy behaviours and practices (Okan et al., 2018). Adolescence is marked by increased cognitive capacity for and involvement in health decision-making and is therefore a salient period for developing and using health literacy skills (Fleary et al., 2022). The existing test-based validated HL measures for adolescents were originally designed for adults. However, adolescents are at an earlier phase of developing their HL skills (e.g. fewer experiences with navigating the health system, cognitive and psychosocial development immature compared to adults) compared to adults, and though validated, measures originally designed for adults may assume prior knowledge that adolescents may lack. Fleary et al. (2022) stated that it is important that HL measures for adolescents are especially designed to account for their developmental characteristics and experiences, while the WHO (2022) reported that interventions with adolescents are more effective if they are aligned with their values of autonomy, social justice, and identification with their peers.

Health Inequalities in Portugal

Portugal has some of the biggest socioeconomic health inequalities among European countries. Aggravated by economic instability since 2020, this inequality has been closely associated with geography, low income, and low health literacy (Campos-Matos et al., 2018; Eespanha, 2019). Education and gender are the main determinants of health inequalities identified in Portugal, mainly affecting the distribution of obesity, self-rated health, and mental health symptoms. Women consistently show worse results for a variety of health outcomes (Campos-Matos et al., 2016). This situation has become ever worse during the COVID-19 pandemic (European Institute for Gender Equality, 2021; Mukherjee & Pahan, 2021).

Portugal has a national health service (SNS), created in 1979 by Law n. 56/79, with the mission of providing adequate access to health services by all citizens, regardless of their social and economic conditions, as well as to foreigners, regardless of their legal status (SNS, 2023). The system includes the management of integrated health services, health promotion, disease prevention, means of diagnosis and treatment of patients, and their social and clinical rehabilitation. The importance of an efficient and attainable national and public health service (SNS) is related to its ability to eliminate health inequalities, contributing to a more just and equitable society (Vidal et al., 2018). Over recent decades, there has been evolution in health services and the quality of health care in Portugal, with many public policies being implemented between 2005 and 2009 to expand and modernize health service efficiency. However, since 2010 the SNS has suffered many budget cuts due to the economic crisis, resulting in austerity measures, which led to a spike in emigration and a deterioration of public social services.

In Portugal there are significant differences in access to health services based on the coastal/interior territorial dichotomy. The asymmetries in the distribution of health services are clear, both in access to health centres and hospitals, with urban areas, such as Porto and Lisbon, being those with more services that could result in better access to health care (Vidal et al., 2018). However, this does have some benefits as these large coastal cities are home to 68.9% of Portugal’s migrants, which are a population group with historically inadequate levels of health literacy that experience health inequalities (Medina et al., 2022). The municipalities with the lowest density of health services are all located in inland regions and the Azores and Madeira islands. This situation underscores the polarization and unequal distribution of health services. Even if the SNS recovers, its fragility is evident by analysing the availability of services especially related to the lack of health professionals and infrastructure serving populations that do not live in urban areas (Vidal et al., 2018).

Several accessibility difficulties, namely, isolation, poverty, and inadequate health literacy, are the main intrinsic barriers to the population’s access to health services (Vidal et al., 2018). The continuous ageing process in Portugal contributes to the worsening of inequalities in access to health care due to high dependency and poor mobility among the elderly. Vidal et al. (2018) also noted that a lack of education contributes to greater vulnerability to death. The presence of public health

policies focused on minimizing health inequalities is currently not evident. To develop a universal and comprehensive national health service, public investments should be made in areas such as health education and promotion (healthy eating habits, physical and social mobility), focusing on the most prevalent diseases (such as malignant tumours and respiratory diseases), determining the cause of inequalities (living contexts, poverty, or social capital) and vulnerable populations (such as the elderly), and, in particular, emphasizing the specificities and needs of each region of the country (Campos-Matos et al., 2016; Vidal et al., 2018).

