Association between parental separation and addictions in adolescents: results of a national Lebanese study

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Research article

Abstract

Objectives: to investigate the association between the divorce of parents and smoking, alcohol, and internet addiction among a representative sample of Lebanese adolescents.

Methods: This study was a cross-sectional, conducted between January and May 2019 using a proportionate random sample of schools from all Lebanese Mohafazat. Out of 2000 questionnaires distributed; 1810 (90.5%) were completed and collected back.

Results: The mean age was 15.42 ± 1.14 years, with 53.3% females and 74.1% smokers. In addition, 11.9% [95% CI 0.104-0.134] of the adolescents had separated/divorced parents. Divorce in parents was significantly associated with higher alcohol use disorder (Beta=8.035), higher cigarette dependence (Beta=2.767) and a higher waterpipe dependence (Beta=5.263) in adolescents. However, divorce in parents was not associated with internet addiction in adolescents.

Conclusion: Parental divorce was correlated to higher alcohol and smoking, but not internet addiction among adolescents. Children whose parents are divorced should be subject to continuous follow-up by their parents and by a psychiatrist/psychologist in order not to develop any addiction that could potentially harm them.

Introduction

Adolescence represents the transitional phase between late childhood and the beginning of adulthood. Moreover, adolescents undergo rapid changes relative to other developmental periods. Psychologically, there is identity formation including self-exploration with respect to interpersonal goals, i.e. the need for social friendship and the determination for an autonomous organized personality. At the cognitive level, adolescents develop general thinking, allowing for a hardly noticeable formulation of a multifaceted personality and a greater concern in appreciating and accepting one's self compared to others [1]. Adolescence is considered the most perplexing phase in one's life [2]; adolescents cope with the biological and experiential changes and find their way of life, which will have long-term impacts on all facets of their growth, including health. Risky behaviors are naturally during adolescence and carried over to adulthood; substance use (smoking, waterpipe and alcohol drinking), is among the major risk behaviors initiated during that period [3]. According to Jessor's Problem-Behaviour Theory [4], the family structure (the divorce between parents, the communication between the parents and the child) predict externalizing problems (smoking, alcohol drinking).

The American Society of Addiction Medicine (ASAM) defines addiction as being "*a primary chronic disease of brain reward, motivation, memory and related circuitry*" [5]. To further develop understandings regarding addictions, the DSM-5 (APA, 2013) [6] chapter concerning this topic was enlarged from "Substance-Related Disorders" (DSM-4) to "Substance-Related and Addictive Disorders" as a means to

include not just the types of psychoactive substances but also types of behavior, specifically gambling disorder[7].

Previous international studies showed a higher risk for onset of alcohol in students as a function of divorce and the impact of divorce was greater than parental drinking [8,9]. The findings of a previous study [8] showed that adolescents from non-intact families (defined as children who did not live with both biological parents at the end of childhood due to parental separation or single motherhood at birth) are expected to start alcohol drinking at a young age, to consume alcohol and to report frequent and heavy drinking, as well as drunkenness than those from intact families. In that same study, 32% of adolescents aged between 11 and 13 years, who experienced parental separation/divorce reported the consumption of a full alcoholic drink [8]. In Lebanon, alcohol consumption in adolescence is on the rise due to the easy purchase (no age restriction, cheap price < 2$) and the lack of strict laws against alcohol [10].

Cigarette smoking among adolescents is on the rise, varying between 10.4% [11] and 51% [12]. Most of them occur in developing countries [13]. Lebanon is smoking prevalence ranks first in the Middle East and for Arab females, with 43% of men and 28% of women in Lebanon being smokers [13]. Waterpipe smoking prevalence is high in Lebanon especially in youth, with 35% of teens aged between 13 and 15 having used it; among them, 47% smoked less than once weekly, 38% weekly but not daily, 16% daily [14]. A study showed that divorce increased the risk of drinking and smoking initiation [15]. To the best of our knowledge, there are no studies that show association between waterpipe addiction in adolescence and divorce.

