



## A Systematic Review of Risky Behaviors in Adolescence and its Related Factors: Evidence from Iran

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### Abstract

**Background:** Adolescence is one of the most challenging, stressful, attractive, and at the same time, problematic periods of life for adolescents and their parents, teachers, and health providers. The present study aims to evaluate the tendency to high-risk behaviors and its related factors associated with adolescent risk behaviors among Iranian adolescents.

**Materials and Methods:** In this systematic review, online databases (Medline, EMBASE, Scopus, Web of Science, Cochrane Library, CINAHL, CIVILICA, and Google Scholar search engine) were reviewed with no time limit up to March 2023. Two reviewers evaluated the quality of eligible studies and carried out the selection procedure. The quality of the data was evaluated using the STROBE guidelines.

**Results:** Finally, 19 studies were selected. The prevalence of high-risk behaviors in adolescents was 63.1% (range: 5.4-63.1%). The selected studies highlighted five forms of high-risk behaviors: hookah smoking (6.9-59%), cigarette smoking (10.9-44.1%), substance abuse (1.8-31.1%), sexual risk behaviors (14.5-41.6%), and violence (23.4%). There was a significant negative relationship between religious tendencies and risky behaviors of students. Also, there was a significant relationship between age, gender, field of study, health literacy, family income, family structure, attachment to family and peers, commitment to norms, belief in moral principles, social inhibitions, and tendency to high-risk behaviors ( $p < 0.05$ ).

**Conclusion:** The prevalence of high-risk behaviors in adolescents was high. The supply of tobacco products to teenagers should be prohibited. It is necessary to create healthy entertainment (such as sports and cultural competitions), develop programs, and design educational interventions to prevent risky behaviors and increase communication skills and self-efficacy in adolescents. In addition, strengthening religious beliefs in adolescents by parents and teachers is suggested.

**Key Words:** Adolescents, Risky Behaviors, Iran, Related Factors.

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## 1- INTRODUCTION

Adolescence is a transitional stage of physical and psychological development that generally spans from puberty to adulthood (1, 2). This transition has biological, psychological, social, and emotional dimensions that expose teenagers to much stress (3-7). The World Health Organization (WHO) officially defines an adolescent as someone between the ages of ten and 19 (8). Adolescents are often characterized as excessively prone to risk-taking and impulsivity, as exemplified by the clustering of risky behaviors, including alcohol consumption, drug use, anti-social behaviors, and unprotected sexual activity. There is ample evidence that risk-taking rises sharply in adolescence (9-12). Since nearly two decades ago, the prevalence of risky behaviors, especially among teenagers and young adults, has become one of the most important concerns of societies (13).

High-risk behaviors are defined as acts that increase the risk of disease or injury and may subsequently lead to disability, death, or social problems. The most common high-risk behaviors include violence, alcoholism, tobacco use disorder, risky sexual behaviors, and eating disorders (14-16). Studies have shown that most high-risk behaviors begin before the age of 18 and include smoking, alcohol, and drug use (14-21). Studies conducted in Iran indicate that the prevalence of high-risk behaviors among teenagers has been significant in recent years (22-24). Several studies also show the prevalence of high-risk behaviors such as smoking, hookah, alcohol, and drugs among teenagers aged 14-18 (25-30). According to the latest national census, 28% of the country's population is in the age range of 10-19 years (31). The prevalence of high-risk behaviors among teenagers and young people has become a social issue in Iran in recent years and has created intense

concerns at various managerial, academic, and general levels of society. As adolescents are vulnerable to risky behaviors, it is necessary to investigate high-risk behaviors of adolescents to develop preventive programs and promote health (32, 33). This study aimed to evaluate the tendency to high-risk behaviors and its related factors associated with adolescent risk behaviors among 10-to-19-year-old Iranians.

## 2- MATERIALS AND METHODS

The Preferred Reporting Items for Systematic review and Meta-Analysis (PRISMA) statement was used as the template for this review (34).

### 2-1. Eligibility criteria

Participants, interventions, comparators, and outcome (PICO) was used to formulate the review objective and inclusion criteria.

**2-1-1. P (Participants):** Iranian adolescents (aged: 10-19 years old).

**2-1-2. I (Intervention/exposure):** Related to factors associated with risk behaviors.

**2-1-3. C (Comparison):** For the absence of risk behaviors.

**2-1-4. O (Outcomes):** High-risk behaviors, such as substance use (alcohol consumption, tobacco smoking, and substance abuse), sexual risk behaviors, and aggressive/violent behavior.

