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BRIEF REPORT

The role of monitoring skills in mediating the association between parent's hazardous alcohol consumption and adolescents' drinking

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Abstract

Background This study aimed to investigate whether parental monitoring skills mediate the effect of hazardous parental alcohol consumption on adolescents' lifetime alcohol use.

Methods This three wave longitudinal study was conducted with 884 families ($n = 1{,}768$ participants) to evaluate the effectiveness of a family-based drug prevention program for adolescents and parents across 12 Brazilian cities. We used structural equation mediation modeling to analyze the effect of hazardous parental alcohol consumption at baseline on adolescents' lifetime alcohol use at 12-month follow-up, mediated by parental monitoring skills latent dimension at 6-month follow-up.

Results We found a significant indirect effect of parents' hazardous alcohol use on adolescents' alcohol use through parental monitoring (OR:1.18, 95%CI:1.02;1.36).

Conclusion Our finding underscores the importance of comprehensive preventive family alcohol approaches targeting adolescent alcohol use, which should consider both parental drinking behavior and monitoring practices.

Keywords Parental drinking · Parental monitoring · Alcohol consumption · Adolescent · Mediation analysis

Introduction

Alcohol consumption is a major risk factor for many health problems and contributes significantly to the burden of disease globally [1]. A considerable body of literature suggests that an early age of drinking onset is associated with an increased likelihood of several future deleterious outcomes [2]. Thus, assessing modifiable risk factors for the age of drinking onset is important to provide evidence for developing effective preventive actions.

Notably, parental behavior, including alcohol consumption, is critical in shaping the decisions and behaviors of early adolescents. Numerous studies have examined the effects of parental drinking on young children's alcohol consumption. A systematic review of cohort studies that investigated the effects of parental drinking on children's alcohol consumption showed consistent evidence, suggesting that parental drinking predicts greater involvement in offspring drinking [3].

However, little is known about the complex mechanisms underlying the association between parental alcohol use and offspring alcohol use. Social learning theory [4] suggests that adolescents model their behaviors by observing the behaviors of those they are close to, such as parental alcohol consumption patterns and behaviors. Moreover, some studies suggest that parental drinking behaviors might influence parental responsibilities (especially monitoring skills),

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which might affect the likelihood of adolescents engaging in risky behaviors such as alcohol consumption [5, 6].

Overall, there is consistent evidence suggesting that poor parental monitoring skills and parental drinking behavior are risk factors for adolescents' alcohol use [7, 8]. However, few studies have addressed the pathways between parenting and parent-adolescent alcohol use. Thus, this study aimed to investigate whether parental monitoring skills mediate the effect of parental alcohol consumption on adolescents' lifetime alcohol use.

Materials and methods

This longitudinal study was nested in a cluster randomized controlled trial conducted with 805 families ($n = 1{,}610$ adolescents and parents) to evaluate the effectiveness of a family-based drug prevention program (*Famílias Fortes*) across 12 Brazilian cities. All the Social Assistance Reference Centers (SARC) in each of the selected municipalities were included in the study ($n = 63$), and 15 families were invited to participate in the study in each SARC. 15 families were recruited from all Social Assistance Reference Centers (SARC) in each of the selected municipalities to participate in the study. Only one parent and one child completed the study's questionnaire. The criteria used to determine which parent would participate in the study were based on those residing in the same household and being more actively involved in the child's daily life. Children aged 10 to 14 were included in the study. If there were multiple children in the family within this age range, we selected the oldest one to fill out the questionnaire, assuming they would be better able to comprehend it.

In three time moments, adolescents and parents answered an anonymous questionnaire delivered through a smartphone app and online by the researchers without the presence of the program facilitator. In three time moments, adolescents and parents answered an anonymous questionnaire delivered through a smartphone app and online by the researchers without the presence of the program facilitator. Adolescents completed the questionnaire individually, without the presence of their parents, to ensure confidentiality.

Data collection took place before the implementation of the intervention (November/December 2021), six months (May/June 2022), and 12 months (November/December 2022) after the first collection. The initial data collection involved 805 families. At the 12-month follow-up, 21.6% of the participants were lost, resulting in interviews conducted with 635 families. The Research Ethics Committee approved the study protocol of the Federal University of São Paulo (number: 4.890.815).

Study measures

The dependent variable in this study was lifetime alcohol use (yes or no) by adolescents collected at 12-month follow-up, measured through one question: "Have you ever tried any alcoholic beverages?". The mediating variable was parental monitoring skills from the SFP 10–14 Parent/Caregiver Survey Questionnaire [9] collected at baseline. The parental monitoring skills is a four-item scale with a four-point Likert scale where "happens rarely" is scored one and "most of the time" is scored four. Some of the questions were "How often: Do you know who your child is with when he or she is away from home?" and "Do you check that your child has completed his or her obligations, such as finishing homework, doing chores, or going to bed on time?". We created a latent variable underlying the four indicators, where the more intense the parental monitoring, the higher the number of latent traits (**Supplementary File**).

