Early Maladaptive Schemas and High-Risk Behaviors Among Adolescents in Shiraz, Iran: A Cross-Sectional Study

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Abstract

Background: Many high-risk behaviors often co-occur during adolescents' development and can be linked to their life patterns, beliefs, and early maladaptive schemas (EMS). This research aimed to determine the association between EMS and high-risk behaviors among teenagers in Shiraz, Iran.

Methods: This cross-sectional study was conducted in 2022, involving 348 adolescents aged 13 to 19 selected through a convenience sampling method in Shiraz, Iran. The Young Schema Questionnaire was utilized to assess EMS, and a researcher-developed self-reported checklist was used to collect demographic and behavioral data from the adolescents, including smoking, drug usage, alcohol use, and hookah use. Logistic regression assessed the association between behavioral characteristics and adolescents' EMS aspects.

Results: Among the 348 adolescents, 187 (53.7%) were male. The relative frequencies of hookah, alcohol, and drug use among boys were 31.6%, 40.1%, and 10.2%, respectively, whereas among girls, they were 11.2%, 15.5%, and 1.2%, respectively. A significant difference was observed between the two groups in terms of the relative frequencies of hookah (P=0.001), alcohol (P=0.001), and drug usage (P=0.008). A significant association was found between different domains of schemas and high-risk behaviors among the participants.

Conclusion: The findings suggested that EMS may predict high-risk behaviors. Therefore, early-life interventions should be considered in line with factors contributing to controlling the negative consequences of EMS among adolescents. Further research is recommended to evaluate this population's predisposing factors for EMS and preventive interventions.

Keywords: Early maladaptive schemas, Health risk behavior, Adolescents, Iran

1. Introduction

Risky behavior is defined as behavior that may jeopardize an adolescent's physical or psychological development. It encompasses many common behaviors throughout teenage growth, such as drug abuse, school disengagement, and unprotected sexual activity (1-3). By definition, high-risk behaviors are activities that escalate the risk of disease or injury. They may cause psychological and social harm, disability, or death (4). The wide-ranging concept of high-risk behavior includes a variety of behaviors that not only cause severe harm to the person engaged in the behavior and his or her family, relatives, and friends but also cause unintended harm to others (5). Drug use, excessive alcohol consumption, unsafe sex, high-risk driving, dangerous sports, and unlawful acts are the most common high-risk

behaviors (6). High-risk behaviors often correlate with mental health challenges, school dropout rates, sexually transmitted diseases, or suicide attempts (7). Evidence showed various approaches to the origins of high-risk behaviors, encompassing individual, biological, familial, environmental, and sociocultural factors (8). Research also indicated that psychiatric factors and personality traits are among the most significant cognitive factors contributing to the adoption of high-risk behaviors such as unsafe sex, drug use, smoking, and excessive alcohol consumption (9).

Early maladaptive schemas are a psychological factor influencing the propensity for high-risk behaviors. In the 1980s, Jeffrey Young made an addition to Beck's Cognitive Theory of Depression (1967). He posited that psychopathologies in young individuals were sometimes linked to early life

patterns and beliefs rather than a single traumatic event, coining the term "early maladaptive schemas" (EMS) (10). A pattern of recurring negative experiences shared with caregivers is believed to give rise to a child's schemas. Due to repetitive exposure to events like child abuse, neglect, hostility, criticism, or other adversities, adolescents who have experienced developmental trauma often have unmet needs. These schemas, or EMS, can contribute to youths engaging in high-risk behaviors (11-14). While these schemas may be adaptive during infancy when they are learned, they may lie dormant for an extended period without manifesting themselves in the external world. However, they become maladaptive in early adulthood and begin to exert their influence. They are not consciously acknowledged during the acquisition and stabilization processes, so they become deeply ingrained and resistant to change, becoming an integral part of an individual's core personality when they are eventually recognized by the individual or a psychologist (15). Although these schemas develop subconsciously, their negative consequences are evident and cannot be ignored by patients.