**2-2. Included studies:** The systematic review included studies containing any quantitative assessment, measurement, and evaluation of high-risk behaviors in adolescents (high school students only) in Iran, published up to March 2023, written in English or Persian, and published articles with full-text available.

**2-3. Exclusion criteria:** The exclusion criteria were abstracts without the full article, articles not written in English or Persian, review articles, systematic

reviews and meta-analyses, letters to the editor, editorials, short reports, case reports, and briefs.

#### **2-4. Information sources**

A systemic search of electronic databases Medline, EMBASE, Scopus, Web of Science, Cochrane Library, CINAHL, CIVILICA, and Google Scholar search engine was conducted. The search was done independently and in duplication by two reviewers, and any disagreement between the reviewers was resolved by the supervisor.

#### **2-5. Search**

Search words were a combination of (Students OR High school students OR Adolescents OR Teenagers) AND (High-risk behaviors OR Risky behaviors OR Behaviors OR Risk factors) AND (Prevalence) AND (Iran).

#### **2-6. Study selection**

The studies were selected which reported the prevalence of smoking tobacco, alcohol consumption, substance abuse, sexual behavior, violence, and factors associated with adolescent risk behaviors among 10–19-year-old Iranians. A database search was done for possible studies, abstracts were screened for eligible studies, full-text articles were obtained and assessed, and a final list of included studies was made. This process was done independently and in duplication by two reviewers, and any disagreement was resolved by the third reviewer. References were organized and managed using EndNote software (version X8).

#### **2-7. Data collection**

A researcher's form was developed and followed for each study. Two reviewers collected the data independently and gathered information based on the following parameters: author names, study

period, study design, settings, sample size, gender, age range, and the rate of high-risk behaviors, such as substance use (including alcohol consumption and smoking tobacco, and substance abuse), sexual risk behavior, aggressive/violent behaviors, and main findings.

#### **2-8. Risk of bias in individual studies**

The risk of bias was assessed following the standard STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guideline (35). It is a valuable tool for evaluating the quality of observational studies. This checklist has 22 items, scored based on the importance of each item in the present study. The final score of the checklist was 30, and the minimum was 15.0. The assessment was done by two reviewers independently and in duplication, and any discrepancies were resolved by the third reviewer.

#### **2-9. Synthesis of results**

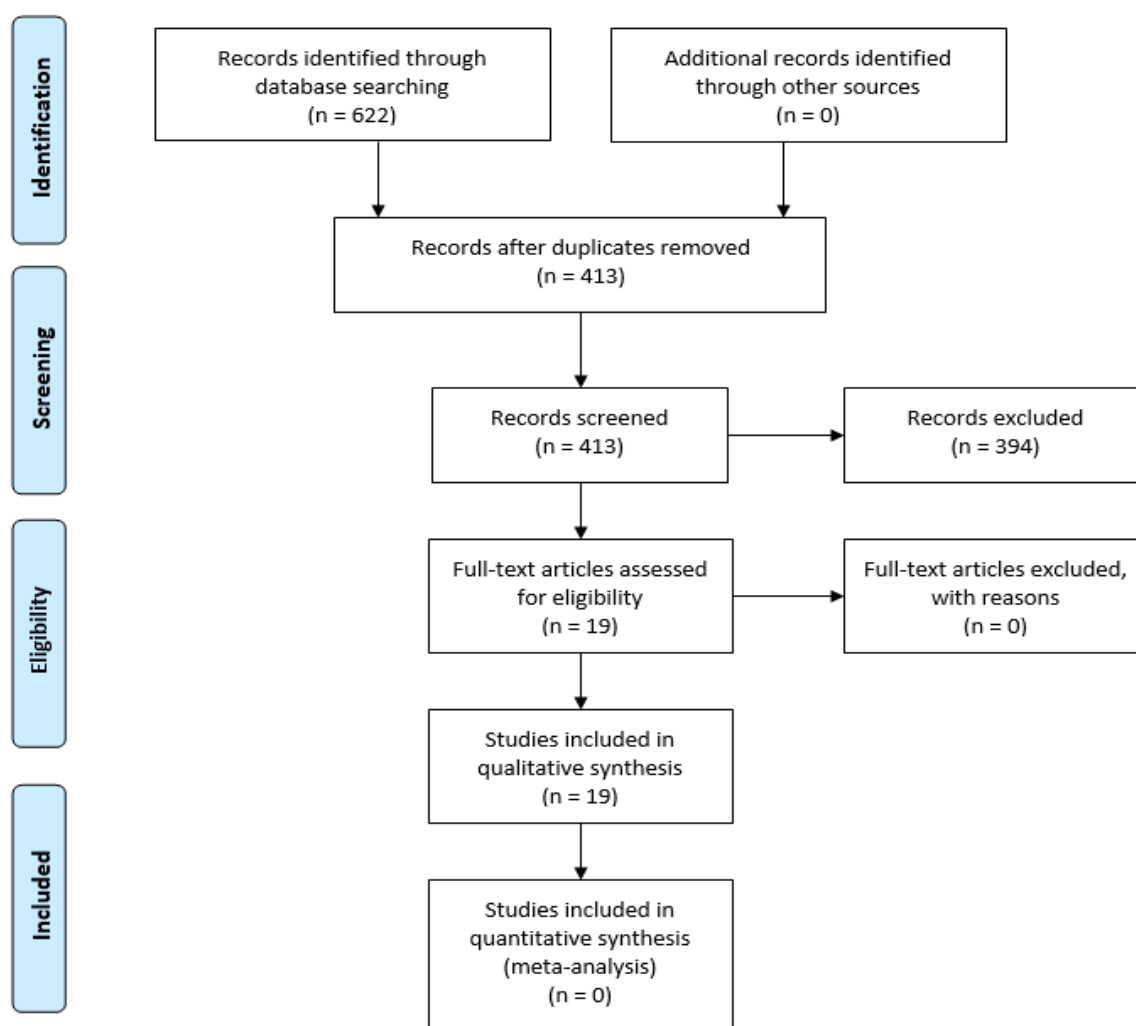
Due to the studies' heterogeneity (different populations, the number of risk behaviors, and risk factors), no meta-analysis was attempted.

