REVIEW

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Adolescent health – contemporary trends in the world and Kyrgyzstan

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Abstract

Objective: The article presents a review of foreign and domestic literature on relevant health problems and risk factors for adolescent diseases.

Methods: The analysis of the conducted and ongoing global programs to assess the health of children and adolescents, the mortality rate and the main factors affecting the quality of life of this age group was carried out.

Results: It was determined that the main causes of death and disability among adolescents were injuries, HIV infection, and suicide. The behavioral risk factors such as abuse of alcohol, tobacco and psychoactive substances, poor diet, early sex life and sexually transmitted infections significantly aggravate adolescent health, leading to physical, mental disorders and social maladjustment.

Conclusion: Thus, the health of modern adolescents in the Kyrgyz Republic is one of the significant problems of public health in the country. The issues of ensuring and maintaining the health of adolescents require in-depth study.

Key words: Adolescents, health, quality of life, risk factors, behavior, prevention, cardiovascular morbidity

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Introduction

Adolescence, the period between 10 and 19 years of age, is a distinct stage of human development characterized by rapid physical, cognitive, and psychosocial changes. Despite being commonly regarded as a generally healthy population group, adolescents account for approximately 6% of the global burden of disease and injury, according to the World Health Organization (1, 2). Puberty is a serious period of life when many forms of behavior are formed or consolidated, and thereby the causes of many serious diseases that develop in adulthood are laid (3).

During this period, there are significant changes in health and social behavior associated with inadequate, unbalanced diet, smoking, alcohol and psychotropic substances abuse, lack of physical activity, promiscuous sexual relations, which can affect the quality of life and health of adolescents. According to a number of modern researchers, over the past decade there has been an increase in the overall incidence of almost all classes of diseases and the level of disability among adolescents, moreover, there has been an increase in socially significant diseases (4, 5).

The objective of our study was to review current literature and statistical data on adolescent health, identifying key causes and risk factors associated with morbidity and mortality among adolescents globally and within the Kyrgyz Republic.

Methods

This review was conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency and reproducibility. The aim of the study was to systematically review the literature on current health problems and risk factors affecting adolescent morbidity and mortality globally and within the Kyrgyz Republic. A comprehensive literature search was carried out using several electronic databases, including Web of Science, Scopus, Google Scholar, and eLibrary.ru.

Additionally, official reports from the World Health Organization (WHO) and the United Nations (UN) Kyrgyzstan, particularly the 2022 "Health Behavior of School-aged Children in the Kyrgyz Republic" (HBSC) report, were included to provide up-to-date regional data. A total of 45 articles were identified, of which 29 were ultimately included in the review.