Individuals often fear and dread their activation, leading to anxiety and sadness. The patient's environment can trigger EMS, and the patient has limited control over it, resulting in significant emotional activation (16). Young developed the most widely used questionnaire for identifying these schemas, which is still employed in treating individuals with specific interactions. He also created schema therapy (ST), with its primary objective being the identification and addressal of these schemas. The child's early environment is categorized into five domains including disconnection and rejection, poor autonomy and performance, other-directedness, impaired limits, and hypervigilance and inhibition. EMS can exist as a fundamental idea guiding an individual's future self-concept and may remain dormant until triggered by an adverse environment or stressor. Activated EMS can directly impact future behavioral responses and social interactions, increasing a person's psychopathology (4).

According to evidence, on one hand, the prevalence of high-risk behaviors is notably high among the Iranian young generation (5, 17). For example, in a cross-sectional study conducted in the outskirts of Shiraz, the capital city of Fars

province, 56.8% of adolescents exhibited at least one high-risk behavior, including smoking, alcohol use, sexual relationships, and substance use. Among them, 34.7% were involved in only one high-risk behavior, while 22.1% engaged in two or more risky behaviors (3). On the other hand, few studies have assessed the association between EMS and high-risk behaviors among adolescents, who constitute the most vulnerable group. Therefore, the present study was conducted in Shiraz, the capital city of Fars province, Iran to evaluate the relationship between EMS and high-risk behaviors and provide policymakers with insights on implementing early interventions to prevent their consequences.

2. Methods

2.1. Study Design and Setting

A cross-sectional study assessed the relationship between EMSs (Electronic Media Sources) and high-risk behaviors among adolescents aged 13 to 19 in Shiraz, southwest Iran, from September to December 2022. Three hundred forty-eight adolescents within this age group were selected using a convenience sampling approach. Based on a prior study (17), the prevalence of high-risk behaviors in the target population was estimated to be 50%. Considering a confidence level (Z) of 95% and a margin of error (d) of 0.055, the initial estimated sample size was 320. However, we opted to include a larger sample size to account for the possibility of excluding some participants or incomplete questionnaires.

Inclusion criteria for participation in the study were met by adolescents aged 13 to 19, regardless of gender, residing in Shiraz, Iran. Exclusion criteria applied to individuals with acute mental illnesses, such as psychosis, cognitive impairments, or significant communication difficulties.

To ensure a representative sample, we selected various public venues from all ten zones within the Shiraz Municipal Divisions. These venues included parks, coffee shops, shopping malls, and private English language sessions, catering to a diverse socioeconomic spectrum where adolescents frequently gathered.

Two experienced psychologists served as interviewers, approaching potential participants in these public venues. Initially, they assessed the

willingness and ability (absence of significant mental or physical disabilities) of the adolescents to participate in the study and respond to the questions accurately. Subsequently, they explained the study's objectives and significance and requested the parents' consent if the participants were below 15 years old or obtained their consent if they were 15 or older. The consent form was carefully read and signed by the parents or the participants, as appropriate. Following this, the interview commenced, with questions administered in the venue, one at a time, using standardized instruments detailed below.

2.2. Instruments

We employed a researcher-designed checklist to collect demographic and behavioral data, while the Young Schema Questionnaire was utilized to assess their Early Maladaptive Schemas (YSQ-SF).

2.3. Researcher-Designed Checklist

The demographic variables encompassed gender (male/female), age, educational level of teenagers (middle school, high school, and college students), parents' educational attainment (elementary/diploma/associate or bachelor/masters or doctorate), and parents' occupations. Behavioral factors also included smoking (yes/no), drug usage (yes/no), alcohol consumption (yes/no), hookah usage (yes/no), and the presence of an opposite-sex companion (yes/no). The socioeconomic status of teenagers was self-reported.

2.4. Young Schema Questionnaire-Short Form (YSQ-SF)

Young (18) devised this questionnaire, comprising seventy-five items. It was designed to assess 15 Early Maladaptive Schemas organized into 5 domains, namely:

1. Rejection / Disconnection: This domain encompasses Emotional Deprivation, Abandonment / Instability, Mistrust / Abuse, Social Isolation / Alienation, and Defectiveness / Shame.