Internet users are on the rise exponentially worldwide exceeding 2.5 billion active users especially adolescents [16-18]. Adolescents with internet addiction were more expected to have divorced parents and that internet addicted adolescents might have emotional problems, with most of the addicted adolescents being males [19]. Many factors, including but not limited to the environment, emotional immaturity, inability to cope with negative emotions, are reasons behind web-addiction among adolescents, emphasizing the possible relationship between divorce and internet addiction among this age group [20]. As a matter of fact, a study covering determinants of internet addiction among adolescence shows that 7% of adolescent web addicts have dysfunctional and/or problematic family relationships[21].

Not every adolescent is equally at risk of developing addiction. Many studies [21,22] have been previously conducted to investigate various aspects of addiction among adolescents and determined the reason behind addiction and why some adolescents are more prone to be addicted than others. Susceptibility differs because people vary in their vulnerability to various genetic, environmental, and developmental factors such as western and eastern culture[23]. Since divorce rates are on the rise in Lebanon (an increase of 101% between 2006 and 2017) [24,25], and since previous international studies [9,26-29] have shown a relationship between divorced parents and addiction in adolescents on smoking, alcohol and internet, it was deemed interesting to assess the background of the Lebanese situation. The practical implication of our study relates to assessing the possible influence of previous or recent parental divorce on adolescent

addiction in order to warn the parents about the importance of secure attachment. The objectives of this study were to investigate the association between the divorce of parents and smoking, alcohol, and internet addiction among a representative sample of Lebanese adolescents.

Methods

Participants

This study was a cross-sectional, conducted between January and May 2019. Out of 2000 questionnaires distributed; 1810 (90.5%) were completed and collected back. The enrollment of the participants was done using a proportionate random sample of schools from all Lebanese Mohafazat (Beirut, Mount Lebanon, North, South and Bekaa). A total of eighteen private schools was contacted; two refused participation. Those who accepted to participate were located as follows: 4 in Beirut; 2 in South Lebanon; 6 in Mount Lebanon; 2 in North Lebanon; and 2 in Bekaa. Students, aged between 14 and 17 years old, were randomly selected from each school. No monetary rewards were given in exchange for participation. Excluded where the students who refused to fill the questionnaire.

Questionnaire

The questionnaire used was in Arabic, the native language of Lebanon, needing approximately 60 minutes to be completed. Students were asked to fill the anonymous questionnaire in the classrooms to avoid their parents' influence while answering the questions. At the end of the process, the completed questionnaires were collected back and sent for data entry.

The first part assessed the sociodemographic details of the participants (i.e. age, gender, smoking status, parents' status). The heights and weights of participants were measured to calculate the Body Mass Index (BMI) (kg/m^2). The household crowding index was calculated by dividing the number of persons living in the house and the number of rooms in the house besides the bathroom and the kitchen [30]. The Total Physical Activity Index was calculated by multiplying the intensity, duration and frequency of daily activity [31]. The second part of the questionnaire included the following scales:

Internet Addiction Test (IAT)

It consisted of twenty items, with Likert type responses varying between 0= does not apply/never and 5=always applies). The total score varied between 20 and 100, with higher scores defining higher internet addiction (Cronbach's alpha=0.925).

The Alcohol Use Disorders Identification Test (AUDIT)

The ten-item self-reported version of the AUDIT was used in this study to assess alcohol use, drinking patterns, and alcohol-related issues [32]. Hazardous Alcohol Disorder (HAD) is considered when the patients score 8 or more (Cronbach's alpha=0.960).

Lebanon Waterpipe Dependence Scale-11 (LWDS-11)

LWDS-11 test was used to assess waterpipe dependence [33]. It includes 11 items measured in 4-point Likert scale ranging from 0 to 3. The total scale is calculated by summing the 11 items, with higher scores indicating higher waterpipe addiction (Cronbach's alpha=0.888).

Fagerstrom test for nicotine dependence (FTND)

The FTND contains six items, scored as 0/1 for the yes/no questions and from 0 to 3 for multiple-choice items. The items are summed to yield a total score of 0-10. The higher the total Fagerström score, the more intense is the patient's physical dependence on nicotine[34] (Cronbach's alpha=0.825).