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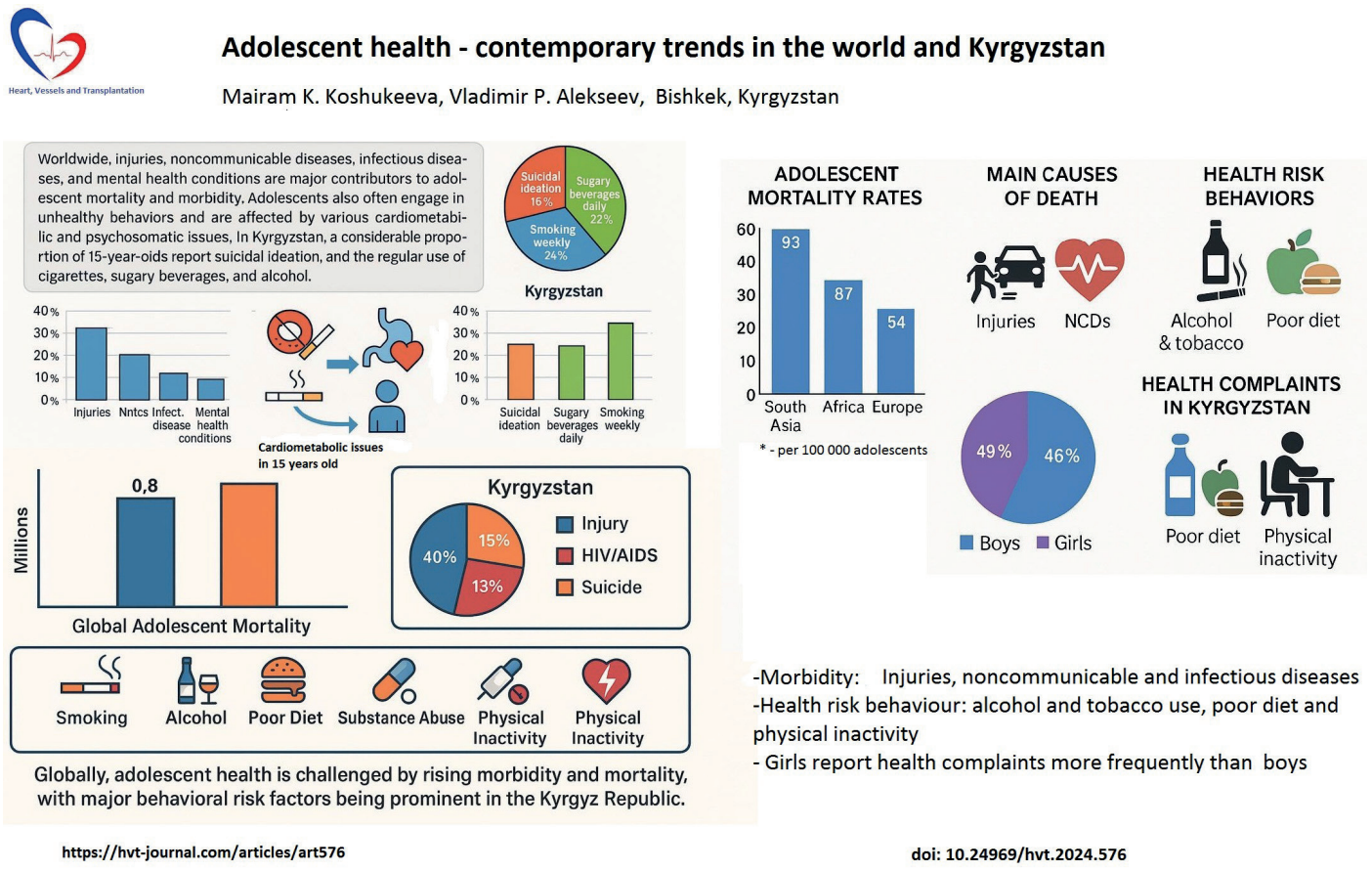
Graphical abstract



The search strategy included combinations of the following key words: adolescents, health, mortality, morbidity, risk factors, behavior, mental health, human immunodeficiency virus infection (HIV), injuries, nutrition, substance abuse, suicide, and Kyrgyzstan. The search was limited to articles published in English and Russian over the last 10–15 years to ensure relevance and accuracy.

Studies and reports were included if they met the following criteria:

1) focused on adolescents aged 10–19 years;
2) addressed physical or mental health issues, risk factors, or behavioral determinants;
3) contained data relevant to global trends or specific to the Kyrgyz Republic;
4) published in peer-reviewed journals or by recognized international or national institutions (e.g., WHO, UN, National Statistical Committee of the Kyrgyz Republic).

Studies were excluded if they:

1) focused solely on adult or early childhood populations;
2) did not report original data or contained duplicated information;
3) were opinion pieces without empirical support.

Results and discussion

The Global Strategy for Women's, Children's and Adolescents' Health (2016–2030) provides a roadmap for ending preventable deaths among women, children and adolescents by 2030 and help them realize their potential and rights to health and well-being in all settings. The implementation of the objectives of this strategy is consistent with the Sustainable Development Goals related to the political, social, economic and environmental determinants of health and sustainable development, adopted by all UN Member States in 2015 (1).