2. Impaired Independence / Performance: This domain consists of Failure, Dependency / Incompetence, Vulnerability to Harm, Enmeshment / Undeveloped Self, and Social

Undesirability.

3. Impaired Limits: This domain includes Subjugation and Self-Sacrifice.

4. Other-Directedness: This Comprises Emotional Inhibition and Unrelenting Standards.

5. Over-vigilance / Inhibition: This encompasses Entitlement / Grandiosity and Insufficient Self-Control / Self-Discipline (19, 20).

Each of the 75 items is rated on a 6-point Likert scale, ranging from "utterly false" (scoring 1) to "absolutely accurate" (scoring 6). A high score indicates a strong presence of maladaptive schemas, with each schema having a minimum score of 5 and a maximum score of 30. The overall score for each questionnaire, the sum of the 15 schema scores, can range from 75 to 450 points. Previous study demonstrated the YSQ-SF's validity and reliability in predicting psychopathology (21). This study used a translated version of the YSQ-SF in Persian, previously employed in studies conducted in Iran. This questionnaire's total Cronbach's alpha score was 0.94 (21, 22).

2.5. Statistical Analyses

The data analysis employed descriptive statistics to yield insights. The mean and standard deviation were utilized to present quantitative data, while numbers and percentages were employed to convey qualitative factors. The T-test and chi-square tests were administered to scrutinize disparities between male and female students concerning demographic and behavioral characteristics.

Logistic regression was employed to establish the link between behavioral characteristics and adolescents' early maladaptive schemas. Furthermore, a linear regression model was deployed to assess factors associated with each early maladaptive schema. The data analysis was conducted utilizing SPSS version 22 and Graph Pad Prism version 8. P<0.05 was considered statistically significant.

3. Results

Among the 348 adolescents who participated in the research, 187 (53.7%) were male. Most girls (80.0%) and boys (80.2%) lived with both

parents, and most parents had a bachelor or master degree. Sixty boys (32.1%) and 12 girls (7.5%) reported smoking, and this difference was statistically significant (P=0.001). The relative frequency of hookah, alcohol, and drug usage in males was 31.6%, 40.1%, and 10.2%, respectively; similarly, the prevalence of these variables in girls was 11.2%, 15.5%, and 1.2%, respectively. There was a significant difference between males and girls in the relative frequency of hookah (P=0.001), alcohol (P=0.001), and drug usage (P=0.008). Table 1 illustrates further demographic and behavioral characteristics of participants by gender.

Table 1: Demographic and behavioral characteristics of the participants by sex

Variables	Male (n=187)	Female (n=161)	P value
Age	17.33±1.51	16.48±1.8	0.001*
Education			0.002*
Middle school	26 (13.9)	43 (26.7)	
High school	146 (78.1)	98 (60.9)	
College	15 (8.0)	20 (12.4)	
Head of household			0.676
Father	152 (81.3)	126 (78.3)	
Mother	17 (9.1)	17 (10.6)	
Other	18 (9.6)	18 (11.2)	
Live with			0.239
Father and Mother	150 (80.2)	132 (82.0)	
Only Father	8 (4.3)	13 (8.1)	
Only Mother	19 (10.2)	11 (6.8)	
Other	10 (5.3)	5 (3.1)	
Father's education			0.001*
Elementary	14 (7.5)	26 (16.1)	
Diploma	34 (18.2)	20 (12.4)	
Associate / Bachelor	111 (59.4)	109 (67.7)	
Masters / PhD	28 (15.0)	6 (3.7)	
Mother's education			0.003*
Elementary	15 (8.0)	34 (21.1)	
Diploma	43 (23.0)	30 (18.6)	
Associate / Bachelor	109 (58.3)	88 (54.7)	
Masters / PhD	20 (10.7)	9 (5.6)	
Father's job			0.035*
Unemployed	7 (3.7)	5 (3.1)	
Worker	16 (8.5)	30 (18.7)	
Employed	85 (45.5)	52 (32.3)	
Free job	62 (33.2)	64 (39.8)	
Retired	17 (9.1)	10 (6.2)	
Mother's job			0.034*
Housewife	130 (69.5)	112 (69.9)	
Working at home with income	33 (17.6)	16 (9.9)	
Employed	24 (12.8)	33 (20.5)	
Socio-economic status			0.032*
Lowest	9 (4.8)	1 (0.6)	
Low	28 (15.0)	17 (10.6)	
Middle	79 (42.2)	90 (55.9)	
High	62 (33.2)	47 (29.2)	
Highest	9 (4.8)	6 (3.7)	
Smoking (yes)	60 (32.1)	12 (7.5)	0.001*
Hookah (yes)	59 (31.6)	18 (11.2)	0.001*
Alcohol (yes)	75 (40.1)	25 (15.5)	0.001*
Drug use (yes)	19 (10.2)	2 (1.2)	0.001*
Having a friend of the opposite sex	87 (46.5)	46 (28.6)	0.001*

