

Parenting styles as predictors of smoking and alcohol consumption among nursing students

Roditeljski stilovi kao čimbenici pušenja i konzumacije alkohola među studentima sestrinstva

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Abstract

Introduction: Smoking and alcohol consumption are common health-risk behaviours among students and may be influenced by family-related factors such as parenting style. This study examined whether perceived parenting styles predict smoking and alcohol consumption among nursing students.

Methods: A cross-sectional study was conducted among nursing students (N = 298). Parenting style dimensions (authoritative, authoritarian, permissive) were analysed as predictors of smoking status and alcohol consumption using binary logistic regression. Differences in self-rated overall health between smokers and non-smokers, and between alcohol consumers and non-consumers, were tested using the Mann–Whitney U test.

Results: The logistic regression model predicting smoking status was not statistically significant ($\chi^2(3) = 7.09$, $p = .069$), and none of the parenting style dimensions independently predicted smoking. The model predicting alcohol consumption was also not statistically significant overall ($\chi^2(3) = 4.65$, $p = .199$); however, authoritarian parenting was a significant individual predictor ($B = 0.278$, $p = .038$; OR = 1.32, 95% CI [1.02, 1.72]). Self-rated overall health differed significantly between smokers and non-smokers ($U = 7541.00$, $Z = -2.94$, $p = .003$), with smokers reporting poorer health. No significant differences in self-rated health were found between alcohol consumers and non-consumers ($U = 9485.50$, $Z = -0.49$, $p = .623$).

Discussion: Parenting styles were not associated with smoking among nursing students, whereas authoritarian parenting was linked to a higher likelihood of alcohol consumption. Smoking was associated with poorer self-rated overall health, highlighting the importance of smoking prevention and cessation interventions in nursing students.

Conclusion: Perceived parenting styles appear to have a limited role in explaining smoking behaviour among nursing students, although authoritarian parenting may increase vulnerability to alcohol consumption. These findings suggest that prevention strategies should extend beyond family-related factors and address broader psychosocial determinants, including coping skills, stress management, peer influences, and health-promoting behaviours.

Keywords: nursing students, parenting style, smoking, alcohol consumption, self-rated health, health-risk behaviours

Short title: Parenting styles

Sažetak

Uvod: Pušenje i konzumacija alkohola predstavljaju česta rizična ponašanja među studentima te mogu biti povezana s obiteljskim čimbenicima poput roditeljskog stila. Cilj ovog istraživanja bio je ispitati predviđaju li percipirani roditeljski stilovi pušenje i konzumaciju alkohola među studentima sestrinstva.

Metode: Provedeno je istraživanje među studentima sestrinstva u kojemu je sudjelovalo 298 ispitanika. Dimenzije roditeljskog stila (autoritativni, autoritarni i permisivni) analizirane su kao prediktori pušenja i konzumacije alkohola primjenom binarne logističke regresije. Razlike u samoprocjeni općeg zdravlja između pušača i nepušača te između konzumenata alkohola i onih koji ne konzumiraju alkohol testirane su Mann–Whitney U testom.

Rezultati: Model logističke regresije za predviđanje pušenja nije bio statistički značajan ($\chi^2(3) = 7.09$, $p = .069$), a nijedna dimenzija roditeljskog stila nije bila značajan prediktor pušenja. Model za predviđanje konzumacije alkohola također nije bio statistički značajan u cjelini ($\chi^2(3) = 4.65$, $p = .199$), no autoritarni roditeljski stil bio je značajan pojedinačni prediktor ($B = 0.278$, $p = .038$; OR = 1.32, 95% CI [1.02, 1.72]). Samoprocjena općeg zdravlja značajno se razlikovala između pušača i nepušača ($U = 7541.00$, $Z = -2.94$, $p = .003$), pri čemu su pušači izvijestili o lošijem zdravlju. Razlike u samoprocjeni zdravlja između studenata koji konzumiraju alkohol i onih koji ga ne konzumiraju nisu bile statistički značajne ($U = 9485.50$, $Z = -0.49$, $p = .623$).