Translation procedure

The forward translation was done by a health professional, whose native language is Arabic and is fluent in English. A backward translation was then performed by a native English speaker translator, fluent in Arabic and unfamiliar with the concepts of the scales. The back-translated English questionnaire was subsequently compared to the original English one, aiming to discern discrepancies and to solve any inconsistencies between the two versions.

Statistical analysis

SPSS software version 23 was used to conduct data analysis. Cronbach's alpha values were noted for the scales' reliability analysis. Counts and percentages, as well as means and standard deviations, were calculated for categorical and continuous variables respectively.

A multivariate analysis of covariance (MANCOVA) was carried out to compare multiple scales scores (being taken as dependent variables) and the parents' status (living together vs. separate), after adjustment over potential confounding variables: age, gender, house crowding index and physical activity score. A $p<0.05$ was considered significant.

Results

The sociodemographic characteristics of the participants are summarized in Table 1. The mean age was 15.42 ± 1.14 years, with 53.3% females and 74.1% smokers. In addition, 11.9% [95% CI 0.104-0.134] of the adolescents had separated/divorced parents.

Parents' status and association with the addiction scales adjusted for age, gender, house crowding index and physical activity is shown in Figure 1. After adjusting for all covariates, a significant difference was found for all the scales except for the IAT total score. A significantly higher mean of AUDIT (15.09), FTND (4.55) and LWDS-11 (11.14) scores were found in separate parents as compared to those whose parents are living together.

Multivariate analysis

The MANCOVA analysis was performed taking the scales as the dependent variables and the groups of parents' status (living together vs. separate) as the independent variable, adjusting for the covariates (age, gender, house crowding index and physical activity score).

Considering the AUDIT score as the dependent variable, adolescents whose parents are separated compared to living together (Beta=8.035) and higher physical activity index (Beta=0.06) were significantly associated with higher AUDIT score.

Taking the IAT score as the dependent variable, being a female (Beta=2.697), increase age (Beta=0.991) and higher physical activity index (Beta=0.234) were significantly associated with higher IAT score.

Taking the FTND score as the dependent variable, adolescents whose parents are separated compared to living together (Beta=2.767) was significantly associated with higher FTND score. Increase age (Beta=-0.333) and high house crowding index (Beta=-0.357) were significantly associated with lower FTND score.

Taking the LWDS-11 score as the dependent variable, adolescents whose parents are separated compared to living together (Beta=5.263) was significantly associated with higher LWDS-11 score. Increase age (Beta=-1.293) and high house crowding index (Beta=-1.098) were significantly associated with lower LWDS-11 score (table 2).

Discussion

This is a cross-sectional pilot study conducted on a group of schoolchildren across all mohafazat in Lebanon, aiming to assess the potential risk factors for addiction among adolescents, especially the effect of parental status on adolescent's risky behavior. The results of the study demonstrated that adolescents whose parents are divorced or separated show more alcohol use disorder, higher cigarette and waterpipe dependence but not higher internet addiction.

Parental divorce was significantly associated with more HAD among adolescents, in agreement with a previous study[28]. Indeed, parental divorce is among the most frequently recognized adverse events encountered during childhood, which has been associated with higher odds of alcohol consumption and HAD in adolescence and early adulthood. So, what if this progression was as well marked by a parental divorce? As reduction in adolescent supervision may follow divorce, we notice decrease in parenting effectiveness and increased access to alcohol that may be due to more propensity to seek out new and potentially dangerous situations and meet emotional needs, especially that the parents are at first busy trying to solve their problems. A possible reason would be that parental divorce may lead to greater affiliation with substance-using peers[26]. Previous findings suggest that the odds of drinking associated with parents' divorce was significantly decreased when monitoring for peer drinking, suggesting that deviant peer affiliation may mediate the effects of parental separation on alcohol use [35]. Hence, the

absence of monitoring by separated parents leads to outings with unusual peers, increased access to alcohol and eventually earlier age of drinking initiation [8]. Parental divorce may have less influence on adolescents' risky behaviors once they become more independent and less reliant on parental support [8].