In May 2017, WHO published a major report: Global Accelerated Action for the Health of Adolescents (AA-HA!) (6). The AA-HA! Guidance has drawn on inputs received during extensive consultations with Member States, United Nations agencies, adolescents and young people, civil society and other partners. It aims to assist governments in deciding what they plan to do and how they plan to do it as they respond to the health needs of adolescents in their countries (6, 7).

According to the WHO, one in six people in the world belongs to the adolescent category: this is 1.2 billion people aged 10 to 19 years. In 2019 an estimated 0.9 million adolescents died. Approximately two thirds of these deaths were in lower-middle-income countries (LMICs) of the WHO African and South-East Asia regions, where about half of adolescents live (Table 1). Their mortality rates (deaths per 100 000 adolescent population) were the highest of all the regions (8-9). Unintentional injuries such as traffic accidents, violence, drowning, and suicide are the main causes of death among adolescents, and non-communicable and infectious pathology are other important causes of death during this period (10, 11).

Table 1. Overview of the burden of mortality and morbidity among adolescents globally and by modified WHO regions, 2019

Variables	Global	African LMICs	Americas LMICs	Eastern Mediterranean LMICs	European LMICS	South-East Asia LMICs	Western Pacific LMICs	HICs
Adolescent population in millions (%of global total)	1240 (100)	249 (20)	103 (8)	129 (10)	53 (4)	362 (29)	214 (17)	131 (11)
Adolescent deaths in thousands (%)	857 (100)	321 (38)	67 (8)	104 (12)	19 (2)	244 (28)	73 (8)	29 (13)
Mortality rate (deaths per 100 000 adolescents)	69	129	65	81	36	67	34	22
Adolescent YLDs in millions (%)	69 (100)	15 (22)	6 (8)	8 (11)	3 (4)	21 (30)	19 (13)	8 (11)
YLDs per 100 000 adolescents	5536	6120	5637	5919	4871	5776	4211	5762

HICs – high income countries, LMICs – low-middle income countries, YDL – years of healthy life lost due to disability
Source: WHO 2019.

In addition to mortality, adolescents are also at risk of many non-fatal diseases and conditions. The behavioral risk factors such as alcohol or tobacco use, physical inactivity, unprotected sex and/or violence can threaten adolescent health not only in the present moment but also later in life (6, 12). Moreover, their combination with the main cardiovascular risk factors such as hereditary predisposition, hypercholesterolemia, arterial hypertension, obesity increases the incidence of cardiovascular diseases by 3-10 times (13, 14).

According to the National Statistical Committee of the Kyrgyz Republic, at the beginning of 2022, 2 million 555 thousand children under the age of 18 lived in the Kyrgyz Republic, of which 13% were adolescents aged 15-17 years (328 thousand people) (15). In 2022, the Health Behavior of School-age Children (HBSC) survey was conducted in our country among adolescents aged 11, 13 and 15 regarding health and well-being, social environment and health-related behavior (16, 17). The study of health complaints among adolescents in the Kyrgyz Republic revealed that girls aged 13–15 were more likely to report somatic health issues—such as headaches, mood swings, weakness, abdominal pain, and back pain—compared to boys of the same age. Psychological symptoms (nervousness and irritability) in girls (13-19%) were more common than in boys (8-10%). Also, with increasing age, girls were much more likely to complain of the presence of psychological symptoms (irritability), at the age of 11 - 13% and at the age of 15 - 19.7%. In boys, with increasing age, on the contrary, there was a decrease in complaints, at 11 years old - 10.4% and at 15 years old - 8.3%.

Numerous studies confirm that injuries in adolescence are the main cause of death and serious morbidity in all seven modified WHO regions (11, 18-20). In childhood, as they grow older, the risk of injury increases dramatically. During adolescence, injuries are indicative of a high-risk lifestyle.

According to the results of the HBSC study, adolescents who received one or more injuries during the year when they sought medical care in the aggregate is 47.6% in boys and 40.0% in girls. In terms of age, a high percentage of injuries was observed at the age of 11 (25.8%) among boys and slightly decreased by the age of 15 (22.9%) (10). These results show that in the Kyrgyz Republic, injuries are more common among boys, with rates decreasing, as adolescents grow older.