Rasprava: Roditeljski stilovi nisu bili povezani s pušenjem među studentima sestrinstva, no autoritarni je roditeljski stil povezan s većom vjerojatnošću konzumacije alkohola. Pušenje je povezano s lošijom ocjenom zdravlja, što ukazuje na potrebu za preventivnim programima i intervencijama odvikavanja od pušenja u studentskoj populaciji sestrinstva.

Zaključak: Percipirani roditeljski stilovi imaju ograničenu ulogu u razumijevanju sklonosti pušenja među studentima sestrinstva, dok autoritarni roditeljski stil može povećati sklonost konzumaciji alkohola. Ovi rezultati upućuju na to da bi preventivne strategije trebale nadilaziti obiteljske čimbenike te obuhvatiti šire psihosocijalne odrednice, uključujući razvoj vještina suočavanja, upravljanje stresom, utjecaj vršnjaka i promicanje zdravih životnih navika.

Ključne riječi: studenti sestrinstva, roditeljski stil, pušenje, konzumacija alkohola, samoprocjena zdravlja, rizična ponašanja

Kratak naslov: Roditeljski stilovi

Introduction

Health-risk behaviours such as smoking and alcohol consumption remain among the most important preventable determinants of morbidity and premature mortality worldwide [1, 2]. They often consolidate in early adulthood, particularly amid increased independence, peer influence, and reduced parental monitoring [3]. The transition to university life represents a critical developmental period during which young adults may adopt or intensify behaviours that compromise long-term health. University students are therefore considered a population at increased vulnerability for the development of risky lifestyle patterns, including tobacco use and alcohol consumption [4].

Among university students, nursing students constitute a particularly relevant group for research on health behaviours. As future healthcare professionals, nursing students are expected to model health-promoting practices and serve as credible sources of health education and prevention. However, previous research has shown that nursing students may still engage in smoking and alcohol use, often reflecting broader societal trends and psychosocial stressors associated with academic demands, clinical practice, and transitional life challenges [5, 6].

Individual, social, and family-related influences shape risky behaviours. Family environments, particularly parenting practices, are central contexts through which values, coping strategies, health attitudes, and behavioural norms are communicated [3]. A growing body of research highlights the role of parenting style as a long-term predictor of psychosocial development and health-related decision-making [7]. Parenting style refers to the broader emotional climate in which parenting occurs and is commonly conceptualised within three dimensions: authoritative, authoritarian, and permissive. Authoritative parenting is typically characterised by high warmth and responsiveness combined with clear boundaries and consistent discipline. Authoritarian parenting involves high control, strictness, and low emotional responsiveness. Permissive parenting is generally associated with high warmth, but low behavioural control and limited structure [8, 9].

Theoretical and empirical evidence suggest that different parenting styles may influence the likelihood of engaging in smoking or alcohol consumption. Authoritative parenting has been linked with better self-regulation, stronger internalised norms, and healthier behavioural patterns, thereby potentially reducing engagement in risky behaviours. In contrast, authoritarian parenting may contribute to maladaptive coping, rebellion, or reduced communication regarding health-related decision-making. Permissive parenting may reduce behavioural monitoring and limit the development of self-discipline, thereby increasing susceptibility to peer pressure and risky experimentation [9, 10].

Parenting styles are most commonly conceptualised within Baumrind's theoretical framework [11], which distinguishes between authoritative, authoritarian, and permissive parenting based on varying levels of responsiveness and control. This framework has been further elaborated in

contemporary research, highlighting the role of parenting as a key socialisation mechanism influencing behavioural regulation, emotional development, and health-related decision-making [12]. Authoritative parenting, characterised by warmth, support, and consistent boundaries, has been consistently associated with more favourable developmental outcomes, including lower engagement in health-risk behaviours [13]. In contrast, authoritarian parenting, marked by high control and low emotional responsiveness, has been linked to poorer communication, reduced autonomy, and maladaptive coping strategies, which may increase susceptibility to substance use [14; 15]. Permissive parenting, defined by high warmth but low behavioural control, has been associated with insufficient monitoring and greater vulnerability to peer influence [16]. Empirical evidence suggests that the association between parenting styles and substance use behaviours such as smoking and alcohol consumption is complex and context-dependent, with effect sizes varying across developmental stages and cultural settings [17]. In emerging adulthood, parental influence may become less direct; however, internalised patterns of interaction and coping, shaped by earlier parenting experiences, continue to play a role in behavioural choices. Therefore, examining perceived parenting styles remains relevant for understanding health-risk behaviours among university students.