Data reported as N (%), mean±SD; * Significant at 0.05 level

The mean of Yang Schema Questionnaire schemas is presented in Table 2. There was a statistically significant difference between girls and boys on the Abandonment/Instability Schema, with female students scoring substantially higher than boys (P=0.038). Also, Figure 1 depicts the mean of Schemas according to five domains.

Table 3 shows the association between demographic characteristics and Young Questionnaire Schemas. According to the findings, a higher level of father's education is associated with a lower score of Emotional deprivation (B=-1.60), Abandonment/instability (B=-0.79), Defectiveness/ shame (B=-0.79), Enmeshment/undeveloped self (B=-0.85), subjugation (B=-0.80), Self-sacrifice (B=-0.80), Emotional inhibition (B=-0.80). Except for Mistrust/abuse and Social isolation/alienation Schemes, a greater degree of mother's education was substantially related to lower scores on the Young Questionnaire. A higher socioeconomic status was also associated with lower scores on Emotional deprivation (B=1.38), Mistrust/Abuse (B=0.93), Defectiveness/shame (B=1.19), Failure to achieve (B=0.74), Vulnerability to harm (B=0.85), Enmeshment/undeveloped self (B=0.73), Self-sacrifice (B=0.96), Unrelenting standards (B=0.79), Entitlement/grandiosity (B=1.02), and Insufficiency (B=1.18) Schema.

Table 2: The mean of Schemas in Yang Schema Questionnaire by sex

Schema	Total (n=348)	Male (n=187)	Female (n=161)	P value
Emotional deprivation	10.96±4.93	10.97±5.09	10.95±4.74	0.957
Abandonment/instability	12.68±5.88	12.07±5.16	13.38±6.58	0.038*
Mistrust/abuse	12.23±5.07	12.35±5.10	12.08±5.06	0.624
Social isolation/alienation	10.32±5.02	11.43±4.88	11.09±5.02	0.528
Defectiveness/shame	10.04±5.06	10.10±4.96	9.96±5.18	0.789
Failure	10.32±5.03	10.20±4.95	10.46±5.11	0.630
Dependence/incompetence	10.09±4.74	9.92±4.60	10.27±4.90	0.500
Vulnerability to harm	9.97±4.66	9.65±4.21	10.35±5.11	0.168
Enmeshment/undeveloped self	11.30±4.98	10.84±4.65	11.83±5.31	0.067
Subjugation	11.28±4.75	11.19±4.77	11.38±4.74	0.716
Self-sacrifice	14.21±5.98	13.74±5.97	14.75±5.97	0.120
Emotional inhibition	12.36±5.73	12.15±5.67	12.15±5.67	0.460
Unrelenting standards	15.30±5.91	14.80±5.84	14.81±5.84	0.098
Entitlement/ grandiosity	14.46±6.07	14.01±5.81	14.01±5.81	0.139
Insufficient self-control and/or self-discipline	13.11±5.54	12.84±5.84	12.84±5.84	0.329