Portugal joined the European Network of Health Promoting Schools in 1994 (Sousa, 2020), in an inter-institutional partnership between health and education, constituting the focal point of Schools for Health in Europe (SHE). More recently, within the National Health Plan, Portugal created the National Program of Education for Health Literacy and Self-Care (PNESLA) which aims to improve levels of health literacy. The resultant Action Plan of Health Literacy has the goals of promoting healthy lifestyles and training for the proper use of the health system. It promotes the well-being, knowledge of chronic diseases, and health literacy of 9- and 10-year-old children in a school environment (Vieira et al., 2020).

Oral Health Literacy and Nutritional Health Literacy

Oral health literacy is the degree to which people have the capacity to obtain, process, and understand basic oral and craniofacial health information and access services needed to make appropriate oral health decisions (Horowitz & Kleinman, 2012; Lee et al., 2012). Oral health literacy is related to nutrition and eating habits. Nutritional health literacy is the capacity to access, understand, and apply nutritional information at three different levels, including functional, interactive, and critical health nutrition literacy (Doustmohammadian et al., 2022; Slater, 2013). Food and nutrition literacy includes the information and skills to plan, manage, select, prepare, and consume food (Vidgen & Gallegos, 2014). In 2013, Wong et al. considered that new studies are needed to show how oral health literacy can play a major role in improving an individual's oral health and to evaluate the impact of limited health literacy skills on oral health outcomes. The authors also stated that appropriate instruments are needed to assess health literacy-related skills in the oral health-care context.

Oral Health Framing in Portugal

Oral health literacy may be instrumental in decreasing oral health disparities and promoting oral health. Consequently, it could facilitate the selection of appropriate interventions to improve oral health behaviours leading to better oral health care. In this context one of the limitations of oral health care in Portugal is that the SNS was

created in 1979, without dental care services (SNS, 2023). Dentists in Portugal work in private practice and are paid on a fee-for-service basis. Fees are privately determined, following principles of the Portuguese Dental Association (Ordem dos Médicos Dentistas). Oral health care is mainly based on an out-of-pocket health system (Machado et al., 2022) and usually includes only the basic prevention procedures. There are very few salaried positions within the SNS related to dental care (de Simões et al., 2017).

Dental patients in Portugal may be partially reimbursed by their professional or private insurance scheme if dental care is included in their package of benefits. Filipe and Aguiar (2018) noted that even though a dental voucher system was created to facilitate the access to oral health care, the use of these vouchers is inconsistent. They also stated that only 23% of students aged 7, 10, and 13 with dental caries from state schools in Western Lisbon and Oeiras participated in the program in the 2014/2015 school year (Filipe & Aguiar, 2018).

The Portuguese Public Oral Health Program was implemented in 2005 by the Ministry of Health (Directorate General of Health [DGS], 2021). The main purpose of this program was to promote oral health and toothbrushing in schools. It is conducted by dental hygienists that do some fissure sealing and nurses from the public health system (Kravitz et al., 2015). This program provides for an individual intervention for each child or teenager, from 2 to 18 years old, including instruction and motivation for proper practices related to oral hygiene and food, the implementation of preventive techniques such as the application of fluoride and the application of fissure sealants, and, whenever necessary, dental treatment. Pregnant women, beneficiaries of the solidarity supplement, people with HIV/AIDS, and users with suspected oral cancer also have access to a dental check (DGS, 2021).

The DGS (2014) has stated that Portugal has already achieved the 2020 WHO goal of having a decayed, missing, or filled teeth index (specific dental index) at age 12 years below 1.5 (1.18 in 2013, with a decreasing trend since 2000 from 2.95). In 2013, 51.8% of children aged 12 had healthy gums, which constitutes a remarkable improvement since 2006, when it was only 26.1% (de Simões et al., 2017).

Food and Nutrition Framing in Portugal

In Portugal, unhealthy eating habits are one of the main risk factors for chronic noncommunicable diseases. The increased prevalence of excessive weight, which is strongly linked to unbalanced eating habits, is a major concern in the adult and young population (Gregório et al., 2021). The European Regional Obesity Report (WHO, 2022) revealed that 30.2% of Portuguese adolescents between 10 and 19 years of age are overweight, with 8.5% being obese, with a slight predominance of males.