#### **2-10. Ethics**

Approval of a research ethics committee was not necessary as the study analyzed only publicly available articles.

### **3- RESULTS**

A total of 19 studies, consisting of 8,027 adolescents between 2011 and 2021, were selected (**Figure 1**). The majority (77.25%) of the studies included in this review analyzed boys and girls, although approximately 14.82% and 7.93% included only boys or girls, respectively. The quality of reporting in studied articles was acceptable, based on the STROBE scale. The main characteristics of the selected studies are summarized in **Table 1** and the following:



**Fig.1:** PRISMA flowchart.

**1.** A cross-sectional study on 1280 high school students in Tehran in 2013 aimed to investigate the prevalence of high-risk behaviors among high school students. The results showed that the experience of smoking hookah and cigarettes, having sex, being beaten outside the house, and alcohol consumption were the most common risky behaviors among teenagers, respectively. The average of high-risk behaviors was higher in boys than in girls (36).

**2.** A cross-correlation on 3529 high school students from 30 high schools in Tehran in 2012 aimed to evaluate the role of family variables on adolescents' tendency towards high-risk behaviors. The results showed that adolescents' tendency towards high-

risk behaviors was significantly related to family factors. These findings demonstrate the significant role of family factors, especially smoking, alcohol consumption, and drug abuse among family members, on Iranian adolescents' tendency towards high-risk behaviors (37).

**3.** A cross-sectional study on 245 adolescents in the North of Tehran in 2018 aimed to explore the prevalence of risky behaviors among adolescents. The results showed that 6.9% of students had carried cold weapons with them at least once before, 15.17% had experienced drug consumption (opium and hash) at least once, 21.3% consumed alcohol, 41.66% had sexual affairs with the opposite sex, and 44.1% had experienced smoking (38).

**4.** A cross-sectional study on 450 high school students in Tehran in 2011-2012 aimed to assess the prevalence of risky behaviors and their relationship to religious orientations among students (Shaahed and public schools). The results showed that the prevalence of risky behaviors was 8.2% in public school students, 1.5% in Shaahed school students, and 3.2% in Shaahede Shaahed students. There was a significant difference between public school students and Shaahed students in public schools in the mean scores of risky behavior. Besides, a significant negative relationship was observed between religious tendencies ( $p < 0.05$ ) and risky behaviors of public and Shaahed students. Considering subsidiary hypotheses, it was indicated that there was a significant positive relationship between age and field of study ( $p < 0.05$ ) with risky behaviors in public school students (39).

