



RESEARCH ARTICLE

Assessing Vulnerable Factors Leading To Substance Use Among Schoolchildren: A Scoping Review

El moubchiri chaimaa^{1*}, Chahboune Mohamed², Hilali Abderraouf²

¹PhD-Laboratory of Health Sciences and Technology, Higher Institute of Health Sciences, Hassan First University of Settat

²Professor- Laboratory of Health Sciences and Technology, Higher Institute of Health Sciences, Hassan First University of Settat

ARTICLE INFO	ABSTRACT
Received: Aug 17, 2024 Accepted: Sep 20, 2024	The two primary goals of this scoping review are to present a summary of the evidence base for studies that have explored factors that increase the risk of substance use among young schoolchildren, and to evaluate the effectiveness of strategies implemented in schools to address substance abuse. Studies performed between 2015 and 2020 were drawn from main scientific databases: SCOPUS, SPRINGER, and PUBMED. This study included articles published in English, interested only in the schoolchildren population. Early initiation of substance use, Peer influence, low Parent's education level, Gender factor disparity, Adolescence brain factor are the major finding in this study. Through data charting, five major Prevention strategies in context of school were identified: rising membership to school, improve parent's education and relationship with their daughters, gendering the actions in context of substance abuse, and lately understand the needs of adolescents in biological approach. This research can be used as a blueprint for designing future school-based substance abuse prevention initiatives. Our findings suggest that assessing vulnerability factors is a useful strategy to implement tailored substance use prevention strategies among schoolchildren.
Keywords Substance Use Vulnerability School going children Prevention Assessment	
*Corresponding Author: elmoubchiri.iss@uhp.ac.ma	

INTRODUCTION

Adolescents, particularly those between the ages of 10 and 14, engage in self-exploration to better understand their identity and their place in the world. Additionally, during this developmental stage, individuals start to contemplate their future and may become emotionally and physically distanced from their families. (Steinberg, 1986) They may rely less on their families for support and guidance and instead turn to friendships and non-kin relationships for help. (Steinberg, L and Monahan, 2007)

Adolescents may not always act in their best interests, even as they perceive them. They may overestimate or underestimate risks associated with certain actions or behaviors. Some may engage in risky behaviors due to a feeling of invincibility, as commonly believed by adults, while others may do so out of a sense of hopelessness. (Fischhoff, B et al) These perceptions can lead to poor decision-making, placing them at risk of physical or psychological harm, with potentially negative long-term effects on their health and well-being. (National Research Council, 2001)

According to world health organization, adolescents aged 15 to 19 years have a prevalence of heavy episodic drinking that is almost equivalent to 13.6% in 2016, with boys being the most exposed (Rekve, 2018). However, Adolescence involves risky attitude that may not be an effective method of coping with

emotional difficulties and can seriously affect an adolescent's mental and physical well-being. (Nations, 2020)

Developmental psychologists and sociologists, such as *Bronfenbrenner*, *Sameroff*, and *Bandura*, view the process of development as a social construction that is influenced by ongoing interactions between the individual and their social context. *Goffman's* theory of the presentation of self also highlights the role of culture in shaping adolescent identity, self-perception, and behavior. Moreover, Their social environment, including family, peers, school, media, influences adolescents' dress, language, and behaviors and cultural values, and can in turn shape their sense of self and how they are perceived by others. (Robert William Blum, and al, 2001)

Lately, There has been a growing focus on substance use among adolescents in , highlighting the need for targeted prevention programs that target subgroups who are at a higher risk of developing substance use disorders. (Steve sussman et al, 2013)This selective prevention is still necessary to respond effectively in population aim of study that is considered vulnerable by default.

The term "*vulnerability*" refers to individuals or groups who are more likely to be at risk than others are. It is a dynamic process that involves the interaction between a young person's social environment and a range of underlying factors that increase their risk of negative outcomes, such as school failure, unintended pregnancy, and injury. These predisposing factors can be biological or cognitive and may arise from growing up in disadvantaged environments or personal characteristics such as an aggressive temperament. (Fischhoff Baruch , Elena O. Nightingale, & Joah G. Iannotta , 2001).However, vulnerability is not a fixed or inherent characteristic, but rather a relative and contextual state that can vary over time and across different countries. It is a dynamic and fluid concept that can change based on a variety of factors (Arora, 2015)

While most school-based studies have focused on identifying substance use in the school context and its relationship to general factors, it is crucial to also consider the vulnerable factors that contribute to early substance use. To address this gap, a recent research study employed a scoping review approach to identify vulnerability factors that lead to substance use in school-aged populations and to characterize existing research on this topic.