The independent variable was parents' hazardous alcohol consumption, evaluated using the Alcohol Use Disorders Identification Test (AUDIT) collected at 12-month follow-up. The questionnaire contained ten dichotomous questions: alcohol intake, abnormal drinking behavior, alcohol dependence, the link between alcohol consumption, detection of psychological effects, and alcohol-related problems. Scores range from 0 to 40, and a score of 8 was used to identify potentially hazardous alcohol intake, which is the generally accepted cutoff point of the scale [10].

The covariates included the age, sex, race, and socioeconomic status (SES) of parents and adolescents, group of randomization, baseline lifetime alcohol use, and baseline parental monitoring skills. SES was assessed using the scale of the Brazilian Association of Research Companies (ABEP), which considers the education level of the head of the household and the goods and services used. ABEP was scored from 1 to 100 points, with categories ranging from A (highest) to D/E (lowest) [11].

Statistical analysis

We conducted a confirmatory factor analysis (CFA) to estimate the latent factors and provide evidence for the construct validity of the parental monitoring skills scale. The comparative fit index (CFI), Tucker–Lewis index (TLI), and root mean square error approximation (RMSEA) were used to evaluate the goodness-of-fit. The RMSEA was estimated to be less than or equal to 0.08, and the CFI and TLI were greater than 0.90. Factor loadings showed variance, as explained by the variables for each factor of the model. We considered factor loadings greater than 0.7 to provide evidence that the factor extracts sufficient variance from that variable [12].

We used structural equation mediation modeling to analyze the effect of hazardous parental alcohol consumption on adolescents' lifetime alcohol use, mediated by the latent dimension of parental monitoring skills. Mediation Analysis was controlled by age, sex, race, and SES of parents and adolescents, group of randomization, baseline status of parental monitoring, and adolescents' lifetime alcohol use. All covariates were simultaneously regressed on the mediator and outcome. To address the multilevel structure of the data (families nested in SARC), we applied a post-estimation adjustment to the standard errors [13]. The CFA and mediation analyses were performed using Mplus version 7.4.

Results

The sample of adolescents was homogeneous regarding gender (50.6% were boys), the mean age was 12.60 (±1.24) years, the majority self-declared as black/brown (70.49), and 12.3% reported lifetime alcohol use (Table 1). Most of the parents were mothers (91.2%), from the lowest class (73.5%), self-declared as black/brown (75.20%), and with a mean age of 39.50 (±0.28). Of the parents, 4.4% reported hazardous alcohol use, and the mean score for parental monitoring was 6.98 (±0.05), ranging from 0 to 8. The prevalence of adolescent's lifetime alcohol use at 12-month follow-up was 24.72%.

We found an inverse association between parental hazardous alcohol use and parental monitoring (Coef: -0.26, 95% -0.51; -0.01). We also found that adolescents with parents who reported higher monitoring levels are 46% less likely to report lifetime alcohol use (OR: 0.54, 95%CI: 0.42; 0.71). Regarding the mediation analysis, we found a significant indirect effect of parents' hazardous alcohol use on adolescents' lifetime alcohol use through parental monitoring (OR: 1.18, 95%CI: 1.02; 1.36) (Fig. 1).

Discussion

This study tested the indirect association between hazardous parental alcohol consumption and adolescents' life time alcohol use via parental monitoring. We found an increased risk of alcohol use in adolescents whose parents presented hazardous alcohol use only mediated by parental monitoring.

It is well-reported in the literature that having at least one parent who drinks heavily is predictive of early and heavy drinking in adolescents [3, 14]; however, these studies did not report the underlying variables that could explain this association. Our study found that parental monitoring played a central role in mediating the association between hazardous parental alcohol consumption and adolescents' alcohol use onset. Our findings align with other studies that found that parental monitoring can enhance the association between parental and adolescent consumption practices

Table 1 Baseline sociodemographic characteristics of the participants from the *Famílias Fortes* Study ($n=1,768$)*

	Adolescents ($n=884$)		Parent ($n=884$)	
	n	%	*n*	%
Sex				
Men	429	48.69	73	8.25
Woman	446	50.62	807	91.19
Others	6	0.68	5	0.56
Age (mean SE)	12.60 ± 0.04		39.50 ± 0.28	
Race/skin color				
White	229	26.23	193	21.81
Black/ Brown	614	70.49	664	75.20
Indigenous	13	1.49	21	2.37
Yellow	15	1.72	5	0.56
Socio Economic Status				
A			8	0.91
B			33	3.77
C			191	21.83
D			643	73.49
Adolescents' lifetime use of alcohol	108	12.33		
Parent's hazardous alcohol use (AUDIT)			39	4.40
Parental Monitoring Score (mean SE)			6.98 ± 0.05	