The present study aimed to explore family-related determinants of risky behaviours among nursing students, with a particular focus on perceived parenting styles as predictors of smoking status and alcohol consumption. In addition, the study examined differences in self-rated overall health between smokers and non-smokers as well as between alcohol consumers and non-consumers.

Methodology

A cross-sectional quantitative study was conducted to examine lifestyle-related behaviours, alcohol consumption, smoking, and parenting style among nursing students. The design relied on self-reported questionnaire data collected at a single time point (from October 1st to December 1st, 2025).

Sample

The study population comprised undergraduate nursing students enrolled at the University of Maribor (Faculty of Health Sciences). At the time of data collection, the total population of eligible nursing students was approximately 650 students across all study years, including both part-time and full-time students, and in first-, second-, and third-degree studies. A total of 298 students participated in the study, representing approximately 45,85 % of the target population. Convenience sampling was applied. Students were eligible to participate if they (1) were enrolled in a nursing study programme at the time of data collection, (2) were at least 18 years old, and (3) provided informed consent by completing the questionnaire. No further exclusion criteria were applied.

Instruments

Data were collected using a structured questionnaire. The questionnaire consisted of (1) demographic and study-related variables and (2) parenting style and lifestyle behaviour. Students were also asked whether they had any chronic health conditions and to rate their overall health on a five-point scale (ranging from very good to very poor). The perceived parenting style was measured using 9 items adapted from a well-established instrument developed by Clyde C. Robinson and colleagues [18], designed to capture key dimensions of parenting practices across different cultural contexts. The instrument operationalises parenting style according to Diana Baumrind's typology, distinguishing between authoritative, authoritarian, and permissive parenting [11]. All items were rated on a five-point Likert scale ranging from 1 ("very untrue") to 5 ("very true"). Composite scores for authoritarian, authoritative, and permissive parenting styles were computed as the mean of three items per scale. Higher scores indicate greater endorsement of the respective parenting style. Smoking status was measured with four categories. Alcohol consumption was assessed by asking how often students drank alcoholic beverages.

Data Collection Procedure

Data were collected via an anonymous online questionnaire administered to nursing students. Participation was voluntary, and students could withdraw at any time. No identifying information was collected. Before participating, students received information about the study's purpose and assurances regarding data protection. The questionnaire was distributed through faculty networks and student channels.

Data Analysis Method

All data cleaning, recoding, and statistical analyses were conducted using IBM SPSS Statistics. Preprocessing included the computation of composite variables, with parenting style scores (authoritative, authoritarian, and permissive) calculated as the mean of three items per scale. No reverse coding was required. Missing data were handled using listwise deletion for analyses requiring complete cases. Descriptive statistics were used to summarise the sample characteristics and study variables, including frequencies and percentages for categorical variables, and means, medians, and standard deviations for continuous variables. To examine whether parenting styles predict smoking status and alcohol consumption, two separate binary logistic regression analyses were performed. In both models, parenting style dimensions (authoritative, authoritarian, and permissive) were entered simultaneously as independent variables. Model fit was evaluated using the omnibus test of model coefficients, $-2 \log$ likelihood, Cox & Snell R^2 , Nagelkerke R^2 , and the Hosmer–Lemeshow goodness-of-fit test. Regression coefficients (B), standard errors (SE), Wald statistics, odds ratios (OR), and 95% confidence intervals (CI) were reported. Differences in self-rated overall health between smokers and non-smokers, as well as between alcohol consumers and non-consumers, were analysed

using the Mann–Whitney U test due to the ordinal nature of the health variable and non-normal distribution assumptions. Mean ranks, U values, Z scores, and p-values were reported. Statistical significance was set at $p < .05$ for all analyses.

Ethical Considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki and relevant ethical standards for research involving human participants. Participation was entirely voluntary, and informed consent was obtained electronically before completing the survey. Participants were informed about the purpose of the study, the expected duration of participation, potential minimal risks, and their right to withdraw at any time without consequences. Ethical approval for the study was obtained from the Ethics Committee of the University of Maribor, Faculty of Health Sciences (038/2025/4931-6/900).