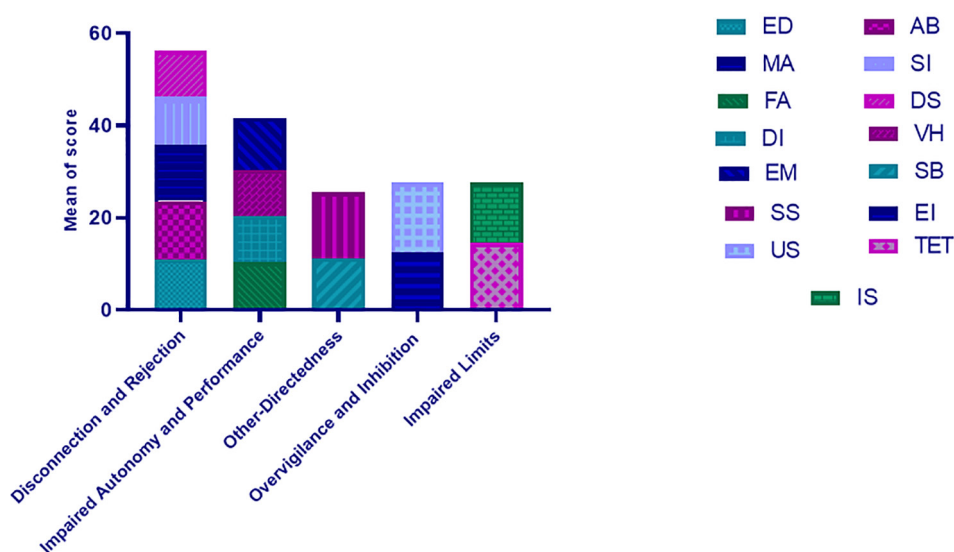Data reported as mean±SD; * Significant at 0.05 level

Figure 1: The figure shows the mean of Schemas in the Young Questionnaire according to the five domains. ED: Emotional Deprivation; AB: Abandonment /instability; MA: Mistrust /abuse; SI: Social isolation/alienation; DS: Defectiveness/shame; FA: Failure; DI: Dependence/ incompetence; VH: Vulnerability to harm; EM: Enmeshment/undeveloped self; SB: subjugation; SS: Self-sacrifice; EI: Emotional inhibition; US: Unrelenting standards; ET: Entitlement/ grandiosity; IS: Insufficient self-control and/or self-discipline.

Table 3: Relationship between demographic variables and Schemas of the Young Questionnaire

Schemas	Sex (Ref=Female)		Father's education		Mother's education		Socio-economic status	
	B	P value	B	P value	B	P value	B	P value
ED	0.03	0957	-1.60	0.001*	-1.12	0.001*	-1.38	0.001*
AB	-1.31	0.038*	-0.79	0.046*	-0.3	0.014*	-0.57	0.135
MA	0.27	0.624	-0.13	0.696	-0.17	0.600	-0.93	0.005*
SI	0.34	0.528	-0.35	0.297	-0.31	0.327	-0.51	0.111
DS	0.14	0.789	-0.79	0.021*	-0.69	0.036*	-1.19	0.001*
FA	-0.26	0.630	-0.66	0.053	-0.93	0.004*	-0.74	0.024*
DI	-0.35	0.500	-0.50	0.117	-0.63	0.039*	-0.46	0.132
VH	-0.69	0.168	-0.58	0.068	-0.80	0.008*	-0.85	0.005*
EM	-0.98	0.067	-0.85	0.012*	-1.37	0.001*	-0.73	0.025*
SB	-0.18	0.716	-0.80	0.013*	-1.24	0.001*	-0.22	0.469
SS	-1.01	0.120	-1.01	0.013*	-1.22	0.002*	-0.96	0.014*
EI	-0.46	0.460	-1.32	0.001*	-1.34	0.001*	-0.63	0.093
US	-1.06	0.098	-0.78	0.052	-0.77	0.044*	-0.79	0.042*
ET	-0.97	0.139	-1.18	0.004*	-1.54	0.001*	-1.02	0.010*
IS	-0.58	0.329	-1.06	0.005*	-1.57	0.001*	-1.18	0.001*

*Significant at 0.05 level; the Schemas of the Yang questionnaire are considered as outcome, ED: Emotional Deprivation; AB: Abandonment /instability; MA: Mistrust /abuse; SI: Social isolation/alienation; DS: Defectiveness/shame; FA: Failure; DI: Dependence/ incompetence; VH: Vulnerability to harm; EM: Enmeshment/undeveloped self; SB: subjugation; SS: Self-sacrifice; EI: Emotional inhibition; US: Unrelenting standards; ET: Entitlement/ grandiosity; IS: Insufficient self-control and/or self-discipline.