The 2015–2016 national food, nutrition, and physical activity survey, conducted on the Portuguese population (Lopes et al., 2017), found that adolescents are the age group with the lowest consumption of vegetables and the group with the highest

consumption of cereals and potatoes (rice, pasta, breakfast cereals, and cereal bars). Additionally, consumption of sweets, cakes and biscuits, salty snacks, pizzas, soft drinks, and meat is excessive (Lopes et al., 2017). More recently, the Health Behaviour in School-Aged Children Study (HBSC) (Matos et al., 2020) found that more than 50% of Portuguese adolescents do not consume fruit and vegetables daily, with vegetable consumption being much lower than fruit consumption. However, consumption, of both food groups, has increased since 2014 (Matos et al., 2020).

Adolescents may be aware of the dietary recommendations and the negative implications of an inadequate diet for their health, but this knowledge is not enough to motivate them to adhere to or maintain healthier habits (Strömmer et al., 2021). In Portugal, studies on nutritional health literacy, its determinants, and influential factors among adolescents are scarce. One relevant study (Ferreira et al., 2021) found that girls have more knowledge than boys about food and alcohol consumption. They also noted students who have lunch in the school canteen and that are interested in receiving information through applications such as WhatsApp have higher food literacy levels.

In 2012, Portugal implemented the first national food and nutrition policy—the National Program for the Promotion of Healthy Eating (PNPAS) of Portugal's DGS. This program aimed to improve nutritional habits by modifying food environments and investing in improving the food literacy of the population. This aim is based on the principle that adequate food consumption and the consequent improvement of the nutritional status of citizens have a direct impact on disease prevention and control (DGS, 2021).

The Portuguese Education for Health referential, which resulted from a partnership between the Directorate of Education and the Directorate-General for Health, presents guidelines on the topics to be developed and worked on in the areas of health, food, and nutrition, from preschool through to secondary school (Pereira & Cunha, 2017). However, these guidelines generally translate into a markedly theoretical curriculum offering. Therefore, all the population, including adolescents, must have knowledge about food and nutrition, healthy foods, and habits and must acquire skills to be able to apply this knowledge in everyday practice so that the promotion of healthier eating habits can lead to a consequent decrease in the incidence of chronic diseases (Thakur & Mathur, 2021).

Method

The aim of this study was to measure the level of health literacy in general health, oral health, and nutrition, through the self-perception of young people, in the domains of access, understanding, and use of resources. This study involved young people, aged between 12 and 19 years, living in different Portuguese cities (Lisbon, Oporto, Portimão, Portalegre) (see Tables 14.1 and 14.2).

Table 14.1 Gender of the sample

Gender	Frequency	%
Male	28	31.1
Female	62	68.9
Total	90	100

Table 14.2 Age of the sample

Age	Frequency	%
12	6	6.7
13	16	17.8
14	12	13.3
15	8	8.9
16	7	7.8
17	6	6.7
18	19	21.1
19	16	17.8
Total	90	100

The questionnaire—Q-LIS-SON—integrates domains of general (questions 1–8, 10, 20), nutritional (questions 9, 11–15), and oral health literacy (questions 16–19) and was conducted in 2022 with a convenience sample. The 20-item questionnaire was developed from the HLS-EU-PT and the work of Paakkari et al. (2016). More specifically, the food-related items in the Q-LIS-SON are from the HLS-EU-PT (Saboga-Nunes et al., 2014), the health literacy questions are from Paakkari et al. (2016), and the oral health questions were developed by a panel of experts including the researchers. Each question has four possible responses on a Likert scale: absolutely true, somewhat true, not quite true, and not at all true. The questionnaire was piloted with a small sample for comprehension analysis after being reviewed by a number of experts from different fields (e.g. dental health, nutrition, health literacy specialists) to determine validity.