Furthermore, our results showed that parental divorce was not associated with higher internet addiction among adolescents in opposite to previous findings [27,29]; in fact, the Mann's notion of "availability as a law of addiction" [36] suggests that greater internet availability may foster greater engagement in online activities. However, it is important to note that internet accessibility is not homogenous on the Lebanese territory and that many adolescents do not have full-time access to the internet or electronic devices. Another reason for the decrease in IA among adolescents might be the emergence of parental control software that are able to blacklist certain types of website access, implement time limits, and to schedule when internet access is available[37].

Lastly, supporting previous studies[9,28], our results showed that higher odds of daily smoking were observed in adolescents whose parents are separated and are living in non-intact families. Parental conflict period is an important stressor for children, which can produce an aversive home environment that may be responsible for the negative correlation to health outcomes. Extensive research has tried to pin-point some of the major risk factors for smoking initiation and it appears that psychological distress such as a depressed mood and high levels of rebelliousness may be triggers for nicotine addiction [38,39]. Another explanation might be that at this age and without vigorous parental supervision, adolescents are unable to grasp the long-term risks and consequences of cigarette or waterpipe smoking and often feel like smoking is their "self-medication" rather than a potential risk factor for ulterior diseases [40]. Moreover, the uptake of a new potentially harmful habit could be a way for adolescents to grab their parent's attention when the parent-child bond is weakened. It is essential to keep in mind that our study was conducted in a middle-eastern country, where water-pipe smoking is part of the cultural, traditional and social method of smoking tobacco [9,41]. It is essential to keep in mind that our study was conducted in a Mediterranean region, where prevalence of waterpipe smoking is higher due to its belonging to the cultural and social way of smoking tobacco. The reason behind the popularity of waterpipe smoking among youth are presumably for its entertaining, socializing and relaxation purposes [42].

Clinical Implications

The results of our study, suggesting high rates of addiction (cigarette and waterpipe smoking and alcohol drinking) among adolescents whose parents are divorced, highlight the urgent need for health managers and policymakers to develop evidence-based interventions to reduce the risk and consequences of divorce. Increasing parental education in such situations is needed in order to improve parents' communication proficiency, a necessary component in reducing the adolescent's emotional suffering and loneliness and achieve healthy familial interactions.

Limitations

This study has few limitations. The cross-sectional nature of our study results does not infer causality (the temporal occurrence of the events is unknown). We did not assess the length of time the adolescents were exposed to parental separation. Also, for quitters we did not have enough data regarding the time they stopped smoking therefore we can't know whether quitting was done before or after parental divorce. Some of the questions may not have been correctly understood and therefore leading to information bias and the study did not take into consideration adolescents who do not attend schools. Finally, a selection bias might be present because of the schools selection process.

Conclusion

In conclusion, parental divorce was correlated to higher alcohol and smoking, but not internet addiction among adolescents. Children whose parents are divorced should be subject to continuous follow-up by their parents and by a psychiatrist/psychologist in order not to develop any addiction that could potentially harm them.

Declarations

Ethics Approval and Consent to Participate

The Psychiatric Hospital of the Cross Ethics and Research Committee, in compliance with the Hospital's Regulatory Research Protocol, approved this study protocol (HPC-012-2019). A written consent was obtained from the students' parents prior to starting the data collection.

Consent for publication

Not applicable.

Availability of data and materials

All data generated or analyzed during this study are not publicly available to maintain the privacy of the individuals' identities. The dataset supporting the conclusions is available upon request to the corresponding author.

Competing interests

The authors have nothing to disclose.

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Author contributions

SO and SH designed the study; NJ and VAR drafted the manuscript; SH, CH and PS carried out the analysis and interpreted the results; RH, MS and HS assisted in drafting and reviewing the manuscript; All authors reviewed the final manuscript and gave their consent.