Table 4 shows the association between aspects of the Young Questionnaire and behavioral factors such as smoking, hookah, alcohol, and drug usage. Smoking was related to a higher score on Emotional deprivation (P=0.001), Mistrust/abuse (P=0.001), Social isolation/alienation (P=0.001), Self-sacrifice (P=0.003), Entitlement/grandiosity (P=0.006), and Insufficiency (P=0.036) Schemas. Hookah usage was related to higher scores on Emotional deprivation (P=0.001), Mistrust/abuse (P=0.032), Self-sacrifice (P=0.006), Entitlement/ grandiosity (P=0.007), and Insufficiency (P=0.009) Schemas. Alcohol consumption was significantly associated with higher scores on Emotional deprivation (P=0.001), Mistrust/abuse (P=0.001), Social isolation/alienation (P=0.001), Self-sacrifice (P=0.001), Emotional inhibition (P=0.007), Unrelenting standards (P=0.009), Entitlement/ grandiosity (P=0.001), and Insufficiency (P=0.002) Schemas. A higher score on Mistrust/abuse (P=0.001), Self-sacrifice (P=0.013), and Entitlement/ grandiosity (P=0.038) Schemas was also linked to drug usage.

4. Discussion

This research examined the role of Early Maladaptive schemes (EMS) in influencing risky behaviors among Iranian teenagers, including smoking, hookah usage, alcohol consumption, and drug use. Our study's findings indicated that EMSs may serve as significant predictors of high-risk behaviors, with a higher degree of maladaptiveness in schemas correlating with a greater likelihood of teenagers engaging in risky activities. Consistent with our results, a study conducted in Iran revealed that EMSs such as Shame, Perfectionism, Entitlement, and Failure could strongly predict drug and alcohol consumption (5). To prevent the proliferation of high-risk behaviors among students, considering the contributing factors leading to forming initially incompatible schemas is crucial.

Furthermore, we investigated the influence of demographic factors on the dimensions of the Young questionnaire. We found that lower scores on this questionnaire were associated with higher parental education levels and socioeconomic status. Interestingly, this contrasts with the findings of Panaghi and colleagues who reported that fathers and mothers with over 12 years of education and high income were linked to smoking and alcohol consumption (23). Additionally, higher maternal education was associated with increased employment and busyness, potentially reducing their ability to influence their children's risky behaviors (24). Shokri and co-workers emphasized that parents with lower education levels may have a limited understanding of their responsibilities, leading to reduced efficacy in guiding and educating their children effectively, thereby diminishing their ability to prevent risky behaviors (25).

Table 4: Relationship between behavioral variables and Schemas of the Young Questionnaire