Results

A total of 298 nursing students participated in this study. Most respondents were female (77.2%), while 22.8% were male. The sample was predominantly composed of younger students, with the largest proportions being 19-year-olds (26.8%), 20-year-olds (26.2%), and 21-year-olds (26.5%). Regarding study format, the majority of participants were enrolled in full-time study (92.6%), whereas 7.4% reported part-time study (Table 1).

TABLE 1. Sample characteristics (N = 298)

Characteristic	Category	n	%
Gender	Men	68	22.8
	Women	230	77.2
Type of study	Full-time	276	92.6
	Part-time	22	7.4
Year of study	1st year	100	33.6
	2nd year	94	31.5
	3rd year	93	31.2
	Other (5th year / graduate)	11	3.7
Employment during studies	Occasional work	190	63.8
	Regular employment	20	6.7
	No	88	29.5
Living arrangement	With parents	213	71.5
	With partner	35	11.7
	With partner and family	23	7.7
	Living alone	24	8.1
	Other	3	1.0
Chronic health condition	No	249	83.6
	Yes	49	16.4

Note. n = number of participants.

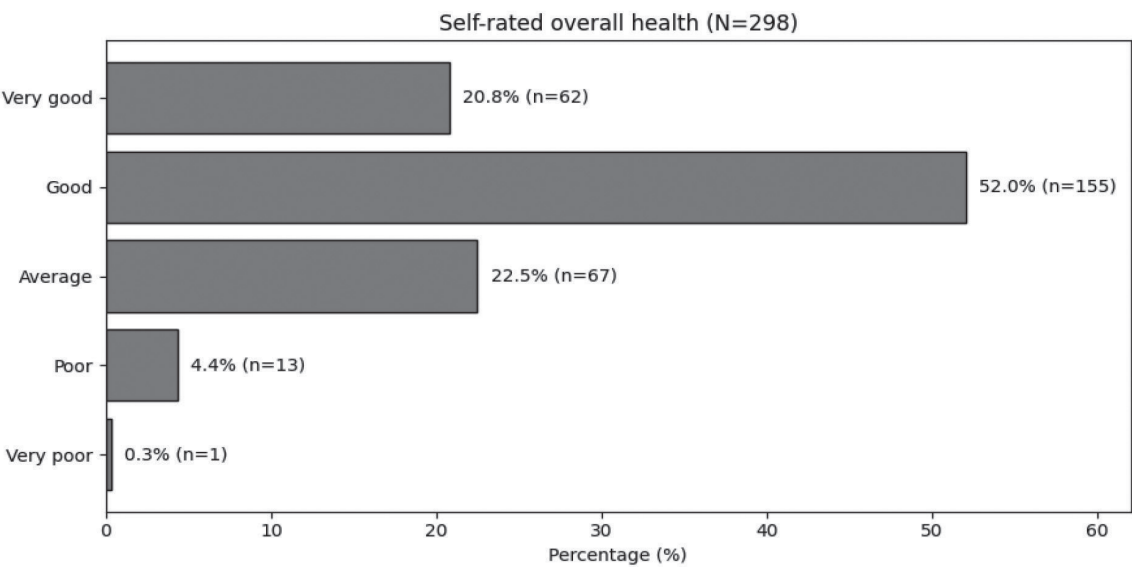


FIGURE 1. Self-rated overall health

Figure 1 presents students’ self-rated overall health. More than half of the respondents rated their current overall health as good (52.0%), while 20.8% reported very good health.

A regression analysis was conducted to examine whether parenting styles (authoritative, authoritarian, permissive) predict smoking status (0 = non-smoker, 1 = smoker) (Table 2). The overall model did not reach statistical significance, $\chi^2(3) = 7.09, p = .069$. The model explained a small proportion of variance in smoking (Cox & Snell $R^2 = .025$; Nagelkerke $R^2 = .034$) and demonstrated good fit (Hosmer–Lemeshow $\chi^2(8) = 3.81, p = .874$). None of the parenting style were significant predictors of smoking: authoritative ($B = -0.131, p = .437, OR = 0.88, 95\% CI [0.63, 1.22]$), authoritarian ($B = 0.197, p = .134, OR = 1.22, 95\% CI [0.94, 1.58]$), and permissive ($B = 0.257, p = .119, OR = 1.29, 95\% CI [0.94, 1.79]$) (Table 3 and 4).