Following ethical approval from the Portuguese Health Literacy Society (SPLS; July 2022), the questionnaire was disseminated through Google Forms for participants older than 18 years. The recruitment of young people aged under 18 years was carried out by the researchers at the time of paediatrics’ routine consultations in a national company health clinic, where young people and parents were invited to participate. After explaining the objectives to the patients and their parents, they were invited to answer the questionnaire during their waiting time. The questionnaire was completed using pen and paper, and informed consent was obtained from the participant and their parent beforehand. Statistical analysis was performed by researchers with the software Statistical Package for the Social Sciences (SPSS). To determine internal consistency and reliability, a Cronbach’s alpha was completed.

Findings

The Cronbach's alpha result (0.899) showed a strong reliability of the scale used (Landis & Koch, 1977). Participant responses to the 20 survey items indicate that they had predominantly positive self-evaluations of their health literacy (Table 14.3). This evidence shows that young people are confident regarding their knowledge about healthy behaviours they should adopt. Despite this overall confidence, some nutritional health literacy statements (statements 9, 14, 15) and oral health literacy statements (statements 16–17) indicated lower confidence in some areas. These exceptions are more related to the confidence at the behavioural level and thus more at the level of knowledge use (Table 14.3).

Further analysis of the survey statements related to general health literacy against gender (Fig. 14.1) revealed that more than 50% of females answered *Absolutely true* to four statements, while males only did this in only one (statement 8), which denotes a more positive health literacy self-assessment by these female participants. This gender discrepancy is most clearly evident in statement six and in statement 20. Male participants had more positive self-assessments (*Absolutely true*) on the statements referring to nutritional health literacy—statements 9, 11, 12, and 13 (Fig. 14.2).

In the four statements on oral health, females stand out in the positive self-assessments, showing their self-confidence. Statement 18, "I know that it is important to do my oral hygiene", is the strongest among both males and females (respectively, 63% and 84.5%)—see Fig. 14.3.

Discussion

Health education is viewed as an important element of child health promotion (Fairbrother et al., 2016). The main purpose of this exploratory study was to measure Portuguese adolescents' level of literacy in general health, oral health, and nutrition. The researchers also aimed to validate a questionnaire for this purpose. The internal consistency and reliability returned a Cronbach's alpha within the desirable values indicating the second aim was met.

Regarding the first aim, data in this study indicates that female participants had a more positive self-evaluation of their oral health literacy than males, whereas males tended to have a more positive self-evaluation of their nutritional health. Although this result does not match the Portuguese study by Paiva et al. (2017), where no gender differences in health literacy were found, it does align with the results of the meta-analysis by Chakravety et al. (2022) who also found that men, with a migration background, may have lower health literacy than women. The authors also reported that men were examined much less frequently. Additionally, Brown et al. (2021) stated that male and female adolescents rank differently on food literacy assessment tools.