Socio Economic Status – ABEP according to the cutoff points established in the literature: A (45–100), B (29–44), C (17–28), and D/E (0–16)

Monitoring score (ranging from 0–8)

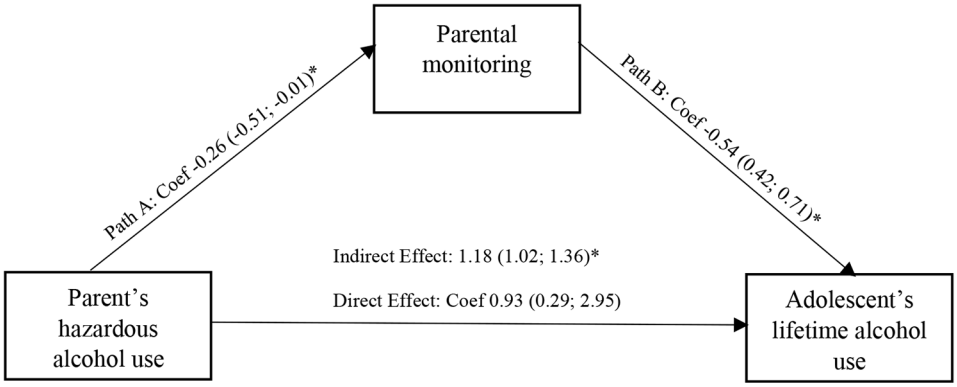

Fig. 1 Mediation paths, direct and indirect effects of parents hazardous alcohol use on adolescents alcohol use via parental monitoring from the *Famílias Fortes* Study. Legend: Path A (effects of the indirect variable on the mediator), Path B (effects of the mediator on the outcome), Direct effect (effects of the indirect variable on the outcome). Indirect effect (product of Paths A and B). * **P**-value < 0.005. Mediation Analysis was controlled by age, sex, race, and SES of parents and adolescents, group of randomization, baseline status of parental monitoring and adolescent's lifetime alcohol use

[5, 7, 15]. Two longitudinal studies, one from Finland and another from England, corroborated our findings by demonstrating that monitoring is a mediator of the association between parents' alcohol consumption practices and the frequency of use and intoxication by adolescents [5, 6].

A possible explanation for the mediating role of parental monitoring in the association between hazardous parental alcohol use and adolescent alcohol use onset is the influence of parental alcohol use on the credibility of their communication with their child [16]. Low parental monitoring may generate in adolescents a perception of more tolerant or more permissive parental attitudes towards alcohol use in adolescence. Children may assume that their parents approve of their alcohol use and its consequences [17, 18]. The literature also demonstrates that parental monitoring protects adolescents from involvement with deviant peers and consequently prevents early alcohol consumption [6, 19]. Parents with hazardous alcohol consumption might benefit from parental skills training emphasizing monitoring skills [20].

It is important to highlight that few studies examined the direct association between parental alcohol consumption and parental skills. The association between parents' alcohol use and their ability to monitor their children has been scarcely studied in the literature and deserves further investigation.

This study had some limitations. Parents in our sample were mostly mothers, so it is important to realize that these results are not generalizable to fathers or other carers. We used self-reported measures, which may have introduced information bias. We also did not consider all possible confounding factors, such as alcohol consumption by peers and parental discipline; thus, future studies are needed to assess such confounders. Finally, 21.6% of the families were lost during the follow-up and this may imply some bias in the study. Due to the significant predominance of mothers from a low socio-economic status in the study, caution must be exercised when generalizing the findings to other types of parent or guardian behavior.

Our findings highlight the importance of comprehensive preventive approaches targeting adolescent alcohol use, which should consider both parental drinking behaviors and monitoring practices within the family. Therefore, it is urgent to educate parents about their crucial role in preventing adolescent alcohol consumption.

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Author contributions Dra. Juliana Y. Valente conceptualized and designed the study, conducted the data analyses, and drafted the initial manuscript. Dra. Patricia Galvão, Msc. Miguel Henrique Santos, Dra. Fabiane Gurbert reviewed and revised the manuscript. Dra. Zila Sanchez is responsible for the grant acquisition and data collection and approved the final version of the manuscript. All authors approved the final version of the manuscript.

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Data availability No datasets were generated or analysed during the current study.

Declarations

Competing interests The authors declare no competing interests.

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