METHODS

The purpose of a scoping review is to identify and summarize all of the research on a specific topic in a comprehensive manner. The authors conducted a scoping review to examine the literature on their area of focus and identify any gaps or areas that need further research. (Arksey & O'Malley, 2005).

This type of reviews can help clarify the definitions and conceptual boundaries of a topic and it is used for complex, heterogeneous subjects or, when there is a body of evidence that has not yet been exhaustively reviewed. (Peters Micah D.J et al, 2015)

Scoping reviews can be particularly helpful in identifying gaps in the literature, and areas that may be oversaturated with research, and can inform the development of more focused and detailed systematic reviews or guide the planning of new studies, beyond just the effectiveness or implementation of an intervention. This type of review can provide a broad overview of the existing literature on a particular topic and help identify gaps in the research. (Peters Micah D.J et al, 2015)

The process is carried out in a crosswise rather than linear way (Arksey & O'Malley, 2005). The steps of the methodology are as following.

PRISMA-ScR guidelines:

Step 1: Identify a research question

Step 2: Search for relevant studies

Step 3: Selection of studies

Step 4: Data charting process

Step 5: Collating, summarizing, and reporting the result

Identify the research question

This scoping review has dual objective. The first one was to identify the main factors behind substance use at schoolchildren's; the second one was to extract the most efficient strategies to prevent substance use in schoolchildren's. Therefore, the following questions were developed: "what are the vulnerable factors leading to substance use among schoolchildren's?" and " what the most effective strategies to prevent, Substance Use among young schoolchildren"?

Search of relevant studies

To capture as many relevant citations as possible, the database search terms included "vulnerable factors" "substance use" "adolescent" and not "adults" Boolean terms, "AND" and "NOT", were used to separate the keywords, to prevent the possibility of publication bias, we conducted an explicit search for grey literature. The initial stage entailed looking for articles in the databases (**ScienceDirect, PUBMED, SCOPUS**).The search was limited to 5 years , publication from 2015 to 2020; This seemed to be a reasonable time frame for determining vulnerability factors leading to substance use among schoolchildren's, given the heterogeneous nature of our research topic.

Selection of the studies

Eligibility Criteria:

To maintain the scientific integrity of the study, we applied eligibility criteria to the titles, abstracts, and full-text papers (See table 1)

Charting the data

The results of our research were imported into N-vivo 10 software, after being first imported into Zotero. We believe that N-vivo is suitable for a variety of research designs and analytical approaches.

The software's nodes provided a user-friendly structure for coding and identifying themes. Additionally, N-vivo played a passive role in our analysis process, which we were able to utilize effectively in this study. (F C Zamawe , 2015)

The authors utilized the N-vivo coding process to analyze and elaborate on various aspects of the included studies, such as study population, purpose, methodology, different factors of substance use at school, type of prevention strategy, and outcomes. They organized this information into a table to provide a comprehensive summary of the studies. (See table 2).

RESULTS

The initial search yielded 6,338 citations that were potentially relevant. After eliminating duplicates and examining the titles and abstracts, only 100 of these citations met the established eligibility criteria, and the corresponding full-text articles were obtained for further assessment.

After examining the entirety of the articles, 18 of them met the necessary criteria for inclusion in the analysis. The process of selecting these articles is shown in (Figure 1)

After data importing, we have used the Text Search function to find the frequency of words and then, the N-vivo software will generate a list of words, along with the frequency of each word appears in our data. The articles were deemed relevant as the word cloud clearly displayed the following discernible keywords: substance use, study school, adolescents, related factors, analysis. The two reviewers involved, did not identify any conflicts in approving the accepted studies. Quantitative studies, qualitative and mixed-method approaches were included. However, the schoolchildren sample size ranged from 170 to 2150 participants. And most studies is conducted in USA (Figure 2)

The authors found that this study includes :quantitative studies (n=10) (Azmina Hussain et al, 2017) (Gilberto Gerra et al, 2020) (Kristen R.Hamilton, 2019) (Traci M Schwinn et al, 2016) (Min Jung Kim, 2017) (Katherine Pizarro et al, 2016) (Marco Di Nicola et al, 2017) (Christopher D et al, 2016) (Lopez-Quintero et al, 2015) (W G van Loon et al, 2019), and qualitative (n=2) (C. Trenz, 2015) (Kaitlin Bountress et al, 2015), and mixed-methods (n=2) (Mahmood abad Saeed, 2017) (Jorge Gaete et al, 2018), and reviews (n=3) (Chloe J, 2016) (Hanie Edalati et al, 2018) (Sarah J. Cross et al, 2016)