Table 14.3 Participant responses and percentages

Statement	Absolutely true *N* (%)	Somewhat true *N* (%)	Not quite true *N* (%)	Not at all true *N* (%)
1. I have good health information.	26 (28.9)	56 (62.2)	8 (8.9)	0
2. When needed, I can give ideas to improve the health around me (e.g. of my family, friends, or even the space around me).	21 (23.3)	57 (63.3)	10 (11.1)	1 (1.1)
3. I can compare health information coming from different places/sources (e.g. books, magazines, television, online social networks).	27 (30.0)	42 (46.7)	18 (20.0)	2 (2.2)
4. I can follow all the instructions that the health professionals give me (e.g. the nurse or the doctor).	41 (45.6)	42 (46.7)	5 (5.6)	2 (2.2)
5. It is easy for me to give examples of things that improve health.	32 (35.6)	43 (47.8)	14 (15.6)	1 (1.1)
6. I know/acknowledge that my words and actions have consequences/effects on the health of others (people and environment).	57 (63.3)	23 (25.6)	8 (8.9)	2 (2.2)
7. When I need to, I know how to find health information.	40 (44.4)	39 (43.3)	10 (11.1)	0
8. I know how my behaviour can do good or harm to my health.	62 (68.9)	27 (30.0)	1 (1.1)	0
9. When I decide, I eat what I want.	24 (26.7)	39 (43.3)	24 (26.7)	3 (3.3)
10. I can often find out whether the health information I read and/or hear is right or wrong.	16 (17.8)	48 (53.3)	21 (23.3)	5 (5.6)
11. I know which foods are good for my health.	44 (48.9)	42 (46.7)	4 (4.4)	0
12. I know about healthy foods.	56 (62.2)	29 (32.2)	5 (5.6)	0
13. I know the foods that may not be good for my health.	52 (57.8)	34 (37.8)	4 (4.4)	0
14. I can easily say "no" to foods that may be bad for my health.	20 (22.2)	24 (26.7)	39 (43.3)	7 (7.8)
15. I eat what is good for me, because it is healthy.	16 (17.8)	39 (43.3)	27 (30.0)	3 (3.3)
16. I know what oral health is.	49 (54.4)	18 (20.0)	12 (13.3)	6 (6.7)
17. I am able to give advice to my friends about oral health.	18 (20.0)	33 (36.7)	22 (24.4)	12 (13.3)
18. I know it's important to do my oral hygiene.	66 (73.3)	19 (21.1)	0	0
19. I know how much toothpaste to put on my toothbrush to brush my teeth.	17 (18.9)	10 (11.1)	3 (3.3)	2 (2.2)
20. I know that sometimes I need to go to the health centre.	32 (35.6)	19 (21.1)	10 (11.1)	3 (3.3)

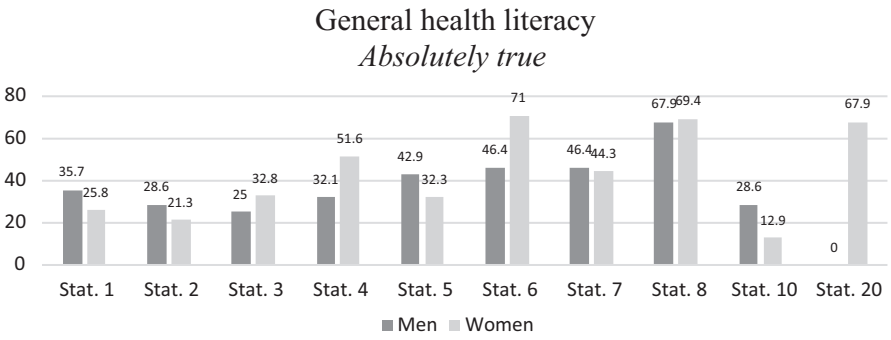

Fig. 14.1 Comparison between general health literacy statements and gender in the *Absolutely true* category (%)

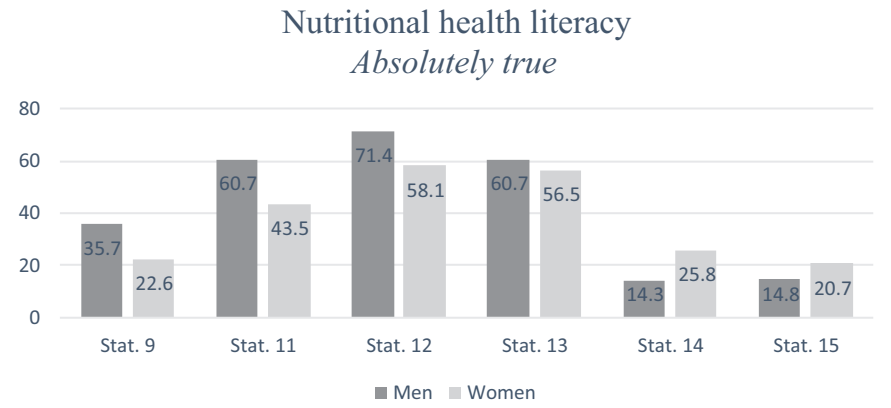

Fig. 14.2 Crosstabs between nutritional health literacy statements and gender in the *Absolutely true* category (%)

While this study showed that participants had generally positive self-assessments of their health literacy, this was not the case for all nutritional and oral health literacy statements on the Q-LIS-SON. For example, 37.7% of respondents said they were able to give advice to friends about oral health. Although the participants in this study were a small sample of the Portuguese adolescent population, these findings align with other relevant European research (e.g. Brown et al., 2021; Mirmiran et al., 2007) and suggest that more education is needed to improve the health literacy of Portuguese adolescents. This education should include knowledge, understanding, and application, in line with the Centers for Disease Control and Prevention's recommendation that knowledge and information need to be used to have the most benefit. It is this use that determines good health practices.