Schemas	Smoking			Hookah		
	OR	95% CI	P value	OR	95% CI	P value
ED	1.10	1.04-1.15	0.001*	1.09	1.04-1.14	0.001*
AB	0.97	0.93-1.02	0.357	0.99	0.95-1.04	0.871
MA	1.09	1.03-1.14	0.001*	1.05	1.01-1.10	0.032*
SI	1.10	1.05-1.16	0.001*	1.05	0.99-1.10	0.060
DS	1.05	1.00-1.10	0.051	1.01	0.96-1.06	0.678
FA	1.03	0.97-1.08	0.286	0.99	0.94-1.04	0.726
DI	0.98	0.93-1.04	0.584	0.97	0.92-1.03	0.459
VH	0.99	0.94-1.05	0.940	1.02	0.96-1.07	0.509
EM	1.01	0.96-1.06	0.640	0.98	0.94-1.04	0.642
SB	0.98	0.93-1.04	0.660	1.02	0.95-1.06	0.671
SS	1.09	1.02-1.11	0.003*	1.06	1.02-1.11	0.006*
EI	1.02	0.97-1.07	0.332	1.03	0.98-1.07	0.179
US	1.03	0.98-1.08	0.136	1.02	0.98-1.07	0.248
ET	1.06	1.01-1.11	0.006*	1.06	1.01-1.11	0.007*
IS	1.05	1.01-1.09	0.036*	1.06	1.01-1.11	0.009*
Schemas	Alcohol			Drug use		
	OR	95% CI	P value	OR	95% CI	P value
ED	1.09	1.04-1.14	0.001*	1.07	0.99-1.16	0.060
AB	1.00	0.96-1.14	1.00	1.01	0.95-1.08	0.652
MA	1.09	1.05-1.15	0.001*	1.14	1.06-1.22	0.001*
SI	1.09	1.04-1.14	0.001*	1.07	0.99-1.15	0.086
DS	1.03	0.98-1.08	0.163	0.99	0.90-1.08	0.826
FA	1.03	0.98-1.08	0.149	1.02	0.94-1.11	0.617
DI	0.99	0.94-1.04	0.863	1.02	0.93-1.12	0.655
VH	1.02	0.97-1.07	0.381	1.03	0.94-1.12	0.477
EM	1.01	0.96-1.05	0.775	1.02	0.94-1.11	0.629
SB	1.01	0.96-1.06	0.586	1.03	0.95-1.13	0.447
SS	1.08	1.04-1.13	0.001*	1.09	1.02-1.17	0.013*
EI	1.05	1.01-1.10	0.007*	1.02	0.95-1.10	0.520
US	1.05	1.01-1.09	0.009*	1.06	0.98-1.14	0.132
ET	1.09	1.05-1.14	0.001*	1.08	1.01-1.15	0.038*
IS	1.07	1.03-1.12	0.002*	1.03	0.96-1.10	0.429

*Significant at 0.05 level; the behavioral variables (including smoking, hookah, alcohol, and drug use) are considered as outcome. OR: Odds Ration, ED: Emotional Deprivation; AB: Abandonment /instability; MA: Mistrust /abuse; SI: Social isolation/alienation; DS: Defectiveness/shame; FA: Failure; DI: Dependence/ incompetence; VH: Vulnerability to harm; EM: Enmeshment /undeveloped self; SB: subjugation; SS: Self-sacrifice; EI: Emotional inhibition; US: Unrelenting standards; ET: Entitlement/ grandiosity; IS: Insufficient self-control and/or self-discipline.

Our study highlighted parental education as a significant predictor of adolescent EMS scores. Several studies raised concerns about the impact of parental education on children's psychological well-being, suggesting that lower parental education levels are associated with a higher risk of behavioral and psychological problems in their children (26, 27). Our results suggested that early maladaptive schemas trace their origins to childhood experiences, emphasizing the pivotal role of family educational systems and parenting styles in the development of EMS during childhood (28, 29).

Our research also indicated a correlation between a higher socioeconomic position within the family and lower scores on EMS dimensions in teenagers, which aligns with the broader body of research indicating that an individual's socioeconomic status can significantly influence their quality of life and, subsequently, their physical and mental health (30, 31). Factors such as family stability, children's psychological and physical development, and parenting styles can all be influenced by socioeconomic status (32), supporting our findings.

In our study, smokers exhibited higher scores in EMS aspects such as Emotional Deprivation, Mistrust/Abuse, Social Isolation/Alienation, Defectiveness/Unlovability, Self-Sacrifice,

Entitlement, and Inadequacy. Similarly, hookah usage was associated with higher scores on EMS aspects like Emotional Deprivation, Mistrust/Abuse, Self-Sacrifice, Entitlement, and Inadequacy. These findings suggested that individuals with Defectiveness/Unlovability schemas often experience anxiety due to the judgments and evaluations of others, which may drive them to engage in risky behaviors (33). Meanwhile, those with Mistrust/Abuse schemas may perceive others as threats, leading to irritability and a lack of trust, potentially driving them towards substances like drugs, cigarettes, or alcohol as coping mechanisms (34). Our findings also indicated a connection between drug use and three EMS aspects: Mistrust/Abuse, Self-Sacrifice, and Entitlement. Previous research suggested that these schemas can lay the foundation for drug use (35, 36).