**5.** A descriptive cross-sectional study on 252 students in Qom in 2019-2020 aimed to predict the adolescents' tendency to high-risk behaviors according to parenting style and healthy lifestyle. The results showed a significant relationship between parenting style (control, affection), and three aspects of lifestyle (spiritual growth, health accountability, and exercise and physical activity). According to the calculated coefficient of determination, parenting and healthy lifestyles in adolescents can explain 30% of changes in their risk behaviors. Furthermore, according to the calculated Beta coefficient, a healthy lifestyle has a higher effect on the emergence of adolescents' risk behavior than the parenting style (40).

**6.** A cross-sectional study on 800 high school students in Qom in 2016 aimed to estimate the prevalence of health risk behaviors among high school students. The results showed that the prevalence of high-risk behaviors in the studied population was 56.25%. The prevalence of physical contact at school and outside the school

during a year, carrying a sharp weapon to school during a month, smoking in school during a month, and hookah smoking, use of alcohol and drug during a month had statistically significant differences in both sexes ( $p < 0.05$ ) (30).

**7.** A cross-sectional study on 180 high school students in Shiraz in 2019-2020 aimed to predict high-risk behaviors based on psychological motives in female teenagers. The results showed that emotional and reckless motivations played the most important role in predicting female adolescents' willingness to use drugs. Emotional motivation had the most important role in predicting the tendency of teenage girls to use alcohol. Besides, regression impact coefficients indicated that irresponsibility and reckoning played the most important role in predicting the smoking trend variable (41).

**8.** A cross-sectional study on 450 male students in Shiraz in 2020 aimed to evaluate the predictive model of high-risk behaviors in adolescents based on their motivations. The results showed that thrill-seeking, calculation, audience control, irresponsibility, and hedonistic motivation had significant relationships with high-risk behaviors. Also, besides attention-seeking, other motivations could significantly contribute to the prediction of high-risk behaviors. Motivations generally explained 44% of the variance of high-risk behaviors (42).

**9.** A cross-sectional study on 400 high school adolescents in Kashan in 2012 aimed to investigate high-risk behaviors and their association with demographic characteristics in adolescents. The results showed that 28.7% of boys and 22.5% of girls had risky behaviors. A significant difference was found between general high-risk behaviors and tobacco, sexual high-risk behaviors and acquired immunodeficiency syndrome (AIDS) behaviors, AIDS, and law-breaking

domains in girls and boys. In addition, a significant relationship was found between high-risk behaviors and several individual, family, and social factors ( $p < 0.05$ ) (43).

**10.** A cross-sectional study on 400 high school adolescents in Kashan from December 2014 to June 2017 aimed to evaluate the relationship between risky behaviors and sensation-seeking in a sample of Iranian adolescents. The results showed that risky behaviors were observed in 51.2% of students, and a significant difference was found between male and female students in this regard ( $p < 0.05$ ). The overall sensation-seeking score and the scores in the dimensions of experience-seeking, disinhibition, and boredom susceptibility were higher in males than females ( $p < 0.05$ ). Therefore, sensation seeking can be an indicator for screening risky behaviors and should be monitored (44).

**11.** A cross-correlation on 510 high school students in Qazvin in 2012 aimed to estimate the prevalence of health risk behaviors among high school students. The results showed that the use of hookah was the most popular among girls and boys (59%) compared with cigarette smoking (32.7%), drug use (7.3%), and alcohol consumption (16.7%). The prevalence of physical violence in and outside the school in one year, carrying weapons to school in a month, cigarette smoking in the school in one month, smoking hookah, and alcohol and opioid use during one month were more frequently observed in boys than girls. The use of the seat belt was more common among girls than boys, and the total prevalence of using the seat belt was 23.7% (45).

**12.** A cross-sectional study on 457 female adolescents in Zahedan in 2015 aimed to determine the prevalence of health-risk behaviors among teen girls in Southeastern Iran. The results showed that the highest prevalence of health-risk behaviors among

students included failing to drink natural fruit juice (53.1%), failing to wear a seat belt (43.0%), sitting in a car while the driver is sending messages or emails (43.0%), failing to drink milk daily (36.0%), lack of minimum daily physical activity (37.0%), and watching TV more than three hours a day (35.0%). The ANOVA showed a statistically significant difference in the average health risk behaviors of adolescents in families with high economic status, those who never talked with their parents, or those who had physical relations with the opposite sex ( $p < 0.001$ ) (46).