The majority of quantitative studies (n=10) relied on data sourced from school or obtained from a cross-sectional survey groups in schools. The primary data collection in this study came from national or binational populations (n=2) (Gilberto Gerra et al, 2020) (Min Jung Kim, 2017); After-school interventions, sectional surveyed in public school; multi-informant (i.e., students, parents, and trainers) (n=8) in order to see a possible mediator factors, leading to substance use in young going school population.

Two studies were integrated (n=1) a population at risk (Kaitlin Bountress et al, 2015) and the second (n=1) a population with exhibit signs of mental illness (Christopher D et al, 2016) , to see differences between adolescent in risk and not in risk .

The research study used a range of methods, including surveys, scales, focus groups, interviews, and test scores, to gather data about the effectiveness of substance use prevention programs, for young schoolchildren and the factors that influence substance use in this age group.

Academic achievement and school belonging and educational outcomes were assessed with a variety of instruments or markers. The most common include early consumption, school protection (n=5), emotion regulation (n=1) towards substance use issue, socio-demographic factors related to problem and substance use (n=4); academic performance in relation with effective programs established in context of school (n=4).

Although the ages of the youth participants in this study varied from 12 to 18 years old, most of studies reported their grade level rather than their age (n=5) People who were 18 or older were included in this study as long as the data collected pertained to their high school years.

Given that the primary aim of this scoping analysis is to investigate the vulnerable factors leading young to use substances and see the strategies employed in context of school to prevent this issue among schoolchildren's, the authors identified the following theory groups by analyzing the studies that were included .

The scoping analysis revealed that the implemented strategies developed it according to positive youth development (20%), substance social theory (13%) theory of stage environment (13%), emotion regulation theory (7%), exploration model (7%), response to intervention model (7%) Theory of parenting (7%) (Refer to Figure 3). Since the main goal of this analysis was to examine the strategies utilized to prevent substance abuse in schools, the authors grouped the included studies accordingly.

prevention strategy of early use : Rising membership to school (n=6)

It is found that the weak link between School and the young adolescent is the most problem of addiction. (Jorge Gaete et al, 2018) Therefore, this independent factor is very important to reorganize the actions in the context of the school, but it is necessary to know how we can strengthen the attachment to school through other models.

The early initiation of the use is found to have a negative effect on school performance. Therefore, school performance is a predictor measure of early use in the study conducted by (C. Trenz, 2015); which is subsequently a major vulnerable factor, modifiable through prevention and health education programs. The programs that aimed at promoting the well-being of young people and preventing the emergence of other problems. In this sense (W G van Loon et al, 2019) Response to Intervention model (RTI), that aims to identify vulnerable students and provide them with appropriate interventions prevention are very effective in the school environment together with the rollout of a health education campaign on substance abuse among student in high school.

This has also improved the knowledge of students on the subject (Mahmood abad Saeed, 2017). Therefore, it is likely that polyuse among this category can be avoided if we consider early initiation as alarming factor that need intervention immediately, Hence, people who tend to polyuse are frequently early users (Min Jung Kim, 2017) inspiring from developmental model .

Therefore, the school environment is an effective ground to prevent the use and to affect positively this transition. If we opt for a structured and favorable environment, this would positively affect the health of the vulnerable young people. This is linked to the school disciplinary style (Claudia Lau et al, 2018).

A single style in the face of this population overwhelmed by disparities is questionable. The tools that aim to evaluate the degree of attachment to school will be of great reliability in the context of evaluating the Vulnerability Factors.

Prevention strategy of peer influence: Family peer-protection (n=4)

The mother-adolescent relationship acts as a protective factor against peer pressure and delinquency. A poor relationship is often linked to delinquency in adolescents; however, a good mother-teenager relationship is one of the protective factors against the use at an early age.