According to WHO (2012), HIV infection among adolescents is considered to be one of the most common causes of adolescent death worldwide (2). According to the Center of AIDS (2021), 937 of the HIV-positive residents of Kyrgyzstan are children and adolescents under the age of 19. This is 9% of the total number of people living with HIV in the Kyrgyzstan (21).

According to a WHO study, adolescents most frequently experience depression, making suicide the leading cause of death in this age group. The WHO report separately notes that in those countries where the Internet is most developed, a direct link has been identified between adolescent suicide and the so-called cyberbullying – severe bullying on the Internet, which regularly takes the lives of an increasing number of schoolchildren and students (11, 22).

The results of the HBSC show that in Kyrgyzstan, 33.6% of adolescents noted that during the last 12 months they felt so sad or hopeless almost every day for two or more weeks in a row that they stopped doing some normal activities. There is a

significant upward trend with age, especially among 15-year-old girls (47.7%) compared to 11-year-olds (27.9%)

Over the past 12 months, 16.1% of adolescents in the study reported having suicidal thoughts; 12.1% planned to attempt suicide and 2.7% of adolescents actually tried to commit suicide. It should be noted that there were significant gender and age differences, especially as they grew older.

Suicidal thoughts and attempts in girls with age tended to increase, and in boys, on the contrary, to decrease. 15-year-old girls were almost twice as likely (24.2% vs. 13.7%) and planned (21.1% vs. 8.5%) suicide compared to 11-year-old girls (17).

One of the main risk factors for health problems in adolescents is malnutrition, which directly affects the development of obesity, dyslipidemia, and arterial hypertension in adulthood (23- 26). Moreover, highly processed food has a high glycemic index, helps the development of carbohydrate metabolism disorders, which increases the risk of developing type II diabetes mellitus and obesity. Carbon dioxide from sweet carbonated beverages contributes to a more rapid absorption of easily digestible carbohydrates, stimulates gastric secretion, and contributes to the development of biliary dyskinesia (23). According to HBSC results, as adolescents age, they are less likely to report a daily breakfast and the daily presence of fruit in their diet. Girls report high amounts of daily consumption of sweets in all age groups. Regular consumption of sugary soft drinks among adolescents was 8.7%. Daily intake of sugars increases with age among boys and the differences between adolescents aged 15 and 11 years range from 3.3% (16, 27).

Among the factors that adversely affect the health of a teenager, one of the first places is occupied by early initiation of bad habits, in particular, smoking. Despite the promotion of the dangers of smoking, active measures to limit the sale of tobacco products, the number of smokers among children, adolescents and young people remains quite high (1). For children under 14 years of age, smoking one cigarette per week or more is considered permanent smoking (12, 28, 29). In the Kyrgyz Republic, there is an increase in smoking among adolescents. Thus, compared to the data in Kyrgyzstan, 2.4% of consumers smoked cigarettes in 2014, while in 2022 teenagers smoked 6.6% (17).

According to the HBSC study, 2.6% of 15-year-old adolescents reported having tried cannabis at least once, with the majority being boys (2.4%). The proportion of adolescents who tried alcohol at least once in their lives was 10.1%. The prevalence of drinking alcohol at least once in a lifetime increased dramatically with age for both sexes of adolescents living in the Kyrgyz Republic (10).

Conclusion

Thus, the health of modern adolescents in the Kyrgyz Republic is one of the significant problems of public health in the country. The issues of ensuring and maintaining the health of adolescents require in-depth study. In addition, adolescent health and development has become an integral part of the Global Strategy for Women's, Children's and Adolescents' Health 2016-2030 (Global Strategy).Adolescent health and well-being is an engine of change in the process of building a healthier and more sustainable tomorrow's society. When developing measures to preserve and strengthen the health of the adolescent population, it is necessary to take into account the indicators of morbidity, physical development, disability, number and mortality of adolescents in our country, as well as the available resources and capabilities of the network of primary health care institutions.

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