**13.** A cross-sectional study on 384 high school students in Babol in 2018 aimed to investigate the association between high-risk behaviors and identity styles in adolescents. The results showed that aggression (23.4%), relationship with the opposite gender (14.5%), smoking cigarettes and hookah (10.9%), consuming alcohol (9.3%), suicidal thoughts and attempts (5.7%), running away from home (3.9%), and consuming psychotropic substances (1.8%) were the most prevalent high-risk behaviors among adolescents. Regression analysis showed that only the informational style had a significant negative correlation with high-risk behaviors (47).

**14.** A descriptive-analytical cross-sectional study on 716 high school students in Bushehr in 2019 aimed to determine the status of adolescents' tendency to high-risk behaviors and related factors. The results showed that high-risk driving had the highest mean score ( $14.5 \pm 88.67$ , range: 5-25). There was a direct and significant relationship among all three high-risk behaviors (smoking, violence, and high-risk driving subscales). The presence of smoker friends had significant direct relationships with all three high-risk behaviors, and the amount of pocket money had a significant direct relationship

with the tendency towards high-risk driving ( $p=0.016$ ) (48).

**15.** A cross-sectional study on 377 male students of high schools in Bushehr in 2017 aimed to explore the prevalence of high-risk behaviors among male adolescents in the South of Iran. The results showed that the highest frequency of high-risk behaviors in male adolescents involved physical contact and struggle outside of school (22.81%), hookah consumption within a month (19.62%), physical contact and struggle at school within a year (18.30%), and smoking cigarettes out of school in a month (11.14%). Besides, the rate of hookah consumption within a month and outside school was reported as 19.62% and 11.14% (49).

**16.** A cross-sectional study on 334 high school students in Rabor in 2021 aimed to investigate the relationship between high-risk behaviors (HRB), and mental health in adolescents. The results showed that the male gender is one of the risk factors for the consumption of alcohol, smoking, and other substances, the tendency to high-risk sexual behaviors, depression, and suicide in adolescents. The variables of age, sex, marital status of parents, and the number of children in the family, educational level, smoking, hookah, and alcohol were determined as influential and facilitating factors in the HBR of adolescents. Adolescents with better mental health are physically healthier, show more positive social behaviors, and engage in less risky behaviors. In contrast, adolescents with mental health problems such as depression are more likely to engage in risky behaviors (50).

**17.** A descriptive cross-sectional study on 560 high school students in West Azerbaijan province in 2019-2020 aimed to investigate the relationship between health literacy and high-risk behaviors regarding the mediating role of positive adolescent development among students. The results showed that health literacy had a significant relationship with high-risk behaviors and reduced the tendency towards such behaviors. The total mean score of high-risk behaviors in students was  $20.57 \pm 13.64$  (addiction:  $5.21 \pm 4.98$ , alcohol:  $4.92 \pm 4.85$ , sexual behaviors:  $3.27 \pm 2.75$ , and violence:  $7.20 \pm 5.08$ ) (51).

**18.** A cross-sectional study on 384 high school students in Guilan province in 2020-2021 aimed to determine the prevalence of smoking, alcohol, and drug use among adolescent students. The results showed that high-risk behaviors of smoking (34.96%), drug use (31.17%), and alcohol consumption (30.62%) were the most common among adolescent students, respectively (52).

**19.** A cross-sectional study on 363 male high school students in Sanandaj in 2018 aimed to determine the factors associated with high-risk behaviors among students based on the Health Belief Model. The results showed that the prevalence of high-risk behaviors among students was 63.1%. There was a significant statistical difference between knowledge and perceived susceptibility constructs, cues to action, perceived barriers, and perceived self-efficacy ( $p < 0.05$ ) in students with high-risk behaviors and those without (53).