A higher chance of heavy drinking was predicted by exposure to antisocial siblings and classmates. (Min Jung Kim, 2017) , When it comes to high-risk environments (peer and parental use with the availability and unawareness of the danger of smokeless tobacco and betel quid), it contributes to the increased risk of use. (Azmina Hussain et al, 2017)

The integration of families is paramount to protect young adolescents from peer influence, which ranks as an underlying factor that follows a neurobiological process that is explained by the differential growth of frontal-mediated control and striato frontal reward processing. Prevention programs are necessary for two groups: high-risk children, adolescents, and those who have already experienced maltreatment. Long-term care and support, like rehabilitation and counseling, can help reduce impairments and improve coping skills. (Hanie Edalati et al, 2018)

Prevention strategy of risky behaviors: Parent's education (n=4)

(Leventhal et al, 2015) Details in their study that a low level of parental education may favor the use susceptibility initiation and frequency of substance use in adolescents. For tobacco, marijuana and alcohol.

Impulsivity is a vulnerable factor; that is also linked to parental knowledge that affects substance use in adolescents, when parental knowledge is low; impulsivity is on the rise and vice versa. Youth whose parents are current users may provide less consistent support to their children, which may increase the risk for children to internalize and externalize problems. Parents, who have recovered, their children remain at risk for externalizing problems, (Kaitlin Bountress et al, 2015).

Negative family relationship is often associated with the initiation of drinking and family conflict related to drinking at an early age (Katherine Pizarro et al, 2016). Some other studies have contradicted this result because there were a large proportion of students who had access to drugs but chose to avoid using them despite a climate of increased substance accessibility and social disorder. (Lopez-Quintero et al, 2015).

Therefore, it can be deduced that social factors are highly diverse in relation to substance use among young teenagers. Consequently, everything is related to the context and in the same context, different results can be found. Encouraging healthy family interactions and parental oversight skills may be useful in interventions. (Katherine Pizarro et al, 2016).

Prevention strategy of gender specificity: Understand Gender-sensitivity (n=3)

The use of psychoactive products affects both sexes with a degree and substance that varies according to the nature and the context of the sample. Generally, male gender is more affected by substance use while girls tend to have substance use related to family problems.

Impulsivity factor is found to be often behind addictive behavior. (Marco Di Nicola et al, 2017) Impulsivity is an individual vulnerability factor; this may be due to individuals having an immature prefrontal cortex (PFC). "Combined with hyperactive reward, habit, and stress systems. Early identification of risk factors for Substance use disorder is important in order to reduce the incidence of substance use. (Chloe J, 2016).

Programs to prevent substance addiction among teenage girls should concentrate on overall risk, in addition of strategies including problem-solving abilities, determination, peer pressure, self-efficacy, and gender-specific risk. Coping mechanisms, self-efficacy, and communication style, as well as self-esteem, body image, stress perception, and the ability to regulate mood. (Traci M Schwinn et al, 2016).

Prevention strategy: Incorporating knowledge of the adolescent brain (n=4)

Exposure to nicotine during adolescence can create a lasting vulnerability to substance use later in life. Adolescence is a time of significant neurological development, particularly in areas of the brain that are involved in reward, learning, memory, and decision-making. This makes adolescents particularly susceptible to the effects of nicotine (Sarah J. Cross et al, 2016). These results indicate that the simultaneous use of smoking and drinking is increasingly influenced by factors that affect both behaviors simultaneously.

There are approximately 30 variables that have been identified, as strong predictors of substance use disorders. These predictors can include psychological dysregulation and poor health behaviors in childhood, as well as a lack of normative socialization during adolescence.

Among 10- to 12-year-old characteristics, predict Substance Use Disorder +/- with 74% accuracy, increasing to 86% at age 22. (jing, 2020). According to the incentive sensitization theory, addiction is characterized by an excessive amplification of psychological "desire" that is particularly triggered by cues, rather than an amplification of "taste." This excessive desire is thought to be the essence of addiction. (Hanie Edalati et al, 2018)

According to the incentive sensitization theory, addiction is characterized by lasting changes in the dopamine-related motivational systems of certain individuals, a process known as neural sensitization. Over the past 25 years, evidence has continued to accumulate in support of this theory, which has also been applied to various behavioral addictions and other mental health conditions.

This study found that starting to use alcohol at an earlier age is linked to lower scores on tests that measure psychomotor speed and visual attention, and starting to use alcohol on a weekly basis at an earlier age is associated with worse cognitive inhibition and working memory performance.

Level of trait impulsivity during early adolescence during, predicted the rate of escalation of alcohol use during adolescence (Kristen R. Hamilton, 2019))

DISCUSSION:

Undoubtedly, the world is moving towards a new era that demands the creation and implementation of innovative strategies that take into account the progress of science, community environment, school programs, individual specificity, It refer to the idea that people may respond differently to the same intervention, treatment, or stimulus based on their individual characteristics, such as genetics, personality, or life experiences. (Roy F. Baumeister & al)

The objective of this scoping review was to examine some vulnerable factors, related to substance use among young in school environment. Moreover, different strategies suggested that school environment could be the stronger way to prevent problematic substance use.