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Tables

Table 1: Sociodemographic characteristics of the sample population	
	Frequency (%)
Gender	
Male	844 (46.7%)
Female	963 (53.3%)
Parents status	
Living together	1581(88.1%)
Separate	213 (11.9%)
Smoking status	
Yes	468 (25.9%)
No	1342 (74.1%)
	Mean ± SD
Age (years)	15.42 ± 1.14
Body Mass Index (kg/m2)	21.95 ± 4.21
Household crowding index	1.01 ± 0.64

Table 2: Multivariate analysis of covariance (MANCOVA)	Beta	p-value	95% Confidence Interval	
			Lower Bound	Upper Bound
AUDIT total score				
Age	0.332	0.064	-0.019	.683
Gender (male* vs. female)	0.295	0.493	-0.548	1.137
Parents status (living together* vs. separate)	8.035	<0.001	6.840	9.230
House crowding index	-0.161	0.624	-0.805	0.483
Physical activity score	0.060	<0.001	0.032	0.089
IAT total score				
Age	0.991	0.017	0.178	1.803
Gender (male* vs. female)	2.697	0.007	0.749	4.645
Parents status (living together* vs. separate)	-0.584	0.679	-3.348	2.181
Physical activity score	0.234	<0.001	0.168	0.301
House crowding index	1.141	0.084	-0.154	2.436
Physical activity score	0.131	<0.001	0.073	0.188
FTND				
Age	-0.333	<0.001	-0.462	-0.203
Gender (male* vs. female)	-0.097	0.540	-0.409	0.214
Parents status (living together* vs. separate)	2.767	<0.001	2.325	3.209
House crowding index	-0.357	0.003	-0.595	-0.119
Physical activity score	0.005	0.354	-0.006	0.016
LWDS-11				
Age	-1.293	<0.001	-1.687	-0.899
Gender (male* vs. female)	-0.851	0.077	-1.795	0.094
Parents status (living together* vs. separate)	5.263	<0.001	3.923	6.604
House crowding index	-1.098	0.003	-1.820	-0.376
Physical activity score	0.016	0.320	-0.016	0.048
Note: In the global model, the independent variable is Parents status (living together* vs. separate). Covariates are: age, gender, house crowding index and physical activity score.				
*Reference group				

Figures
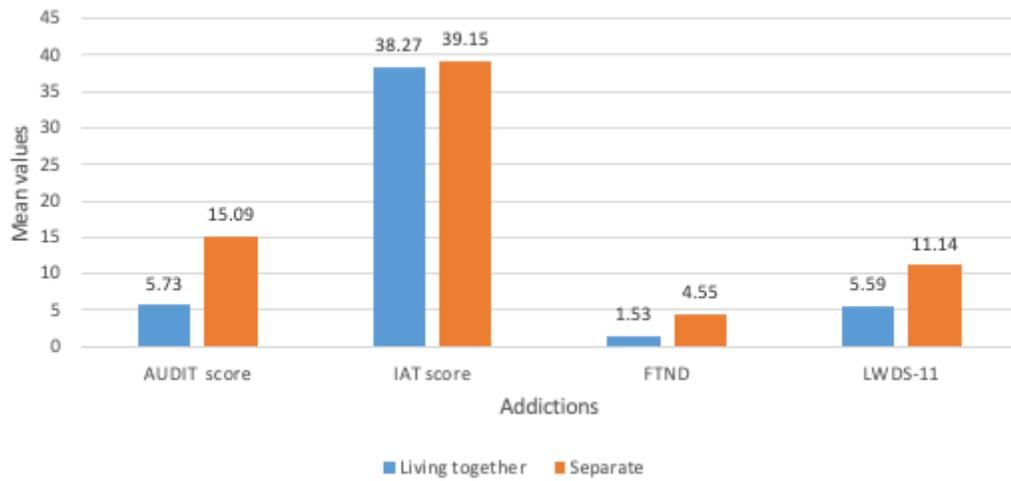
Figure 1

Mean values of the addiction scales according to parent status adjusted for age, gender, house crowding index and physical activity