The Portuguese population has relatively low health literacy when compared to other European countries (Campos-Matos et al., 2018; Vidal et al., 2018); however, in the present study, participants self-reported quite high health literacy. These

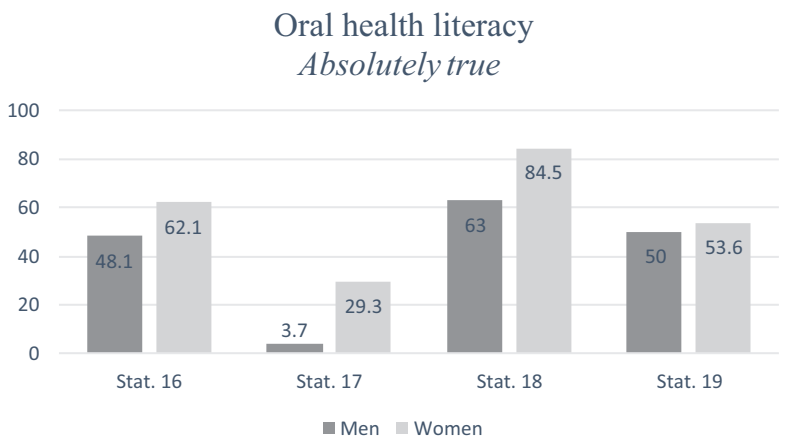

Fig. 14.3 Crosstabs between oral health literacy statements and gender in the category *Absolutely true* (%)

results can be explained because most of the participants were from large cities. Children and young people up to the age of 18 have access to free health care in health centres (e.g. family doctor and paediatrician in SNS hospitals) and are exempt of charges. Most of the population, including those with low socioeconomic status, use these services (SNS, 2023), which are more available in larger urban areas.

Schools, health centres, and the community should be encouraged to work together to build effective long-term strategies that focus on those most at risk, such as children from low socioeconomic backgrounds (Bombert et al., 2018). In this sense, the implementation of nutrition education and nutrition literacy is a measure to be considered. Researchers and policymakers should also consider that feedback from others. Subjective health and the ability to navigate multiple sources of information also determined adolescents’ confidence in their HL skills (Fleary & Joseph, 2020). Adolescents are more likely than young children to be influenced by interaction with their friendship groups, or “tribes”, so researchers and policymakers should be aware of how these interactions can influence adolescents’ health decisions.

Conclusion

This exploratory study presented and measured three domains of health literacy (general, oral, and nutritional) in Portuguese adolescents. In doing so it attempted to contribute to research that could be used to help the correction of health inequalities in Europe and, more specifically, of literacy in oral and nutritional health in Portugal.

In Europe, the road to implementation of policies to reduce health inequities is ongoing. Public policies in Portugal are aimed at improving the future of young

people so that they can grow, develop, and live in better health conditions than the generations that precede them. Research can help delineate clearer paths towards achieving these aims.

The present study has some limitations, such as its exploratory nature that limits firmer conclusions and the convenience sample that does not allow the results to be extrapolated to the wider Portuguese adolescent population. Therefore, future studies are encouraged to investigate these three domains of health literacy through a representative sample, allowing for extrapolations, and also through focus groups, which allow for more in-depth responses to health literacy questions.

Young people's understanding of their nutritional health and oral health is related to an investment in health literacy in schools, as well as the development of parental skills. The steps required to improve Portuguese adolescent health literacy require more evidence, more reflection and critical thinking, and, above all, more action for change. Schools, health providers, social and cultural organizations, parents, legislators, and young people themselves should be encouraged to be a part of this process.

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