Notably, Disconnection/Rejection, Reduced Autonomy/Performance, Impaired Limits, Other-Directedness, and Excessive Vigilance/Inhibition were identified as significant predictors of addiction in young individuals, as indicated by Bakhshi Bojed and Nikmanesh (37). Another study suggested that EMSs play a role in drug usage, implying that certain personality traits in drug users may predispose them to initiate or continue drug use (38). In line with these findings, an Iranian study suggested that EMSs, including Emotional Deprivation, Mistrust/Abuse, and Unyielding Norms, are implicated in initiating opioid use, potentially leading to future drug-related problems (39).

Our research also revealed that the most significant predictors of alcohol consumption among Iranian teenagers were Emotional Deprivation, Mistrust/Abuse, Social Isolation/Alienation, Self-Sacrifice, Emotional Inhibition, Unyielding Norms, Entitlement, and Inadequate schemas. Enoch's research supported these findings, indicating that early life stress and emotional instability can lead to adult psychiatric impairments, disrupting the HPA axis and potentially contributing to addiction and alcoholism (40). People with high scores in the Self-Sacrifice schema tend to prioritize the needs of others at the expense of their own, which may result in suppressed anger and an inclination toward high-risk activities (41). Some individuals may turn to alcohol as a coping mechanism to deal with the pressure associated with rigid standards (42).

4.1. Limitation

Few studies have focused on Iranian adolescents to assess the association between Early Maladaptive schemes (EMS) and high-risk behaviors. Therefore, our findings can message mental health policymakers regarding EMS and adolescent high-risk behaviors. However, there are some limitations in this study. For instance, despite our best efforts to reach out to adolescents across all ten zones of Shiraz Municipal Divisions, encouraging their participation and assuring the confidentiality of their information, we cannot guarantee the representativeness of our samples. Additionally, the study's cross-sectional nature allows us to provide evidence for the relationship between high-risk behaviors and independent variables but does not enable us to explain causality.

5. Conclusion

The findings indicated that EMS may predict high-risk behaviors. Furthermore, since schemas are established early in infancy and lay the groundwork for future beliefs, actions, and emotions, implementing necessary plans and procedures for EMS education, prevention, and treatment within this age group would be beneficial and effective. Early-life interventions should be contemplated in alignment with the factors contributing to managing the adverse consequences of EMS among adolescents. In conclusion, further research is recommended to meticulously assess the predisposing factors for EMS and appropriate preventive interventions among this target population.

Ethical Approval

All adolescents were required to express informed permission before data collection, and their parents were requested to enable their children under the age of 16 to participate. In addition, they were advised of their right to withdraw from the research and the privacy of their data. This research was done after assessment and clearance by the Ethics Committee of the Shiraz University of Medical Sciences with the code of IR.SUMS.REC.1399.1065.

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Author's Contribution

Hassan Joulaei: Study concept and design, acquisition, and interpretation of data, drafting and critical revision of the manuscript. Zohre Foroozanfar: Material preparation, data collection, and analysis, critical revision of the manuscript. Razieh Joulaei: Material preparation, data collection, and analysis, critical revision of the manuscript. Mohammad Reza Heydari: Study concept and design, acquisition, and interpretation of data, drafting and critical revision of the manuscript. Sima Afrashteh: Study concept, drafting the manuscript. Arash Ziaee: Study concept, drafting the manuscript. Maryam Fatemi: Study concept and design, acquisition, and interpretation of data, drafting and critical revision of the manuscript. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of Interest

The authors of this manuscript declare no relationships with any company whose products or services may be related to the subject matter of the article. Hassan Joulaei, Editor-in-Chief, was not involved in the peer-review and decision-making processes for this manuscript. The non-author, Chairperson, oversaw the peer review process for this paper.

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