**Table-1:** The general characteristics of included studies (n=19).

Authors, Study period, References	Study design	Area	Sample size	Gender	Setting	Main results	*Quality assessment result
Rashid, 2013, 36	cross-sectional study	Tehran	1280	M/F	High school	The experience of smoking hookah, smoking cigarettes, having sex, being beaten outside the house, and the experience of alcohol consumption, respectively, were the most common risky behaviors among teenagers.	17
Panaghi et al., 2012, 37	cross-correlation	Tehran	3529	M/F	High school	The results demonstrates the significant role of family factors, especially smoking, alcohol consumption and drug abuse among family members, on Iranian adolescents' tendency towards high-risk behaviors	17
Marashi et al., 2018, 38	cross-sectional study	Tehran	245	M/F	High school	6.9% of students had carried cold weapons with them at least once before; 15.17% had experienced drug consumption (opium and hash); 21.3% consumed alcohol; 41.66% had sexual affairs with the opposite sex and 44.1% experienced smoking.	19
Valizadeh et al., 2011-2012, 39	cross-sectional study	Tehran	450	M/F	High school	The prevalence of risky behaviors was 8.2 percent in public school students, 1.5 percent in Shaahed school students and 3.2 percent in Shaahede Shaahed students.	18
Abbasi et al. 2019-2020, 40	cross-sectional study	Qom	252	M/F	High school	The parenting styles and healthy life style in adolescents can explain 30% of the changes in their risk. Also, healthy life style had more effect on the emergence of adolescents' risk than the parenting style.	17
Marzban et al., 2016, 30	cross-sectional study	Qom	800	M/F	High school	The prevalence of high-risk behaviors in the studied population was 56.25%.	17
Sehat et al., 2019-2020, 41	cross-sectional study	Shiraz	180	F	High school	The emotional and reckless motivations played the most important role in predicting female adolescents' willingness to use drugs, respectively. Moreover, emotional motivation played the most important role in predicting the tendency of teenage girls to use alcohol.	16
Aminimanesh et al., 2020, 42	cross-sectional study	Shiraz	450	M	High school	Based on the results, thrill seeking, calculation, audience control, irresponsibility, and hedonistic motivation had significant relationships with high-risk behaviors.	17
Aghajni et al., 2012, 43	cross-sectional study	Kashan	400	M/F	High school	The results showed that 28.7% of boys and 22.5% of girls had risky behaviors.	18
Safa et al., 2014-2017, 44	cross-sectional study	Kashan	400	M/F	High school	More than half of the adolescents (51.2%) had risky behaviors. Also, a significant difference was found between the male and female students in this regard.	18

Esmailzadeh et al., 2012, 45	cross-correlation	Qazvin	510	M/F	High school	The use of hookah was the most popular activity in girls and boys (59%) as compared with cigarette smoking (32.7%), drug use (7.3%), and alcohol consumption (16.7%).	19
Shahraki-Sanavi et al., 2015, 46	cross-correlation	Zahedan	457	F	High school	The highest prevalence of health-risk behaviors of students included: failing to drink natural fruit juice (53.1%), failing to wear a seat belt (43.0%), sitting in a car while the driver is sending a message or emails (43.0%), failing to drink milk daily (36.0%), etc.	19
Zabihi et al., 2018, 47	cross-sectional study	Babol	384	M/F	High school	The aggression (23.4%), relationship with the opposite gender (14.5%), smoking cigarettes and hookah (10.9%), consuming alcohol (9.3%), suicidal thoughts and attempts (5.7%), etc. were the most prevalent high-risk behaviors among adolescents.	18
Zarei et al., 2019, 48	cross-sectional study	Bushehr	716	M/F	High school	The high risk driving had the highest mean score (14.5±88.67, ranged 5-25).	18
Sotoudeh et al., 2017, 49	cross-sectional study	Bushehr	377	M	High school	The highest frequency of high-risk behaviors in adolescents involved physical contact and struggle out of school (22.81%), hookah consumption (19.62%), physical contact and struggle at school (18.30%), and smoking cigarettes out of school (11.14%).	19
Jalali et al., 2021, 50	cross-sectional study	Rabor	334	M/F	High school	The male gender is one of the risk factors for alcohol, smoking and other substances, tendency towards high-risk sexual behaviors, depression and suicide in adolescents.	16
Brouki Milan et al., 2019-2020, 51	cross-sectional study	West Azerbaijan province	560	M/F	High school	The total mean scores high-risk behaviors in students was 20.57±13.64 (addiction: 5.21±4.98, alcohol: 4.92±4.85, sexual behaviors: 3.27±2.75, and violence: 7.20±5.08).	18
Omidpour et al., 2020-2021, 52	cross-sectional study	Guilan province	384	M/F	High school	The high-risk behaviors of smoking (34.96%), drug use (31.17%) and alcohol (30.62%) were the most common among adolescent students.	19
Panahi et al., 2019, 53	cross-sectional study	Sanandaj	363	M	High school	The prevalence of high-risk behaviors among students was 63.1%.	17

M: male, F: female.