TABLE 2. Binary logistic regression model fit summary

Model information	Value
Omnibus test of model coefficients, $\chi^2 (df = 3)$	7.09
p-value	.069
–2 Log likelihood	368.51
Cox & Snell R^2	.025
Nagelkerke R^2	.034
Hosmer–Lemeshow test, $\chi^2 (df = 8)$	3.81
p-value (Hosmer–Lemeshow)	.874

Note. Dependent variable: smoking status (0 = non-smoker, 1 = smoker). Predictors entered simultaneously: authoritative, authoritarian, and permissive parenting style scores.

TABLE 3. Classification accuracy of the logistic regression model

Observed smoking status	Predicted: Non-smoker (0)	Predicted: Smoker (1)	% Correct
Non-smoker (0)	148	17	89.7
Smoker (1)	95	18	15.9
Overall percentage			59.7

Note. Classification cut-off = .50.

TABLE 4. Predictors of smoking status: Parenting styles

Predictor	B	SE	Wald	df	p	OR (Exp(B))	95% CI for OR
Authoritative parenting	–0.131	0.168	0.604	1	.437	0.88	[0.63, 1.22]
Authoritarian parenting	0.197	0.132	2.244	1	.134	1.22	[0.94, 1.58]
Permissive parenting	0.257	0.165	2.426	1	.119	1.29	[0.94, 1.79]
Constant	–1.137	0.945	1.446	1	.229	0.32	—

Note. Dependent variable: smoking status (0 = non-smoker, 1 = smoker). Method: Enter.

A binary logistic regression analysis was conducted to examine whether parenting styles (authoritative, authoritarian, permissive) predict alcohol consumption (0 = no, 1 = yes). The overall model was not statistically significant, $\chi^2(3) = 4.65$, $p = .199$, and explained a small proportion of variance in alcohol consumption (Cox & Snell $R^2 = .015$; Nagelkerke $R^2 = .022$). The Hosmer–Lemeshow test indicated good model fit, $\chi^2(8) = 6.93$, $p = .544$. At the individual level, authoritarian parenting was significantly associated with alcohol consumption ($B = 0.278$, $SE = 0.134$, $Wald = 4.31$, $p = .038$), suggesting increased odds of alcohol use with higher authoritarian parenting scores ($OR = 1.32$, 95% $CI [1.02, 1.72]$). Authoritative parenting ($p = .329$) and permissive parenting ($p = .973$) were not significant predictors (Table 5).

A Mann–Whitney U test was conducted to compare self-rated overall health between non-smokers and smokers. The results showed a statistically significant difference in self-rated health between the two groups ($U = 7541.00$, $Z = -2.94$, $p = .003$). Non-smokers reported significantly better self-rated overall health than smokers, as indicated by higher mean ranks for non-smokers (Mean Rank = 150.30) compared with smokers (Mean Rank = 123.73).

A Mann–Whitney U test was conducted to compare self-rated overall health between students who reported alcohol consumption and those who did not. The analysis showed no statistically significant difference in self-rated health between the two groups ($U = 9485.50$, $Z = -0.49$, $p = .623$). Mean ranks were comparable for non-drinkers (Mean Rank = 147.93) and drinkers (Mean Rank = 152.71), indicating similar levels of self-rated overall health across groups.

TABLE 5. Binary logistic regression predicting alcohol consumption

Predictor	B	SE	Wald	df	p	OR (Exp(B))	95% CI for OR
Authoritative parenting	0.167	0.171	0.952	1	.329	1.182	[0.845, 1.652]
Authoritarian parenting	0.278	0.134	4.306	1	.038*	1.320	[1.016, 1.716]
Permissive parenting	0.005	0.161	0.001	1	.973	1.005	[0.733, 1.379]
Constant	-2.197	0.952	5.328	1	.021	0.111	—

Note. Dependent variable: alcohol consumption (0 = no, 1 = yes). Method: Enter. * $p < .05$.