This scoping review confirm that school environment is the most effective for implementing health education and substance use prevention programs. Early initiation of substance use has a negative impact on school performance, which is a predictor of early use, as shown in a study conducted by (C. Trenz, 2015). This early use, can be prevented with rising the strategy of membership at school in actions of prevention (Jorge Gaete et al, 2018)

Theory of stage environment show; that Positive feelings toward instructors and school were protective against problematic substance use. As shown in the study conducted by (Manuela Pulimeno and al, 2020) the main idea conveyed is that school-based preventive approaches should encourage students to internalize health knowledge and develop critical thinking about risky behaviors.

Educators should be adequately trained in health topics and innovative approaches to engage students in adopting healthy lifestyles. By doing so, students will be empowered to make informed decisions about their health and take responsibility for it. It is important to offer early intervention to adolescents and adults who may be at risk of or show signs of substance misuse or substance use disorder in order to prevent the progression of these issues and improve recovery outcomes. (US Department of Health and Human, 2016).

However, interventions should be efficient; certain drug abuse prevention education programs are ineffective or even counterproductive. To avoid these pitfalls, schools can use established principles, guidelines, and models of best practices as standards to evaluate the success of their programs. (UNODC, 2004) It is important to structure the actions; and to engage the family in this step will probably give fruit, to remedy this plague. The mother-adolescent relationship acts as a strategy of prevention against peer pressure and delinquency (Christopher D et al, 2016). In other studies, family support has no effect on reducing the use. This can be related to individual genetics. The genetic susceptibility to peer pressure increases alcohol use in late adolescence for those who carried at least one copy of the DRD4 allele at seven repeats (7+). (Christopher D et al, 2016)

Understanding drugs and their usage is crucial in shaping values and attitudes towards drug use and making informed decisions. The way this information is presented, along with its timing and delivery, greatly affects how it is perceived and received. (UNODC, 2004)

The key question in our study was is: Can assessing vulnerable factors leading to substance use be used to improve outcomes to prevent this issue in young schoolchildren?

Research on the effectiveness of prevention curricula have generally focused on universal programs that target children in junior high and high school (Harolyn M. E. et al , 1998). Drug abuse prevention education is most effective when it is centered on students ,and incorporates interactive methods, emphasizing experiential learning and small group work. (UNODC, 2004)

Therefore, it can be said that schools should prioritize creating a positive and nurturing environment for their students. By doing so, they can help to promote academic success, personal growth, and overall well-being for their students (National Advisory Committee on Drugs, October 2010) .This scoping review underline that the weak link between School and the young adolescent is the most problem of addiction. (Jorge Gaete et al, 2018).

Other studies suggest focusing on building school bonding at an early stage in a child's development, before the sixth grade, may be beneficial. This is especially important for young people who exhibit deviant behavior. (Jenny Oelsner et al, 2016). It is believed that the use of specific vulnerability assessment tools will be more effective, as vulnerability is individual but the factors related to substance use are general. Future research should explore other types of risks and leverage other methods to gain better understanding of the factors that contribute to substance use among younger population.

To the best of the authors' knowledge, this is the first scoping review to examine the factors that make schoolchildren vulnerable to substance use, as well as prevention strategies targeting each of these vulnerability factors. The authors acknowledge the limitations of the review and the need for further research in this area.

This scoping review focuses solely on the school-age population and explores the factors that lead young people to consume substances, without considering behavioral factors in the context of school. Further research is necessary to examine other factors among out-of-school children. Given the high number, nearly

15 million children aged 5-14 years who are not in school in the MENA region and 10 million who are in school but at risk of leaving school. (Unicef, 2017).

Table1: Inclusion and exclusion criteria for identifying relevant studies

Inclusion Criteria	Exclusion Criteria
Papers published in English Papers published in 2015 or later to 2020 Papers Interested in adolescence, determine the age limit, we used the WHO definition which determines adolescents and youth from 10 to 24 Papers address school-going adolescents Because many set lower but not upper bounds for their population Papers has to be in context of schools Article review / Journal article	Articles in languages other than English Papers published before 2015 or after 2020 Papers interested in adults and not young population Papers interested in all the population

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