#### 4- DISCUSSION

This study aimed to investigate the tendency towards high-risk behaviors and the associated factors with adolescent risk behaviors among 10-19-year-old Iranians. The results showed that the prevalence of high-risk behaviors in adolescents was

63.1%. The most common forms of high-risk behaviors were (in the order of prevalence) hookah smoking, cigarette smoking, substance abuse, sexual risk behaviors, and violence. There was a significant relationship between age, gender, field of study, health literacy, family income, family structure,

attachment to family and friends, commitment to norms, belief in moral principles, social inhibitions, and tendency towards high-risk behaviors ( $p < 0.05$ ).

Health-threatening behaviors are among the most important health and psychosocial challenges, in which most countries are involved in some way and impose extensive and severe problems on societies. Despite many efforts to increase public awareness of the harm and danger of high-risk behaviors in the last two decades, societies still face an increase in these behaviors, especially among young people and teenagers (54). Adolescence is one of the most important and valuable periods of life. Puberty, as an extremely sensitive stage in growth, is the transition from childhood to adulthood and gives adolescence great importance. At this stage of life, a series of physical, psychological, and social changes take place, which form the foundation of adult life to the old age of people in the future. The process of changes in the period of puberty and adolescence, due to its particular characteristics, makes one vulnerable to special problems (31-33).

Surveys have shown that high-risk behaviors such as smoking and the consumption of alcohol and other substances are seen among middle school and high school students (21). The present review showed that the prevalence of high-risk behaviors in Iranian adolescents was high (range: 5.4-63.1%).

Researchers believe that teenagers' increasing tendency towards high-risk behaviors is a reflection of the emotional and psychological problems that they face. Experts believe that feelings of depression, loneliness, and isolation often have a direct association with high-risk behaviors in teenagers, especially suicide. Similarly, high self-esteem and strong social support resources are protective factors for teenagers against high-risk behaviors such as smoking, alcohol consumption, and

anti-social behaviors (55, 56). One study showed that the causes of risky behaviors are biological (genetic), personal, environmental, social (gender and race), and cultural (57). According to the latest national census, 28% of Iran's population is in the age range of 10-19 years. Therefore, knowing the high-risk behaviors of this age group is necessary for future planning and logical, principled intervention to reduce high-risk behaviors (31, 32).

The present study found the most common adolescent high-risk behaviors as tobacco smoking (cigarette, hookah), substance abuse, sexual risk behaviors, and violence, respectively. Tobacco use is evolving in adolescents. Youth usage of tobacco products in any form is unsafe, whether smoked, smokeless, or electronic. Tobacco product use begins and is established primarily during adolescence (58, 59). Nearly nine out of ten adults who smoke cigarettes daily first tried smoking by age 18, and 99% first tried smoking by the age of 26 years old (59). The results of the present review showed that hookah (range: 6.9-59%), and cigarette smoking (range: 10.9-44.1%) in Iranian adolescents were high. In 2022, about four in every 100 middle school students (4.5%), and about one in every six high school students (16.5%) in the United States reported current use of a tobacco product. Also, in 2022, 0.5% of middle school students and 1.5% of high school students reported that they had smoked hookah in the past 30 days (60, 61).

The results of the present review showed that substance abuse (range: 1.8-31.1%), and alcohol consumption (range: 9.3-30.6%) in Iranian adolescents were high. Based on 2019 Youth Risk Behavior Survey (2019 YRBS) results, alcohol is the most commonly used substance among young people in the U.S. (62). The YRBS results from 13, 677 high school students showed that 29% drank alcohol, 14%

practiced binge drinking, 5% of drivers drove after drinking alcohol, 17% rode with a driver who had been drinking alcohol, and 8% had been in a physical fight at the school. Alcohol, drugs, and tobacco consumption affect the developing brain. Their usage can alter brain structure and impair decision-making abilities, even after a single use. The most commonly abused substances by adolescents are alcohol and psychotropic substances (62, 63). The results of several studies show that youth who drink alcohol are more likely to experience the following (63-66):

- School problems, such as higher rates of absence or lower grades
- Social problems, such as fighting or lack of participation in youth activities
- Legal problems, such as being arrested for driving or physically hurting someone while drunk
- Physical problems, such as hangovers or illnesses
- Unwanted, unplanned, and unprotected sexual activity
- Disruption of normal growth or sexual development
- Physical and sexual violence
- Increased risk of suicide and homicide
- Alcohol-related motor vehicle crashes and other unintentional injuries, such as burns, falls, or drowning
- Memory problems
- Misuse of other substances
- Changes in brain development that may have life-long effects, and
- Alcohol poisoning.