TABLE 6. Differences in self-rated overall health between smokers and non-smokers

Smoking status (yes / no)	N	Mean rank	Mann–Whitney U	Z	p
Non-smoker (0)	165	150.30	7541.00	-2.94	.003
Smoker (1)	113	123.73			
Total	278				

Note. Self-rated overall health was assessed on an ordinal scale. Higher mean ranks indicate better self-rated health. Two-tailed p-values are reported.

TABLE 7. Differences in self-rated overall health by alcohol consumption

Alcohol consumption (yes / no)	N	Mean rank	Mann–Whitney U	Z	p
No (0)	200	147.93	9485.50	-0.49	.623
Yes (1)	98	152.71			
Total	298				

Note. Self-rated overall health was assessed on an ordinal scale. Higher mean ranks indicate better self-rated health. Two-tailed p-values are reported.

Discussion

The findings showed that perceived parenting styles were not associated with smoking status. In contrast, authoritarian parenting was linked to a higher likelihood of alcohol consumption. In addition, smokers reported poorer self-rated overall health compared with non-smokers, whereas no differences in self-rated health were observed between alcohol consumers and non-consumers.

Our findings are partly consistent with previous research indicating that associations between parenting style and substance use are often small, context-dependent, and vary across cultures and developmental stages. In emerging adulthood, the influence of parental practices may weaken as autonomy increases, separation from the family environment deepens, and peers and university-related stressors gain greater sway. This may explain why parenting styles did not predict smoking in our sample, as tobacco use among university students is frequently shaped by social norms, peer networks, and situational factors rather than family-related determinants. However, the observed link between authoritarian parenting and alcohol consumption aligns with studies suggesting that controlling and emotionally less responsive parenting may contribute to maladaptive coping, poorer emotion regulation, and a higher susceptibility to engage in alcohol use, particularly in social contexts [19]. Alcohol consumption may also be more socially normalised in student environments compared with smoking, which could make it more responsive to psychosocial and relational determinants. The finding that smokers reported poorer self-rated health is expected and supports previous evidence that smoking is associated with reduced perceived well-being even among young adults [20, 21, 22]. Given that nursing students are future health professionals, this result is particularly relevant, as smoking may negatively affect not only their current health but also their credibility and effectiveness as future health promotion role models.

Several limitations should be considered when interpreting the results. First, the cross-sectional design does not allow causal conclusions (e.g., whether authoritarian parenting contributes to alcohol use or whether other underlying factors influence both perceived parenting and

alcohol behaviour). Second, convenience sampling from a single institution limits the generalisability of findings to other student populations, educational settings, or cultural contexts. Third, all variables were self-reported, which increases the risk of reporting bias and social desirability, particularly for sensitive behaviours such as smoking and alcohol consumption. Fourth, parenting style was assessed with a brief measure, which may reduce measurement sensitivity and contribute to weaker observed associations. Finally, smoking and alcohol variables were dichotomised for regression analyses (yes/no), which may mask differences in frequency, intensity, or problematic patterns (e.g., binge drinking). Future research should use longitudinal designs, including broader psychosocial and contextual determinants (e.g., peer influence, stress, coping strategies, mental health), and employ more detailed assessments of smoking and alcohol use to better understand mechanisms of risk behaviour development among nursing students.

Conclusion

Results show that parenting styles do not meaningfully explain smoking behaviour, while authoritarian parenting may still represent a relevant vulnerability factor for alcohol consumption in emerging adulthood. From a practical and educational perspective, the findings highlight the need for targeted smoking prevention and cessation programmes within nursing curricula, not only to protect students' health but also to strengthen their future credibility as health promoters and role models. At the same time, alcohol-related interventions should incorporate psychosocial components, including coping skills, emotional regulation, and awareness of family-related patterns that may influence risk-taking behaviours. For research, the results indicate that parenting style alone is an insufficient explanatory framework for smoking in this population and support the inclusion of broader contextual mechanisms.

Authors declare no conflict of interest.

Nema sukoba interesa.

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