The results of the present review showed that sexual risk behaviors (14.5-41.6%) in Iranian adolescents were prevalent and

concerning. Sexual risk behaviors place youth at risk for human immunodeficiency virus (HIV) infection, sexually transmitted diseases (STDs), and unintended pregnancy. Among US high school students surveyed in 2019, 38% had experienced sexual intercourse (67). When adolescents become sexually active, their behaviors can often result in sexually transmitted infections (STI), and unplanned pregnancies. Although many STIs are treatable, symptoms and complications from sexually transmitted infections (such as herpes and HIV) have to be managed for life. Most teenagers engaging in sexual activity do not use consistent birth control methods or protection or do not use them properly – both increasing the risk of unplanned pregnancy (33, 68). School health programs can help young people adopt lifelong attitudes and behaviors that support their health and well-being, including behaviors that can reduce their risk of HIV and other STDs. These programs in schools should provide health information that is basic and accurate and directly contributes to health-promoting decisions and behaviors.

The present review showed that violence (23.4%) in Iranian adolescents was high. Youth violence is a significant public health problem that affects thousands of young people and their families, schools, and communities. Youth violence can have serious and long-lasting effects on young people's physical, mental, and social health, harm their development, and contribute to impaired decision-making, learning challenges, decreased connections to peers and adults, and trouble coping with stress. Violence increases health care costs, lowers property value, harms school attendance, and decreases access to community support services. A combination of individual (history of violent victimization, attention deficits, involvement with drugs, alcohol, or

tobacco, antisocial beliefs and attitudes), family (authoritarian childrearing attitudes, harsh, lax, or inconsistent disciplinary practices, parental substance abuse), peer and social (association with delinquent peers, poor academic performance, failure in school), and community risk factors (lower economic opportunities, high concentrations of poor residents, socially disorganized neighborhoods), contribute to the risk of youth violence. The youth must be protected, and their growth into healthy adults requires support. Certain factors may affect the risk of youth experiencing or perpetrating violence. Preventing youth violence requires understanding and addressing risk and protective factors at the individual, relational, community, and societal levels (67, 69- 71).

In the present review, there was a significant negative relationship between religious tendencies and risky behaviors of students. A protective factor from risky behaviors is religiosity, which has been referred to as a shield against such behaviors (72). Studies have shown that young people who believe in God and the significant role of religion in their lives are less often involved in risky behaviors, such as violence and early sexual relations, compared to their non-religious peers (73-75). A meta-analysis of 40 studies on the relationship of religion with destructive and constructive behaviors showed a significant positive relationship between religiosity and constructive behaviors (76). As a result, by strengthening religiosity and religious beliefs in students, risky behaviors might decrease.

## 5- CONCLUSION

Adolescence is known as a period of vulnerability and being at risk, and adolescents are exposed to high-risk behaviors. Such behaviors put the health and well-being of adolescents and other people in danger. Based on the present review, the prevalence of high-risk

behaviors in Iranian adolescents was high. The five most common adolescent high-risk behaviors were (in the order of prevalence) cigarette smoking, hookah smoking, substance abuse, sexual risk behaviors, and violence. There was a significant relationship between age, gender, the field of study, health literacy, family income, and family structure, attachment to family and peers, commitment to norms, belief in moral principles, social inhibitions, and tendency toward high-risk behaviors. The youth must be protected, and their growth into healthy adults requires support. Therefore, the supply of tobacco products to adolescents should be prohibited. It is important to create healthy entertainment (such as sports and cultural competitions), develop programs, and design educational interventions to prevent risky behaviors and increase communication skills and self-efficacy in adolescents.

One of the factors that can protect an individual from risky behaviors is religiosity, which has been referred to as a shield against such behaviors. There was a significant negative relationship between religious tendencies and risky behaviors of students. Studies have shown that young people who believe in God and the important role of religion in their lives are less often involved in risky behaviors, such as violence and early sexual relations, in comparison with their non-religious peers. Research shows that prevention efforts by teachers, administrators, parents, community members, and even students can reduce risky behaviors and improve the school environment.

**6- CONFLICT OF INTEREST:** None.

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